Administrative 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. Application materials

Portada de Paquete Administrativo

Este archivo contiene los siguientes documentos:

1. Resumen en lenguaje sencillo (PLS, por sus siglas en inglés) de la actividad propuesta
   - Inglés
   - Idioma alternativo (español)
2. Primer aviso (NORI, por sus siglas en inglés)
   - Inglés
   - Idioma alternativo (español)
3. Solicitud original

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

Plain Language Summary Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

Applicants should use this template to develop a plain language summary as required by Title 30, Texas Administrative Code (30 TAC), Chapter 39, Subchapter H. Applicants may modify the template as necessary to accurately describe their facility as long as the summary includes the following information: (1) the function of the proposed plant or facility; (2) the expected output of the proposed plant or facility; (3) the expected pollutants that may be emitted or discharged by the proposed plant or facility; and (4) how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

Fill in the highlighted areas 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 you are subject to the alternative language notice requirements in 30 TAC Section 39.426, **you must provide a translated copy of the completed plain language summary in the appropriate alternative language as part of your application package**. For your convenience, a Spanish template has been provided below.

ENGLISH TEMPLATE FOR TPDES or TLAP NEW/RENEWAL/AMENDMENT APPLICATIONS
Enter 'INDUSTRIAL' or 'DOMESTIC' here WASTEWATER/STORMWATER
The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC 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.

Caviness Development, Ltd. (CN602835209) operates Caviness Sanitary Waste Facility (RN110569571), a domestic wastewater treatment facility. The facility is located at 3255 US Highway 60, in Hereford, Deaf Smith County, Texas 79045. The purpose of this application is to provide administrative and technical information necessary to renew the existing permit with no increase in flow or changes to the existing treatment facility and land application. This permit will not authorize a discharge of pollutants into water in the state.

Discharges from the facility are expected to contain domestic waste from employee restrooms, showers and breakrooms at the Caviness Beef Packers beef slaughter, fabrication and rendering plant. The domestic waste is treated by a self-contained package treatment plant designed and manufactured by WSI International, LLC, and consists of influent bar screens, an equalization tank with aeration for odor control aerobic sludge digester, chlorine contact tank for disinfection and associated pumps and piping.

PLANTILLA EN ESPAÑOL PARA SOLICITUDES NUEVAS/RENOVACIONES/ENMIENDAS DE TPDES o TLAP

AGUAS RESIDUALES DOMESTICAS /AGUAS PLUVIALES

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 Capítulo 39 del Código Administrativo de Texas 30. La información proporcionada en este resumen puede cambiar durante la revisión técnica de la solicitud y no es una representación ejecutiva fedérale de la solicitud de permiso.

Caviness Development, LTD. (CN602835209) opera Caviness Sanitary Waste Facility RN110569571), una instalacion de tratamiento de aguas residuales domésticas. La instalación está ubicada en 3255 US Highway 60, en Hereford, Condado de Deaf Smith, Texas 79045. El propósito de esta solicitud es proporcionar la información administrativa y técnica necesaria para renovar el permiso existente sin aumento en el flujo ni cambios en la instalación de tratamiento y aplicación del terreno actuales. Este permiso no autorizará una descarga de contaminantes en el agua en el estado.

Se espera que las descargas de la instalación contengan desechos domésticos de los aseos, duchas y salas de descanso de los empleados en el matadero y la planta de procesamiento y aprovechamiento de residuos de carne de res de Caviness Beef Packers. Los desechos domésticos están tratados por una autónoma planta paquete de tratamiento diseñada y fabricada por WSI International, LLC, que consta de rejillas de criba de afluente, un tanque de ecualización con aireación para el control de olores, un digestor aeróbico de lodos, un tanque de contacto de cloro para la desinfección y bombas y tubería asociadas.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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

PERMIT NO. WQ0015744001

APPLICATION. Caviness Development, Ltd., P.O. Box 790, Hereford, Texas 79045, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Land Application Permit (TLAP) No. WQ0015744001 to authorize the disposal of treated wastewater at a volume not to exceed a daily average flow of 16,500 gallons per day via surface irrigation of 100 acres of non-public access agricultural land. The domestic wastewater treatment facility and disposal area are located at 3255 U.S. Highway 60, in Deaf Smith County, Texas 79045. TCEQ received this application on June 27, 2024. The permit application will be available for viewing and copying at Hereford City Hall, 224 Lee Avenue, Hereford, in Deaf Smith 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/tlap-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=-102.476666,34.756666&level=18

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

TCEQ may act on an application to renew a permit for discharge of wastewater without providing an opportunity for a contested case hearing if certain criteria are met.

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 Caviness Development, Ltd. at the address stated above or by calling Mr. Regan Caviness, Vice President, at 806-357-2443.

Issuance Date: July 18, 2024

Comisión de Calidad Ambiental del Estado de Texas

AVISO DE RECIBO DE LA SOLICITUD Y
EL INTENTO DE OBTENER PERMISO PARA LA CALIDAD DEL AGUA
RENOVACION

PERMISO NO. WQ0015744001

SOLICITUD. Caviness Development, Ltd, P.O. Box 790, Hereford, Texas 79045 ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para renovar el Permiso No. WQ0015744001 del Sistema de Eliminación de Descargas de Contaminantes de Texas (TPDES) para autorizar la descarga de aguas residuales tratadas en un volumen que no sobrepasa un flujo promedio diario de 16.500 galones por día mediante riego superficial de 100 acres de tierra agrícola de acceso no público. La planta y la ruta de descarga están ubicadas en 3255 U.S. Highway 60 en el Condado de Deaf Smith, Texas 79045. La TCEQ recibió esta solicitud el 27 de junio de 2004. La solicitud para el permiso estará disponible para leerla y copiarla en Hereford City Hall, 224 Lee Avenue, Hereford en el Condado de Deaf Smith, Texas antes de la fecha de publicación de este aviso en el periódico. La solicitud, incluyéndose cualquier actualización y avisos asociados, están disponibles electrónicamente en la siguiente página web: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tlap-applications. Este enlace a un mapa electrónico de la ubicación general del sitio o de la instalación es proporcionado como una cortesía y no es parte de la solicitud o del aviso. Para la ubicación exacta, consulte la solicitud. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-102.476666,34.756666&level=18

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. Si ciertos criterios se cumplen, la TCEQ puede actuar sobre una solicitud para renovar un permiso sin proveer una oportunidad de una audiencia administrativa de lo contencioso.

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

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

También se puede obtener información adicional de Caviness Development, Ltd. a la dirección indicada arriba o llamando al Sr. Regan Caviness, Vice Presidente, al 806-357-2443.

Fecha de emission: 18 de julio de 2024

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

Corporate Office:
3404 Airway Blvd.
Amarillo TX 79118

Central Texas:
9855 FM 847
Dublin TX 76446

New Mexico:
110 East Mill Road
Artesia NM 88210

June 24, 2024

TCEQ Water Quality Division
Applications Review & Processing Team (MC148)
12100 Park 35 Circle
Austin TX 78753

Re: Application to Renew Permit No. WQ15744001
Caviness Development, Ltd. – CN602835209
Caviness Sanitary Waste Facility – RN110569571

Dear Sir/Madam,

Enclosed please find the original and 2 copies of the renewal application referenced above. The attachments are printed double-sided on the copies. The required application renewal fees were paid under a separate cover to the Financial Administration Division. Copies are attached.

Please contact our office at 806-353-6123 if additional information is needed.

Sincerely,

Amy L Peoples

Amy Peoples
Consultant

Enclosures
Cc: TCEQ Region 1
Caviness Development, Ltd.

RECEIVED
JUN 27 2024
Water Quality Applications Team

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 602835209		RN 110569571

SECTION II: Customer Information

4. General Customer Information	**5. Effective Date for Customer Information Updates** (mm/dd/yyyy)		
☐ 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:*	
CAVINESS DEVELOPMENT, LTD			
7. TX SOS/CPA Filing Number 080031402	**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:	PO BOX 790						
	City	HEREFORD	**State**	TX	**ZIP**	79045	**ZIP + 4**

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

18. Telephone Number	**19. Extension or Code**	**20. Fax Number** *(if applicable)*

(806) 357-2443		( ) -

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.)*

CAVINESS SANITARY WASTE FACILITY

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	3255 U.S. HIGHWAY 60							
	City	HEREFORD	**State**	TX	**ZIP**	79045	**ZIP + 4**	
24. County	DEAF SMITH							

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

25. Description to Physical Location:			
26. Nearest City		**State**	**Nearest ZIP Code**
HEREFORD		TX	79045

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:	34.7568		**28. Longitude (W) In Decimal:**	-102.4766	
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)
4952		221320	

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

DOMESTIC WATEWATER TREATMENT

34. Mailing Address:	**PO BOX 790**							
	City	**HEREFORD**	**State**	**TX**	**ZIP**	**79045**	**ZIP + 4**	

35. E-Mail Address:	**regan@cavinessbeef.com**		
36. Telephone Number		**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(806) 357-2443			( ) -

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:
	WQ0015744001			

SECTION IV: Preparer Information

40. Name:	AMY PEOPLES	**41. Title:**	CONSULTANT

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(806) 353-6123		( ) -	apeoples@enviroag.com

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:	CAVINESS DEVELOPMENT, LTD.	**Job Title:**	VP
Name *(In Print):*	REGAN CAVINESS	**Phone:**	(806) 357- 2443
Signature:	Regan Caviness	**Date:**	6/24/24

DOMESTIC WASTEWATER PERMIT RENEWAL

Caviness Sanitary Waste Facility

Prepared For:

Caviness Development, Ltd.

PO Box 790

Hereford, TX 79045

June 24, 2024

Prepared By:

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

3404 Airway Boulevard ♦ Amarillo, Texas 79118 ♦ Tel 806/353-6123 ♦ Fax 806/353-4132

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EXECUTIVE SUMMARY

Overview

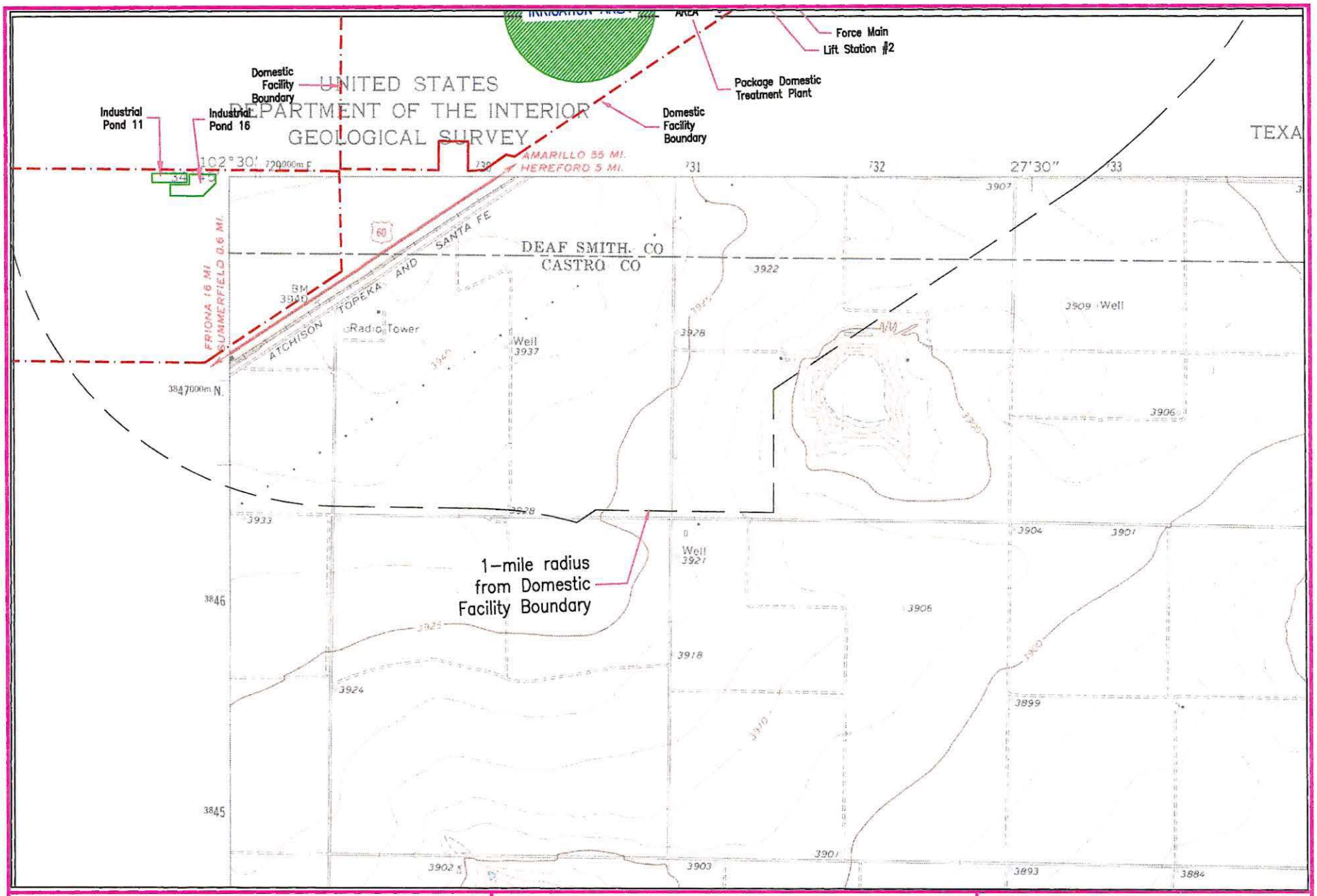
Caviness Development, Ltd. (Caviness) owns and operates an existing 16,500-gallon per day (GPD) wastewater treatment facility to treat domestic waste from employee restrooms, showers, and breakrooms at the Caviness Beef Packers beef slaughter, fabrication and rendering plant located approximately 6 miles southwest of Hereford on the north side of U.S. Highway 60 in Deaf Smith County. Industrial wastewater from packing and rendering plant processes is treated in a separate lagoon system authorized under 30 TAC 321 Subchapter C, Meat Processing. The property is located outside the City of Hereford's sewer utility CCN zone.

Purpose

The purpose of this document is to provide administrative and technical information necessary to renew the existing Permit No. WQ0015744001. No increase in flow or changes to the existing treatment facility and land application area are requested.

USGS Topographic Map

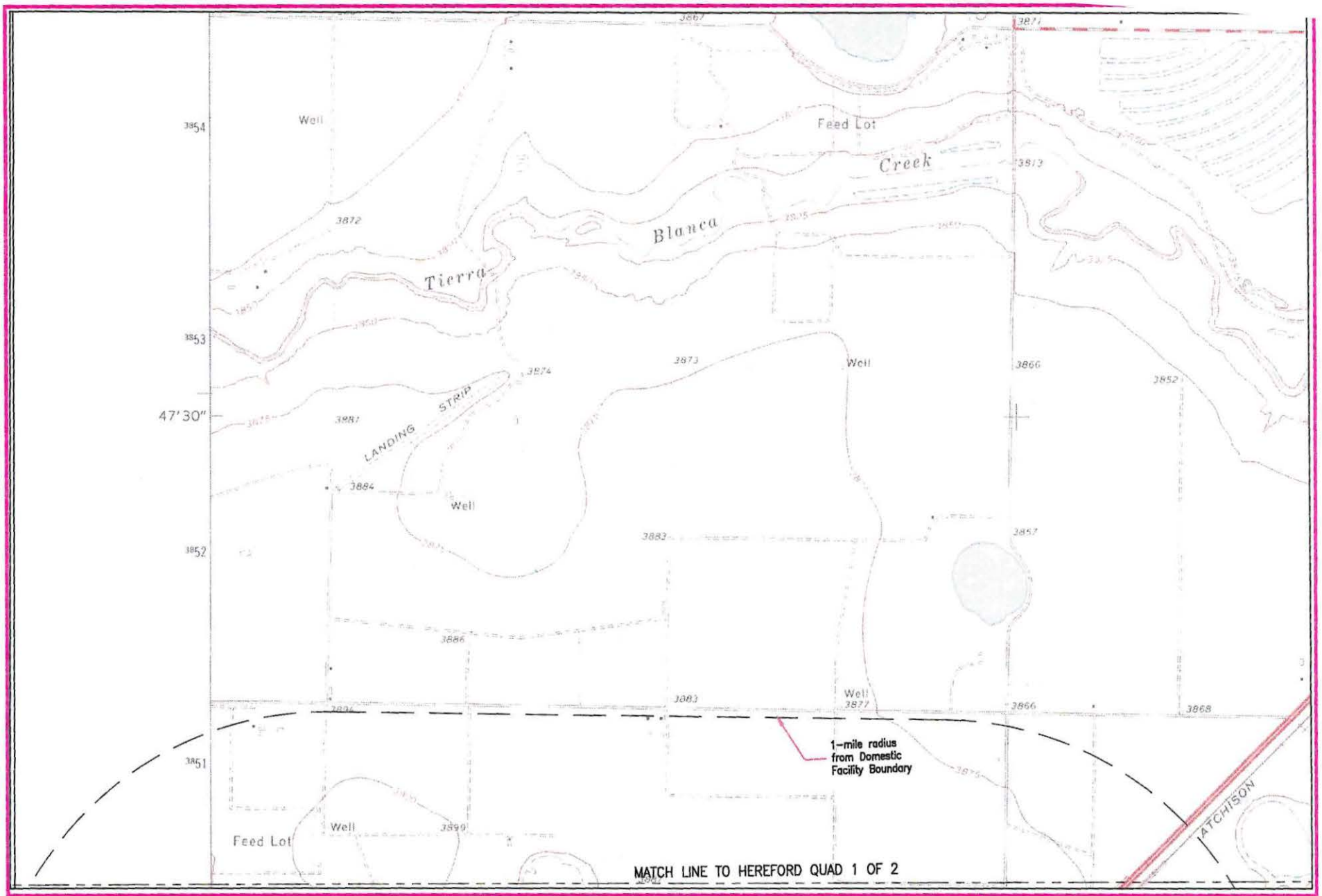
A high quality digital reproduction of the 7.5-minute USGS Topographic Map is attached showing the property, treatment facility and disposal area boundaries, and a 1-mile radius presented at native 1:24,000 scale.



CAVINESS DEVELOPMENT, LTD.
DEAF SMITH COUNTY
HEREFORD, TEXAS

7.5-MINUTE USGS MAP
EASTER QUADRANGLE
FEBRUARY 2022

ENVIRO-AG EAE ENGINEERING, INC.
Enviro-Ag Engineering, Inc.
ENGINEERING CONSULTANTS
3404 Airway Boulevard
AMARILLO, TEXAS 79118
TEL (806) 353-6123 FAX (806) 353-4132



CAVINESS DEVELOPMENT, LTD.
DEAF SMITH COUNTY
HEREFORD, TEXAS

7.5-MINUTE USGS MAP
HEREFORD QUADRANGLE 2 OF 2
FEBRUARY 2022

ENVIRO-AG EAE ENGINEERING, INC.
Enviro-Ag Engineering, Inc.
ENGINEERING CONSULTANTS
3404 Airway Boulevard
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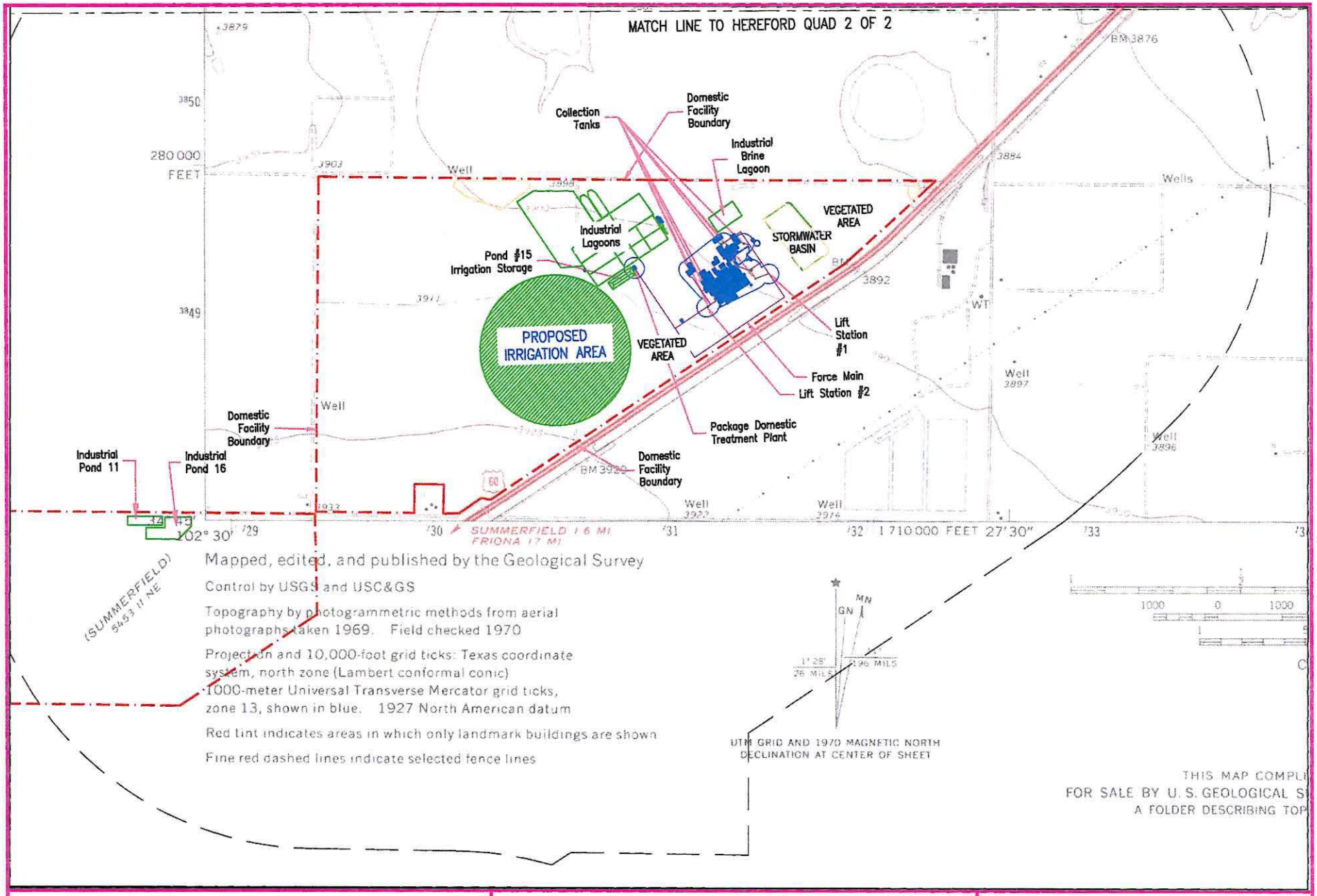
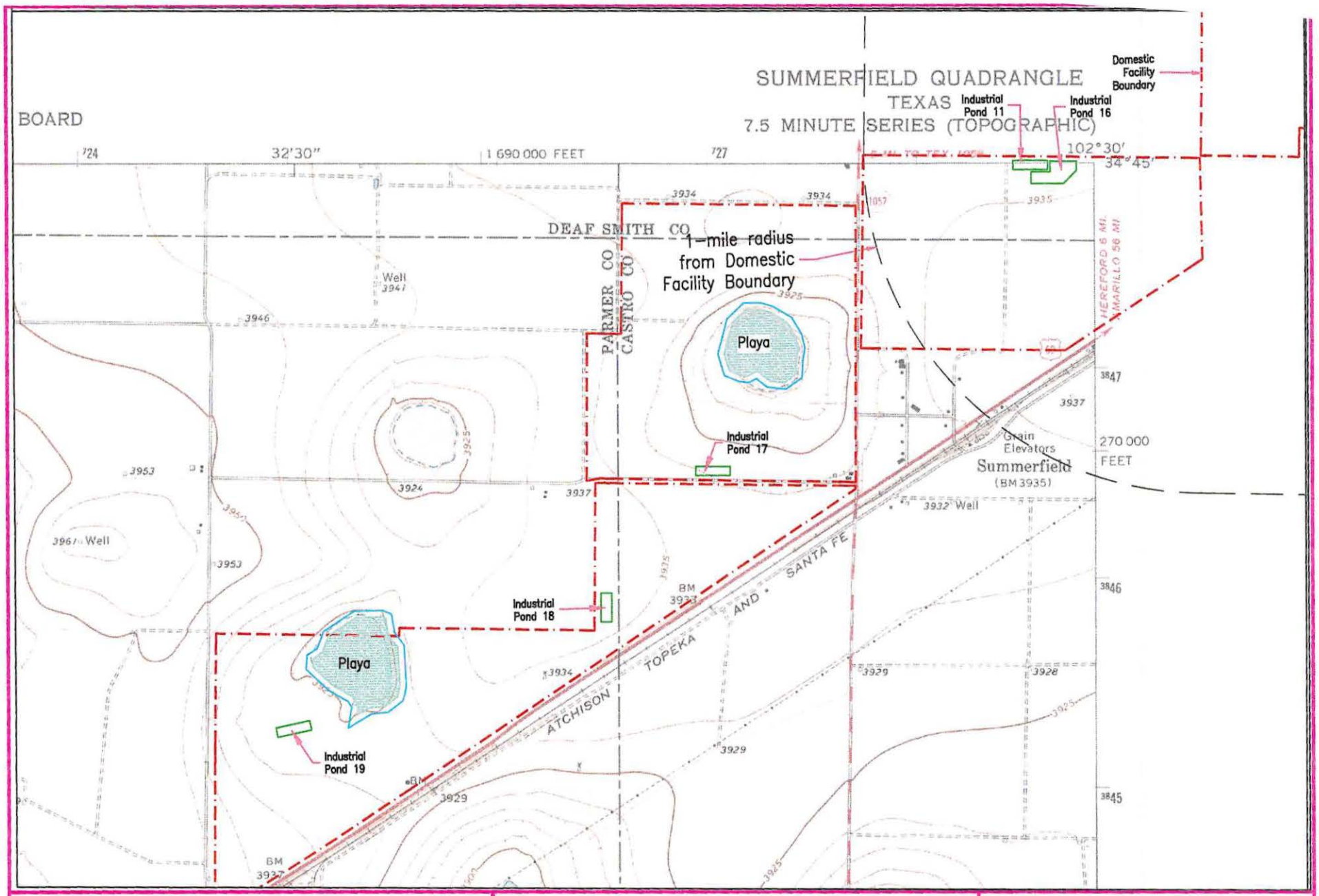


CAVINESS DEVELOPMENT, LTD. DEAF SMITH COUNTY HEREFORD, TEXAS	7.5-MINUTE USGS MAP HEREFORD QUADRANGLE 1 OF 2 FEBRUARY 2022	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



CAVINESS DEVELOPMENT, LTD.
DEAF SMITH COUNTY
HEREFORD, TEXAS

7.5-MINUTE USGS MAP
SUMMERFIELD QUADRANGLE
FEBRUARY 2022

ENVIRO-AG EAE ENGINEERING, INC.
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ENGINEERING CONSULTANTS
3404 Airway Boulevard
AMARILLO, TEXAS 79118
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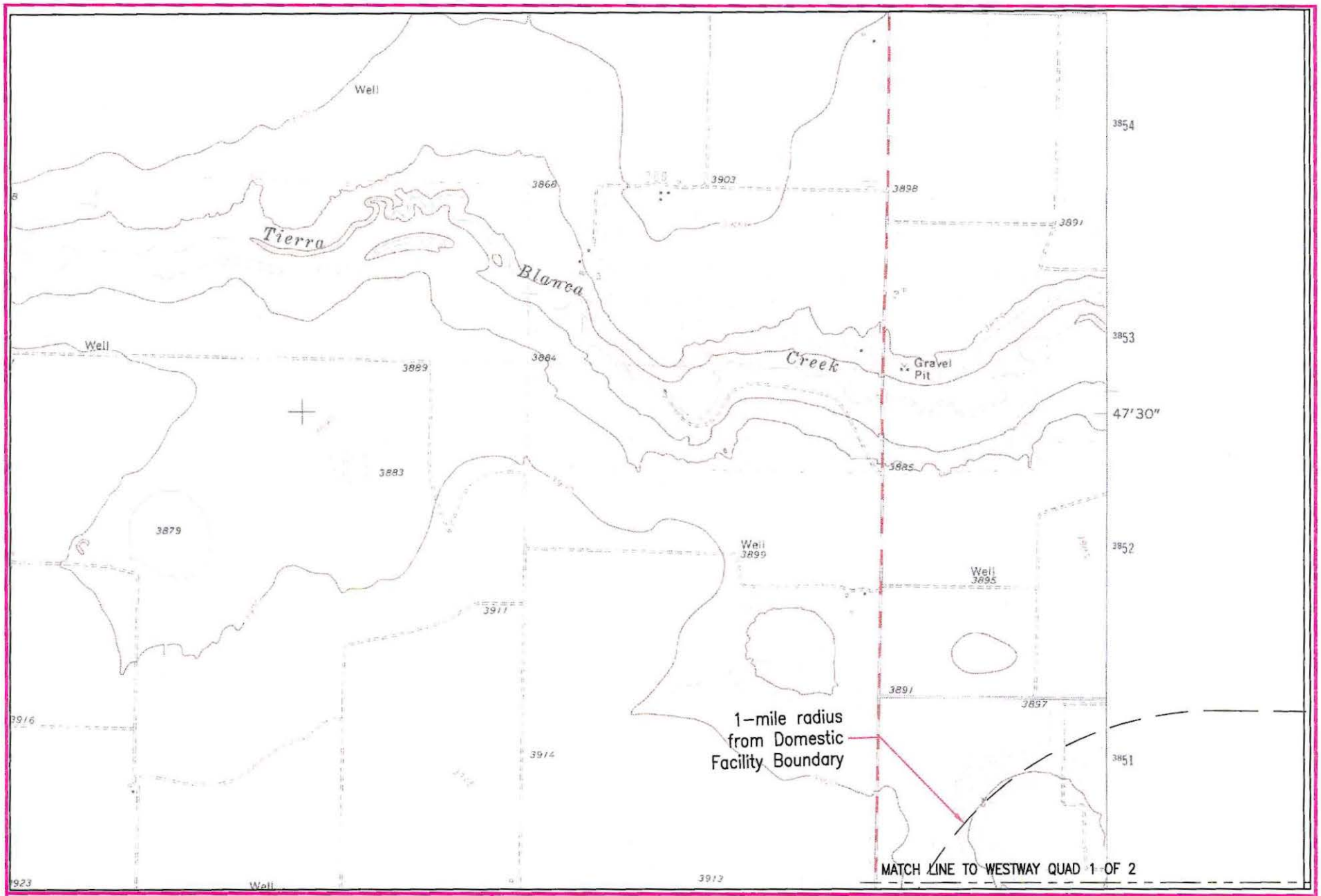

CAVINESS DEVELOPMENT, LTD.
DEAF SMITH COUNTY
HEREFORD, TEXAS

7.5-MINUTE USGS MAP
WESTWAY QUADRANGLE 2 OF 2
FEBRUARY 2022

ENVIRO-AG EAE ENGINEERING, INC.
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3404 Airway Boulevard
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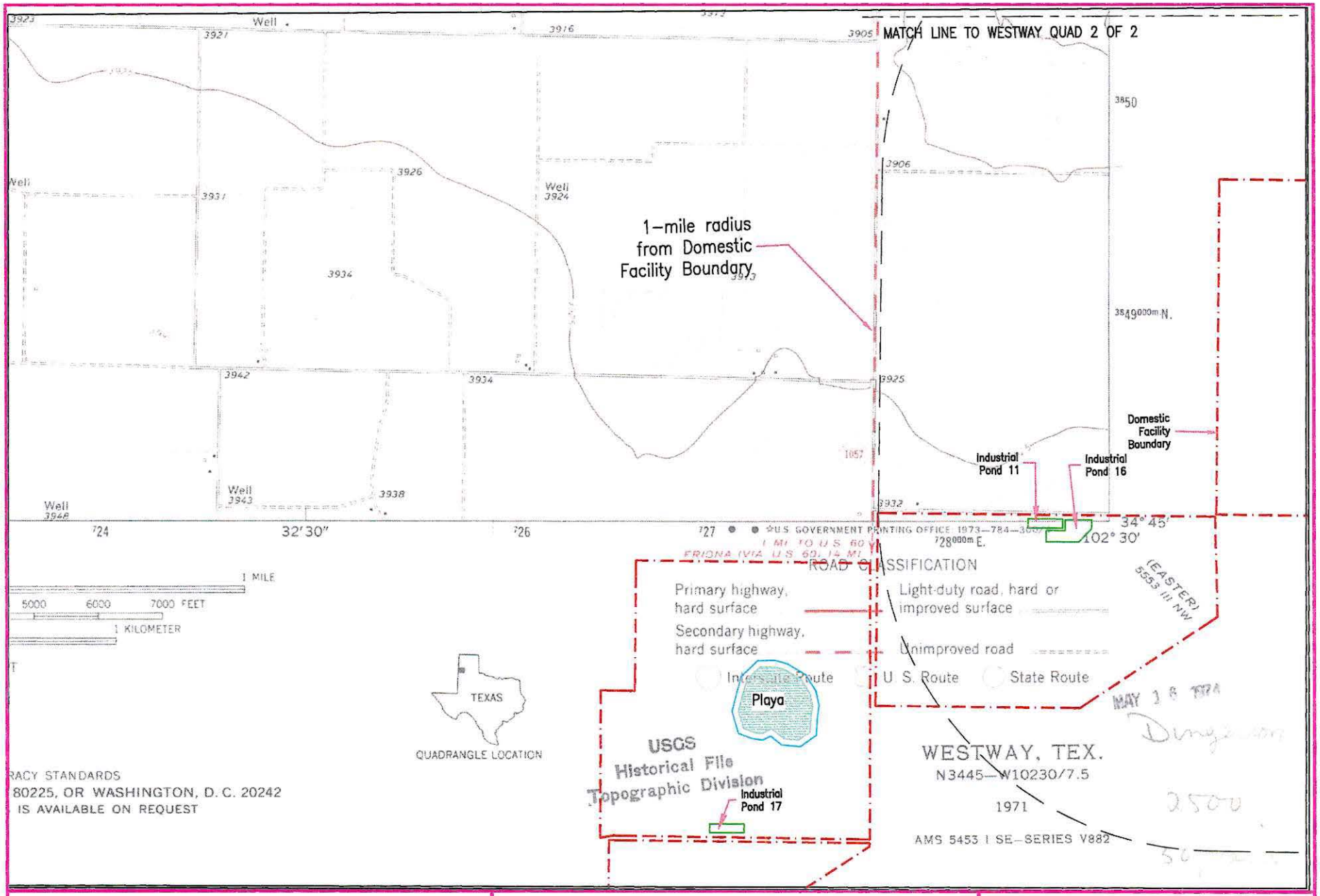

CAVINESS DEVELOPMENT, LTD.
DEAF SMITH COUNTY
HEREFORD, TEXAS

7.5-MINUTE USGS MAP
WESTWAY QUADRANGLE 1 OF 2
FEBRUARY 2022

ENVIRO-AG EAE ENGINEERING, INC.
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TEL (806) 353-6123 FAX (806) 353-4132

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION CHECKLIST

Complete and submit this checklist with the application.

APPLICANT NAME: Caviness Development, Ltd.

PERMIT NUMBER (If new, leave blank): WQ00 15744001

Indicate if each of the following items is included in your application.

	Y	N
Administrative Report 1.0	☒	☐
Administrative Report 1.1	☐	☒
SPIF	☐	☒
Core Data Form	☒	☐
Public Involvement Plan Form	☐	☒
Technical Report 1.0	☒	☐
Technical Report 1.1	☐	☒
Worksheet 2.0	☐	☒
Worksheet 2.1	☐	☒
Worksheet 3.0	☒	☐
Worksheet 3.1	☒	☐
Worksheet 3.2	☐	☒
Worksheet 3.3	☐	☒
Worksheet 4.0	☐	☒
Worksheet 5.0	☐	☒
Worksheet 6.0	☐	☒
Worksheet 7.0	☐	☒

	Y	N
Original USGS Map	☐	☒
Affected Landowners Map	☐	☒
Landowner Disk or Labels	☐	☒
Buffer Zone Map	☐	☒
Flow Diagram	☒	☐
Site Drawing	☒	☐
Original Photographs	☐	☒
Design Calculations	☒	☐
Solids Management Plan	☒	☐
Water Balance	☒	☐

For TCEQ Use Only

Segment Number _____County _____
Expiration Date _____Region_____
Permit Number _____

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION ADMINISTRATIVE REPORT 1.0

For any questions about this form, please contact the Applications Review and Processing Team at 512-239-4671.

Section 1. Application Fees (Instructions Page 26)

Indicate the amount submitted for the application fee (check only one).

Flow	New/Major Amendment	Renewal
<0.05 MGD	$350.00 ☐	$315.00 ☒
≥0.05 but <0.10 MGD	$550.00 ☐	$515.00 ☐
≥0.10 but <0.25 MGD	$850.00 ☐	$815.00 ☐
≥0.25 but <0.50 MGD	$1,250.00 ☐	$1,215.00 ☐
≥0.50 but <1.0 MGD	$1,650.00 ☐	$1,615.00 ☐
≥1.0 MGD	$2,050.00 ☐	$2,015.00 ☐

Minor Amendment (for any flow) $150.00 ☐

Payment Information:

Mailed Check/Money Order Number: Click to enter text.

Check/Money Order Amount: Click to enter text.

Name Printed on Check: Click to enter text.

EPAY Voucher Number: Click to enter text.

Copy of Payment Voucher enclosed? Yes ☒

Section 2. Type of Application (Instructions Page 26)

a. Check the box next to the appropriate authorization type.

☐ Publicly-Owned Domestic Wastewater

☒ Privately-Owned Domestic Wastewater

☐ Conventional Wastewater Treatment

b. Check the box next to the appropriate facility status.

☒ Active ☐ Inactive

c. Check the box next to the appropriate permit type.

☐ TPDES Permit

☒ TLAP

☐ TPDES Permit with TLAP component

☐ Subsurface Area Drip Dispersal System (SADDS)

d. Check the box next to the appropriate application type

☐ New

☐ Major Amendment *with* Renewal

☐ Major Amendment *without* Renewal

☒ Renewal without changes

☐ Minor Amendment *with* Renewal

☐ Minor Amendment *without* Renewal

☐ Minor Modification of permit

e. For amendments or modifications, describe the proposed changes: Click to enter text.

f. For existing permits:

Permit Number: WQ00015744001

EPA I.D. (TPDES only): TX Click to enter text.

Expiration Date: January 6, 2025

Section 3. Facility Owner (Applicant) and Co-Applicant Information (Instructions Page 26)

A. The owner of the facility must apply for the permit.

What is the Legal Name of the entity (applicant) applying for this permit?

Caviness Development, Ltd.

(The legal name must be spelled exactly as filed with the Texas Secretary of State, County, or in the legal documents forming the entity.)

If the applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at http://www15.tceq.texas.gov/crpub/

CN: 602835209

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in *30 TAC § 305.44.*

Prefix: Mr. Last Name, First Name: Caviness, Regan

Title: Vice President Credential: Click to enter text.

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

What is the Legal Name of the co-applicant applying for this permit?

Click to enter text.

(The legal name must be spelled exactly as filed with the TX SOS, with the County, or in the legal documents forming the entity.)

If the co-applicant is currently a customer with the TCEQ, what is the Customer Number (CN)? You may search for your CN on the TCEQ website at: http://www15.tceq.texas.gov/crpub/

CN: Click to enter text.

What is the name and title of the person signing the application? The person must be an executive official meeting signatory requirements in *30 TAC § 305.44*.

Prefix: Click to enter text. Last Name, First Name: Click to enter text.

Title: Click to enter text. Credential: Click to enter text.

Provide a brief description of the need for a co-permittee: Click to enter text.

C. Core Data Form

Complete the Core Data Form for each customer and include as an attachment. If the customer type selected on the Core Data Form is **Individual**, complete **Attachment 1** of Administrative Report 1.0. See attached CDF

Section 4. Application Contact Information (Instructions Page 27)

This is the person(s) TCEQ will contact if additional information is needed about this application. Provide a contact for administrative questions and technical questions.

A. Prefix: Mrs. Last Name, First Name: Peoples, Amy

Title: Consultant Credential: Click to enter text.

Organization Name: Enviro-Ag Engineering, Inc.

Mailing Address: 3404 Airway Blvd. City, State, Zip Code: Amarillo, TX 79118

Phone No.: 806-353-6123 E-mail Address: apeoples@enviroag.com

Check one or both: ☒ Administrative Contact ☒ Technical Contact

B. Prefix: Mr. Last Name, First Name: Caviness, Regan

Title: Vice President Credential: Click to enter text.

Organization Name: Caviness Development, Ltd.

Mailing Address: PO Box 790 City, State, Zip Code: Hereford, TX 79045

Phone No.: 806-357-2443 E-mail Address: regan@cavinessbeef.com

Check one or both: ☒ Administrative Contact ☐ Technical Contact

Section 5. Permit Contact Information (Instructions Page 27)

Provide the names and contact information for two individuals that can be contacted throughout the permit term.

A. Prefix: Mr. Last Name, First Name: Caviness, Terry

Title: Chief Executive Officer Credential: Click to enter text.

Organization Name: Caviness Development, Ltd.

Mailing Address: PO Box 790 City, State, Zip Code: Hereford, TX 79045

Phone No.: 806-357-2443 E-mail Address: terry@cavinessbeef.com

B. Prefix: Mr. Last Name, First Name: Caviness, Regan

Title: Vice President Credential: Click to enter text.

Organization Name: Caviness Development, Ltd.

Mailing Address: PO Box 790 City, State, Zip Code: Hereford, TX 79045

Phone No.: 806-357-2443 E-mail Address: regan@cavinessbeef.com

Section 6. Billing Contact Information (Instructions Page 27)

The permittee is responsible for paying the annual fee. The annual fee will be assessed to permits ***in effect on September 1 of each year.*** The TCEQ will send a bill to the address provided in this section. The permittee is responsible for terminating the permit when it is no longer needed (using form TCEQ-20029).

Prefix: Mr. Last Name, First Name: Caviness, Regan

Title: Vice President Credential: Click to enter text.

Organization Name: Caviness Development, Ltd.

Mailing Address: PO Box 790 City, State, Zip Code: Hereford, TX 79045

Phone No.: 806-357-2443 E-mail Address: regan@cavinessbeef.com

Section 7. DMR/MER Contact Information (Instructions Page 27)

Provide the name and complete mailing address of the person delegated to receive and submit Discharge Monitoring Reports (DMR) (EPA 3320-1) or maintain Monthly Effluent Reports (MER).

Prefix: Mr. Last Name, First Name: Salinas, Jaime

Title: Plant Engineer Credential: Click to enter text.

Organization Name: Caviness Development, Ltd.

Mailing Address: PO Box 790 City, State, Zip Code: Hereford, TX 79045

Phone No.: 806-357-2443 E-mail Address: terry@cavinessbeef.com

Section 8. Public Notice Information (Instructions Page 27)

A. Individual Publishing the Notices

Prefix: Mrs. Last Name, First Name: Peoples, Amy

Title: Consultant Credential: Click to enter text.

Organization Name: Enviro-Ag Engineering, Inc.

Mailing Address: 3404 Airway Blvd. City, State, Zip Code: Amarillo, TX 79118

Phone No.: 806-353-6123 E-mail Address: apeoples@enviroag.com

B. Method for Receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package

Indicate by a check mark the preferred method for receiving the first notice and instructions:

☒ E-mail Address

☐ Fax

☐ Regular Mail

C. Contact permit to be listed in the Notices

Prefix: Mr. Last Name, First Name: Caviness, Regan

Title: Vice President Credential: Click to enter text.

Organization Name: Caviness Development, Ltd.

Mailing Address: PO Box 790 City, State, Zip Code: Hereford, TX 79045

Phone No.: 806-357-2443 E-mail Address: regan@cavinessbeef.com

D. Public Viewing Information

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

Public building name: Hereford City Hall

Location within the building: Click to enter text.

Physical Address of Building: 244 North Lee Ave

City: Hereford County: Deaf Smith

Contact (Last Name, First Name): Click to enter text.

Phone No.: 806-363-7100 Ext.: Click to enter text.

E. Bilingual Notice Requirements

This information **is required** for **new, major amendment, minor amendment or minor modification, and renewal** applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Please call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine whether an alternative language notices are required.

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

   ☒ Yes ☐ No

   If **no**, publication of an alternative language notice is not required; **skip to** Section 9 below.

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 **question 1, 2, 3, or 4**, public notices in an alternative language are required. Which language is required by the bilingual program? Spanish

F. Plain Language Summary Template

Complete the Plain Language Summary (TCEQ Form 20972) and include as an attachment.

Attachment: 7

G. Public Involvement Plan Form

Complete the Public Involvement Plan Form (TCEQ Form 20960) for each application for a **new permit or major amendment to a permit** and include as an attachment.

Attachment: n/a

Section 9. Regulated Entity and Permitted Site Information (Instructions Page 29)

A. If the site is currently regulated by TCEQ, provide the Regulated Entity Number (RN) issued to this site. **RN** 110569571

Search the TCEQ's Central Registry at http://www15.tceq.texas.gov/crpub/ to determine if the site is currently regulated by TCEQ.

B. Name of project or site (the name known by the community where located):

Caviness Sanitary Waste Facility

C. Owner of treatment facility: Caviness Development, Ltd.

Ownership of Facility: ☐ Public ☒ Private ☐ Both ☐ Federal

D. Owner of land where treatment facility is or will be:

Prefix: Click to enter text. Last Name, First Name: Click to enter text.

Title: Click to enter text. Credential: Click to enter text.

Organization Name: Caviness Development, Ltd.

Mailing Address: PO Box 790 City, State, Zip Code: Hereford, TX 79045

Phone No.: 806-357-2443 E-mail Address: regan@cavinessbeef.com

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: n/a

E. Owner of effluent disposal site:

Prefix: Click to enter text. Last Name, First Name: Click to enter text.

Title: Click to enter text. Credential: Click to enter text.

Organization Name: Caviness Development, Ltd.

Mailing Address: PO Box 790 City, State, Zip Code: Hereford, TX 79045

Phone No.: 806-357-2443 E-mail Address: regan@cavinessbeef.com

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: n/a

F. Owner sewage sludge disposal site (if authorization is requested for sludge disposal on property owned or controlled by the applicant)::

Prefix: Click to enter text. Last Name, First Name: n/a – Sludge transported off-site

Title: Click to enter text. Credential: Click to enter text.

Organization Name: Click to enter text.

Mailing Address: Click to enter text. City, State, Zip Code: Click to enter text.

Phone No.: Click to enter text. E-mail Address: Click to enter text.

If the landowner is not the same person as the facility owner or co-applicant, attach a lease agreement or deed recorded easement. See instructions.

Attachment: n/a

Section 10. TPDES Discharge Information (Instructions Page 31)

A. Is the wastewater treatment facility location in the existing permit accurate?

☐ Yes ☐ No

If **no, or a new permit application**, please give an accurate description:

n/a – no discharge

B. Are the point(s) of discharge and the discharge route(s) in the existing permit correct?

☐ Yes ☐ No

If **no, or a new or amendment permit application**, provide an accurate description of the point of discharge and the discharge route to the nearest classified segment as defined in 30 TAC Chapter 307:

n/a – no discharge

City nearest the outfall(s): n/a

County in which the outfalls(s) is/are located: n/a

C. Is or will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch?

☐ Yes ☐ No

If **yes**, indicate by a check mark if:

☐ Authorization granted ☐ Authorization pending

For **new and amendment** applications, provide copies of letters that show proof of contact and the approval letter upon receipt.

Attachment: n/a

D. For all applications involving an average daily discharge of 5 MGD or more, provide the names of all counties located within 100 statute miles downstream of the point(s) of discharge: n/a – no discharge

Section 11. TLAP Disposal Information (Instructions Page 32)

A. For TLAPs, is the location of the effluent disposal site in the existing permit accurate?

☒ Yes ☐ No

If **no, or a new or amendment permit application**, provide an accurate description of the disposal site location:

Click to enter text.

B. City nearest the disposal site: Hereford

C. County in which the disposal site is located: Deaf Smith

D. For **TLAPs**, describe the routing of effluent from the treatment facility to the disposal site:

Treated effluent is routed from the treatment facility via buried PVC pipeline to an earthen reclaimed water storage pond located adjacent to the treatment facility. Treated effluent is allowed to evaporate or will be transferred via buried PVC pipeline to a 100-acre center pivot irrigation sprinkler for land application at agronomic rates.

E. For **TLAPs**, please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained: To an unnamed playa basin off-site and then to Tierra Blanca Creek, located approximately 3 miles NE of the disposal site.

Section 12. Miscellaneous Information (Instructions Page 32)

A. Is the facility located on or does the treated effluent cross American Indian Land?

☐ Yes ☒ No

B. If the existing permit contains an onsite sludge disposal authorization, is the location of the sewage sludge disposal site in the existing permit accurate?

☐ Yes ☐ No ☒ Not Applicable

If No, or if a new onsite sludge disposal authorization is being requested in this permit application, provide an accurate location description of the sewage sludge disposal site.

n/a

C. Did any person formerly employed by the TCEQ represent your company and get paid for service regarding this application?

☐ Yes ☒ No

If yes, list each person formerly employed by the TCEQ who represented your company and was paid for service regarding the application: n/a

D. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

If **yes**, provide the following information:

Account number: Click to enter text.

Amount past due: Click to enter text.

E. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If **yes**, please provide the following information:

Enforcement order number: Click to enter text.

Amount past due: Click to enter text.

Section 13. Attachments (Instructions Page 33)

Indicate which attachments are included with the Administrative Report. Check all that apply:

☐ Lease agreement or deed recorded easement, if the land where the treatment facility is located or the effluent disposal site are not owned by the applicant or co-applicant.

☐ Original full-size USGS Topographic Map with the following information:

- Applicant's property boundary
- Treatment facility boundary
- Labeled point of discharge for each discharge point (TPDES only)
- Highlighted discharge route for each discharge point (TPDES only)
- Onsite sewage sludge disposal site (if applicable)
- Effluent disposal site boundaries (TLAP only)
- New and future construction (if applicable)
- 1 mile radius information
- 3 miles downstream information (TPDES only)
- All ponds.

☐ Attachment 1 for Individuals as co-applicants

☐ Other Attachments. Please specify: Click to enter text.

Section 14. Signature Page (Instructions Page 34)

If co-applicants are necessary, each entity must submit an original, separate signature page.

Permit Number: WQ0015744001

Applicant: Caviness Development, Ltd.

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.

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 (typed or printed): Regan Caviness

Signatory title: Vice President

Signature: Regan Caviness Date: 6/24/24

(Use blue ink)

Subscribed and Sworn to before me by the said Regan Caviness

on this 24 day of June, 2024.

My commission expires on the 21 day of October, 2025.

Shirley J White

Notary Public

SHIRLEY J. WHITE
My Notary ID # 7755342
Expires October 21, 2025

[SEAL]

Dear Smith

County, Texas

DOMESTIC WASTEWATER PERMIT APPLICATION CHECKLIST OF COMMON DEFICIENCIES

Below is a list of common deficiencies found during the administrative review of domestic wastewater permit applications. To ensure the timely processing of this application, please review the items below and indicate by checking Yes that each item is complete and in accordance applicable rules at 30 TAC Chapters 21, 281, and 305. If an item is not required this application, indicate by checking N/A where appropriate. Please do not submit the application until the items below have been addressed.

Core Data Form (TCEQ Form No. 10400) ☒ Yes
(Required for all application types. Must be completed in its entirety and signed. Note: Form may be signed by applicant representative.)

Correct and Current Industrial Wastewater Permit Application Forms ☒ Yes
(TCEQ Form Nos. 10053 and 10054. Version dated 6/25/2018 or later.)

Water Quality Permit Payment Submittal Form (Page 19) ☒ Yes
(Original payment sent to TCEQ Revenue Section. See instructions for mailing address.)

7.5 Minute USGS Quadrangle Topographic Map Attached ☒ Yes
(Full-size map if seeking "New" permit.
8 ½ x 11 acceptable for Renewals and Amendments)

Current/Non-Expired, Executed Lease Agreement or Easement ☒ N/A ☐ Yes

Landowners Map ☒ N/A ☐ Yes
(See instructions for landowner requirements)

Things to Know:

- All the items shown on the map must be labeled.
- The applicant's complete property boundaries must be delineated which includes boundaries of contiguous property owned by the applicant.
- The applicant cannot be its own adjacent landowner. You must identify the landowners immediately adjacent to their property, regardless of how far they are from the actual facility.
- If the applicant's property is adjacent to a road, creek, or stream, the landowners on the opposite side must be identified. Although the properties are not adjacent to applicant's property boundary, they are considered potentially affected landowners. If the adjacent road is a divided highway as identified on the USGS topographic map, the applicant does not have to identify the landowners on the opposite side of the highway.

Landowners Cross Reference List ☒ N/A ☐ Yes
(See instructions for landowner requirements)

Landowners Labels or USB Drive attached ☒ N/A ☐ Yes
(See instructions for landowner requirements)

Original signature per 30 TAC § 305.44 – Blue Ink Preferred ☒ Yes
(If signature page is not signed by an elected official or principle executive officer, a copy of signature authority/delegation letter must be attached)

Plain Language Summary ☒ Yes

DOMESTIC TECHNICAL REPORT 1.0

Section 1. Wastewater Flow

The existing treatment facility receives domestic/sanitary wastewater flows from employee restrooms, showers and breakrooms. All industrial process wastewater is handled separately, authorized by rule under 30 TAC Chapter 321, Subchapter C, Meat Processing. Table 2 shows the design sanitary flows, based on 20 gallons per day per person for the largest shift specified in 30 TAC 217, Design Criteria for Domestic Wastewater Treatment Systems. Operational data since treatment facility startup shows average daily flow of 10,838 GPD, or approximately 66% of design flow. Based on this, no increase in flow is requested as part of this amendment.

Table 1. Design Flows

	Data for Largest Shift	**Data for Cleanup Crew**	**Totals**
Total Max Flow (gpd):	14,500	1,000	
Days per year:	266	99	
Annual Flow (gal/yr):	3,857,000	99,000	3,956,000
Average Daily Flow (gpd):			10,838
w/ Safety Factor of 1.5:			16,258
Design Flow (gpd):			**16,500**

Section 2. Treatment Process

No changes to the existing treatment facility are proposed as part of this renewal. The treatment facility is a self-contained package treatment plant designed and manufactured by WSI International, LLC (WSI), and consists of Influent bar screens, an equalization tank with aeration for odor control, aerobic BioChip reactor tank, dissolved air flotation (DAF) unit for solids removal, aerobic sludge digester, chlorine contact tank for disinfection and associated pumps and piping. The plant is designed to achieve effluent quality that will meet the TCEQ Type II Reclaimed Water criteria. Figure 5, below, is a process flow diagram of the treatment facility operation. The full engineering design report and process description provided by WSI for the package treatment plant is included in Attachment 2.

2.1 Collection System

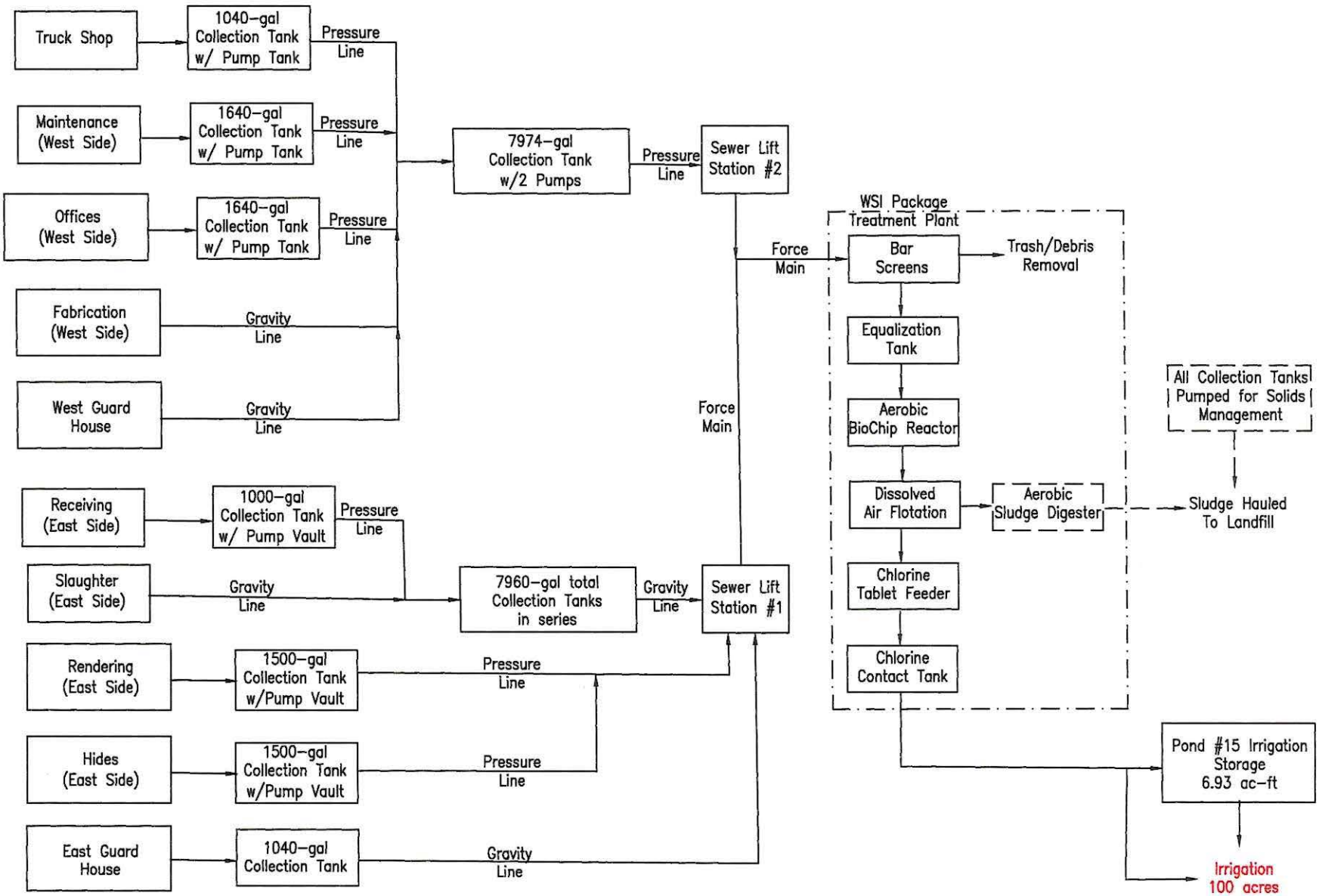
The existing collection system consists of a combination of gravity flow and pressure piping that route domestic flows from employee restrooms, breakrooms and locker rooms to multiple collection tanks that previously functioned as septic tanks. Flow from the septic/collection tanks is routed to two automated lift stations that direct flows to the treatment facility via a combination of gravity piping and force main pipeline.

A calamity tank is ahead of the package treatment plant. The tank is designed for temporary storage as needed, in case an upset condition inside the beef processing

plant causes abnormally high flows (e.g., broken pipe, etc.) to be routed to the sanitary treatment system. In the case of an upset condition, abnormal flow can be diverted into the calamity tank, and then dosed into the package treatment plant.

2.2 Treated Effluent

Treated sanitary effluent is discharged to a 6.93 ac-ft earthen storage pond for storage prior to final disposal via center pivot sprinkler irrigation to 100 acres of on-site farmland. The land application area is located on private property owned by Caviness Development, Ltd., and is restricted from public access via perimeter fencing.



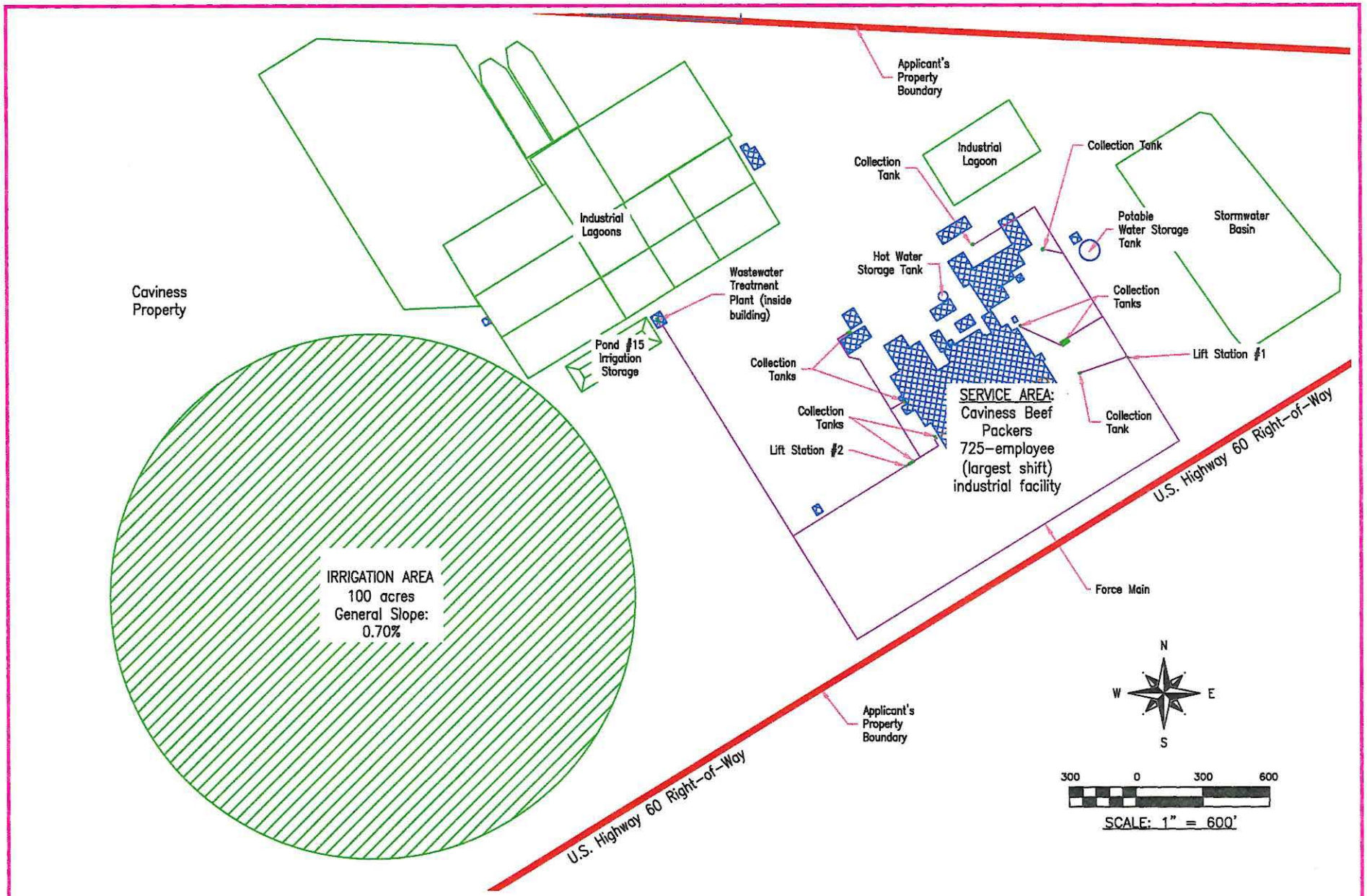
CAVINESS DEVELOPMENT LTD
DEAF SMITH COUNTY
HEREFORD, TEXAS

TREATMENT PROCESS FLOW DIAGRAM
FIGURE 5
JUNE 2024

ENVIRO-AG EAE ENGINEERING, INC.
Enviro-Ag Engineering, Inc.
ENGINEERING CONSULTANTS
3404 Airway Boulevard
AMARILLO, TEXAS 79118
TEL (806) 353-6123 FAX (806) 353-4132

Section 3. Site Drawing

Figure 6 is a Site Map showing the location of the treatment facility, the areas served by the treatment facility (Caviness Beef Packers plant), the collection system, force main, land application area and irrigation storage pond. All sludge will be transported off-site for proper disposal.



Source: Schmeeckle Bros. Construction Co., and EAE files.

CAVINESS DEVELOPMENT LTD DEAF SMITH COUNTY HEREFORD, TEXAS	SITE MAP FIGURE 6 JUNE 2024	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION TECHNICAL REPORT 1.0

For any questions about this form, please contact the Domestic Wastewater Permitting Team at 512-239-4671.

The following information is required for all renewal, new, and amendment applications.

Section 1. Permitted or Proposed Flows (Instructions Page 43)

A. Existing/Interim I Phase

Design Flow (MGD): 0.0165

2-Hr Peak Flow (MGD): Click to enter text.

Estimated construction start date: n/a

Estimated waste disposal start date: January 2021

B. Interim II Phase

Design Flow (MGD): n/a

2-Hr Peak Flow (MGD): n/a

Estimated construction start date: n/a

Estimated waste disposal start date: n/a

C. Final Phase

Design Flow (MGD): 0.0165

2-Hr Peak Flow (MGD): Click to enter text.

Estimated construction start date: n/a

Estimated waste disposal start date: January 2021

D. Current Operating Phase

Provide the startup date of the facility: January 2021

Section 2. Treatment Process (Instructions Page 43)

A. Current Operating Phase

Provide a detailed description of the treatment process. **Include the type of treatment plant, mode of operation, and all treatment units.** Start with the plant's head works and

finish with the point of discharge. Include all sludge processing and drying units. **If more than one phase exists or is proposed, a description of *each phase* must be provided.**

Refer to Section 2 – Treatment Process of permit renewal packet, pages 6-8

B. Treatment Units

In Table 1.0(1), provide the treatment unit type, the number of units, and dimensions (length, width, depth) **of each treatment unit, accounting for *all* phases of operation.**

Table 1.0(1) - Treatment Units

Treatment Unit Type	Number of Units	Dimensions (L x W x D)
ST1 thru ST9: Septic Tanks (function as Collection tanks?	9	Varies
SC1: Manual Bar Screen	1	40" x 24" x 200"
SC: Mechanical Screen	1	4'11" x 6'2.5" x 1'4.5"
EQ1: Equalization Tank	1	8.36' x 8' x 11'6" total depth (10' water depth)
BCR1: Bio-Chip Reactor	1	7.10' x 8' x 11'6" total depth (10' water depth)
ASD1: Aerobic sludge Digester	1	4.64' x 4'3" x 11'6" total depth (7' avg water depth)
DAF1: Dissolved Air Flotation Unit	1	8' x 3' x 11'6" total depth
CCT1: Chlorine Contact Tank	1	1' x 41' x 1' water depth
CT1: Calamity Tank (temporary storage only)	1	19'6" x 16' x 12' total depth

C. Process Flow Diagram

Provide flow diagrams for the existing facilities and **each** proposed phase of construction.

Attachment: Section 2, Figure 5 of permit renewal packet

Section 3. Site Information and Drawing (Instructions Page 44)

Provide the TPDES discharge outfall latitude and longitude. Enter N/A if not applicable.

- Latitude: n/a
- Longitude: n/a

Provide the TLAP disposal site latitude and longitude. Enter N/A if not applicable.

- Latitude: n/a

- Longitude: n/a

Provide a site drawing for the facility that shows the following:

- The boundaries of the treatment facility;
- The boundaries of the area served by the treatment facility;
- If land disposal of effluent, the boundaries of the disposal site and all storage/holding ponds; and
- If sludge disposal is authorized in the permit, the boundaries of the land application or disposal site.

Attachment: Section 3, Figure 6 of permit renewal packet

Provide the name **and** a description of the area served by the treatment facility.

Caviness Beef Packers Ltd.- The existing treatment facility serves the employee breakrooms, restrooms and locker rooms for a beef processing and rendering plant.

Collection System Information **for wastewater TPDES permits only**: Provide information for each **uniquely owned** collection system, existing and new, served by this facility, including satellite collection systems. **Please see the instructions for a detailed explanation and examples.**

Collection System Information

Collection System Name	Owner Name	Owner Type	Population Served
		Choose an item.	
		Choose an item.	
		Choose an item.	
		Choose an item.	

Section 4. Unbuilt Phases (Instructions Page 45)

Is the application for a renewal of a permit that contains an unbuilt phase or phases?

☐ Yes ☒ No

If yes, does the existing permit contain a phase that has not been constructed **within five years** of being authorized by the TCEQ?

☐ Yes ☐ No

If yes, provide a detailed discussion regarding the continued need for the unbuilt phase. **Failure to provide sufficient justification may result in the Executive Director recommending denial of the unbuilt phase or phases.**

n/a – no unbuilt phases

Section 5. Closure Plans (Instructions Page 45)

Have any treatment units been taken out of service permanently, or will any units be taken out of service in the next five years?

☒ Yes ☐ No

If yes, was a closure plan submitted to the TCEQ?

☒ Yes ☐ No

If yes, provide a brief description of the closure and the date of plan approval.

Refer to Section 5, page 11 of permit renewal packet. The plan was approved and permit issued on February 23, 2023.

Section 6. Permit Specific Requirements (Instructions Page 45)

For applicants with an existing permit, check the Other Requirements or Special Provisions of the permit.

A. Summary transmittal

Have plans and specifications been approved for the existing facilities and each proposed phase?

☒ Yes ☐ No

If yes, provide the date(s) of approval for each phase: July 14, 2005, July 27, 2005, August 18, 2008, June 10, 2019 and March 13, 2023

Provide information, including dates, on any actions taken to meet a *requirement or provision* pertaining to the submission of a summary transmittal letter. **Provide a copy of an approval letter from the TCEQ, if applicable.**

Refer to Attachment 3 for copy of latest approval letter.

B. Buffer zones

Have the buffer zone requirements been met?

☒ Yes ☐ No

Provide information below, including dates, on any actions taken to meet the conditions of the buffer zone. If available, provide any new documentation relevant to maintaining the buffer zones.

All buffer zones are met within the applicant's own property boundaries

C. Other actions required by the current permit

Does the *Other Requirements* or *Special Provisions* section in the existing permit require submission of any other information or other required actions? Examples include Notification of Completion, progress reports, soil monitoring data, etc.

☒ Yes ☐ No

If yes, provide information below on the status of any actions taken to meet the conditions of an *Other Requirement* or *Special Provision.*

Refer to Section 6 for a description of other permit requirements, pages 12-13 of Domestic Wastewater Permit Renewal.

D. Grit and grease treatment

1. *Acceptance of grit and grease waste*

Does the facility have a grit and/or grease processing facility onsite that treats and decants or accepts transported loads of grit and grease waste that are discharged directly to the wastewater treatment plant prior to any treatment?

☐ Yes ☒ No

If No, stop here and continue with Subsection E. Stormwater Management.

2. *Grit and grease processing*

Describe below how the grit and grease waste is treated at the facility. In your description, include how and where the grit and grease is introduced to the treatment

works and how it is separated or processed. Provide a flow diagram showing how grit and grease is processed at the facility.

n/a

3. *Grit disposal*

Does the facility have a Municipal Solid Waste (MSW) registration or permit for grit disposal?

☐ Yes ☐ No

If No, contact the TCEQ Municipal Solid Waste team at 512-239-2335. Note: A registration or permit is required for grit disposal. Grit shall not be combined with treatment plant sludge. See the instruction booklet for additional information on grit disposal requirements and restrictions.

Describe the method of grit disposal.

n/a

4. *Grease and decanted liquid disposal*

Note: A registration or permit is required for grease disposal. Grease shall not be combined with treatment plant sludge. For more information, contact the TCEQ Municipal Solid Waste team at 512-239-2335.

Describe how the decant and grease are treated and disposed of after grit separation.

n/a

E. Stormwater management

1. *Applicability*

Does the facility have a design flow of 1.0 MGD or greater in any phase?

☐ Yes ☒ No

Does the facility have an approved pretreatment program, under 40 CFR Part 403?

☐ Yes ☒ No

If no to both of the above, then skip to Subsection F, Other Wastes Received.

2. ***MSGP coverage***

Is the stormwater runoff from the WWTP and dedicated lands for sewage disposal currently permitted under the TPDES Multi-Sector General Permit (MSGP), TXR050000?

☐ Yes ☐ No

If yes, please provide MSGP Authorization Number and skip to Subsection F, Other Wastes Received:

TXR05 Click to enter text. or TXRNE Click to enter text.

If no, do you intend to seek coverage under TXR050000?

☐ Yes ☐ No

3. ***Conditional exclusion***

Alternatively, do you intend to apply for a conditional exclusion from permitting based TXR050000 (Multi Sector General Permit) Part II B.2 or TXR050000 (Multi Sector General Permit) Part V, Sector T 3(b)?

☐ Yes ☐ No

If yes, please explain below then proceed to Subsection F, Other Wastes Received:

Click to enter text.

4. ***Existing coverage in individual permit***

Is your stormwater discharge currently permitted through this individual TPDES or TLAP permit?

☐ Yes ☐ No

If yes, provide a description of stormwater runoff management practices at the site that are authorized in the wastewater permit then skip to Subsection F, Other Wastes Received.

Click to enter text.

5. ***Zero stormwater discharge***

Do you intend to have no discharge of stormwater via use of evaporation or other means?

☐ Yes ☐ No

If yes, explain below then skip to Subsection F. Other Wastes Received.

Click to enter text.

Note: If there is a potential to discharge any stormwater to surface water in the state as the result of any storm event, then permit coverage is required under the MSGP or an individual discharge permit. This requirement applies to all areas of facilities with treatment plants or systems that treat, store, recycle, or reclaim domestic sewage, wastewater or sewage sludge (including dedicated lands for sewage sludge disposal located within the onsite property boundaries) that meet the applicability criteria of above. You have the option of obtaining coverage under the MSGP for direct discharges, (recommended), or obtaining coverage under this individual permit.

6. *Request for coverage in individual permit*

Are you requesting coverage of stormwater discharges associated with your treatment plant under this individual permit?

☐ Yes ☐ No

If yes, provide a description of stormwater runoff management practices at the site for which you are requesting authorization in this individual wastewater permit and describe whether you intend to comingle this discharge with your treated effluent or discharge it via a separate dedicated stormwater outfall. Please also indicate if you intend to divert stormwater to the treatment plant headworks and indirectly discharge it to water in the state.

Click to enter text.

Note: Direct stormwater discharges to waters in the state authorized through this individual permit will require the development and implementation of a stormwater pollution prevention plan (SWPPP) and will be subject to additional monitoring and reporting requirements. Indirect discharges of stormwater via headworks recycling will require compliance with all individual permit requirements including 2-hour peak flow limitations. All stormwater discharge authorization requests will require additional information during the technical review of your application.

F. Discharges to the Lake Houston Watershed

Does the facility discharge in the Lake Houston watershed?

☐ Yes ☒ No

If yes, attach a Sewage Sludge Solids Management Plan. See Example 5 in the instructions.
Click to enter text.

G. Other wastes received including sludge from other WWTPs and septic waste

1. *Acceptance of sludge from other WWTPs*

Does or will the facility accept sludge from other treatment plants at the facility site?

☐ Yes ☒ No

If yes, attach sewage sludge solids management plan. See Example 5 of instructions.

In addition, provide the date the plant started or is anticipated to start accepting sludge, an estimate of monthly sludge acceptance (gallons or millions of gallons), an estimate of the BOD_5 concentration of the sludge, and the design BOD_5 concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

n/a – no off-site wastes will be accepted

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

2. ***Acceptance of septic waste***

Is the facility accepting or will it accept septic waste?

☐ Yes ☒ No

If yes, does the facility have a Type V processing unit?

☐ Yes ☐ No

If yes, does the unit have a Municipal Solid Waste permit?

☐ Yes ☐ No

If yes to any of the above, provide the date the plant started or is anticipated to start accepting septic waste, an estimate of monthly septic waste acceptance (gallons or millions of gallons), an estimate of the BOD_5 concentration of the septic waste, and the design BOD_5 concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

n/a – no off-site wastes will be accepted

Note: Permits that accept sludge from other wastewater treatment plants may be required to have influent flow and organic loading monitoring.

3. ***Acceptance of other wastes (not including septic, grease, grit, or RCRA, CERCLA or as discharged by IUs listed in Worksheet 6)***

Is or will the facility accept wastes that are not domestic in nature excluding the categories listed above?

☐ Yes ☒ No

If yes, provide the date that the plant started accepting the waste, an estimate how much waste is accepted on a monthly basis (gallons or millions of gallons), a description of the entities generating the waste, and any distinguishing chemical or

other physical characteristic of the waste. Also note if this information has or has not changed since the last permit action.

n/a – no non-domestic wastes will be accepted.

Section 7. Pollutant Analysis of Treated Effluent (Instructions Page 50)

Is the facility in operation?

☒ Yes ☐ No

If no, this section is not applicable. Proceed to Section 8.

If yes, provide effluent analysis data for the listed pollutants. ***Wastewater treatment facilities*** complete Table 1.0(2). ***Water treatment facilities*** discharging filter backwash water, complete Table 1.0(3). Provide copies of the laboratory results sheets. **These tables are not applicable for a minor amendment without renewal.** See the instructions for guidance.

Note: The sample date must be within 1 year of application submission.

Table1.0(2) – Pollutant Analysis for Wastewater Treatment Facilities

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
$CBOD_5$, mg/l	18	N/A	1	Effluent	5/16/2024
Total Suspended Solids, mg/l					Pending
Ammonia Nitrogen, mg/l	21	N/A	1	Effluent	5/22/2024
Nitrate Nitrogen, mg/l	ND	N/A	1	Effluent	5/22/2024
Total Kjeldahl Nitrogen, mg/l	32	N/A	1	Effluent	5/22/2024
Sulfate, mg/l					Pending
Chloride, mg/l					Pending
Total Phosphorus, mg/l	21.5	N/A	1	Effluent	5/22/2024
pH, standard units	8.4	N/A	1	Effluent	5/22/2024
Dissolved Oxygen*, mg/l	N/A	N/A	N/A	N/A	N/A
Chlorine Residual, mg/l					Pending
E.coli (CFU/100ml) freshwater					Pending
Entercocci (CFU/100ml) saltwater					Pending
Total Dissolved Solids, mg/l	30	N/A	1	Effluent	5/22/2024
Electrical Conductivity, µmohs/cm, †	4430	N/A	1	Effluent	5/22/2024

Oil & Grease, mg/l					Pending
Alkalinity ($CaCO_3$)*, mg/l	670	N/A	1	Effluent	5/22/2024

*TPDES permits only
†TLAP permits only

Table1.0(3) – Pollutant Analysis for Water Treatment Facilities

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
Total Suspended Solids, mg/l					
Total Dissolved Solids, mg/l					
pH, standard units					
Fluoride, mg/l					
Aluminum, mg/l					
Alkalinity ($CaCO_3$), mg/l					

Section 8. Facility Operator (Instructions Page 50)

Facility Operator Name: Jesus T. Diaz

Facility Operator's License Classification and Level: Class B

Facility Operator's License Number: WW0050965

Section 9. Sludge and Biosolids Management and Disposal (Instructions Page 51)

A. WWTP's Biosolids Management Facility Type

Check all that apply. See instructions for guidance

- ☒ Design flow>= 1 MGD
- ☒ Serves >= 10,000 people
- ☐ Class I Sludge Management Facility (per 40 CFR § 503.9)
- ☐ Biosolids generator
- ☐ Biosolids end user – land application (onsite)
- ☐ Biosolids end user – surface disposal (onsite)
- ☐ Biosolids end user – incinerator (onsite)

B. WWTP's Biosolids Treatment Process

Check all that apply. See instructions for guidance.

- ☐ Aerobic Digestion
- ☐ Air Drying (or sludge drying beds)
- ☐ Lower Temperature Composting
- ☐ Lime Stabilization
- ☐ Higher Temperature Composting

- ☐ Heat Drying
- ☐ Thermophilic Aerobic Digestion
- ☐ Beta Ray Irradiation
- ☐ Gamma Ray Irradiation
- ☐ Pasteurization
- ☐ Preliminary Operation (e.g. grinding, de-gritting, blending)
- ☐ Thickening (e.g. gravity thickening, centrifugation, filter press, vacuum filter)
- ☐ Sludge Lagoon
- ☐ Temporary Storage (< 2 years)
- ☐ Long Term Storage (>= 2 years)
- ☐ Methane or Biogas Recovery
- ☒ Other Treatment Process: Transport offsite

C. Biosolids Management

Provide information on the *intended* biosolids management practice. Do not enter every management practice that you want authorized in the permit, as the permit will authorize all biosolids management practices listed in the instructions. Rather indicate the management practice the facility plans to use.

Biosolids Management

Management Practice	Handler or Preparer Type	Bulk or Bag Container	Amount (dry metric tons)	Pathogen Reduction Options	Vector Attraction Reduction Option
Other	Off-site Third-Party Handler or Preparer	Bulk		Choose an item.	Choose an item.
Choose an item.	Choose an item.	Choose an item.		Choose an item.	Choose an item.
Choose an item.	Choose an item.	Choose an item.		Choose an item.	Choose an item.

If "Other" is selected for Management Practice, please explain (e.g. monofill or transport to another WWTP): Transported to another permitted wastewater treatment plant or permitted sludge processing facility.

D. Disposal site

Disposal site name: City of Hereford Wastewater Treatment Plant

TCEQ permit or registration number: WQ0010186002

County where disposal site is located: Deaf Smith

E. Transportation method

Method of transportation (truck, train, pipe, other): Truck

Name of the hauler: David's Quality Contracting and Plumbing

Hauler registration number: 25565

Sludge is transported as a:

Liquid ☐ semi-liquid ☒ semi-solid ☒ solid ☐

Section 10. Permit Authorization for Sewage Sludge Disposal (Instructions Page 53)

A. Beneficial use authorization

Does the existing permit include authorization for land application of sewage sludge for beneficial use?

☐ Yes ☒ No

If yes, are you requesting to continue this authorization to land apply sewage sludge for beneficial use?

☐ Yes ☐ No

If yes, is the completed **Application for Permit for Beneficial Land Use of Sewage Sludge (TCEQ Form No. 10451)** attached to this permit application (see the instructions for details)?

☐ Yes ☐ No

B. Sludge processing authorization

Does the existing permit include authorization for any of the following sludge processing, storage or disposal options?

Sludge Composting	☐ Yes	☒ No
Marketing and Distribution of sludge	☐ Yes	☒ No
Sludge Surface Disposal or Sludge Monofill	☐ Yes	☒ No
Temporary storage in sludge lagoons	☐ Yes	☒ No

If yes to any of the above sludge options and the applicant is requesting to continue this authorization, is the completed **Domestic Wastewater Permit Application: Sewage Sludge Technical Report (TCEQ Form No. 10056)** attached to this permit application?

☐ Yes ☐ No

Section 11. Sewage Sludge Lagoons (Instructions Page 53)

Does this facility include sewage sludge lagoons?

☐ Yes ☒ No

If yes, complete the remainder of this section. If no, proceed to Section 12.

A. Location information

The following maps are required to be submitted as part of the application. For each map, provide the Attachment Number.

- Original General Highway (County) Map:

  Attachment: n/a
- USDA Natural Resources Conservation Service Soil Map:

  Attachment: n/a
- Federal Emergency Management Map:

  Attachment: n/a
- Site map:

  Attachment: n/a

Discuss in a description if any of the following exist within the lagoon area. Check all that apply.

☐ Overlap a designated 100-year frequency flood plain

☐ Soils with flooding classification

☐ Overlap an unstable area

☐ Wetlands

☐ Located less than 60 meters from a fault

☒ None of the above

Attachment: n/a

If a portion of the lagoon(s) is located within the 100-year frequency flood plain, provide the protective measures to be utilized including type and size of protective structures:

n/a

B. Temporary storage information

Provide the results for the pollutant screening of sludge lagoons. These results are in addition to pollutant results in *Section 7 of Technical Report 1.0.*

Nitrate Nitrogen, mg/kg: n/a

Total Kjeldahl Nitrogen, mg/kg: n/a

Total Nitrogen (=nitrate nitrogen + TKN), mg/kg: n/a

Phosphorus, mg/kg: n/a

Potassium, mg/kg: n/a

pH, standard units: n/a

Ammonia Nitrogen mg/kg: n/a

Arsenic: n/a

Cadmium: n/a

Chromium: n/a

Copper: n/a

Lead: n/a

Mercury: n/a

Molybdenum: n/a

Nickel: n/a

Selenium: n/

Zinc: n/

Total PCBs: n/

Provide the following information:

Volume and frequency of sludge to the lagoon(s): n/a

Total dry tons stored in the lagoons(s) per 365-day period: n/a

Total dry tons stored in the lagoons(s) over the life of the unit: n/a

C. Liner information

Does the active/proposed sludge lagoon(s) have a liner with a maximum hydraulic conductivity of $1x10^{-7}$ cm/sec?

☐ Yes ☐ No

If yes, describe the liner below. Please note that a liner is required.

n/a

D. Site development plan

Provide a detailed description of the methods used to deposit sludge in the lagoon(s):

n/a

Attach the following documents to the application.

- Plan view and cross-section of the sludge lagoon(s)

  Attachment: n/a
- Copy of the closure plan

  Attachment: n/a
- Copy of deed recordation for the site

  Attachment: n/a

- Size of the sludge lagoon(s) in surface acres and capacity in cubic feet and gallons

  Attachment: n/a

- Description of the method of controlling infiltration of groundwater and surface water from entering the site

  Attachment: n/a

- Procedures to prevent the occurrence of nuisance conditions

  Attachment: n/a

E. Groundwater monitoring

Is groundwater monitoring currently conducted at this site, or are any wells available for groundwater monitoring, or are groundwater monitoring data otherwise available for the sludge lagoon(s)?

☐ Yes ☐ No

If groundwater monitoring data are available, provide a copy. Provide a profile of soil types encountered down to the groundwater table and the depth to the shallowest groundwater as a separate attachment.

Attachment: n/a

Section 12. Authorizations/Compliance/Enforcement (Instructions Page 55)

A. Additional authorizations

Does the permittee have additional authorizations for this facility, such as reuse authorization, sludge permit, etc?

☐ Yes ☒ No

If yes, provide the TCEQ authorization number and description of the authorization:

n/a

B. Permittee enforcement status

Is the permittee currently under enforcement for this facility?

☐ Yes ☒ No

Is the permittee required to meet an implementation schedule for compliance or enforcement?

☐ Yes ☒ No

If yes to either question, provide a brief summary of the enforcement, the implementation schedule, and the current status:

n/a

Section 13. RCRA/CERCLA Wastes (Instructions Page 55)

A. RCRA hazardous wastes

Has the facility received in the past three years, does it currently receive, or will it receive RCRA hazardous waste?

☐ Yes ☒ No

B. Remediation activity wastewater

Has the facility received in the past three years, does it currently receive, or will it receive CERCLA wastewater, RCRA remediation/corrective action wastewater or other remediation activity wastewater?

☐ Yes ☒ No

C. Details about wastes received

If yes to either Subsection A or B above, provide detailed information concerning these wastes with the application.

Attachment: n/a

Section 14. Laboratory Accreditation (Instructions Page 56)

All laboratory tests performed must meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification*, which includes the following general exemptions from National Environmental Laboratory Accreditation Program (NELAP) certification requirements:

- The laboratory is an in-house laboratory and is:
  - periodically inspected by the TCEQ; or
  - located in another state and is accredited or inspected by that state; or
  - performing work for another company with a unit located in the same site; or
  - performing pro bono work for a governmental agency or charitable organization.
- The laboratory is accredited under federal law.
- The data are needed for emergency-response activities, and a laboratory accredited under the Texas Laboratory Accreditation Program is not available.
- The laboratory supplies data for which the TCEQ does not offer accreditation.

The applicant should review 30 TAC Chapter 25 for specific requirements.

The following certification statement shall be signed and submitted with every application. See the Signature Page section in the Instructions, for a list of designated representatives who may sign the certification.

CERTIFICATION:

I certify that all laboratory tests submitted with this application meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.*

Printed Name: Regan Caviness

Title: Vice President

Signature: Regan Caviness

Date: 6/24/24

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 3.0: LAND DISPOSAL OF EFFLUENT

The following is required for renewal, new, and amendment permit applications.

Section 1. Type of Disposal System (Instructions Page 68)

Identify the method of land disposal:

- ☒ Surface application
- ☒ Irrigation
- ☐ Drip irrigation system
- ☐ Evaporation
- ☐ Other (describe in detail): Click to enter text.
- ☐ Subsurface application
- ☐ Subsurface soils absorption
- ☐ Subsurface area drip dispersal system
- ☐ Evapotranspiration beds

NOTE: All applicants without authorization or proposing new/amended subsurface disposal MUST complete and submit Worksheet 7.0.

For existing authorizations, provide Registration Number: n/a

Section 2. Land Application Site(s) (Instructions Page 68)

In table 3.0(1), provide the requested information for the land application sites. Include the agricultural or cover crop type (wheat, cotton, alfalfa, bermuda grass, native grasses, etc.), land use (golf course, hayland, pastureland, park, row crop, etc.), irrigation area, amount of effluent applied, and whether or not the public has access to the area. Specify the amount of land area and the amount of effluent that will be allotted to each agricultural or cover crop, if more than one crop will be used.

Table 3.0(1) – Land Application Site Crops

Crop Type & Land Use	Irrigation Area (acres)	Effluent Application (GPD)	Public Access? Y/N
Improved Bermudagrass Or blend of Kleingrass, switchgrass & Teff grass with small grains for forage production	100 (total) in 4-25 acre plots	16,500 GPD average	N

Section 3. Storage and Evaporation Lagoons/Ponds (Instructions Page 68)

Table 3.0(2) – Storage and Evaporation Ponds

Pond Number	Surface Area (acres)	Storage Volume (acre-feet)	Dimensions	Liner Type
15	1.38	6.93	431.2' x 138.9'	36" thick compacted clay

Attach a copy of a liner certification that was prepared, signed, and sealed by a Texas licensed professional engineer for each pond.

Attachment: 6

Section 4. Flood and Runoff Protection (Instructions Page 68)

Is the land application site within the 100-year frequency flood level?

☐ Yes ☒ No

If yes, describe how the site will be protected from inundation.

n/a – not located near a floodplain area

Provide the source used to determine the 100-year frequency flood level:

USGS Topographic maps; FEMA online maps, soil survey maps

Provide a description of tailwater controls and rainfall run-on controls used for the land application site.

Application rates will not exceed the infiltration capacity of the soil to prevent the creation of tailwater. An existing berm around nearby farm fields minimizes run-on from upgradient areas entering the irrigation area.

Section 5. Annual Cropping Plan (Instructions Page 68)

Attach an Annual Cropping Plan which includes a discussion of each of the following items. If not applicable, provide a detailed explanation indicating why. **Attachment**: Section 5 of Renewal packet, pgs 13-15

- Soils map with crops
- Cool and warm season plant species
- Crop yield goals
- Crop growing season
- Crop nutrient requirements
- Additional fertilizer requirements
- Minimum/maximum harvest height (for grass crops)
- Supplemental watering requirements
- Crop salt tolerances
- Harvesting method/number of harvests
- Justification for not removing existing vegetation to be irrigated

Section 6. Well and Map Information (Instructions Page 69)

Attach a USGS map with the following information shown and labeled. If not applicable, provide a detailed explanation indicating why. **Attachment**: Figure 8

- The boundaries of the land application site(s)
- Waste disposal or treatment facility site(s)
- On-site buildings
- Buffer zones
- Effluent storage and tailwater control facilities
- All water wells within 1-mile radius of the disposal site or property boundaries
- All springs and seeps onsite and within 500 feet of the property boundaries
- All surface waters in the state onsite and within 500 feet of the property boundaries
- All faults and sinkholes onsite and within 500 feet of the property

List and cross reference all water wells located within a half-mile radius of the disposal site or property boundaries shown on the USGS map in the following table. Attach additional pages as necessary to include all of the wells.

Table 3.0(3) – Water Well Data

Well ID	Well Use	Producing? Y/N	Open, cased, capped, or plugged?	Proposed Best Management Practice
1-2730/20437	Irrigation	Y	cased	Buffer zone maintained

Well ID	Well Use	Producing? Y/N	Open, cased, capped, or plugged?	Proposed Best Management Practice
2-2674/20388	Irrigation	N	Cased	Buffer zone maintained
3-3970/21382	Irrigation	N	Plugged	Dry hole documented
4-3969/21382	Irrigation	N	Cased	Buffer zone maintained
5-2979/20631	Irrigation	N	Cased	Buffer zone maintained

If water quality data or well log information is available please include the information in an attachment listed by Well ID.

Attachment: Table 3 continued in Section 6, pages 18-22

Section 7. Groundwater Quality (Instructions Page 69)

Attach a Groundwater Quality Technical Report which assesses the impact of the wastewater disposal system on groundwater. This report shall include an evaluation of the water wells (including the information in the well table provided in Item 6. above), the wastewater application rate, and pond liners. Indicate by a check mark that this report is provided.

Attachment: Section 7 of Renewal Packet, pages 24-26

Are groundwater monitoring wells available onsite? ☐ Yes ☒ No

Do you plan to install ground water monitoring wells or lysimeters around the land application site? ☐ Yes ☒ No

If yes, provide the proposed location of the monitoring wells or lysimeters on a site map.

Attachment: n/a

Section 8. Soil Map and Soil Analyses (Instructions Page 70)

A. Soil map

Attach a USDA Soil Survey map that shows the area to be used for effluent disposal.

Attachment: Figure 10

B. Soil analyses

Attach the laboratory results sheets from the soil analyses. **Note**: for renewal applications, the current annual soil analyses required by the permit are acceptable as long as the test date is less than one year prior to the submission of the application.

Attachment: 4, Laboratory Reports

List all USDA designated soil series on the proposed land application site. Attach additional pages as necessary.

Table 3.0(4) – Soil Data

Soil Series	Depth from Surface	Permeability	Available Water Capacity	Curve Number
Refer to Section 8 renewal packet, page 28				

Section 9. Effluent Monitoring Data (Instructions Page 71)

Is the facility in operation?

☒ Yes ☐ No

If no, this section is not applicable and the worksheet is complete.

If yes, provide the effluent monitoring data for the parameters regulated in the existing permit. If a parameter is not regulated in the existing permit, enter N/A.

Table 3.0(5) – Effluent Monitoring Data

Date	30 Day Avg Flow MGD	BOD5 mg/l	TSS mg/l	pH	Chlorine Residual mg/l	Acres irrigated
6/2022	.007360	288 In House-51.5	N/A	8	2.33	
7/2022	.007408	92 In House-52	N/A	8	2.22	
8/2022	.007956	160 In house – 37.5	N/A	8	2.53	
9/2022	.006986	84 In house -55	N/A	8	1.9	
10/2022	.008162	214 In house - 73	N/A	9	1.87	
11/2022	.008309	110 In house-58.5	N/A	9	4.92	

Date	30 Day Avg Flow MGD	BOD5 mg/l	TSS mg/l	pH	Chlorine Residual mg/l	Acres irrigated
12/2022	.008198	110 In House - 29	N/A	8	2.26	
1/2023	.011897	110 In House -66	N/A	8	2.26	
2/2023	.011099	44	N/A	8	3.38	
3/2023	.009770	24	N/A	8	3.35	50
4/2023	.008837	27	N/A	8	3.03	
5/2023	.010375	189 In House- 86	N/A	8	4.73	100
6/2023	.010481	104 In House- 61	N/A	7	4.4	
7/2023	.008245	200 In house-181	N/A	8	3.5	
8/2023	.009875	129 In House-67	N/A	8	3.87	50
9/2023	.010247	49	N/A	8	5.95	50
10/2023	.011480	49	N/A	8	4.98	50
11/2023	.010936	42	N/A	8	5.21	
12/2023	.010769	52	N/A	8	4.35	
1/2024	.00927	81	N/A	8	3.72	
2/2024	.010275	89	N/A	8	5.52	50
3/2024	.008652	203	N/A	9	5.1	50
4/2024	.009806	22	N/A	9	5.02	
5/2024	.009520	18	N/A		4.82	

Provide a discussion of all persistent excursions above the permitted limits and any corrective actions taken.

On the exceedances in 2022-2023, the permittee took internal BOD to verify that they were at or below the 65 mg/l or less than the 40%, triggering reporting to TCEQ. Training and internal procedures have been put into place to prevent this from happening in the future. After the TCEQ inspection in March 2024, the permitee has been evaluating lab results to ensure all appropriate holding times are observed. They have also created an internal protocol for closely monitoring BOD and any future exceedences. They have changed the aeration times and will evaluate the correlation between BOD and the plant operations. After training and putting into place the internal protocols, the last 3 months of BODs have been below 30 mg/L

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 3.1: SURFACE LAND DISPOSAL OF EFFLUENT

The following is required for new and major amendment permit applications. Renewal and minor amendment permit applications may be asked for this worksheet on a case by case basis.

Section 1. Surface Disposal (Instructions Page 72)

Complete the item that applies for the method of disposal being used.

A. Irrigation

Area under irrigation, in acres: 100 acres in four 25-acre plots

Design application frequency:

hours/day 24 **And** days/week 2

Land grade (slope):

average percent (%): 0.6

maximum percent (%): 1.5

Design application rate in acre-feet/acre/year: 0.58 average

Design total nitrogen loading rate, in lbs N/acre/year: 312

Soil conductivity (mmhos/cm): 1.1

Method of application: center pivot sprinkler

Attach a separate engineering report with the water balance and storage volume calculations, method of application, irrigation efficiency, and nitrogen balance.

Attachment: 5. Surface Irrigation Engineering Report

B. Evaporation ponds

Daily average effluent flow into ponds, in gallons per day: n/a

Attach a separate engineering report with the water balance and storage volume calculations.

Attachment: n/a

C. Evapotranspiration beds

Number of beds: n/a

Area of bed(s), in acres: n/a

Depth of bed(s), in feet: n/a

Void ratio of soil in the beds: n/a

Storage volume within the beds, in acre-feet: n/a

Attach a separate engineering report with the water balance and storage volume calculations, and a description of the lining.

Attachment: n/a

D. Overland flow

Area used for application, in acres: n/a

Slopes for application area, percent (%): n/a

Design application rate, in gpm/foot of slope width: n/a

Slope length, in feet: n.a

Design BOD_5 loading rate, in lbs BOD_5/acre/day: n/a

Design application frequency:

hours/day: n/a **And** days/week: n/a

Attach a separate engineering report with the method of application and design requirements according to *30 TAC Chapter 217.*

Attachment: n/a

Section 2. Edwards Aquifer (Instructions Page 73)

Is the facility subject to *30 TAC Chapter 213*, Edwards Aquifer Rules?

☐ Yes ☒ No

If **yes**, is the facility located on the Edwards Aquifer Recharge Zone?

☐ Yes ☐ No

If yes, attach a geological report addressing potential recharge features.

Attachment: n/a

Section 4. Unbuilt Phases

There are no unbuilt phases.

Section 5. Closure Plans

Former septic tanks and pump chambers remain in service as collection tanks. If it becomes necessary to remove any of these facilities at a later date, they will be properly closed in accordance with 30 TAC §285.36, specifically:

- The tank(s) will be pumped by a registered waste transporter (refer to Section 8 of the Domestic Technical Report 1.0 for contact information);
- The tank(s) will be filled to ground level with suitable fill material free of organic material and/or construction debris.

Both former septic system drainfields have been closed in place and all flow is now routed to the lift stations for transfer to the treatment plant. No new construction is proposed in these areas of. The leaching chambers will remain in place and existing vegetative cover and fencing will be maintained to prevent access to the area. Should construction be proposed in these areas in the future, the drainfields should be properly closed as outlined below.

- All unused surface equipment (risers, valve boxes, etc.) will be removed, the areas backfilled with clean fill to natural or new design grades.
- The existing vegetation and a minimum of 3 inches of topsoil cover will be removed from the entire drainfield area and stockpiled for later site finishing work.
- All leaching chambers and aggregate will be excavated and transported to a permitted landfill for proper disposal.
- All excavated areas previously exposed to effluent will be coated with hydrated lime for stabilization. Sufficient time shall be allowed to ensure the area is dry before further construction commences.
- Clean fill will be used to bring the area to design subgrade elevations for parking lot construction.
- The parking area will be completed and paved to the lines and grades shown on the construction plans.

Section 6. Permit Specific Requirements

Summary Transmittal Letters

Special Provision 4: A summary transmittal letter for the treatment facility was submitted to TCEQ in May 6, 2019, and for the lift stations and force main pipeline in April 5, 2019. Copies of TCEQ approval letters are included in Attachment 2.

Other Permit Requirements

Special Provisions 5, 6, & 8: Completion and startup notifications were submitted in January 2021.

Special Provision 17: The first annual soil monitoring reports was submitted in September 2021.

Special Provision 18 & 22: Pond 15 has been properly lined in accordance with TCEQ rules. The liner certification is included in Attachment 6.

Special Provision 21: Due to site limitations, an exception to the 500-ft buffer requirement between potable water storage tanks and existing collection tanks was obtained during the original permitting action. The treatment plant itself meets the buffer requirement.

Section 7. Pollutant Analysis of Treated Effluent

Laboratory results are included in Attachment 3.

Section 8. Facility Operator

Refer to TCEQ Technical Report 1.0

Section 9. Sewage Sludge Management and Disposal

All sludge is transported off-site to the City of Hereford Wastewater Treatment Plant (TCEQ Permit No. WQ0010186002) for proper disposal. A copy of the disposal agreement is attached.

Section 10. Permit Authorization for Sewage Sludge Disposal

The applicant is not requesting authorization for land application, processing, or storage of sludge. All sludge will be transported off-site for proper disposal.

Section 11. Sewage Sludge Lagoons

The facility does not include sewage sludge lagoons.

Section 12. Authorizations/Compliance/Enforcement

There are no other current authorizations for the treatment facility.

Section 13. RCRA/CERCLA Wastes

No off-site or non-domestic wastes will be accepted.

Section 14. Laboratory Accreditation

Only NELAP accredited laboratories will be used for the sample analyses required under this permit.

WORKSHEET 3.0 LAND DISPOSAL OF EFFLUENT

Section 1. Type of Disposal System

Treated effluent will be land applied at beneficially agronomic rates on private property owned and controlled by Caviness Development, Ltd. The disposal system consists of an earthen irrigation storage pond, with proposed irrigation via a center pivot sprinkler irrigation system. The Disposal System Engineering Report is included in Attachment 5.

Section 2. Land Application Sites

The land application site is 100 acres under center pivot irrigation, is planted to permanent warm season grasses overseeded with small grains (wheat, triticale, barley, ryegrass, etc.) in winter on the same acreage. The site is restricted from public access via fencing and manned, gated access. The field may be subdivided into four 25-acre plots to allow for rest periods between effluent application events.

Table 2. Proposed Crops

Crops	Expected Yield	Warm/Cool Season
Improved Bermudagrass Hay (similar to Coastal)	2 cuttings = 4000 lb/ac	Warm
Blend of Kleingrass, Switchgrass, and Teff grass	1 cutting = 1000 lb/ac	Warm
Small Grain Hay (possible varieties: wheat, triticale, barley, ryegrass, etc.)	1 cutting = 2000 lb/ac	Cool

Section 3. Storage and Evaporation Lagoons/Ponds

Pond 15 was designed and constructed to provide approximately 90 days of storage at design flow for times when irrigation is not feasible due to weather or field conditions. As-built capacity provides approximately 105 days of storage at average design flow. The liner certification is included in Attachment 6.

Section 4. Flood and Runoff Protection

The land application site is not located in or near a published 100-year flood plain. The site is located in an area that has not been mapped by FEMA for flood hazard. Soil survey maps and USGS topographic maps show no features consistent with flood plains in the area of the land application site.

Section 5. Annual Cropping Plan

This plan is intended to satisfy the requirements in TCEQ Worksheet 3.0, Section 5.

- *Soil map with crops:* Refer to Figure 9.
- *Cool and warm season plant species:* The field will be seeded/sprigged to a suitable permanent warm season grass species for use as a forage crop. The field

will be overseeded in late fall with a winter small grain crop to provide year-round nutrient uptake.

- *Crop yield goals:* Refer to table below.
- *Crop growing season:* The cropping plan includes both cool and warm season crops to provide year-round vegetative cover, hydraulic demand and nutrient uptake.
- *Crop Nutrient Requirements:* Application rates will be calculated based on the nutrient requirement for Improved bermudagrass (similar to Coastal) overseeded with small grains in the winter, using data from USDA-NRCS Conservation Practice Code 590. A summary is provided the table below.

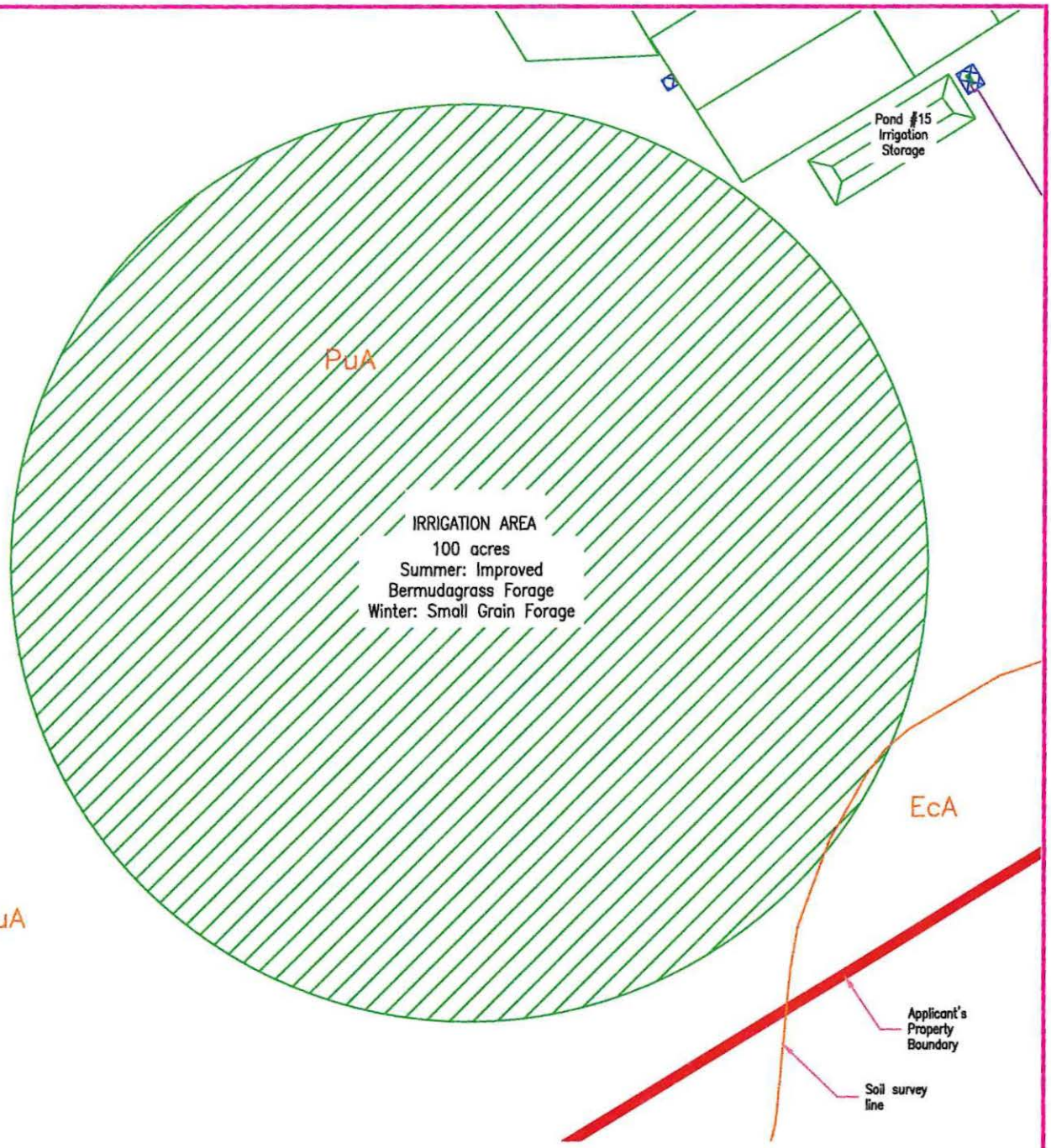
Planned Crop	**Yield Goal per Acre**	**N (lb/ac)**	**P2O5 (lb/ac)**
Improved Bermudagrass (considered similar to Coastal)	2 cuttings (4000#)	200	125
Small Grain Hay (considered similar to Wheat Forage)	2000#	60	80
Total Annual Requirement:		**260**	**205**

Alternative Crop	**Yield Goal per Acre**	**N (lb/ac)**	**P2O5 (lb/ac)**
Blend of Kleingrass, Switchgrass, and Teff grass	1 cutting (1000#)	80	55
Small Grain Hay (considered similar to Wheat Forage)	2000#	60	80
Total Annual Requirement:		**140**	**135**

- *Additional fertilizer requirements:* Supplemental fertilizer requirements will be determined annually based on soil test results. No supplemental fertilizer is planned in the first year.
- *Minimum/maximum harvest heights:* Cutting and removal of grass hay will be done in accordance with USDA-NRCS Conservation Practice Standard Code 511, which recommends a minimum cutting height of 3 inches for sod-forming grasses such as Bermudagrass and 4 to 8 inches for introduced bunch-type grasses such as Kleingrass and Switchgrass.
- *Supplemental watering requirement:* No supplemental freshwater irrigation will be available.
- *Crop salt tolerances:* Winter small grain crops are rated moderately tolerant to tolerant, generally in the range of 6.0 to 7.6 dS/m depending on species, and bermudagrass is known to be tolerant, at 6.9 dS/m (Reference: www.fao.org Annex 1, Table A1.1).
- *Harvesting method/number of harvests*: Harvest will be conducted by haying, approximately twice to three times per year – once in early spring to remove the winter small grain crop to allow for warm season grass green-up, once in mid-

summer, and with adequate rainfall, again in late fall, approximately 4 to 6 weeks before the first killing freeze to prepare the area for winter crop overseeding.

- *Justification for not removing existing vegetation to be irrigated*: N/A



Soil Unit Name and Symbol Legend:
EcA – Estacado clay loam, 0–1% slopes
PuA – Pullman clay loam, 0–1% slopes

N
W E
S

200 0 200 400

SCALE: 1" = 400'

SOURCE: USDA–NRCS. Geospatial Data Gateway. Available At: http://datagateway.nrcs.usda.gov/. SSURGO, Accessed Nov. 2018.

CAVINESS DEVELOPMENT LTD. DEAF SMITH COUNTY HEREFORD, TEXAS	NRCS SOILS MAP with CROPS FIGURE 7 JUNE 2024	ENVIRO–AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

Section 6. Well and Map Information

Figure 10, Well Map shows the treatment, storage and irrigation areas, applicable buffer zones, buildings, all water wells within 1 mile and all surface waters within 500 feet of the property. There are no springs, seeps, faults, or sinkholes on-site or within 500 feet of the property. Table 3.0(3), Water Well Data is a continuation of the table on the Worksheet 3.0 form. All available well logs and data are included in Attachment 5.

6.1 High Plains Groundwater Conservation District Records

Numerous wells were identified by the district as being located on and within 1 mile of the Caviness property. Should an abandoned penetration be encountered anywhere on the property at any time, the penetration will be marked, reported to the district, inspected and properly sealed to avoid a potential impact to the underlying aquifer.

6.2 GeoSearch

GeoSearch has performed a thorough and diligent search of all wells recorded with the TWDB, TCEQ and USGS. All mapped locations are based on information obtained from the TWDB, TCEQ and USGS. Although GeoSearch performs quality assurance and quality control on all research projects, they recognize that any inaccuracies of the records and mapped well locations could possibly be traced to the appropriate regulatory authority or the water well driller. Many water well schedules may have never been submitted to the regulatory authority by the water well driller and, thus may explain the possible unaccountability of private drilled wells. It is uncertain if the databases provide 100% of the existing well locations within the area of review. Therefore, GeoSearch cannot guarantee the accuracy of the data or well location(s) of those maps and records maintained by Texas' regulatory authorities.

6.3 TWDB Water Data Interactive (WDI)

The TWDB WDI online database was reviewed for artificial penetrations. The database revealed several water wells registered with the TWDB as being located on and around the subject property.

6.4 USDA Natural Resource Conservation Service

The NRCS Soil Survey of Deaf Smith County (1968) was reviewed for locations of potential recharge features. The surveys indicate artificial penetrations in the form of wells are located on the subject properties.

6.5 Other Artificial Features

Other man-made features, such as stormwater detention basins and industrial wastewater lagoons, exist on the subject property. All wastewater lagoons are lined in accordance with TCEQ rules. No irrigation is planned in these areas.

6.6 Current Land Owner

Mr. Jaime Salinas, assistant plant engineer for Caviness Beef Packers, was contacted regarding the presence of any potential artificial recharge features on the property. Mr.

Salinas confirmed the locations of the active and known inactive/capped water wells on the subject property.

6.7 On-Site Inspection

The property and off-site areas have been inspected both on the ground and by historical mapping. Only those off-site areas visible from public right-of-way areas were reviewed during site reconnaissance. All visible water wells (irrigation, domestic/stock) were documented during the on-site inspection. No public water supply wells are located within 500 feet of the property boundary.

All well data listed in Table 3.0(3) is based on information received from the water district, TCEQ and TWDB files, on-site inspection, and interviews of persons knowledgeable of the property. The well identification number corresponds to the map labels shown in Figure 10, and the District/State ID corresponds to the number found on well logs, as applicable.

Table 3. Water Well Data

Well ID	District/ State ID	Well Use	Producing? Y/N	Open, Cased, Capped or Plugged?	Proposed BMP
6	5621/ 22639	Irrigation	Y	Cased	Buffer zone maintained
7	2922/ 20588	Irrigation	Y	Cased	Buffer zone maintained
8	2672/ 20386	Irrigation	N	Plugged	Buffer zone maintained
9	2673/ 20387	Test hole	N	Plugged	Not visible *Revised 6/8/22*
10	1192/ 19189	Irrigation	N	Plugged	Buffer zone maintained
11	41077/ 24534	Irrigation	N	Plugged	Not visible; Buffer zone maintained
12	1620/ 19534	Irrigation	N	Plugged	Buffer zone maintained
13	4878/ 22083	Irrigation	Y	Cased	Buffer zone maintained
14	41076/ 24533	Irrigation	N	Plugged	Not visible; Buffer zone maintained
15	41075/ 24532	Irrigation	N	Plugged	Not visible; Buffer zone maintained
16	2044/ 19875	Irrigation	N	Plugged	Buffer zone maintained
17	5528/ 22572	Irrigation	Y	Cased	Buffer zone maintained
18	3151/ 20778	Irrigation	N	Plugged	Buffer zone maintained
19	4483/ 21774	Irrigation	Y	Cased	Buffer zone maintained
20	6839/ 23626 305344	Irrigation	Y	Cased	Buffer zone maintained
21	6840/ 23627 305345	Irrigation	Y	Cased	Buffer zone maintained
22	3204/ 20813	Irrigation	N	Plugged	Not visible; Buffer zone maintained
23	3791/ 21256	Stock	Y	Cased	Buffer zone maintained
24	2688A/ 20488	Irrigation	Y	Cased	Buffer zone maintained
25	4866/ 22073	Irrigation	N	Plugged	Documented as plugged

Well ID	District/ State ID	Well Use	Producing? Y/N	Open, Cased, Capped or Plugged?	Proposed BMP
26	1584/ 19503	Irrigation	N	Plugged	Not visible; Buffer zone maintained
27	2923/ 20589 1013703	Irrigation	Y	Cased	Buffer zone maintained
28	3203/ 20812	Irrigation	Y	Cased	Buffer zone maintained
29	4279/ 21609	Industrial/Stock	N	Cased	Buffer zone maintained
30	5582/ 22614	Stock Well	Y	Cased	Buffer zone maintained
31	5179/ 22321	Irrigation	N	Plugged	Documented as plugged
32	41061/ 24519	Irrigation	N	Plugged	Not visible; Buffer zone maintained
33	1607/ 19523	Irrigation	N	Plugged	Buffer zone maintained
34	41062/ 24520	Irrigation	Y	Cased	Buffer zone maintained
35	2675/ 20389	Stock	Y	Cased	Buffer zone maintained
36	108/ 18808	Irrigation	N	Plugged	Documented as plugged
37	4277/ 21607	Irrigation	N	Plugged	Buffer zone maintained
38	812/ 18957	Irrigation	N	Capped	Documented as capped
39	6456/ 23247 96976	Irrigation	Y	Cased	Buffer zone maintained
40	2395/ 20167	Irrigation	N	Plugged	Buffer zone maintained
41	4824/ 22037	Irrigation	Y	Cased	Buffer zone maintained
42	2550/ 20287	Irrigation	N	Plugged	Buffer zone maintained
43	5416/ 22489 1013705	Irrigation	Y	Cased	Buffer zone maintained
44	4116/ 21489	Irrigation	N	Plugged	Buffer zone maintained
45	1785/ 19654	Irrigation	N	Plugged	Documented as plugged
46	5961/ 22903	Irrigation	Y	Cased	Buffer zone maintained
47	3178A/ 20795	Irrigation	N	Plugged	Buffer zone maintained
48	4377/ 21685	Irrigation	N	Plugged	Buffer zone maintained
49	185/ 18466 61785	Test Well	N	Plugged	Documented as plugged
50	4602/ 21113 1013706	Irrigation	Y	Cased	Buffer zone maintained
51	3241A/ 20844 23621	Irrigation	N	Plugged	Documented as being taken in by highway improvements
52	3240A/ 20843 48373	Irrigation	N	Plugged	Buffer zone maintained
53	6659/ 23446 179445	Irrigation	Y	Cased	Buffer zone maintained
53A	6605/ 23392	N/A-Test hole	N	Plugged	Buffer zone maintained

Well ID	District/ State ID	Well Use	Producing? Y/N	Open, Cased, Capped or Plugged?	Proposed BMP
	59187				
54	6658/ 23445 179441	Irrigation	Y	Cased	Buffer zone maintained
54A	6604/ 23391 59185	N/A-Test hole	N	Plugged	Buffer zone maintained
55	1712/ 19596	Irrigation	N	Plugged	Buffer zone maintained
56	2442/ 18867	Irrigation	N	Plugged	Buffer zone maintained
57	5096/ 22251	Irrigation	Y	Cased	Buffer zone maintained
58	41064/ 24522	Irrigation	Y	Cased	Buffer zone maintained
59	2562/ 20299	Irrigation	Y	Cased	Buffer zone maintained
60	3615/ 21125 23622	Irrigation	N	Plugged	Buffer zone maintained; documented as plugged
61	3614A/ 21124	Irrigation	Y	Cased	Buffer zone maintained
62	3813/ 21273	Irrigation	Y	Cased	Buffer zone maintained
63	856/ 18992	Irrigation	N	Plugged	Buffer zone maintained
64	3186/ 20801	Irrigation	N	Plugged	Buffer zone maintained
65	4330/ 21652	Domestic	Y	Cased	Buffer zone maintained
66	1605/ 19521	Irrigation	N	Cased	Buffer zone maintained (Believed to be same well as 65)
67	5521A/ 22567	Irrigation	Y	Cased	Buffer zone maintained
68	1594/ 19511 1013804	Irrigation/Domestic?	N	Plugged	Buffer zone maintained
69	41079/ 24536	Irrigation	N	Cased	Buffer zone maintained
70	41078/ 24535	Irrigation	N	Cased	Buffer zone maintained (district says destroyed)
71	1200/ 19197	Unknown	N	Plugged	Buffer zone maintained
72	2474/ 20229	Irrigation	N	Plugged	Buffer zone maintained
73	41214/ 24651 1021101	Irrigation	N	Cased	Buffer zone maintained
74	1520/ 6168	Irrigation	Y	Cased	Buffer zone maintained
75	1033/ 19067	Unknown	N	Plugged	Buffer zone maintained
76	59304	Test Well	N	Plugged	Documented as plugged
77	935/ 19036	Irrigation	N	Plugged	Buffer zone maintained
78	41669/ 11031	Irrigation	Y	Cased	Buffer zone maintained
79	2654/ 91004	Irrigation	N	Plugged	Buffer zone maintained
80	1064/ 5771	Irrigation	N	Plugged	Buffer zone maintained
81	2914/ 7358	Irrigation	N	Plugged	Buffer zone maintained
82	2276/ 6835	Irrigation	N	Plugged	Buffer zone maintained
83	41676/ 11038	Stock	Y	Cased	Buffer zone maintained
84	41674/ 11036	Irrigation	N	Cased	Not visible; Buffer zone maintained

Well ID	District/ State ID	Well Use	Producing? Y/N	Open, Cased, Capped or Plugged?	Proposed BMP
85	41675/ 11037	Irrigation	N	Cased	Not visible; Buffer zone maintained
86	3246/ 7639 1021102	Irrigation/Observation	N	Cased	Buffer zone maintained
87	1211/ 5897 1021104	Irrigation	Y	Cased	Buffer zone maintained
88	50157/ 11245	Irrigation	N	Cased	Not visible; Buffer zone maintained
89	3054/ 7475	Irrigation	Y	Cased	Buffer zone maintained
90	3130/ 7538 1020304	Irrigation	Y	Cased	Buffer zone maintained
91	2871/ 7327	Irrigation	Y	Cased	Buffer zone maintained
92	3124/ 7533	Irrigation	N	Capped	Buffer zone maintained (documented as capped)
93	2845/ 7307 1020305	Irrigation/PWS	N	Cased	Buffer zone maintained
94	2298A/ 6854	Irrigation	Y	Cased	Buffer zone maintained
95	41063/ 24521	Stock	N	Cased	Buffer zone maintained
96	5545A/ 22580	Irrigation	N	Capped	Buffer zone maintained (documented as capped)
97	6228/ 23100	Irrigation	Y	Cased	Buffer zone maintained
98	4264/ 21598	Industrial/Stock	Y	Cased	Buffer zone maintained
99	1013701	Observation	N	Cased	Buffer zone maintained
100	143127	Domestic	Y	Cased	Buffer zone maintained
101	59189	Test well	N	Plugged	Documented as plugged
102	273297	Monitor	N	Cased	Buffer zone maintained
103	1012902	Observation	N	Cased	Buffer zone maintained
104	--	Stock well	N	Plugged	Not visible; Buffer zone maintained
105	--	Irrigation	N	Plugged	Not visible; Buffer zone maintained
106		Stock	Y	Cased	Buffer zone maintained
107	3020/ 20669	Stock	Y	Cased	Buffer zone maintained
108	4061/ 21450 1012903	Stock	Y	Cased	Buffer zone maintained
109		Domestic	Y	Cased	Buffer zone maintained
110		Domestic	Y	Cased	Buffer zone maintained
111	992/ 5704	Irrigation	Y	Cased	Buffer zone maintained
112		Stock	Y	Cased	Buffer zone maintained
113		Domestic	Y	Cased	Buffer zone maintained
114		Monitor Well	N	Cased	Buffer zone maintained

Well ID	District/ State ID	Well Use	Producing? Y/N	Open, Cased, Capped or Plugged?	Proposed BMP
115		Monitor Well	N	Cased	Buffer zone maintained
116		Domestic	Y	Cased	Buffer zone maintained
117		Domestic	Y	Cased	Buffer zone maintained
118		Domestic	Y	Cased	Buffer zone maintained
119		Stock	N	Cased	Buffer zone maintained
120	180067/ 92832 471166	Stock	Y	Cased	Buffer zone maintained
121	2068	Irrigation	Y	Cased	Buffer zone maintained
122	231061	Irrigation	Y	Cased	Buffer zone maintained

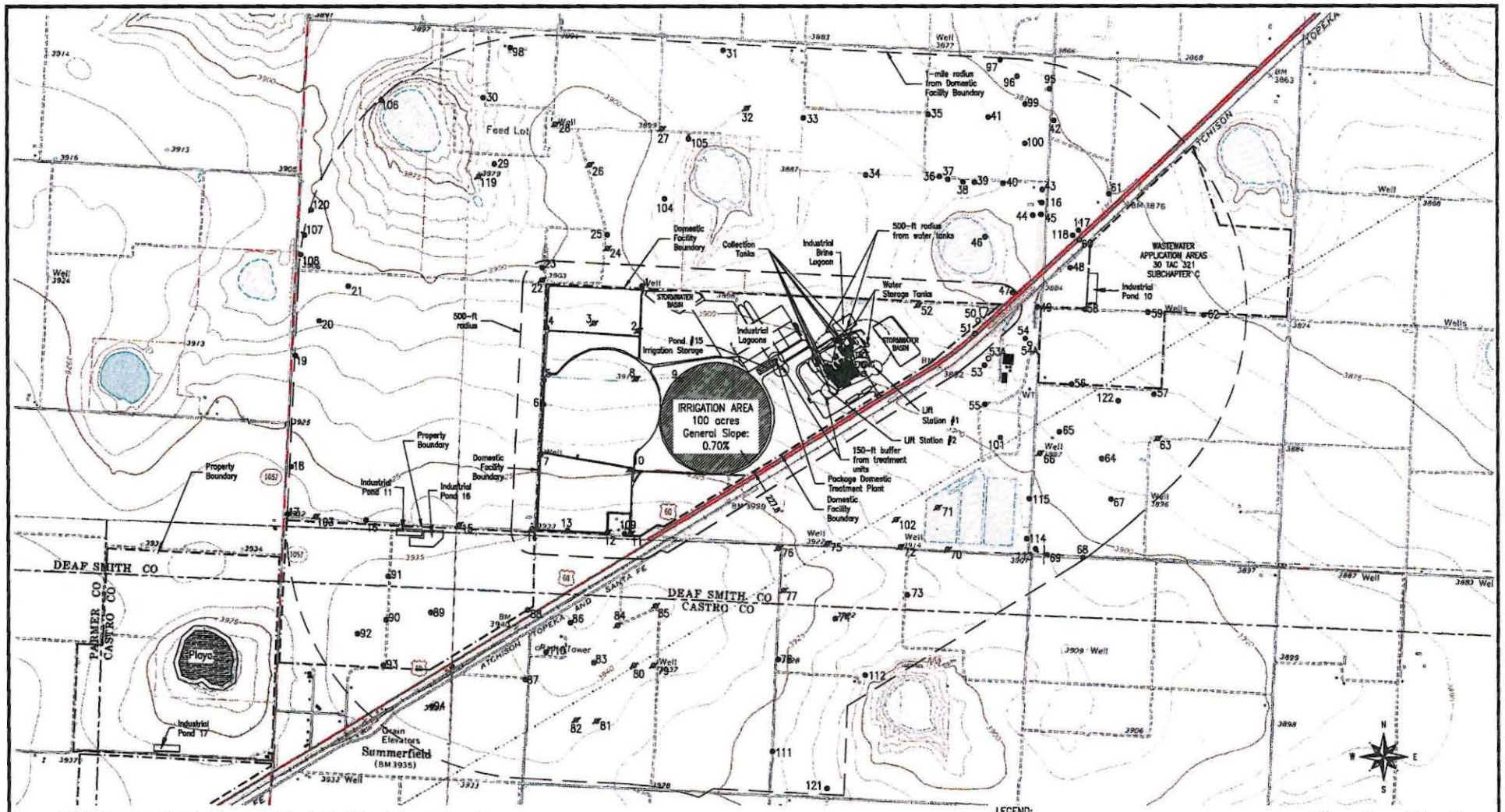
6.8 References

High Plains Underground Water Conservation District. Lubbock, Texas, Interactive Map and Records Search, June 2024, from http://map.hpwd.org/#

TCEQ and Texas Water Development Board, Files Search, June 2024.

Texas Water Development Board. Water Information Integration & Dissemination, Retrieved June 2024, from http://www2.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer

USDA NRCS, Soil Survey of Deaf Smith County, Texas, 1968.



Source: USDA-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. Digital Raster Graphic County Mosaic by NRCS – Accessed 2014.
Water well locations from High Plains Ground Water Conservation District, Texas Water Development Board, EAE files, and site reconnaissance, 2024.

LEGEND:
- Denotes Plugged Water Well
- Denotes Non-Visible Water Well
- Denotes Water Well

1000 0 1000 2000
SCALE: 1" = 2000'

CAVINESS DEVELOPMENT LTD.
DEAF SMITH COUNTY
HEREFORD, TEXAS

WELL MAP
FIGURE 8
JUNE 2024

ENVIRO-AG EAE ENGINEERING, INC.
Enviro-Ag Engineering, Inc.
ENGINEERING CONSULTANTS
3404 Airway Boulevard
AMARILLO, TEXAS 79118
TEL (806) 353-6123 FAX (806) 353-4132

Section 7. Groundwater Quality/Groundwater Technical Report

The purpose of this section is to provide information on the geologic features and groundwater resources in the area of the Caviness property associated with the land application site and to identify Best Management Practices (BMP)s that will be used to protect these resources.

7.1 Geomorphologic/Geologic Features

The Pullman and Estacado soil associations in this area of Deaf Smith County are immediately underlain by deposits of the Quaternary Blackwater Draw Formation, as shown in Figure 11, Geologic Atlas. This formation consists of deposits of fine- to medium-grained quartz sand, silty, calcareous, locally clayey deposits, caliche nodules, massive, grayish-red with a distinct soil profile up to 25 feet thick that feathers out locally (Bureau of Economic Geology, 2018).

A water well driller's log for an on-site well drilled in 1971 indicates the subsurface geology to consist of topsoil and caliche to 60 feet below the surface, followed by sand, sandstone, and rock with clay layers from 60 to 270 feet, followed by red beds to a total depth of 277 feet. Percolation can be greatly hampered by the presence of caliche layers (Knowles, et al., 1984).

Recharge of the Ogallala through deep percolation of the overlying soils without specific recharge features is generally considered insignificant. A study of the preferred pathways of recharge to the Ogallala found that the subsurface water movement in interplaya settings was negligible (Scanlon, et. al., 1994). This study found that the minimum water potentials of the interplaya soil profiles were low and indicated that the sediments were dry. The water potentials of the interplaya regions increased with depth except in the shallow subsurface after a rainfall event, which results in an upward driving force or liquid water movement. The study concluded that downward subsurface water movement in interplaya settings is negligible.

7.1.1 Outcrops/Stream Interception

Recharge to the Ogallala aquifer can occur by the infiltration of precipitation on an outcrop or stream interception (Knowles et al., 1984). No outcrops or stream interceptions are located on the subject property. The USGS topographic map identifies the presence of a man-made waterway on the property, west of the proposed treatment facility. This waterway is no longer present due to changes in farming practices.

7.1.2 Topographic Depressions

No topographic depressions are shown on USGS maps on the property associated with the land application site.

7.1.3 Playa Basins

The USGS quadrangle map, geologic atlas and the NRCS Soil Survey show no playas on the property associated with the land application site.

7.1.4 Other Features

Other features, such as meat packing wastewater lagoons and a stormwater detention basin, that exist on the subject property were designed and are managed in accordance with the TCEQ rules applicable to those structures.

7.1.5 Excessive Slopes

No slopes of greater than 8 percent are present on the property.

7.1.6 Other Large-Scale Conduits

No faults, fractured sediments, caves, sinkholes, solution cavities, vugs or concentrated or extensive animal burrowing were observed during an on-site visit, nor are any identified on the geologic atlas, Soil Surveys or USGS maps.

7.1.7 Aquifer

The Ogallala aquifer, the major water-bearing unit in the High Plains of Texas, provides water to all or parts of 46 counties. Vertical hydrologic communication also occurs between the Ogallala and the underlying Cretaceous, Jurassic, and Triassic formations in many areas and between the overlying Quaternary Blackwater Draw Formation where present.

The Ogallala is composed primarily of sand, gravel, clay, and silt deposited during the Tertiary Period. Ground water, under water-table conditions, moves slowly through the Ogallala Formation in a southeastward direction toward the caprock edge or eastern escarpment of the High Plains. Saturated thickness of the aquifer is generally greater in the northern part of the region and thinner in the southern part where the formation overlaps Cretaceous rocks.

Recharge to the Ogallala occurs principally by infiltration of precipitation on the surface and, to a lesser extent, by upward leakage from underlying formations. Only about one inch of the precipitation actually reaches the water table annually because rainfall in minimal, the evaporation rate is high, and the infiltration rate is slow. The highest recharge infiltration rates occur in areas overlain by sandy soils and in playa-lake basins (Ashworth and Hopkins, 1995).

The Dockum Group of Triassic age underlies much of the Ogallala Formation of the High Plains area of Texas and New Mexico, the northern part of the Edwards Plateau, and the eastern part of the Cenozoic Pecos Alluvium. Where exposed east of the High Plains caprock and in the Canadian River Basin, the land surface takes on a reddish color. In the subsurface, the Dockum is commonly referred to as the "red bed". The primary water-bearing zone in the formation, the Santa Rosa, consists of up to 700 feet of sand and conglomerate interbedded with layers of silt and shale (Ashworth and Hopkins, 1995).

7.1.8 Water Wells

All water wells within a 1-mile radius of the Caviness property associated with the land application site, are identified in Section 6, and all available well logs are included in Attachment 5.

The well in the northeast corner of the Caviness property (Well ID 50 in Table 3.0(3)) was analyzed by the HPWD in 1986. This analysis represents baseline groundwater quality prior to industrial development on the property. Laboratory results are attached and a summary is provided in the table below.

Table 4. Summary of Well Analysis

Parameter	Units	Value
TDS	mg/L	524
NO3	mg/L (as NO3)	23.97 (equates to 5.14 NO3-N)
Chlorides	mg/L	87
Sulfates	mg/L	66
pH	Standard units	8.2

** Note: Coliform bacteria test was not conducted.*

7.1.9 Best Management Practices

The disposal system will consist of an existing center pivot irrigation sprinkler designed to irrigate crops at application rates that will not exceed the infiltration rate of the soil. Due to the low application rates, no pooling, ponding or tailwater is anticipated. Pond 15 was design, constructed, and properly lined and certified in accordance with TCEQ rules.

7.1.10 References

Ashworth and Hopkins, November 1995. Aquifers of Texas. Report 345, Texas Water Development Board.

Bureau of Economic Geology, The University of Texas at Austin, Geologic Atlas of Texas – Clovis and Tucumcari Sheets, 1978 & 1983. Online version retrieved Sept. 2108, https://txpub.usgs.gov/dss/texasgeology/

Knowles, T., Nordstrom, P., Klemt, W. B., Report 288, "Evaluating the Ground Water Resources of the High Plains of Texas". Texas Department of Water Resources, Volume 1, May 1984.

Scanlon, B. R., Goldsmith, R. S., Hovorka, S. D., Mullican, W. F. III, Xiang, J., 1994, "Evidence for Focused Recharge Beneath Playas in the Southern High Plains". Proceedings of the Playa Basin Symposium, Texas Tech University, Lubbock, Texas, May 1994.

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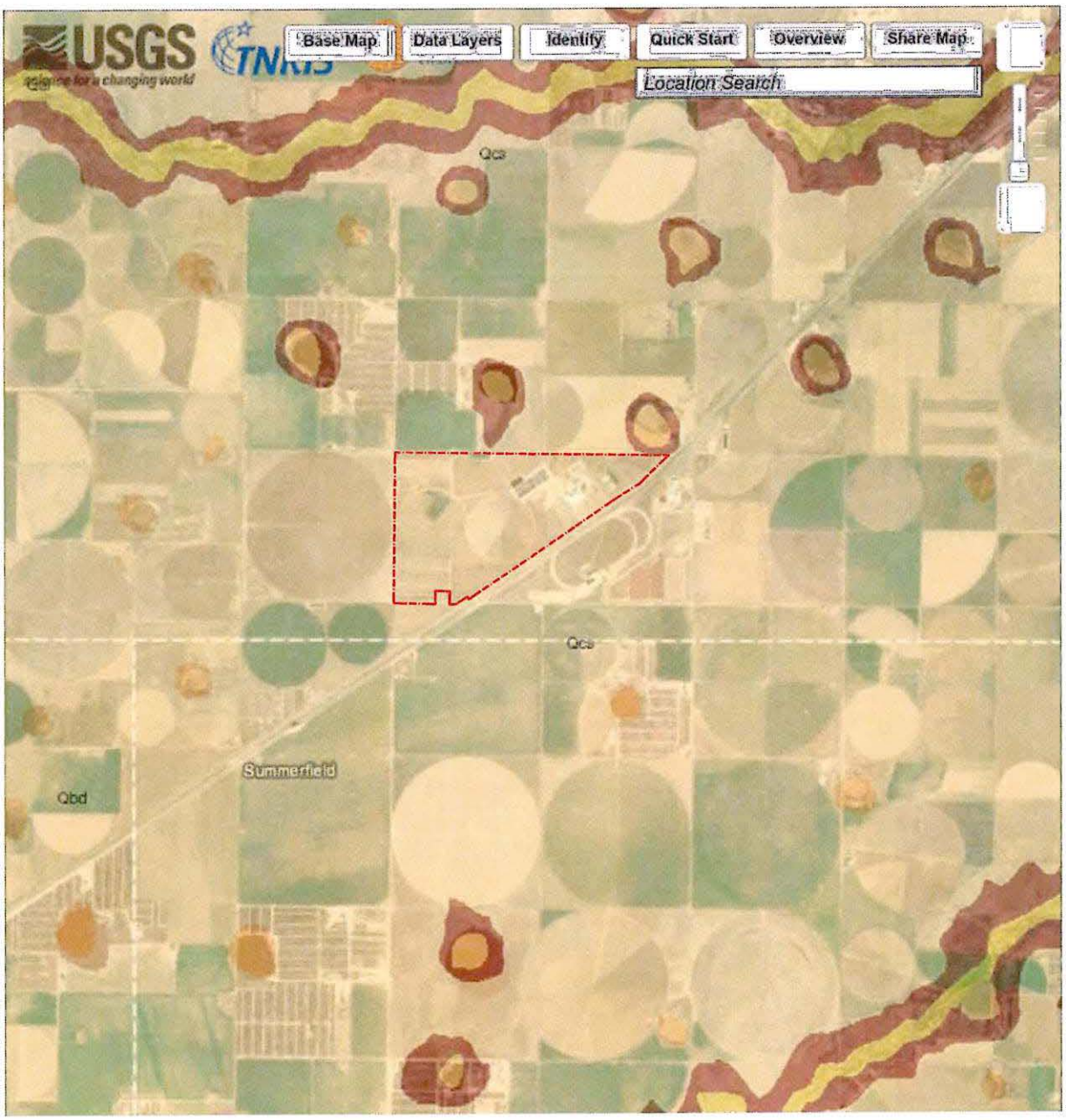
USDA NRCS, Soil Survey of Deaf Smith County, Texas, 1968.

USDA NRCS, Web Soil Survey, Retrieved September 2018. http://websoilsurvey.nrcs.usda.gov/app/



LEGEND:
Qcs – Quaternary Blackwater Draw Formation

0 0.5 1mi

Developed and powered by the USGS Texas Water Science Center

Scale = 1 : 72,224 (34.755, -102.472)

SOURCE: USGS Texas Geology Web Map Viewer,
http://txpub.usgs.gov/dss/texasgeology/ Accessed Sept. 19, 2018.

9/19/2018, 7:55 AM

CAVINESS DEVELOPMENT LTD. DEAF SMITH COUNTY HEREFORD, TEXAS	GEOLOGIC ATLAS MAP FIGURE 9 SEPTEMBER 2018	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

Section 8. Soil Map and Soil Analyses

Figure 12, NRCS Soil Map, is attached showing the soil types in the center pivot sprinkler irrigation area.

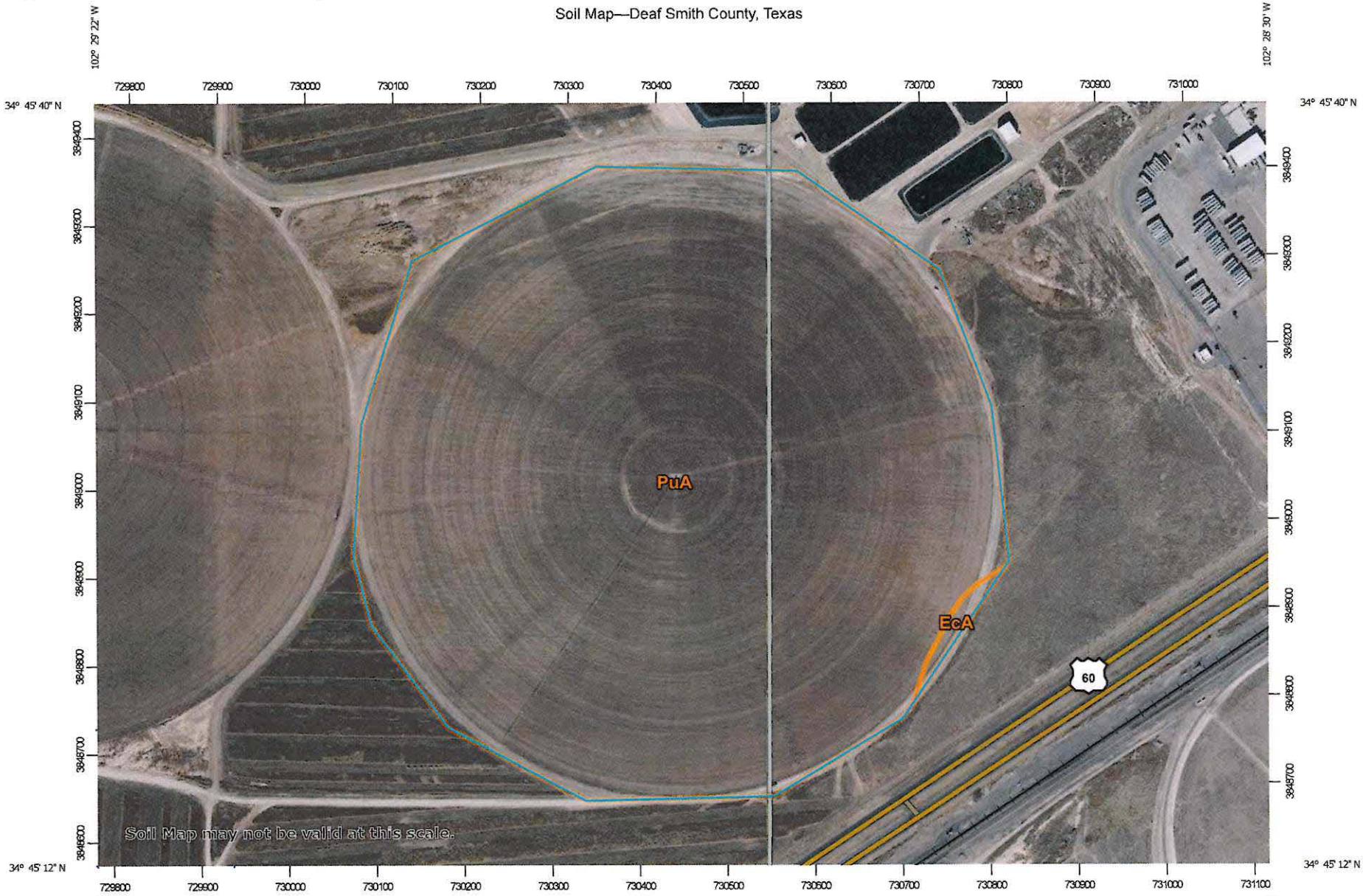
Table 5. Soil Data

Soil Series	Depth (in)	Permeability (um/sec)	Available Water Capacity (in/in)	Curve Number
EcA, Estacado clay loam, 0-1% slopes	0-6 6-38 38-50 50-80	1.40-14.0 1.40-14.0 1.40-14.0 4.00-14.0	0.12-0.18 0.11-0.18 0.10-0.17 0.10-0.17	58 (HSG B)
PuA, Pullman clay loam, 0-1% slopes	0-5 5-33 33-52 52-80	1.40-4.00 0.42-1.40 0.42-1.40 1.40-4.00	0.16-0.20 0.16-0.20 0.15-0.20 0.12-0.16	71 (HSG C)

Soil samples were collected from the irrigation area. Laboratory reports are included in Attachment 3.

Figure 10-NRCS Soil Map

Soil Map—Deaf Smith County, Texas



Map Scale: 1:6,110 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N 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 1:24,000.

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: Deaf Smith County, Texas
Survey Area Data: Version 20, Aug 31, 2023

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

Date(s) aerial images were photographed: Jan 16, 2022—Jan 29, 2022

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

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
EcA	Estacado clay loam, 0 to 1 percent slopes	0.6	0.6%
PuA	Pullman clay loam, 0 to 1 percent slopes	105.9	99.4%
Totals for Area of Interest		**106.5**	**100.0%**

Section 9. Effluent Monitoring Data

The treatment facility was placed in service beginning in January 2021. Reported flows represent inflow to the treatment facility.

WORKSHEET 3.1 SURFACE LAND DISPOSAL OF EFFLUENT

Section 1. Surface Disposal

Specifics of the landscape irrigation system are provided on TCEQ Worksheet 3.1. Refer to the Surface Irrigation Engineering Report in Attachment 5 for the Water Balance Models, Pond 15 storage volume calculations, and nitrogen balance. The disposal system consists of a center pivot sprinkler designed to irrigate cropland at application rates that will not exceed the infiltration rate of the soil.

Attachment 1

Wastewater Treatment Plant Engineering Design Report

Wastewater Treatment Plant

Engineering Design Report

Location:	Caviness Beef Packers 3255 US Highway 60 Hereford, TX 79045
Legal Description:	B.S.&F. Survey – Section 151 – Block M-7
Report Date:	October 8, 2018
To:	Texas Commission on Environmental Quality
Capacity:	16,500 GPD
WSI Job No.:	469

CAVINESS BEEF PACKERS

WASTEWATER TREATMENT FACILITY

ENGINEERING DESIGN REPORT

Submitted To:	**Texas Commission on Environmental Quality**
Prepared By:	**WSI International, LLC**
Prepared For:	**Caviness Development, LTD.**
Date:	**October 8, 2018**

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1 EXECUTIVE SUMMARY

The plant design is focused on longevity, operator ease, and process, power and space efficiency. The core biological treatment process is WSI's BioChip Reactor (BCR) technology that combines suspended and attached growth activated sludge processes; forming a robust and efficient treatment system. The tanks and wetted components are constructed out of 304 stainless steel. Variable Frequency Drives (VFDs) are utilized to reduce power consumption and provide greater process control. Redundant equipment is provided for key components to facilitate routine maintenance without process interruption. The control panel enclosure is NEMA 4X with a side-mounted air conditioner to ensure a long service life of the electrical components in a hot and humid environment. Integrated remote access software allows the operator and owner to monitor and control treatment plant operation. Clarification is performed with a dissolved air flotation cell, allowing greater thickening of solids, reducing the sludge haul frequency and environmental impact of trucking and disposal. The effluent is disinfected with a chlorine tablet feeder and chlorine contact tank prior to discharge. The treated effluent will meet or exceed the requirements for Use of Reclaimed Water Type II under 30 TAC Chapter 210. Odor from the system is contained and treated through on-site activated carbon odor control media.

2 GENERAL INFORMATION

2.1 Facility Information

The new WWTP will treat the domestic wastewater from the Caviness Beef Packers (Caviness) operation. The Caviness operation is currently serviced by a septic system permitted under the TCEQ OSSF rules for facilities designed to received 5,000 gallons per day or less. Caviness needs to increase the number of employees and will exceed 5,000 gallons per day based on 30 TAC §217.32(a)(3))- Table B.1. All industrial wastewater from the slaughter and rendering operations is handled separately under separate permit-by-rule.

Table 1: Facility Information

Facility Name:	Caviness Beef Packers WWTP
Physical Address:	3255 US Highway 60 Hereford, TX 79045
County:	Deaf Smith County
Legal Description:	B.S.&F. Survey – Section 151 – Block M-7
Existing OSSF Permit Number:	059-0252

2.2 Owner Information

Table 2: Owner Information

Land Owner:	Caviness Development, LTD.
Land Owner Address:	PO Box 790 Hereford, TX 79045
Phone:	(806) 364-0900
Email:	terry@cavinessbeef.com

2.3 Preparer Information

Table 3: Preparer Information

WWTP Facility Design	WSI International, LLC
Address:	1709 West Baltic Place Englewood, CO 80110
Phone:	(303) 985-0885
Email:	ptyler@wsi-llc.com engineering@wsi-llc.com

2.4 Civil Design and Applicant Information

Table 4: Civil Design & Applicant Information

WWTP Civil & Application:	Enviro-Ag Engineering, Inc.
Address:	3404 Airway Blvd. Amarillo, TX 79118
Phone:	(806) 353-6123
Email:	anissa@enviroag.com

3 INTRODUCTION

3.1 Purpose

The purpose of this engineering design report is to provide the process design and equipment details for the proposed Caviness Beef Packers Domestic Wastewater Treatment Facility. This Engineering Design Report was prepared based on the Texas Administrative Code, Title 30, Part 1, Chapters 217 and 309 and is limited to the wastewater treatment equipment and integrated system. This engineering design report consists of four main sections, including: basis of design, process modelling, packaged treatment facility design, and unit process design. The appendices include process design calculations, design drawings, mechanical equipment specifications, and process modelling outputs.

3.2 Description of Project

3.3 Location

The facility will be located on the Caviness Beef Packers site at 3255 US Highway 60, Hereford, Texas 79045.

3.4 Existing Facilities

Two existing On-Site Sewage Facilities are currently installed at the site, permitted for a total capacity of 4,940 gallons per day. The OSSFs consists of septic tanks and a leach field. The existing septic tanks will be utilized as part of the collection system and lift station for the new WWTP. The new WWTP will replace the treatment function of the existing OSSFs.

3.5 Flow Projection

The WWTP will service the domestic wastewater flow generated by the employees at the plant. The proposed flows are detailed in the Domestic Wastewater Permit Application. The average daily flow is projected to be 10,838 gallons per day. The required plant capacity is 16,258 gallons per day including a factor of safety of 1.5. The rated capacity of the plant is 16,500 gallons per day.

3.6 Design Basis

3.6.1 Plant Loading

The design loading was determined based on Table B.1, Figure 30 TAC §217.32(a)(3) entry for "Office Building or Factory" and industry standards. The WWTP design loading is shown in the table below.

Table 5: Design Influent and Effluent Constituent Concentrations

Parameter	Units	Influent	Effluent
Average Dry Weather Flow	Gallons/Day	16,500	16,387
BOD_5	mg/l	300	20
TSS	mg/l	300	20
NH_3-N	mg-N/l	25	3
TKN	mg-N/l	40	10
Total Nitrogen	mg-N/l	40	30
Total Phosphorous	mg-P/l	10	8
Dissolved Oxygen	mg/l	0	2.0

3.6.2 Site Conditions

Parameter	Value
Average Wastewater Temperature	60°F
Ambient Temperature	22°F – 95°F
Blower Intake Design Temperature	90°F
Elevation	3,786'
Atmospheric Pressure	12.91 psia
Average Dew Point	55°F
Air Density at Site Elevation and Blower Temperature	0.0635 lb_m/ft^3
$\%O_2$ in Atmosphere by weight	23.18%

3.6.3 Peaking

An instantaneous peaking factor of 4 was utilized to size the influent screening equipment. A diurnal flow pattern was used to determine the required equalization volume using a maximum one-hour peak of 2. The equalization basin volume determination is discussed in greater detail in Sections 6.2 and 7.3

3.6.4 *Infiltration and Inflow (I&I)*

Since the wastewater treatment plant will be located on site, will be covered and the collection system is short, neither dry weather nor wet weather infiltration and inflow are expected or accounted for in the flow projection.

4 SEWAGE COLLECTION SYSTEM

The collection system is composed of a small network of existing gravity sewers and force mains culminating at an existing septic tank that will be utilized as a lift station to feed the new WWTP.

5 PROCESS DESIGN

5.1 DESIGN CONSIDERATIONS

5.1.1 *Biological Treatment Process*

The biological wastewater treatment process is the most proven technology for organic matter removal and nutrient removal. Based upon the growth type of the microorganisms, the biological wastewater treatment can be divided into two major groups, suspended growth process (e.g., activated sludge) and attached growth process (e.g., trickling filter).

In a suspended growth process (e.g., activated sludge), the microorganisms are suspended in mixed liquor and have more opportunities to capture food sources (organic matter and nutrients) and dissolved oxygen. The advantages of a suspended growth process include: higher quality effluent (90-95% BOD_5 removal), nitrogen and phosphorus removal, and the flexibility to adapt to minor pH, organic and temperature changes. However, the major disadvantages of a suspended growth process include sludge bulking, highly skilled labor requirements, and sensitivity to shock loads, metallic and other toxic compounds.

An attached growth process (e.g., trickling filter) consists of a bed of permeable medium of either rock or plastic media used to host the microorganisms. The organic matter (BOD_5) and nutrients in the wastewater diffuse into a film, where it is then metabolized. To acquire a good quality effluent (80-90% BOD_5 removal), multiple stages of the attached growth system may be required.

Some of the disadvantages of attached growth process include:

- Potential odor problems
- Flow distributors and beds are prone to clogging
- Major Biofilm sluffing events
- The media can become infested with snails and support populations of mosquitoes and other insects

WSI's BCR (Bio-Chip Reactor) system is an enhanced activated sludge process with the biomass attached onto a small bio-media that is suspended in the mixed liquor. The BCR system combines the advantages of a suspended growth process and an attached growth process. Compared to conventional activated sludge and extended aeration system, the BCR system has the advantages of providing greater biomass concentration, therefore increasing treatment capacity, eliminating sludge bulking concerns, stabilizing

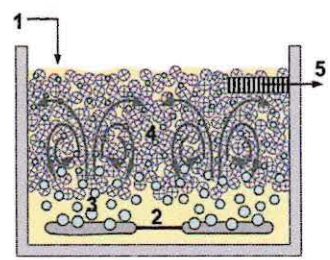
process operations, reducing sludge production, enhancing sludge settleability, and lowering costs for operations and maintenance. Compared to other attached growth processes, the BCR system has the advantages of providing a higher quality effluent, is easily adapted for nitrogen and phosphorus removal, provides more opportunities for contact with organic matter nutrients and eliminates odor and insect problems.

The BCR system is mostly self-regulating and does not require daily measurements of mixed liquor suspended solids (MLSS), sludge volume index, sludge settleability, Return Activated Sludge (RAS) and Waste Activated Sludge (WAS) rate calculations for proper operation. This reduces the skill level required for successful operation and daily time requirements to maintain the system. This is critical for small community wastewater treatment facilities that do not have the resources for full time management.

5.1.2 *Aerobic BCR System*

The BCR system is an enhanced activated sludge process with biomass attaching to the small Bio-Chip media that are suspended in the mixed liquor and mobilized within the reactor by the aeration system. The innovative design of the BCR system creates a higher percentage of protected surface area for microorganisms to adhere to and propagate. This feature results in increased levels of overall biomass concentrations inside the reactor and the reduction of the required reactor volume for the biodegradation of organic matter in the influent as compared to conventional activated sludge processes. Since the biomass is retained on the Bio-Chip, the solids loading on the secondary DAF is greatly reduced.

In the Aerobic BCR system, medium bubble diffusers distribute air across the basin. The aeration system provides the oxygen needed for the growth of the aerobic microorganisms attached on the bio-chip media. The aeration also supplies mixing energy which causes the bio-chips to be dispersed throughout the tank. The healthy and thin layer of biofilm is maintained by the shear forces enacted on the Bio-Chips from the mixing action. The large openings on the bio-chips allow the wastewater to freely pass through the chips; this also helps to refresh the biofilm which mature within this protected area. The figure below shows the schematic of a typical BCR system.



1. Influent
2. Coarse Bubble Diffuser
3. Air Bubble
4. Bio-Chip
5. Effluent Sieve

A BCR system consists of tanks equipped with the outlet sieves for retaining the media, the bio-chip media, and aeration grid.

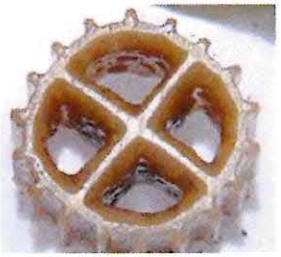
Within the reactor, the media, wastewater and air are completely mixed resulting in very efficient contact between the biofilm and the substrates (organic matter and nutrients) within the liquid.

- The thickness of the biofilm is controlled by the movement of the media so that oxygen diffusion through the biofilm is enhanced.
- The detached biofilm is suspended within the reactor and leaves the reactor with the treated effluent.

Aeration is provided by blowers and the medium bubble air distribution system.

5.1.3 Bio-Chip Media

The Bio-Chip media used in the support of biofilm growth is made of a high-density polyethylene (HDPE) which is approximately 0.8-inch in diameter and 3/8-inch long as shown below. The bio-chips are lightweight, durable, and rugged. The media has an effective specific surface area of 152.4 ft^2/ft^3 (500 m^2/m^3) for biofilm growth and has a void space of 92%.



The amount of air sent to the BCR can be varied by adjusting the speed of the blower VFD. The aeration grid system is designed to allow a turndown of air (approximately 50%) into the grids and still maintain mixing of the media and provide enough oxygen for the biomass.

5.2 System Design Parameters

This BCR system consists of a single aerobic zone. This zone functions to remove organic matter (BOD_5) and nitrify ammonia.

Nitrification is an aerobic process and will occur only in the aerobic zones. Nitrosomonas oxidizes ammonia to the intermediate product nitrite. Nitrite is converted to nitrate by Nitrobacter. The conversion from ammonia to Nitrite involves a complex series of reactions that control the overall conversion process as evidenced by the lack of nitrite build-up in the system. Dissolved oxygen concentrations above 1 mg/L are essential for nitrification to occur.

5.3 Proposed System Description

Influent to the system enters through an elevated 5-mm mechanical self-cleaning screen and degritting chamber to remove trash and grit from the influent. A 5-mm manual bar screen is also provided to ensure screening of the influent during by-pass or maintenance activities of the mechanical screen. Effluent from the combined screen then flows by gravity to the Equalization tank.

Coarse bubble diffusers are utilized to pre-aerate the wastewater and mix the contents of the equalization tank. The wastewater is then pumped by submersible Tsurumi solids handling pumps to the aerobic BioChip Reactor (BCR). One primary and one back-up transfer pumps are provided and plumbed. The pumps operate on VFDs and the flow is controlled by an operator setpoint flowrate with feedback control from a magnetic flow meter.

The Aerobic BCR chamber contains the media, aeration grids and media retaining sieves. Effluent from the BCR chamber flows by gravity to a WSI R-25 DAF unit for suspended solids separation.

The DAF float is raked from the top and flows by gravity to the adjacent aerobic digester. The bottom of the DAF is sloped, and any settled sludge is collected and periodically pumped to the aerobic digester as well.

Effluent from the DAF flows by gravity through a chlorine tablet feeder and into a chlorine contact channel prior to discharge to the irrigation holding pond.

The details of the system are shown in figure below.

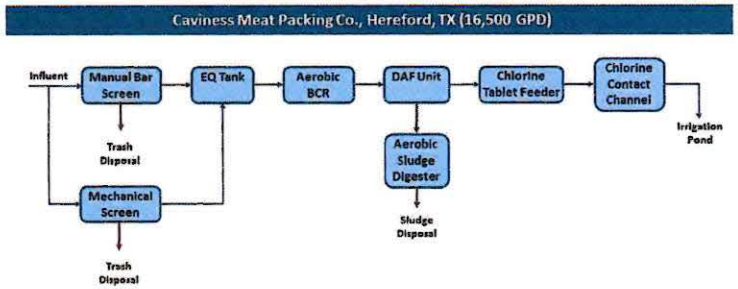


Figure 1: Block Flow Diagram

6 PROCESS MODELLING

6.1 Basis of Model Development

Initial working tank and biological reactor sizes were determined using the set of formulas below and evaluated in WSI's Process Design Software. A process model was then developed in Hydromantis GPS-X v7.0 using the initial sizing criteria and the comprehensive library modelling carbon, nitrogen,

phosphorous and pH. The model was then evaluated under static loading conditions. The BCR and DAF effluent was then evaluated over a range of aerobic BCR volumes to establish the ideal volumes to achieve target effluent constituent concentrations. The model was then adjusted to the ideal volumes and evaluated again under steady state and dynamic loading conditions. Adjustments were then made to the system component size based on model feedback. The process model developed in GPSX was used only to confirm sizing for the biological processes and confirm required air flows. Mechanical and process equipment was sized from empirical data and equipment manufacturer specifications. Details of the sizing parameters for the mechanical and process equipment are presented in Section 7 of this report.

6.2 Equalization Tank Sizing

The equalization tank size is determined using the average daily dry weather flow rate (16,500 GPD) and applying an hourly peaking factor to model the diurnal flow pattern. The factors applied to the average flow rate are shown in Table 6 below. The modelling shows a required working equalization volume of 4,125 gallons.

Table 6: EQ Flow Modelling

Hour	0	1	2	3	4	5	6	7
Peaking Factor	0.1	0.1	0.1	0.1	0.1	1.4	1.6	1.5
% Flow	0.42%	0.42%	0.42%	0.42%	0.42%	5.83%	6.67%	6.25%
To EQ (GPH)	68.8	68.8	68.8	68.8	68.8	962.5	1,100.0	1,031.3
To WWTP (GPH)	687.5	687.5	687.5	687.5	687.5	687.5	687.5	687.5
Volume in EQ (Gal)	2,475.0	1,856.3	1,237.5	618.8	0.0	275.0	687.5	1,031.3
Hour	8	9	10	11	12	13	14	15
Peaking Factor	2	1.3	0.8	0.8	1.2	1.2	1	1
% Flow	8.33%	5.42%	3.33%	3.33%	5.00%	5.00%	4.17%	4.17%
To EQ (GPH)	1,375.0	893.8	550.0	550.0	825.0	825.0	687.5	687.5
To WWTP (GPH)	687.5	687.5	687.5	687.5	687.5	687.5	687.5	687.5
Volume in EQ (Gal)	1,718.8	1,925.0	1,787.5	1,650.0	1,787.5	1,925.0	1,925.0	1,925.0
Hour	16	17	18	19	20	21	22	23
Peaking Factor	1	1.5	1.6	2	1.6	1.5	0.4	0.1
% Flow	4.17%	6.25%	6.67%	8.33%	6.67%	6.25%	1.67%	0.42%
To EQ (GPH)	687.5	1,031.3	1,100.0	1,375.0	1,100.0	1,031.3	275.0	68.8
To WWTP (GPH)	687.5	687.5	687.5	687.5	687.5	687.5	687.5	687.5
Volume in EQ (Gal)	1,925.0	2,268.8	2,681.3	3,368.8	3,781.3	4,125.0	3,712.5	3,093.8

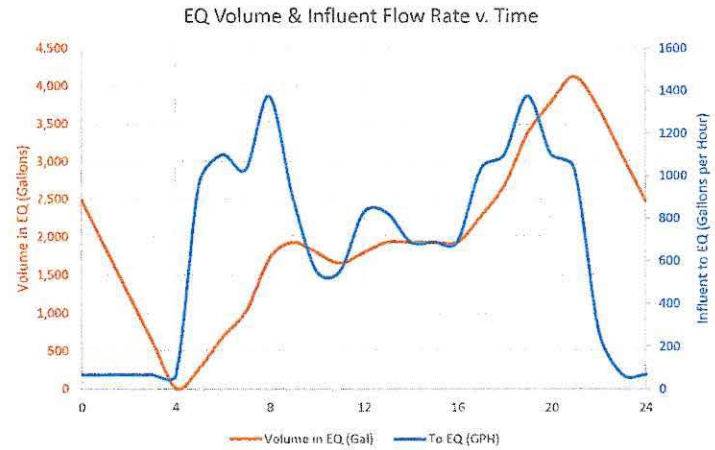


Figure 2: EQ Flow Modelling

6.3 Aerobic Zone Sizing

The baseline design loading rate and media fill are the two key parameters for initial sizing of the aerobic zone. A media fill of 50% and an initial design loading rate of 4.8 g-BOD/m²/day were established for the basis of design. The surface area of the media required is first calculated with the following equation:

$$A_{media} = \frac{\dot{m}_{BOD}}{SALR}$$

Where: A_{media} = Surface area of the media required, m²
m_{BOD} = mass flow rate of BOD, g/day
SALR = Surface Area Loading Rate, g BOD/m²/day

The volume of media is then calculated by dividing the required surface area by the specific surface area of the media and then by the percent fill, as shown in the following equation:

$$V_{aerobic} = \frac{A_{media}}{A_{media,specific} / \%Fill}$$

Where: $A_{media,\,specific}$ = Specific surface area of the media, m²/m³

% Fill = percent of media by volume in reactor tank, %

Once the baseline volume has been determined, the initial model is developed and evaluated over a range of volumes.

6.4 Model Development

The local site environmental conditions, influent wastewater characterization and initial reactor tank sizes were loaded into a process model developed in GPS-x v7.0. The model allows full simulation and evaluation of the treatment system. The model layout is shown in graphical format in Figure 3.

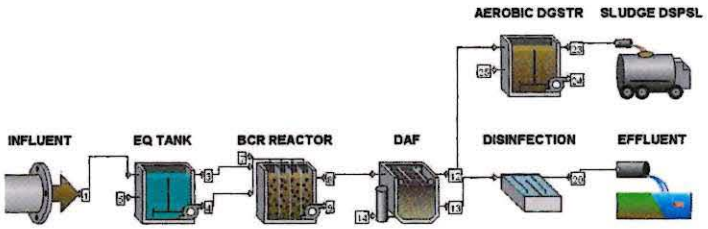


Figure 3: GPS-X Process Model Loy-out

The aerobic reactor tank was modelled as a single MBBR reactor. The air flow to the aerobic zones was controlled by a PID loop in the model with a DO set point of 4 mg/l. The media fill was set at 50% of the tank volume. The BOD based model was used with the comprehensive library setting in GPS-X, allowing for modelling of carbon, nitrogen, phosphorous and pH. The ammonia stripping model was turned on to incorporate ammonia stripping through aeration in the process.

The complete influent parameters and output data from the process model are presented in APPENDIX 4.

6.5 Model Results

6.5.1 Effluent BOD_5 versus Aerobic Reactor Size

The reactor tank size was first analyzed for efficient BOD_5 removal. The filtered BOD_5 and TSS profile as a function of reactor tank volume in the BCR effluent and plant effluent are plotted below in Figure 4 and Figure 5.

The filtered BOD (or soluble BOD) shows the minimum obtainable BOD through the system. The BOD becomes effectively metabolized at a reactor volume of 2,000 gallons and achieves target design.

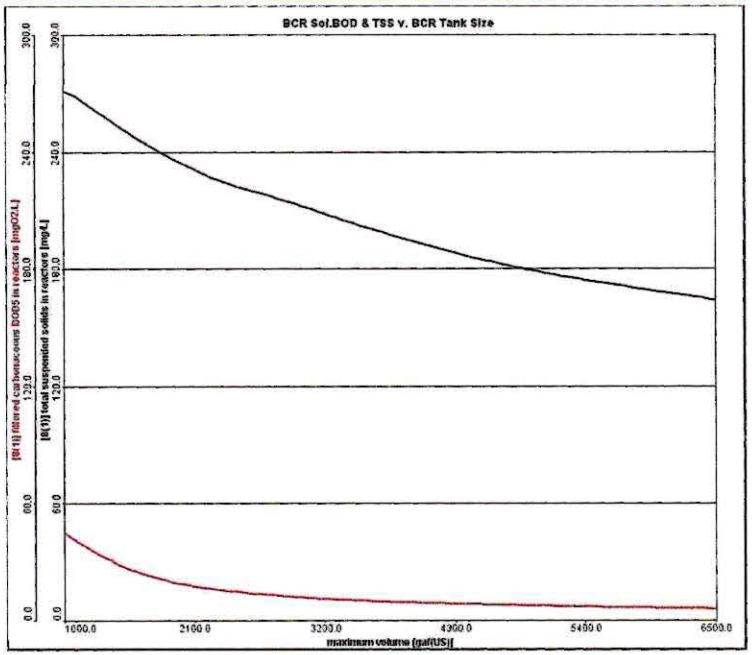


Figure 4: BCR Reactor Effluent Soluble BOD and TSS

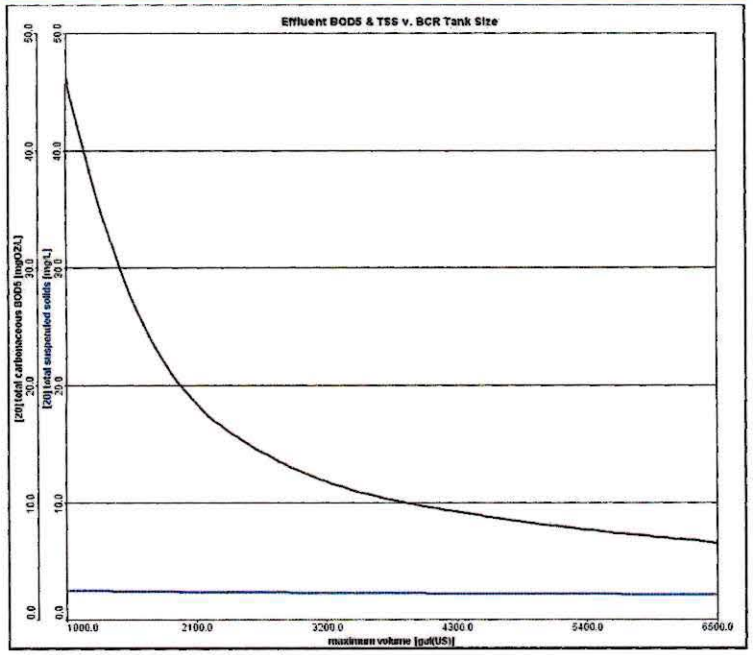


Figure 5: Effluent $cBOD_5$ and TSS versus BCR Reactor Size

6.5.2 Effluent Ammonia and Nitrogen versus Aerobic Reactor Volume

The system requires sufficient reduction in BOD and residence time for nitrification to begin to occur. Nitrification is an aerobic process and will occur only in the aerobic zones. Nitrosomonas oxidizes ammonia to the intermediate product nitrite. Nitrite is converted to nitrate by Nitrobacter. The conversion from ammonia to Nitrite involves a complex series of reactions that control the overall conversion rate as evidenced by the lack of nitrite build-up in the system. Dissolved oxygen concentrations above 1 mg/L are essential for nitrification to occur. Figure 6 below illustrates the point at which nitrification begins to occur and the point at which the influent ammonia has been almost entirely consumed. This curve indicates that the combined reactor volume should be no less than 3,300 gallons to achieve sufficient nitrification.

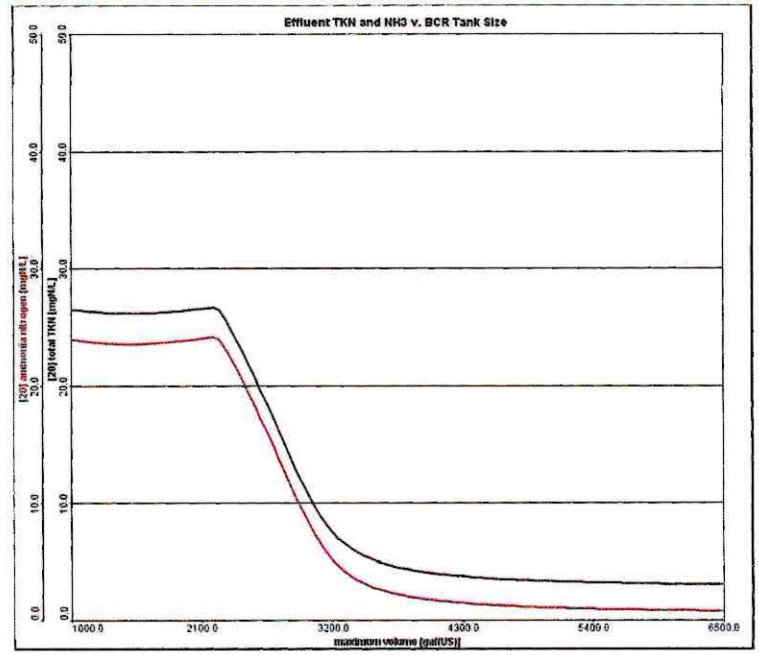


Figure 6: BCR Effluent NH_3, NO_2 and NO_3 v. reactor tank size

6.5.3 Reactor Performance

From the model, the anticipated performance and constituent profiles can be determined to understand the conversion through the reactor train. Table 7 below presents the relevant parameters through the BCR reactor.

Table 7: BCR Reactor Parameters

Parameter	Units	Influent	Reactor	Effluent
MLSS	mg/L	271.0	188.8	188.8
MLVSS	mg/L	203.3	111.2	111.2
Soluble $cBOD_5$	mg/l	108.0	8.4	8.4

Parameter	Units	Influent	Reactor	Effluent
cBOD5	mg/l	300.0	84.3	84.3
Soluble COD	mg/L	177.0	38.2	38.2
COD	mg/l	517.2	207.8	207.8
Ammonia N	mgN/L	25.0	1.5	1.5
Nitrite N	mgN/L	0.0	0.4	0.4
Nitrate N	mgN/L	0.0	0.0	0.0
Soluble PO4-P	mgP/L	8.0	6.8	6.8
Total Alkalinity	mgCaCO3/L	282.8	-	197.6
pH	-	7.0	-	7.6
HRT	h	-	5.6	-
DO	mgO2/L	-	4.0	-
Air Flow	cfm	-	19.6	-
SOTE	%	-	30.0	-
Actual OTR	lb/h	-	1.7	-
Biofilm Thickness	in	-	0.0	-
Biofilm Mass	lb	-	311.6	-
Media Surface Area	ft2	-	43,292	-
TSS / Surf. Area	lb/ft2	-	0.0	-
Reactor Media Fill	%	-	50.0	-
Media Displaced Vol.	ft3	-	51.1	-
Liquid Volume	gal(US)	-	3,868	-

6.5.4 Model Mass Balance

The parameter concentration and mass balance through the treatment system is shown in Table 8 below.

Table 8: Modelling Analysis Mass Balance

Parameter	Units	Inf	EQ	BCR Eff	DAF Eff	CCT Eff	Float	Dig. Sludge	Truck
Flow	gpd(US)	16,500	16,500	16,500	16,412	16,412	88	88	-
TSS	mg/L	271.0	271.0	188.8	2.2	2.2	35,001	21,990	21,990
	lb/d	37.3	37.3	26.0	0.3	0.3	25.7	16.1	-
VSS	mg/L	203.3	203.3	111.2	1.3	1.3	20,616	8,436	8,436
	lb/d	28.0	28.0	15.3	0.2	0.2	15.1	6.2	-
Soluble cBOD5	mgO2/L	108.0	108.0	8.4	8.4	8.4	8.4	0.7	0.7
	lb/d	14.9	14.9	1.2	1.2	1.2	0.0	0.0	-
cBOD5	mgO2/L	300.0	300.0	84.3	9.3	9.3	14,076	2,105	2,105
	lb/d	41.3	41.3	11.6	1.3	1.3	10.3	1.5	-
Soluble COD	mgCOD/L	177.0	177.0	38.2	38.2	38.2	38.2	27.4	27.4
	lb/d	24.4	24.4	5.3	5.2	5.2	0.0	0.0	-
COD	mgCOD/L	517.2	517.2	207.8	40.1	40.1	31,479	12,758	12,758
	lb/d	71.2	71.2	28.6	5.5	5.5	23.1	9.4	-
Ammonia Nitrogen	mgN/L	25.0	25.0	1.5	1.5	1.5	1.5	327.8	327.8
	lb/d	3.4	3.4	0.2	0.2	0.2	0.0	0.2	-

Parameter	Units	Inf	EQ	BCR Eff	DAF Eff	CCT Eff	Float	Dig. Sludge	Truck
Nitrite	mgN/L	0.0	0.0	0.4	0.4	0.4	0.4	449.9	449.9
	lb/d	0.0	0.0	0.1	0.1	0.1	0.0	0.3	-
Nitrate	mgN/L	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	lb/d	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Soluble TKN	mgN/L	27.8	27.8	3.7	3.7	3.7	3.7	329.8	329.8
	lb/d	3.8	3.8	0.5	0.5	0.5	0.0	0.2	-
TKN	mgN/L	40.0	40.0	14.1	3.8	3.8	1,935	1,215	1,215
	lb/d	5.5	5.5	1.9	0.5	0.5	1.4	0.9	-
TN	mgN/L	40.0	40.0	14.5	4.2	4.2	1,935	1,665	1,665
	lb/d	5.5	5.5	2.0	0.6	0.6	1.4	1.2	-
Ortho-Phosphate	mgP/L	8.0	8.0	6.8	6.8	6.8	6.8	217.1	217.1
	lb/d	1.1	1.1	0.9	0.9	0.9	0.0	0.2	-
TP	mgP/L	10.0	10.0	10.0	7.1	7.1	544.5	544.3	544.3
	lb/d	1.4	1.4	1.4	1.0	1.0	0.4	0.4	-
Dissolved Oxygen	mgO2/L	0.0	9.2	4.0	4.0	4.0	4.0	8.6	8.6
	lb/d	0.0	1.3	0.6	0.5	0.5	0.0	0.0	-
Total Soluble Inorganic Carbon	mgC/L	84.0	84.0	47.5	47.5	47.5	47.5	0.5	0.5
	lb/d	11.6	11.6	6.5	6.5	6.5	0.0	0.0	-
TOC	mgC/L	165.5	165.5	72.8	13.0	13.0	11,242	4,612	4,612
	lb/d	-	-	-	-	-	-	-	-
Alkalinity	mgCaCO3/L	277.8	277.7	187.3	187.3	187.3	187.3	0.2	0.2
	lb/d	-	-	-	-	-	-	-	-
pH	-	7.00	7.00	7.64	7.64	7.64	7.64	5.66	5.66

7 FACILITY DESIGN & SPECIFICATIONS

7.1 Stainless Steel Tank Assembly

The stainless-steel tank assembly is comprised of the equalization tank, aerobic BCR tank, aerobic digester tank, Dissolved Air Flotation Cell (DAF) and Chlorine Contact Tank (CCT). The tank is constructed from 3/16" (7 gauge) 304SS plate with horizontal and vertical stiffeners. The top of the tank is enclosed for odor control. Access hatches are provided in the tank roof to access submersible pumps and tank internals. System subcomponents are built into the superstructure, including, aeration grids, pump platforms, instrumentation brackets, handrail supports, and process piping.

7.2 Influent Screening and Degritting

Influent from the sewage collection system will enter the plant through the combined screen. The unit is mounted on top of the equalization tank. Incoming trash is screened, washed, dewatered and compacted prior to discharge from the top chute of the trash conveyor into a continuous bagging system to reduce odors. An internal baffle allows for the separation of sand and grit in an integral hopper. The grit is discharged through a manual valve. The integrated plant control system controls the screen duty cycle and washwater solenoids. Effluent from the screen flows directly into the equalization chamber.

A manual bar screen is also supplied to facilitate routine maintenance and redundancy to the automatic screen. The manual bar screen is located in the top of the equalization tank and is 40 inches long by 24 inches wide and 20 inches in height and can accommodate influent from two locations. The screen is fully enclosed and provides an internal perforated drying plate where accumulated solids are manually raked by the operator, allowed to dry and then disposed. The screen is manufactured from 304 Stainless Steel.

Table 9: Influent Screen Equipment Specifications

Parameter	Value
Screen basket Perforation diameter	5 mm
Theoretical flow rate	317 gpm (72 m^3/hr)
Design Flow Rate	46 gpm
Design Max TSS Loading	500 mg/l
Length	4'-11" (1500 mm)
Height	6'-2.5" (1893 mm)
Width	1'-4.5" (423 mm)
Weight (dry)	385 lbs (175 kg)
Power	1/3 hp (0.25 kW)
Material of construction	304SS

Table 10: Manual Bar Screen Specifications

Parameter	Value
Bar Gap	5 mm
Bar Thickness	1/8"
Box Length	40 inches
Box Width	24 inches
Box Height	20 inches
Material of Construction	304 Stainless Steel

7.3 Equalization Tank

The Equalization tank acts to dampen the incoming diurnal wastewater flow cycles and provide a consistent flow to the biological reactors. The equalization tank is constructed from 3/16" (7 gauge) 304 stainless steel and has a coarse bubble aeration grid consisting of TideFlex Duckbill TFA non-clog diffusers with integral dedicated regenerative blower to keep the contents mixed and reduce odors. The tank comes fitted with two Tsurumi submersible pumps, Badger magnetic flow meter for flow control, hydrostatic level transducer, high and low water float switches, swing check valves and isolation valves. The pumped discharged is pre-piped to the aerobic BCR and then disassembled for shipping.

The EQ transfer rate is controlled through an operator input flow rate and feedback control from the magnetic flow meter to the EQ transfer pump VFDs. High and low level protection is provided by the level transducer and float switches. Should the tank level reach a high warning level, the set point flow

rate is increased and conversely should the tank level reach a low water set point. Dry run protection is provided by the low-low transducer set point and backed up by the low water float switch.

The equalization tank blower is operated on a duty cycle controlled by operator set points. The equipment specifications for the equalization tank group are presented below.

Table 11: Equalization Tank System Specifications

Parameter	Value
Equalization Volume Required	4,125 gal
Equalization Volume Provided	4,500 gal
% of Design Flow	27%
Peak Influent Flow	45.8 GPM
Minimum air flow required	18 SCFM
Air flow provided	34 SCFM @ 148 inWC
Flow Meter	Magnetic, Badger M-2000 (2")
EQ Transfer Pump	Tsurumi 50PU2.4-62 (0.5 HP) (2")
Level Transmitter	Keller Level Rat
Float Switches	SJE Rhombus SignalMaster
Check Valves	Y-Ball Check Valve
Ball Valves	Bray Flowtek SS Ball Valve (S80)

Table 12: EQ Blower Specifications

Parameter	Value
Air Flow	34 SCFM
Pressure (at Air Flow Above)	148 inWC (5.3 psig)
Horsepower	3
Manufacturer	FPZ
Model No.	SCL R30-MD-3-3
Type	Side Channel (Regenerative)

The equalization tank volume is determined by modeling the diurnal flow to the system with the peak anticipated flows. The output of the model is shown in Figure 7 below.

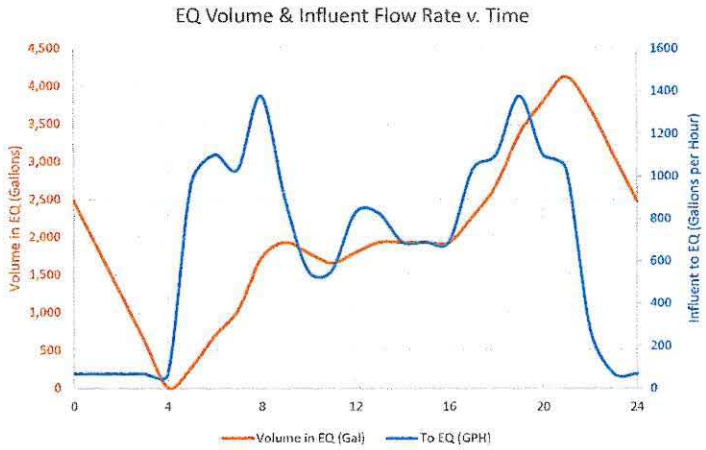


Figure 7: EQ Volume Modelling Output

7.4 Aerobic BCR

The aerobic BCR reactor chamber is responsible for BOD reduction and nitrification. The aerobic BCR consists of a single chamber with medium bubble diffusers constructed of 304 stainless steel pipe using WSI's proven orifice sizing guidelines. The chambers are filled to a 50% volume with WSI's HDPE Bio-Chips and retained in the tank with wedgewire sieves affixed to the outlet baffle walls and supported from the bottom of the tank.

After process modelling, the design surface area loading rate of the aerobic BCR tanks is 4.66 g-BOD/m^2/day, at the lower range of typical loading rates.

The amount of air sent to the BCR can be varied by adjusting the speed of the blower VFD. The basin is outfitted with a single aeration grid. The aeration grid is designed to allow a turndown of air (approximately 50%) into the grids and still be able to maintain mixing of the media.

Table 13: Aerobic BCR Specifications

Parameter	Value
BCR Volume	4,250 Gallons (16.1 m^3)
Media Fill	50%
Design Loading Rate	4.66 g-BOD/m^2/day

Parameter	Value
Media Specific Surface Area	152 ft^2/ft^3 (500 m^2/m^3)
Media Volume	284 ft^3 (8.0 m^3)
Minimum air flow required	39.6 SCFM
Air flow provided	55 SCFM

Table 14: Aerobic BCR Blower Specifications

Parameter	Value
Air Flow	56 SCFM
Pressure (at Air Flow Above)	148 inWC (5.3 psig)
Horsepower	4
Manufacturer	FPZ
Model No.	SCL R40-MD-4-3
Noise Level @ 60 Hz	73.3 dB(A) @ 1m
Type	Side Channel (Regenerative)
Quantity	2 (one Stand-by)

7.5 Dissolved Air Flotation Cell

The DAF unit acts to remove the suspended solids (Biomass) from the BCR reactor effluent. The BCR reactors convert soluble nutrients into cell mass and the DAF removes the cell mass and inorganic suspended solids from the reactor effluent through dissolved air flotation. The DAF pump recirculates DAF effluent and flash mixes it with ambient air (aspirated on the suction side of the DAF pump). The air dissolves into the effluent under the pressure of the pump. The air-water solution is then passed through a saturation tank to allow additional time for the air to dissolve and to remove any coalesced air bubbles. The solution is then expanded across diaphragm control valves leading into WSI's proprietary diffusers inside the body of the DAF. By reducing the pressure of the solution rapidly (expanding), the dissolved air is forced out of solution in the form of micro-bubbles (90% of the bubbles formed are less than 10 µm in diameter). The small bubbles collect under the biomass floc and float it to the surface, forming a thickened sludge blanket on the surface of the DAF that is raked directly into the aerobic digester. The DAF provides greater thickening of the sludge as well as a reduced footprint from a conventional clarifier. Settled sludge is periodically pumped to the aerobic digester via a Seepex progressive cavity pump.

The DAF for this system is a WSI model R-25, constructed entirely from 304 Stainless steel to provide longevity in all climates. The unit comes equipped with two KTM25 304SS Nikuni dissolved air pumps (one standby) and all ancillary components for operation. The DAF unit is integral to the stainless-steel reactor assembly.

Table 15: Dissolved Air Flotation Cell Specifications

Parameter	Value
DAF Unit	WSI R-25
Dissolved Air Pump	Nikuni KTM 25

Parameter	Value
Dissolved Air Pump Flow Rate	11 GPM
Aspirated Air Flow	7 SCFH
Saturation Rate	90%
Microbubble Size	90% < 10µm
Design Operating Pressure	60 PSIG
Surface Area	25 ft^2
Air to Solids Ratio	0.325 lb air/lb solid
Hydraulic Loading Rate	0.90 gpm/ft^2
Hydraulic Residence Time	56.1 minutes
Solids Loading Rate	0.05 lb/ft^2-hr
Recirculation rate	96%
Horse power	2 HP (1.5 kW)
Sludge Rake Horsepower	0.5 HP (0.37 kW)
Sludge Pump	Seepex BW2

7.6 DAF Polymer System

A manual polymer batching system is provided should polymer or flocculent addition be required to meet the target effluent TSS limit. The system consists of a mechanical mixer, batching tank and polymer solution feed pump and can utilize either liquid or dry polymer.

Table 16: Polymer System Specifications

Parameter	Value
Design Polymer Dosage	5 mg/l
Design Polymer Solution Concentration	0.40%
Assumed Neat Polymer Active Concentration	40%
Neat Polymer Consumption	1.72 lbs/day (0.2 gpd)
Dry Polymer Consumption	0.69 lbs/day
Polymer Solution Daily Consumption	48 gpd (2 gph)
Polymer Solution Tank Capacity	70 gallons
Polymer Mixer Power	0.5 HP
Polymer Solution Pump Make	Pulsatron
Polymer Solution Pump Model	LVG5-M-A-PTS
Polymer Solution Pump Capacity	4 gph

7.7 Chlorine Disinfection

Disinfection will be accomplished with a Norweco Bio-Dynamic Series 2000 chlorine tablet feeder. Effluent from the DAF will flow through the unit and into the chlorine contact chamber in the main tank weldment. The Norweco unit has two tablet feeder columns, a multi-tiered flow deck, adjustable weir and adjustable outlet sluice to regulate the chemical dosage. A mixing chamber is incorporated into the tablet feeder housing downstream of the outlet weir to induce a turbulent flow prior to exiting the unit.

The system is sized for a chlorine demand of 10 mg/l with a residual of 1 mg/l, but can provide up to 15 mg/l of chlorine demand with a residual of 2 mg/l.

The chlorine contact chamber is a vertical flow, serpentine over under configuration with a 9' working water depth and flow cross sectional area of 1.3 square feet per compartment with a total of 6 compartments operating in series. The flow channels are formed with removable baffles inserted into fixed channels. The details of the chlorination unit and chlorine contact chamber are presented in Table 17 and Table 18 below.

Table 17: Chlorine Tablet Feeder Specifications

Parameter	Value
Manufacturer	Norweco
Model Number	XT 2000-S
Design Chlorine Dosage	10 mg/l
Design Flow	16,500 GPD
Chlorine Required	1.4 lb Cl/day
Design Residual	1 mg/l
Active Ingredient	$Ca(OCl)_2$
Tablet % Active	70%
Tablet Consumption	6.4 tablets/day
Refill Interval	11 days
Number of Chlorine Tablet Feed Tubes	2

Table 18: Chlorine Contact Tank Specifications

Parameter	Value
Required Contact Time	20 minutes
Required Volume	229 gallons
Actual Volume	538 gallons
Actual Contact Time	47 minutes
Type	Serpentine Vertical Flow
Channel Length	54'
Channel Width	1'-4"
Channel Depth	1'
Effective Length:Width Ratio	40.5:1

7.8 Effluent Metering

Effluent will be measured with a 1" Parshall Flume located on the effluent side of the chlorine contact channel. The specifications on the effluent flow measurement are shown in Table 19 below.

Table 19: Effluent Flow Measurement

Parameter	Value
Flow Measurement Type	Open Channel
Flume Type	Parshall
Accuracy	±3-5%
Flume Size	1"
Minimum Flow Reading	1.46 gpm (2,102 gpd)
Water height at minimum flow	0.6"
Maximum Flow Reading	23.47 gpm (33,796 gpd)
Water height a maximum flow	3.6"
Materials of construction	Fiberglass
Level Measurement	Ultrasonic

7.9 AEROBIC DIGESTER AND SLUDGE DISPOSAL

The aerobic sludge digester will be used for stabilizing wasted sludge removed in the DAF unit. The stabilized sludge will be trucked offsite for disposal at a liquid sludge receiving facility and as such, the aerobic digester is sized to hold and aerate the waste sludge prior to transport and meet a minimum 20 day HRT rather than meet Class B biosolids specifications. The aerobic digester has a dedicated blower operated on a VFD to control air delivery and control on a duty cycle timer.

7.9.1 Determination of Aerobic Sludge Digester

Two methodologies are used to determine the aerobic sludge digester size: 1) WEF method based on volatile solids destruction; and 2) Calculation of volumetric sludge production from the DAF from the mass flow analysis multiplied by the required minimum hydraulic residence time (20 days). The larger result from the two methods is used to size the aerobic digester.

The aerobic sludge digester is sized based upon (WEF 1998)

$$V = \frac{Q_i(X_i + YS_i)}{X(k_d P_v + 1/SRT)}$$

Where V = volume of aerobic digester, ft^3
Q_i = influent average flowrate to digester, ft^3/d
X_i = influent SS, mg/L
Y = fraction of the influent BOD_5 consisting of raw primary solids
S_i = influent BOD_5
k_d = reaction rate constant, 1/d
P_v = volatile fraction of digester SS
SRT = solids retention time, d

Table 20: Aerobic Digester Specifications

Parameter	Value
Digester Volume (WEF, 1998)	1,451 gal
Digester Volume for 20-day HRT @ calculated sludge production rates	2,264 gal
Digester Volume	2,500 gal
Maximum Water Depth	10'
Sludge Production Rate	113 gpd
Sludge Solids Concentration	3.0%
Hydraulic Residence Time	22 days
Volatile Solid Loading Rate	48.7 lb VS/1000 ft^3/day
Air Flow Provided	57 SCFM
Air:Volume Ratio	170.5 SCFM/ 1000 ft^3

Table 21: Digester Blower Specifications

Parameter	Value
Air Flow	57 SCFM
Pressure (at Air Flow Above)	148 inWC (5.3 psig)
Horsepower	4 hp
Manufacturer	FPZ
Noise Level (at 60 Hz)	73.3 dB(A) @ 1m
Model No.	SCL R40-MD-4-3
Type	Side Channel (Regenerative)

8 CONTROLS AND INSTRUMENTATION

The system is provided with a main control panel that houses the Variable Frequency Drives (VFDs), motor starters, Programmable Logic Controller (PLC) and Human Machine Interface (HMI). The key high loads in the plant are operated on VFDs for higher efficiency and greater process control. The HMI provides all plant information in a graphical format to the operator and allows the adjustment of set points and parameters. The control panel is housed in NEMA 4X enclosure with side mounted air conditioning unit to maintain an internal temperature of 80°F. Adequate protection of the control system is crucial for system reliability.

In the event of a total PLC failure, the panel is designed to be able to be run manually if needed through a series of physical Hand-Off-Auto Switches. Hand-Off-Auto (HOA) switches are provided for each motor in the plant, allowing the system to be operated manually and by-passing the control system. This function is useful for start-up, check-out and troubleshooting activities and provides a redundant means of operating the plant in the event of PLC failure.

The entire process is tied into a customer supplied static IP address and has a distinct IP Address on the internet. In the event of an alarm or malfunction, alarms are sent to user specified email addresses

and/or cell phones. This process allows the operator to be notified directly and able to login remotely to assess alarm conditions.

The PLC trends all critical process values, and stores them for documentation including equipment runtime, tank levels, influent and effluent flow rates and totals as well as analog inputs from analytic instruments if provided.

9 OTHER CONSIDERATIONS

9.1 Odor Control

9.1.1 Active Odor Control

The main sources for odor in the facility are the headworks, where trash is removed from the raw influent and the aerobic digester during periods of reduced aeration or solids settling and thickening. All process areas of the WWRF are enclosed and provided with negative air pressure odor control systems. The primary odorous compounds are hydrogen sulfide and methyl mercaptans. These compounds are treated through adsorption with activated carbon odor control units positioned by the unit processes. The odor control unit will draw from the influent screens, equalization tank, aerobic digester and DAF.

Table 22: Odor Control Specifications

Parameter	Value
Manufacturer	Carbtrol
Model Number	GC2-2B275
Activated Carbon weight	140 lbs
Foul Air Flow Rate	275 SCFM
Blower Sound Pressure	70 Lp dB(A) @ 10'
Media Type	CAT2
Hydrogen Sulfide Adsorption Capacity	0.2 g H_2S/cc Carbon
Number of units	1

9.1.2 Buffer Area

All buffer zones are on property owned by the facility owner.

9.2 Corrosion Control

The reactor tankage, headworks screen, aeration piping, media retaining sieves and dissolved air flotation cell are manufactured from 304 stainless steel. The biofilm carrier media is HDPE. All wetted components in the WWRF are highly corrosion resistant. The control panel enclosure is rated NEMA 4X and air conditioned. The system design and material selection are focused on corrosion resistance.

The main tank assembly will be partially buried on the site. Non-woven filter fabric will separate the tank bottom from the buried slab. Magnesium anodes will provide cathodic protection for the partially buried assembly.

9.3 Noise Control

The process blowers and odor control equipment are the only high frequency noise producers in the system. The maximum sound pressure level from the blowers is 73.3 dB(A) measured at 1 meter at maximum operating speed. All of the blowers are operated on variable frequency drives and the sound pressure level listed above is the maximum when operating at full speed. The variable frequency drive allows for resonant frequencies to be skipped and further reduce any noise produced by the facility. The odor control fans produce a sound pressure level of 70 dB(A) at 10 feet.

9.4 Energy Conservation

The major continuous loads in the facility are operated on variable frequency drives, allowing the system to operate at the demand flow without using return or by-pass flow valves that waste power. When a motor operates on a VFD, it consumes only the power required to operate at that speed and significantly reduces overall power consumption. The high horsepower motors use premium efficiency electric motors to further reduce power consumption.

9.5 Safety

The system conforms to OSHA safety requirements for machine guarding, fall protection, handrails and operator access. Tank access hatches are secured.

9.6 Labor Requirements

Notwithstanding permit sampling requirements and other local requirements, the facility will require 3 site visits per week by a certified operator to inspect the equipment and refill consumables in the plant. Two hours per site visit should be budgeted. The control system is capable of being accessed remotely, allowing the operator to check the status of the plant without physically being on site and respond to alarm conditions quickly by remotely mitigating issues before arriving on site.

9.7 Redundancy

All critical components of the facility are provided with on-line spares in a lead-lag configuration, including: EQ transfer pumps, main reactor blowers, and dissolved air flotation pumps. The control system is outfitted with physical Hand-Off-Auto switches for every motor load, enabling the operator to fully by-pass the PLC if necessary. The BCR process is resilient to hydraulic surges, shock loads and toxic events and will retain biomass under these conditions, allowing the system to return to compliance quickly should these events occur.

10 EFFLUENT DISPOSAL

Treated effluent will be beneficially reused under 30 TAC 210 for landscape irrigation on private property owned and controlled by the facility owner. The details of the effluent disposal system are included in the permit application.

11 ABBREVIATIONS

Abbreviation	Meaning
ADWF	Average Dry Weather Flow
AE	Analog Element
AIT	Analog Indicating Transmitter
ASSY	Assembly
BCR℠	Bio-Chip Reactor (Moving Bed Bio-Reactor)
BOD_5	5-Day Biological Oxygen Demands
CFH	Cubic Feet Per Hour
CFM	cubic feet per minute
CFU	Colony Forming Unit
COD	Chemical Oxygen Demand
CV	Check Valve
DAF	Dissolved Air Flotation
DO	Dissolved Oxygen
DRC	Direct Responsible Charge
EA	Environmental Assessment
EQ	Equalization
EV	Electronic Valve or Solenoid
FI	Flow Instrument - Local Display Only
FIT	Flow Indicating Transmitter
ft	Feet
gal	Gallons
gpd	Gallons per day
gph	Gallons Per Hour
gpm	Gallons per minute
HDPE	High-density polyethylene
HMI	Human Machine Interface (Touch Screen Panel)
HOA	Hand-Off-Auto Switch
hp	Horsepower
HRT	Hydraulic retention time
HV	Hand Operated Valve
inHG	Inches Mercury Column (Pressure or Vacuum)
inWC	Inches Water Column (Pressure or Vacuum)
LCP	Local Control Panel
Lp dB(A)	Sound Pressure Level measured in A-weighted decibels
LSH	Level Switch High
LSHH	Level Switch High-High
LSL	Level Switch Low
LT	Level Transmitter

M	Motor
MBBR	Moving Bed Bio-Reactor or Mobilized Bed Bio-Reactor
MCP	Main Control Panel
MDF	Maximum Design Flow
mg/L	Milligram per liter
mgd	Million gallons per day
MLSS	Mixed Liquor Suspended Solids
MPN	Most Probable Number (Bacteriological Testing)
MV	Motor Valve
NPS	National Park Service
NTU	Nephelometric turbidity unit
OCA	Open-Close-Automatic Switch
PFR	Peak Flow Rate
PI	Pressure Indicator - Local Display Only
PLC	Programmable Logical Controller
PRT	Part Component
PSI	Pounds per Square Inch
RBOM	Rapidly Biodegradable Organic Matter
SALR	Surface Area Loading Rate
SARR	Surface Area Removal Rate
SCFM	Standard Cubic Feet per Minute
SRT	Solids Retention Time
TAC	Texas Administrative Code
TKN	Total Kjeldahl Nitrogen
TN	Total nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UIC	Underground Injection Control
UPS	Uninterruptable Power Supply
VFD	Variable Frequency Drive

APPENDIX 1 – PROCESS DESIGN CALCULATIONS SUMMARY

Influent Criteria

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Average Design Flow for Phase	16,500	GPD	11.5	GPM	62.5	m^3/day
Ultimate Average Design Flow	16,500	GPD	11.5	GPM	62.5	m^3/day
Influent BOD	300	mg/l	41.3	lb/day	18.7	kg/day
Influent TSS	300	mg/l	41.3	lb/day	18.7	kg/day
Influent NH_3-N	25	mg/L	3.4	lb/day	1.6	kg/day
Influent TKN	40	mg/L	5.5	lb/day	2.5	kg/day
Influent TN	40	mg/l	5.5	lb/day	2.5	kg/day
Influent TP	10	mg/l	1.4	lb/day	0.6	kg/day
Temperature	60	°F	15.6	°C	288.6	Kelvin
Alkalinity	200	mg/L as CaCO3	27.5	lb/day	12.5	kg/day

Effluent Criteria

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Effluent Flow	16,387	GPD	11.4	gpm	62.0	m^3/day
Target Effluent BOD	20	mg/l	2.8	lb/day	1.2	kg/day
Target Effluent TSS	20	mg/l	2.8	lb/day	1.2	kg/day
Target Effluent NH_3-N	3	mg/l	0.4	lb/day	0.2	kg/day
Target Effluent TKN	10	mg/l	1.4	lb/day	0.6	kg/day
Target Effluent TN	30	mg/l	4.1	lb/day	1.9	kg/day
Target Effluent TP	8	mg/l	1.1	lb/day	0.5	kg/day
Effluent Quality Standard	Secondary					

Site Conditions

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Ambient Temperature	22 - 95	°F	-5.6 - 35	°C		
Air Temperature for Blower Sizing	90	°F	32.2	°C	305.2	Kelvin
Elevation	3,786	feet	1,154	meters		
Atmospheric Pressure	12.91	PSIA	89.04	kPa	667.9	mmHg
Average Dew Point	55	ºF	13	ºC		
Air Density	0.0635	lb_m/ft^3	1.0165	kg/m^3		
$\%O_2$ in Atmosphere	23.18%	O_2				
Atmospheric O_2 Density	0.015	lb_m/ft^3	0.236	kg/m^3		

Equalization Tank Design

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Average Design Flow	16,500	GPD	11	GPM	62	m3/day
Design Peaking Factor	4					
Required Volume Based on Flow Modelling at Ultimate Design Flow	4,125	Gallons	551.5	ft^3	15.6	m^3
Equalization Volume Provided	4,500	Gallons	601.6	ft^3	17.0	m^3
Working Depth	10	ft	3.0	m		
Tank Width	8	ft	2.4	m		
Tank Length	8.36	ft	2.5	m		
Peak Influent Flow	45.8	GPM				
Percent of Design Flow	27.3%	Gal/GPD				
Min. Air Flow Required	18.0	SCFM				
Air Flow Supplied	34	SCFM				
Pressure at Air Flow Provided	148	inWC	5.34	psig	0.37	Bar
Air:Volume Ratio	56.5	SCFM/1000 CF				
Average HRT	6.55	hrs				

Bio-Chip Reactor (BCR) Design

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Design Loading Rate	4.8	g-BOD/m^2/day	0.000983124	lb-BOD/ft^2/day		
Media Fill	50%					
Specific Surface Area of Media	152.4	ft^2/ft^3	500	m^2/m^3		
Aeration Tank Depth @ WL	10	ft				
Aeration Tank Width	8	ft				
Required Surface Area	41,992	ft^2	3,901	m^2		
Required Volume of Media	276	ft^3	7.8	m^3		
Required Tank Volume for Design Loading Rate	4,122	Gallons	551	ft^3	15.60	m^3

Bio-Chip Reactor (BCR) Actual

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Tank Volume Provided	4,250	Gallons	568.2	ft^3	16.1	m^3
Media Fill	50%					
Surface Area Provided	43,295	ft^2	4,022	m^2		
Volume of Media Provided	284	ft^3	8.0	m^3		
BCR Total Length	7.1	ft	2.2	m		
Available Biomass in Tank	11,250	mg/l	399	lbs		
Equivalent MLVSS	9,562	mg/l	339	lbs		
Surface Area Loading Rate	4.66	g-BOD/m^2/day	0.000954	lb-BOD/ft^2/day		
Volumetric BOD Loading Rate	72.7	lb BOD_5/1000 ft^3/day	1.16	kg-BOD/m^3/day		
Hydraulic Residence Time (HRT)	6.2	hrs				
F/M Ratio	0.12	kg-BOD/kg MLVSS.d				

BCR Biomass Production Inputs

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Biomass Yield (Y)	0.60	g VSS/ gBOD				
Non-Biodegradable VSS in effluent ($X_{o,v}$)	2	mg/l				
Endogenous Decay Coefficient (k_d)	0.10	1/d				
Biomass Cell Debris Fraction (f_d)	0.15	g-VSS/g-VSS				
Biomass Yield Nitrification (Y_n)	0.12	g-VSS/g-NH_4-N.d				
Endogenous Decay Coefficient (k_{dn})	0.08	g-VSS/g-VSS.d				
Oxygen Inhibition Coefficient (K_o)	0.50	g/m^3				
Thickness of Biofilm	0.50	mm				
Dry Density of Biofilm	90.00	mg/cm^3				
MLVSS/MLSS	0.85					
Solids Retention Time (SRT)	12.00	days				

BCR Biomass Production Outputs

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Biomass production - Heterotrophic Biomass	12.24	lb VSS/d				
Biomass Production - Cell Debris	1.85	lb VSS/d				
Biomass Production - Nitrifying Bacteria Biomass	0.23	lb VSS/d				
Biomass Production - Non-Biodegradable VSS	0.28	lb VSS/d				
Total Volatile Solids Wasted Daily ($P_{x,VSS}$)	14.59	lb VSS/d				
Total Suspended Solids Wasted Daily ($P_{X,TSS}$)	25.38	lb TSS/d				

BCR Effluent

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Solids from Influent TSS	8.3	lb TSS/d	60.0	mg/l	3.7	kg TSS/d
Solids from BOD	4.1	lb TSS/d	30.0	mg/l	1.9	kg TSS/d
BCR Total Effluent Solids	29.5	lb TSS/d	214.4	mg/l	13.4	kg TSS/d
BCR Effluent Soluble BOD_5	0.67	lb BOD_5/d	4.9	mg/l	0.3	kg TSS/d
BCR Effluent Suspended BOD_5	25.08	lb BOD_5/d	182.2	mg/l	11.4	kg TSS/d

BCR Aeration Factors

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Beta Factor (β)	0.95	0.95-0.98 for Municipal				
$C_{S,T,H}$	8.70	mg/l O_2				
Height of Diffuser above floor	12.00	inches				
O_t	18.0%	% O_2 Leaving Tank				
C_L	3.00	mg/l O_2 (Set point Concentration)				
$C_{S,20}$	9.60	mg/l O_2				
Alpha Factor (α)	0.6	0.4-0.6 for coarse bubble diffusers				
Fouling Factor (F)	0.90	0.65-0.9				
Theta Factor (θ) - Temperature	1.024					
Oxygen Transfer Efficiency per foot Immersion	0.80%	Eff/ft				
Oxygen Safety Factor	1.00					

BCR Oxygen Demand

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Oxygen Required for BOD Removal	18.1	lb-O_2/d	0.75	lb-O_2/hr		
Total Standard Oxygen Requirement (SOR)	0.75	lb-O_2/hr				
P_d	115.9	kPa				
AVG $C_{S,T,H}$	9.39	mg O_2/l				
Correction Factor Combined	0.30					
Standard Oxygen Transfer Efficiency	7.20%					
Actual Oxygen Transfer Efficiency (η)	2.159%					
Min. Required Air Flow	39.6	SCFM				
Air Flow Provided	56.0	SCFM				
Pressure at Air Flow Provided	147.7	inWC	5.34	psig	0.37	Bar
Air:Volume Ratio	101.6	SCFM/1000 CF				
Air: BOD Ratio	1.45	SCFM/lb BOD.day				

469-EAE - Caviness Meat Packers Domestic WWTP
Process Design Calculations Summary
Created:7/25/2018
Revised: 10/8/2018

Dissolved Air Flotation

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
DAF Size	R-25					
No. of Units Operating @ Design Flow	1					
DAF Pump	KTM25					
Recycle Flow	11.00	GPM	41.6	l/min		
Air Flow	7.00	SCFH	3.3	Sl/min		
Operating Pressure	60.00	PSIG	4.1	Bar		
Volume	1,278	Gal	4.84	m^3		
Surface Area	25.00	ft^2	2.32	m^2		
Air Solubility	18.70	ml/l				
Saturation Efficiency	90%					
DAF Capture Rate	96%					
Air to Solids Ratio	0.325	lb air/lb solid				
Recycle Ratio	96.0%					
Hydraulic Loading Rate w/ Recycle (HLR)	0.90	gpm/ft^2	2.20	m^3/m^2-hr		
Hydraulic Loading Rate w/o Recycle (HLR)	0.46	gpm/ft^2	1.12	m^3/m^2-hr		
Hydraulic Residence Time w/ Recycle (HRT)	56.9	Minutes				
Hydraulic Residence Time w/o Recycle (HRT)	111.5	Minutes				
Solids Loading Rate (SLR)	0.05	lb/ft^2-hr				
Volumetric Efficiency	0.64	SCFH Air/GPM Recycle				
DAF Effluent TSS	1.18	lb TSS/d	8.6	mg/l	0.5	kg TSS/d
DAF Effluent BOD_5	1.7	lb BOD_5/d	12.3	mg/l	0.8	kg TSS/d
DAF Sludge Production	28.3	lb TSS/d	113.2	GPD	15.1	ft^3/day
DAF Sludge VSS Production	16.3	lb VSS/d				

Polymer System

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Design Max Dosage Rate	5.0	mg/l				
Polymer Density	9.1	lbs/gal				
Neat Polymer Active Conc.	40%					
Polymer Solution Conc.	0.40%					
Neat Polymer Consumption	1.72	lbs neat polymer/day	0.19	gpd	0.008	gph
Dry Polymer Consumption	0.69	lbs-dry polymer/day				
Makedown Water Consump.	47.3	gpd	0.03	gpm	2.0	gph

Aerobic Digester

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Influent Solids Concentration	3.0%		30,000	mg/l		
Min. Required HRT Digester	20	days				
VSS Destruction in Digester	40%					
VSS/TSS of Sludge	0.65	VSS/TSS				
Air Required for Mixing (Min)	20	SCFM/1000CF				
Air Required for Mixing (Max)	40	SCFM/1000CF				
Digester Oxygen Requirement	2.3	lb O_2/lb VSS				
Digester Percent Solids	2.31%		23,099	mg/l		
Fraction of Primary BOD to Digester (Y)	0.00					
Digester Reaction Rate Constant (k_d)	0.10	1/d				
Solids Retention Time (SRT)	40	days				

Required Digester Size for min HRT	2,264	Gal	8.57	m^3	302.7	ft^3
Required Digester Size for 38% VS Destruction (WEF,1998)	1,451	Gal	5.49	m^3	194.0	ft^3
Actual Digester Size	2,500	Gal	9.46	m^3	334.2	ft^3
HRT Provided	22	Days				
Required Digester Length	4.64	ft				
VS Loading	0.049	lb VS/ft^3-day				
VS Destruction	6.52	lb VS/day				
Solids Accumulation Rate	21.81	lb TSS/day				
O_2 Demand	14.99	lb O_2/day				
P_d	107.0	kPa				
AVG $C_{S,T,H}$	8.95	mg O_2/l				
Correction Factor Combined	0.26					
Standard Oxygen Transfer Efficiency	4.50%					
Actual Oxygen Transfer Efficiency (η)	1.176%					
Min. Air Demand	60	SCFM				
Air Flow Provided	57	SCFM				
Pressure at Air Flow Provided	148	inWC	5.34	psig	0.37	Bar
Air:Volume Ratio	170.5	SCFM/ 1000 CF				

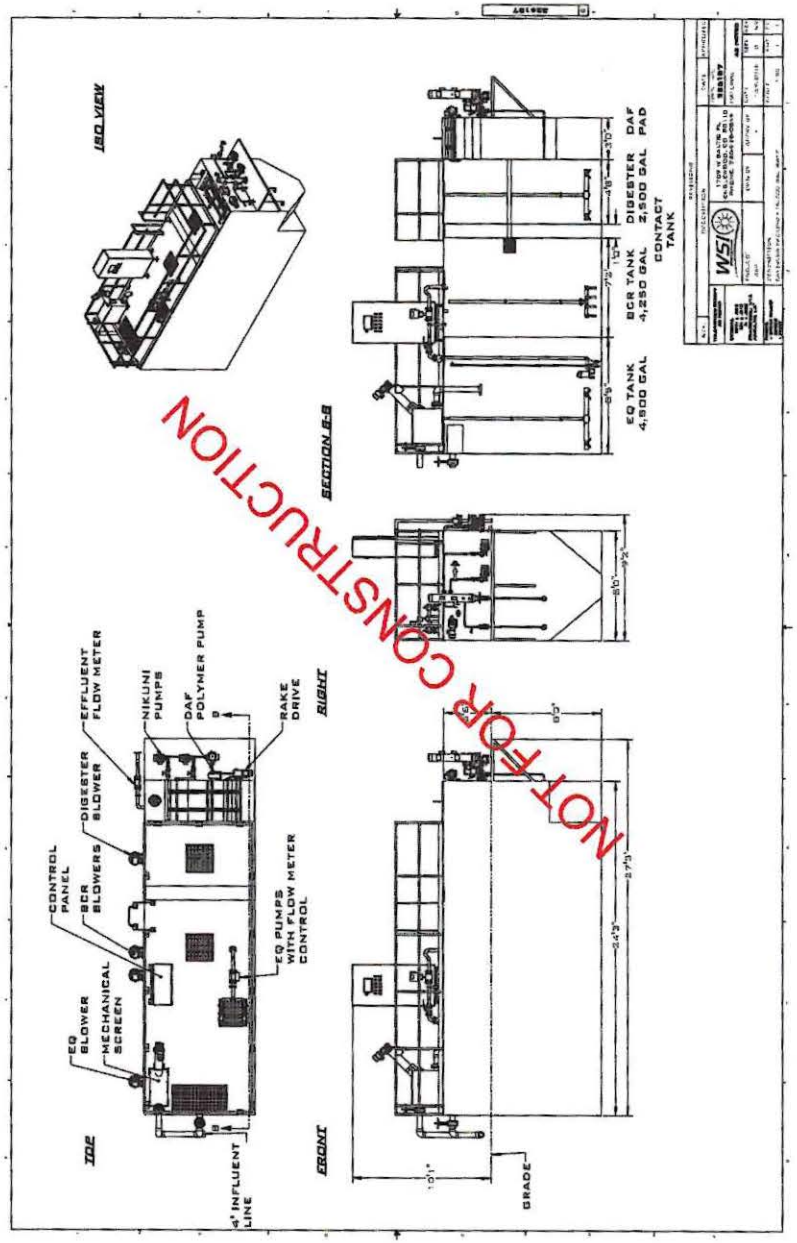
Aerobic Digester Aeration Factors

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Beta Factor (β)	0.80					
$C_{S,T,H}$	8.70	mg/l O_2				
Height of Diffuser above floor	12.00	inches				
O_t	18.0%	% O_2 Leaving Tank				
C_L	2.00	mg/l O_2 (Set point Concentration)				
$C_{S,20}$	9.60	mg/l O_2				
Alpha Factor (α)	0.6	0.4-0.6 for coarse bubble diffusers				
Fouling Factor (F)	0.90	0.65-0.9				
Theta Factor (θ) - Temperature	1.024					
Oxygen Transfer Efficiency per foot Immersion	0.75%	Eff/ft				
O_2 Required for Primary Sludge BOD_5	1.90	lb O_2/lb BOD				
Average Digester Water Level	7	ft				
Oxygen Safety Factor	1.00					

Disinfection

Parameter	Value	Prim. Unit	Value	Alt. Unit	Value	Alt. Unit
Chlorine Contact Time Required	20	minutes				
Peaking Factor	1					
Min. Required Tank Volume	229	Gallons	30.6	ft^3	0.87	m^3
Minimum L:W Ratio	40					
Chlorine Dosage	10	mg Cl/l	1.38	lb Cl/day		
Target Chlorine Residual	1	mg Cl/l				
Actual Tank Volume	539	Gallons	72.0	ft^3	2.04	m^3
Channel Width	1.3	ft	16.00	inches		
Channel Depth	1.0	ft	12.00	inches		
Channel Length	54.0	ft				
Actual Contact Time under peaking conditions	47.0	Minutes				
Calcium Hypochlorite Tablet % Active	70%	by weight				
Biosanitizer Tablet Weight	0.31	lbs	140.0	grams		
Biosanitizer Tablet Consumption	2.0	lbs/day	6.4	tablets/day		

APPENDIX 2 – ENGINEERING DRAWINGS



APPENDIX 3 – EQUIPMENT CUTSHEETS

Influent Screen	Tag E-3.1.1
Manufacturer	Simeco
Model Number	FCD 150
Screen Size	5 mm
Maximum Flow Capacity	317 gpm
Maximum TSS	500 mg/l
Design grit content	0.5%
Grit Removal Efficiency	90% grit w/ diameter > 0.25mm
Combined Horsepower	0.33 hp
Materials of Construction	304 Stainless Steel

SIMECO ENGINEERING
ARTIUM CONSUETUDO VIS NOSTRA EST
SOLUTION PROVIDER · IDEAS · CUSTOMIZATION · ADVANCED DESIGN

FCD
MICRO-COMBINED UNIT FOR SMALL FLOW RATES

FCD
MICRO UNITA' COMBINATA

SIMECO engineering s.r.l.
Via Maestrola 36/1
44045 Dodici Morelli Italy
www.simecoeng.com
simeco@simecoeng.com

MADE IN ITALY · Designed and manufactured in Italy

SIMECO ENGINEERING
ARTIUM CONSUETUDO VIS NOSTRA EST
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WORKING PRINCIPLE

FCD is a combined eqipment for screenings and grit removing; it rappresents the most economical solution to treat low flowrates

The incoming wastewater is filtred throught a screw screen than goes into the settling tank.
The internal baffle system allows an efficient separation of the sand that is collected on the bottom of the tank and removed with a manual valve or solenoid valve.

MANUFACTURING FEATURES

Screws: high strength carbon steel or stainless steel AISI 304/316
Structure: stainless steel AISI304 / 316
Filtration: 0.5 - 6 mm
Screen Basket: wedge wire / perforated plate
Flowrates: from 2 l/s to 13 l/s

APPLICATIONS

- Municipal wastewater
- Industrial plants

DESCRIZIONE E FUNZIONAMENTO

Microcomby è una macchina combinata per la grigliatura e la rimozione delle sabbie.
Rappresenta la soluzione più efficace ed economica del mercato per il trattamento di piccole portate
L'acqua entrante viene filtrata tramite una filtro-coclea per poi andare nella vasca di decantazione.
Il sistema interno di deflettore permette una efficace separazione delle sabbie che vengono raccolte sul fondo della vasca ed espulsa tramite valvola manuale o elettrovalvola.

CARATTERISTICHE COSTRUTTIVE

Eliche: acciaio al carbonio ad alta resistenza o acciaio inox AISI 304/316
Struttura: acciaio inox AISI304 / 316
Filtrazione: 2—6 mm
Portate: da 2 l/s a 13 l/s

PRINCIPALI APPLICAZIONI

- Depurazione municipale
- Depurazione industriale

simeco@simecoeng.com

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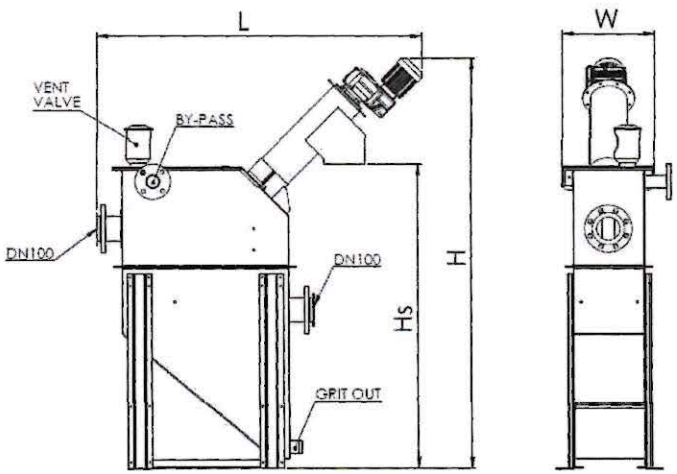
STANDARD MODELS(*)

MODELLO	L (mm)	Hs (mm)	H (mm)	W (mm)
MCB150	1500	1410	1893	423
MCB200	1997	1620	2446	342

(*) value to be defined for the application



simeco@simecoeng.com

WSI International

Equalization Transfer Pumps	Tag M-11.1.1 & M-11.1.2
Manufacturer	Tsurumi
Model Number	50PU-2.25-63
Type	Submersible
Solids Handling Capacity	1.38" Spherical
Flow Rate	14 GPM
Discharge Pressure	30'
Horsepower	0.33
Number of units	2 (1 Stand-by)

Equalization Transfer Flow Meter	Tag FIT-11.1.1
Manufacturer	Badger
Model Number	M2000
Type	Magnetic Flow Meter
Size	2"
Flow Rate	1 – 373 gpm
Volumetric Accuracy	± 0.25%

PU Series

CORROSION RESISTANT SUBMERSIBLE PUMPS

The PU Series is a corrosive resistant pump equipped with a semi-vortex impeller capable of pumping raw sewage and wastewater. Automatic and auto-alternating systems allow the pumps to operate in a duplex system without the need of a control panel.

50PU(A)(W)2.15S
50PUF2.15S
50PU(A)(W)2.25S
50PU(A)(W)2.25
50PU(A)(W)2.4S
50PU(A)(W)2.4
50PU(A)(W)2.75S
50PU(A)(W)2.75
80PU(A)(W)21.5

SPECIFICATION
PERFORMANCE RANGE
PERFORMANCE CURVES
DIMENSIONS
SECTIONAL DRAWINGS
SAMPLE SPECIFICATION

TSURUMI PUMP www.tsurumipump.com

TSURUMI PUMP | VANCS - SERIES - PU (FRP) SEMI-VORTEX - SEWAGE & WASTE WATER PUMPS | SPECIFICATIONS

FEATURES

1. Semi-vortex , FRP (Fiberglass Reinforced Plastic), impeller passes solids and stringy material without clogging and increases wear resistance when pumpage contains abrasive particles.
2. Double inside mechanical seals with silicon carbide faces, running in an oil filled chamber and further protected by a lip seal, provides for the most durable seal design available.
3. Highly efficient, continuous duty, air filled, copper wound motor with class E, insulation minimizes the cost of operation.
4. Built in thermal & amperage sensing, protector prevents motor failure due to overloading, single phasing (in three phase units), or accidental run -dry conditions.
5. Double shielded, permanently lubricated, high temperature C3 ball bearings rated for a B-10 life of 60,000 hours, extends operational life.
6. Utilization of application appropriate FRP & stainless steel components increases corrosion resistance in a wide variety of applications.

APPLICATIONS

1. Residential, commercial, industrial sewage, effluent, wastewater and site drainage.
2. Chemical spill containment.
3. Decorative waterfalls, fountains and fish ponds.

OIL LIFTER EQUIPPED

SPECIFICATIONS	STANDARD	OPTIONS
Discharge Size	2–3" N.P.T. (50 ~ 80mm)	
Horsepower Range	1/5 ~ 2Hp. (.2 ~ 1.5 KW)	
Performance Range Capacity	13.2 ~ 187.6 G.P.M. (.05 ~ .33 m^3/min)	
Head	6.6 Ft. ~ 50.5 Ft. (2.0 ~ 15.4 m)	
Maximum water temperature	104° F. (40° C.)	
Materials of Construction		
Casing (upper)/(lower)	FRP (ABS + w/GF 20 or 30) / ABS	
Impeller	FRP (PPO + w/GF 20 or 30)	
Shaft	304 Stainless Steel	
Motor Frame	304 Stainless Steel	
Fasteners	304 Stainless Steel	
Mechanical Seal	Silicon Carbide	
Elastomers	NBR (Nitril Buna Rubber)	
Impeller Type	Semi-Vortex, solids handling.	
Solids Handling Capability	1.38 -1.81" (35 - 46 mm)	
Bearings	Pre-lubricated, Double Shielded	
Motor Nomenclature		
Type, Speed, Hz.	Air Filled, 3600 Rpm, 60 Hz. 115 or 230	
Voltage, Phase	V.,1 Ph., 208, 230 or 460 V. 3 Ph.	
Insulation	Class E	
Accessories	Submersible Power Cable 32' (10 m)	Length as Required
Operational Mode	Manual	Model A (Automatic),Model AW (Automatic Alternating) TOK (FRP) Slide rail system

TSURUMI PUMP

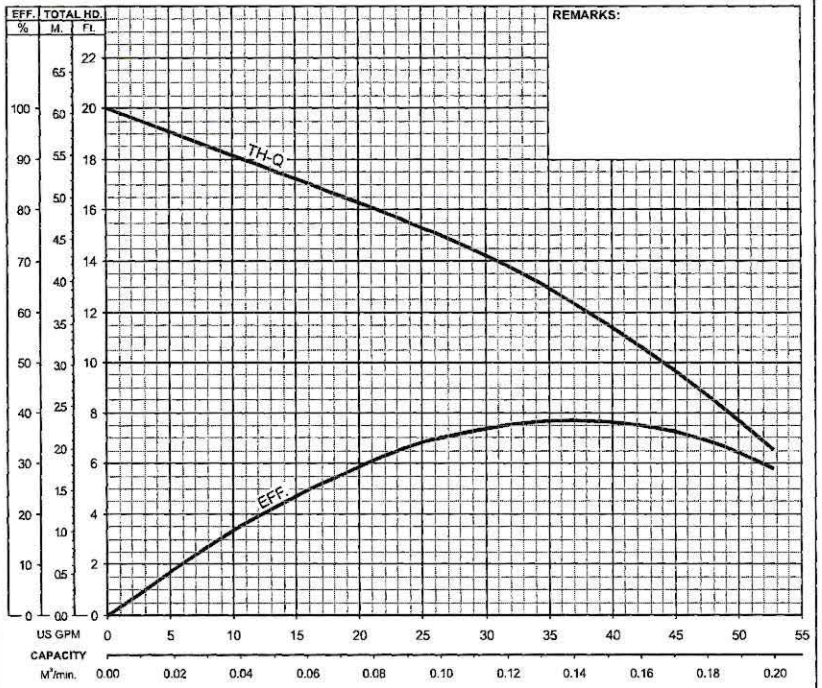
VANCS - SERIES - PU
(FRP) SEMI-VORTEX - SEWAGE & WASTEWATER PUMPS

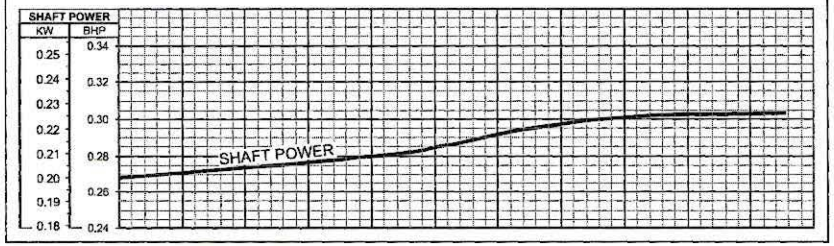
PERFORMANCE CURVE

MODEL	BORE	HP	KW	RPM	SOLIDS DIA	LIQUID	SG.	VISCOSITY	TEMP.
50PU(A/W)2.25 -62	2" / 50mm	0.34	0.25	3386	1.38" / 35mm	Water	1.0	1.123 cSt.	60°F

PUMP TYPE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
Semi-Vortex - Sewage & Wastewater	3	230 / 460	1.5 / 0.75	60	Direct On Line	E

CURVE No.	DATE	PHASE	VOLTAGE	AMPERAGE	HZ	STARTING METHOD	INS. CLASS
-	-	-	-	-	-	-	-



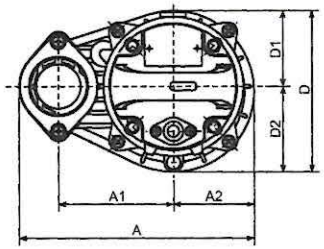


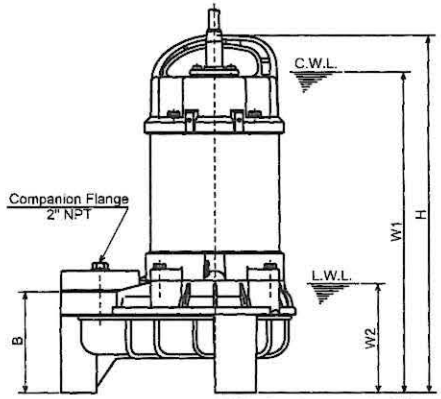
TSURUMI PUMP

VANCS-SERIES - PU
(FRP) SEMI-VORTEX - SEWAGE & WASTEWATER PUMPS

DIMENSIONS

50PU2.25S-62
50PU2.25-62
50PU2.4S-62
50PU2.4-62
50PU2.75S-62
50PU2.75-62





C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water Level

DIMENSIONS:USCS (Inch)

Model	HP	NOM. SIZE	Pump & Motor A	A1	A2	B	D	D1	D2	H	C.W.L. W1	L.W.L. W2	Wt. (lbs.)
50PU2.25S-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PU2.25-62	1/3	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	13 3/4	12 1/4	4 3/8	13.4
50PU2.4S-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.6
50PU2.4-62	1/2	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/16	12 3/4	4 3/8	15.4
50PU2.75S-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 15/16	13 5/8	4 3/8	19.6
50PU2.75-62	1	2"	9 5/16	4 1/2	3 3/16	4	6 3/8	3	3 3/8	14 3/4	13 3/8	4 3/8	18.3

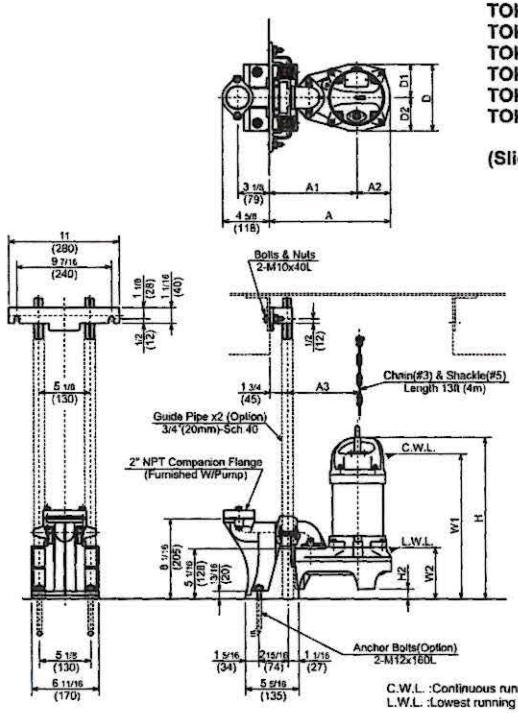
DIMENSIONS:METRIC (mm)

Model	kW	NOM. SIZE	Pump & Motor A	A1	A2	B	D	D1	D2	H	C.W.L. W1	L.W.L. W2	Wt. (kg)
50PU2.25S-62	0.25	50	236	115	81	102	162	76	86	360	325	110	7.1
50PU2.25-62	0.25	50	236	115	81	102	162	76	86	349	310	110	6.1
50PU2.4S-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.1
50PU2.4-62	0.40	50	236	115	81	102	162	76	86	360	325	110	7.0
50PU2.75S-62	0.75	50	236	115	81	102	162	76	86	380	345	110	8.9
50PU2.75-62	0.75	50	236	115	81	102	162	76	86	374	340	110	8.3

TSURUMI PUMP | **VANCS-SERIES - PU** (FRP) SEMI-VORTEX - SEWAGE & WASTEWATER PUMPS | **DIMENSIONS**

TOK50PU2.25S
TOK50PU2.25
TOK50PU2.4S
TOK50PU2.4
TOK50PU2.75S
TOK50PU2.75

(Slide Rail System TOK3-P)



C.W.L. :Continuous running Water Level
L.W.L. :Lowest running Water Level

DIMENSIONS:USCS (Inch)

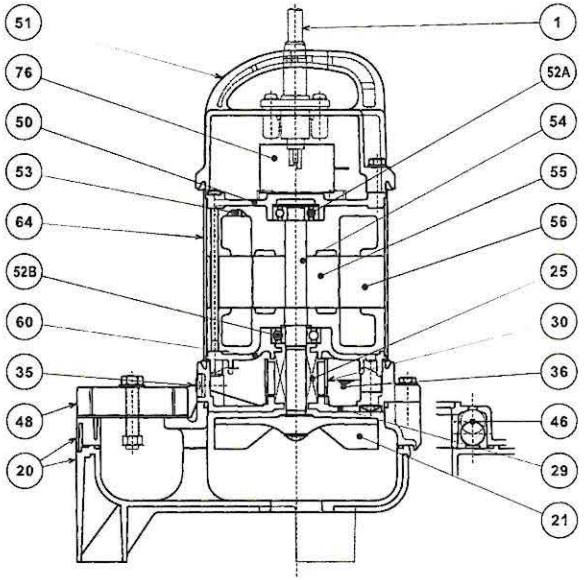
Model	HP	NOM. SIZE	Pump & Motor A	A1	A2	A3	D	D1	D2	H	H2	C.W.L. W1	L.W.L. W2	Wt. (lbs.)
TOK50PU2.25S	1/3	2"	12 1/16	8 3/4	3 3/8	7 3/8	6 11/16	3 3/8	3 3/8	16	1	14 3/8	5 1/8	17.0
TOK50PU2.25	1/3	2"	12 1/16	8 3/4	3 3/8	7 3/8	6 11/16	3 3/8	3 3/8	16	1	14 3/8	5 1/8	15.6
TOK50PU2.4S	1/2	2"	12 1/16	8 3/4	3 3/8	7 3/8	6 11/16	3 3/8	3 3/8	16 5/16	1	14 5/8	5 1/8	18.5
TOK50PU2.4	1/2	2"	12 1/16	8 3/4	3 3/8	7 3/8	6 11/16	3 3/8	3 3/8	16 5/16	1	14 5/8	5 1/8	17.4
TOK50PU2.75S	1	2"	12 1/16	8 3/4	3 3/8	7 3/8	6 11/16	3 3/8	3 3/8	16 7/8	1	15 1/4	5 1/8	23.6
TOK50PU2.75	1	2"	12 1/16	8 3/4	3 3/8	7 3/8	6 11/16	3 3/8	3 3/8	16 7/8	1	15 1/4	5 1/8	21.1

DIMENSIONS:METRIC (mm)

Model	kW	NOM. SIZE	Pump & Motor A	A1	A2	A3	D	D1	D2	H	H2	C.W.L. W1	L.W.L. W2	Wt. (kg)
TOK50PU2.25S	0.25	50	307	222	85	187	170	85	85	406	26	364	131	7.7
TOK50PU2.25	0.25	50	307	222	85	187	170	85	85	406	26	364	131	7.1
TOK50PU2.4S	0.40	50	307	222	85	187	170	85	85	414	26	372	131	8.4
TOK50PU2.4	0.40	50	307	222	85	187	170	85	85	414	26	372	131	7.9
TOK50PU2.75S	0.75	50	307	222	85	187	170	85	85	429	26	387	131	10.7
TOK50PU2.75	0.75	50	307	222	85	187	170	85	85	429	26	387	131	9.6

TSURUMI PUMP | **VANCS - SERIES - PU** (FRP) SEMI-VORTEX - SEWAGE & WASTEWATER PUMPS | **SECTIONAL VIEW**

50PU2.25S-62
50PU2.4S-62



PART#	DESCRIPTION	MAIN MATERIAL / NOTE	RELATED ASTM, AISI CODE	RELATED EN CODE	QTY
1	Power Cable	PVC Sheath AWG16/3-32ft			1
20	Pump Casing	ABS Plastic w/GF20			1
21	Impeller	PPO Plastic w/GF20			1
25	Mechanical Seal	Silicon Carbide / W-14HL			1
29	Oil Casing	PPS Plastic w/GF40			1
30	Oil Lifter	PBT Plastic			1
35	Oil Plug	Stainless Steel	S 30400	1.4301	1
36	Lubricant	White Mineral Oil ISO VG32			
46	Air Valve	Glass Ball			1
48	Companion Flange	PBT Plastic w/GF30 / NPT 2"			1
50	Motor Bracket	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
51	Motor Head Cover	PPS Plastic w/GF40			1
52A	Upper Bearing	#6201ZZC3			1
52B	Lower Bearing	#6202ZZC3			1
53	Motor Protector				1
54	Shaft	Stainless Steel	S 30400	1.4301	1
55	Rotor				1
56	Stator				1
60	Bearing Housing	Aluminum Alloy Die Casting	B85 383.0	EN 1706 AC-46100	1
64	Motor Housing	Stainless Steel	S 30400	1.4301	1
76	Capacitor				1

TSURUMI PUMP	VANCS - SERIES - PU (FRP) SEMI-VORTEX - SEWAGE & WASTEWATER PUMPS	SAMPLE SPECIFICATIONS

1. SCOPE OF SUPPLY -

Furnish and install TSURUMI, VANCS Model _____ Submersible Pump(s). Each unit shall be capable of delivering _____GPM(_____m^3/min) at _____Feet (_____m) TDH. The pump(s) shall be designed to pump waste water, sewage or effluent containing _____ inch (_____mm) diameter solids without damage during operation. The pump(s) shall be designed so that the shaft power required (BHP)/(kW) shall not exceed the motor rated output throughout the entire operating range of the pump performance curve. The pump discharge size shall be____inch, (____mm).

2. MATERIALS OF CONSTRUCTION -

Construction of major parts of the pumping unit(s) including pump casing, impeller, motor head cover and intermediate brackets shall be manufactured from recyclable, application appropriate resins. The need for a protective coating shall not be required. All exposed fasteners shall be stainless steel and shall have stainless steel mating anchors integrally cast into the mating part. All units shall be furnished with a NPT discharge companion flange. Impellers shall be of the multi-vane, semi-vortex, solids handling design and shall be slip fit to the shaft. The motor shaft shall be machined to provide a positive drive of the impeller. The pump casing shall incorporate an air relief valve.

3. MECHANICAL SEAL -

All units shall be furnished with a dual inside mechanical shaft seal located completely out of the pumpage, running in a separate oil filled chamber. Units 2 Hp. and above shall be fitted with a device that shall provide positive lubrication of top mechanical seal, (down to one third of the standard oil level). The device shall not consume any additional electrical power. Units shall have silicon carbide mechanical seal faces. Mechanical seal hardware shall be stainless steel.

4. MOTOR -

The pump motor(s) shall be _____Hp., _____kW., _____V., 60 Hz., __ Phase and shall be NEMA MG-1, Design Type B equivalent. Motor(s) shall be rated at _____ full load amps. Motor(s) shall have a 1.15 service factor and shall be rated for 20 starts per hour. Motor(s) shall be air filled, copper wound, class E insulated with built in thermal protection. Motor shaft shall be 403 stainless steel and shall be supported by two permanently lubricated, high temperature ball bearings, with a B-10 life rating at best efficiency point of 60,000 hours. The bearings shall be single row, double shielded, C3, deep groove type ball bearings. Bearing seats shall be rolled carbon steel or aluminum die casting. Motor housing shall be 304 stainless steel. Motors shall be suitable variable speed applications, utilizing a properly sized variable frequency drive.

5. POWER CABLE AND CABLE ENTRANCE -

The pump power cable shall be suitable for submersible pump applications. The cable entrance shall incorporate built in strain relief, a one piece, three way mechanical compression seal with a fatigue reducing cable boot. The cable entrance assembly shall contain an anti-wicking block to eliminate water incursion into the motor due to Capillary wicking should the power cable be accidentally damaged.

Badger M-Series Mag Meter	Model M-2000 Detector	Technical Brief

GENERAL

The Badger® M-Series® mag meter model M-2000 detector is the result of years of research and field use in electromagnetic flow meters. Based on Faraday's law of induction, these meters can measure almost any liquid, slurry or paste that has minimum electrical conductivity.

Designed, developed and manufactured under strict quality standards, the M-Series meter features sophisticated, processor-based signal conversion with accuracies of ±0.25 percent. The wide selection of liner and electrode materials helps ensure maximum compatibility and minimum maintenance over a long operating period.

OPERATION

The flow meter is a stainless steel tube lined with a nonconductive material. Outside the tube, two DC powered electromagnetic coils are positioned diametrically opposing each other. Perpendicular to these coils, two electrodes are inserted into the flow tube. Energized coils create a magnetic field across the whole diameter of the pipe.

As a conductive fluid flows through the magnetic field, a voltage is induced across the electrodes. This voltage is proportional to the average flow velocity of the fluid and is measured by the two electrodes. This induced voltage is then amplified and processed digitally by the converter to produce an accurate analog or digital signal. The signal can then be used to indicate flow rate and totalization or to communicate to remote sensors and controllers.

This technology provides many advantages. With no parts in the flow stream, there is no pressure loss. Also, accuracy is not affected by temperature, pressure, viscosity, density or flow profile. Finally, with no moving parts, there is practically no maintenance required.

APPLICATION

Because of its inherent advantages over other more conventional technologies, this meter can be used in the majority of industrial flow applications. Whether the fluid is water or highly corrosive, very viscous, contains a moderate amount of solids or requires special handling, this meter can accurately measure fluid flow. Today, magnetic meters are successfully used in industries including food and beverage, pharmaceutical, water and wastewater, and chemical.

M-2000 Detector

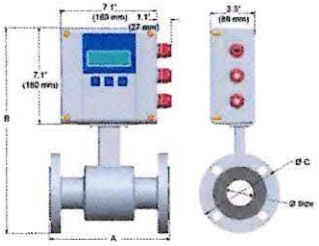
FEATURES

- ±0.25 percent accuracy independent of fluid viscosity, density and temperature
- Unaffected by most solids contained in fluids
- Pulsed DC magnetic field for zero point stability
- No pressure loss for low operational costs
- Corrosion resistant liners for long life
- Calibrated in state-of-the art facilities
- Integral and remote signal converter availability
- Optional grounding rings or grounding electrode
- Measurement largely independent of flow profile
- NSF listed

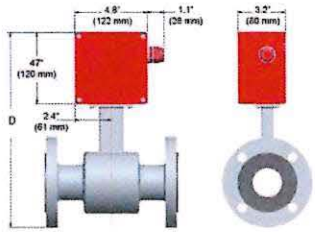
ELECTRODES

When looking from the end of the meter into the inside bore, the two measuring electrodes are positioned at three o'clock and nine o'clock. M-2000 mag meters have an "empty pipe detection" feature. This is accomplished with a third electrode positioned in the meter between twelve o'clock and one o'clock. If this electrode is not covered by fluid for a minimum five-second duration, the meter will display an "empty pipe detection" condition, send out an error message if desired, and stop measuring to maintain accuracy. When the electrode again becomes covered with fluid, the error message will disappear and the meter will continue measuring.

As an option to using grounding rings, a grounding electrode (fourth electrode) can be built into the meter during manufacturing to assure proper grounding. The position of this electrode is at five o'clock.



Meter with M-2000 Amplifier



Meter with junction box for remote M-2000 Amplifier

Size		A		B		C		D		Est. Weight with M-2000		Flow Range			
												LPM		GPM	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Lbs	Kg	Min	Max	Min	Max
1/4	6	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.063	20	0.02	5
5/16	8	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.114	34	0.03	9
3/8	10	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.177	53	0.05	14
1/2	15	6.7	170	14.0	356	3.5	89	11.4	288	10	4.5	0.416	125	0.11	33
3/4	20	6.7	170	14.2	361	3.9	99	11.5	293	13	5.5	0.75	225	0.2	59
1	25	8.9	225	14.4	366	4.3	108	11.7	298	18	8.0	1.20	350	0.3	93
1 1/4	32	8.9	225	15.2	386	4.6	117	12.5	318	20	9.0	2.00	575	0.5	152
1 1/2	40	8.9	225	15.4	390	5.0	127	12.7	322	21	9.5	3.00	900	0.8	239
2	50	8.9	225	15.9	403	6.0	152	13.2	335	26	11.5	4.70	1400	1	373
2 1/2	65	11.0	280	17.1	434	7.0	178	14.4	366	52	23.5	8	2400	2	631
3	80	11.0	280	17.3	440	7.5	191	14.7	372	54	24.5	12	3600	3	956
4	100	11.0	280	18.4	466	9.0	229	15.7	398	56	25.5	19	5600	5	1493
5	125	15.8	400	19.6	498	10.0	254	16.9	430	58	26.0	30	8800	8	2334
6	150	15.8	400	20.6	524	11.0	279	17.9	456	60	27.0	40	12700	11	3361
8	200	15.8	400	22.5	572	13.5	343	20.4	518	86	39.0	75	22500	20	5975
10	250	19.7	500	26.8	681	16.0	406	24.1	613	178	81.0	120	35300	30	9336
12	300	19.7	500	28.9	734	19.0	483	26.2	666	207	94.0	170	50800	45	13444
14	350	19.7	500	30.8	782	21.0	533	28.2	716	258	117	230	69200	60	18299
16	400	23.6	590	33.7	856	23.5	597	31.0	788	306	139	300	90400	80	23901
18	450	23.6	590	35.0	890	25.0	635	32.4	822	400	181	380	114000	100	30250
20	500	23.6	590	38.2	969	27.5	699	35.5	901	493	224	470	140000	125	37346
22	550	23.6	590	39.6	1005	29.5	749	36.9	937	523	237	570	170000	150	45188
24	600	23.6	590	42.2	1071	32.0	813	39.5	1003	552	251	680	200000	180	53778
28	700	23.6	590	46.2	1173	36.5	927	44.0	1118	648	294	920	275000	240	73100
30	750	31.5	800	48.3	1226	39.0	984	45.7	1161	702	319	1060	315000	280	84000
32	800	31.5	800	52.2	1325	41.4	1015	49.5	1257	768	349	1200	361000	320	95800
36	900	31.5	800	55.3	1405	46.0	1168	54.1	1374	848	385	1500	457000	400	121000
40	1000	31.5	800	60.0	1525	50.2	1230	57.4	1457	922	419	1900	565000	500	149300
42	1050	36.0	914	66.0	1675	53.0	1346	63.4	1610	1198	499	2100	620000	550	164600
48	1200	39.4	1000	69.9	1775	59.4	1455	67.2	1707	1208	549	2700	814000	720	215100
54	1400	39.4	1000	78.5	1995	66.4	1675	75.9	1927	1362	619	3700	1100000	980	292700

SPECIFICATIONS - Detector

Flow Range: 0.1 - 39.4 fps (0.03–12 m/s)
Sizes: 1/4 inch to 54 inches (6 mm to 1400 mm)
Min. Conductivity: ≥ 5 micromhos/cm
Accuracy:
± 0.25 percent of rate for velocities greater than 1.64 ft/s (0.50 m/s)
± 0.004 ft/s (± 0.001 m/s) for velocities less than1.64 ft/s (0.50 m/s)
Electrode Materials: Standard. Alloy C
Optional: 316 stainless steel, gold/platinum plated, tantalum, platinum/rhodium
Liner Material: PFA up to 3/8 inch, PTFE 1/2 inch to 24 inches, Soft and Hard Rubber from 1 to 54 inches, Halar® from 14 to 40 inches
NSF Listed: Models with hard rubber liner 4-inch size and up; PTFE liner - All sizes.

Fluid Temperature:
With Remote Amplifier:
PFA, PTFE & Halar 311°F (155°C)
Rubber 178°F, (80°C)
With Meter Mounted Amplifier:
PFA, PTFE & Halar 212°F (100°C)
Rubber 178°F, (80°C)
Pressure Limits:
Maximum allowable non-shock pressure and temperature ratings for steel pipe flanges, according to American National Standard ANSI B16.5. (Example: 150-pound flanges, rated 285 PSI at ambient temperature.) (Example: 300-pound flange rated 740 PSI at ambient temperature.
Coil Power: Pulsed DC
Ambient Temperature: -4°F to 140°F (-20°C to 60°C)

Pipe Spool Material: 316 stainless steel
Meter Housing Material: Carbon steel welded
Flanges: Carbon steel - Standard (ANSI B16.5 Class 150 RF) 316 stainless steel - Optional
Meter Enclosure Classification: NEMA 4X (IP66)
Optional: Submersible NEMA 6P (remote amplifier required)
Junction Box Enclosure Protection:
(for remote amplifier option) Powder coated die-cast aluminum, NEMA 4 (IP65)
Cable Entries: 1/2-inch NPT Cord Grip
Optional Stainless Steel Grounding Rings:

Meter Size	Thickness (of one ring)
up through 10 inches	.135 inch
12 to 20 inches	.187 inch

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Please see our Web site at
www.badgermeter.com
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infocentral@badgermeter.com - www.badgermeter.com

Equalization Tank Blower	Tag M-12.1.1
Manufacturer	FPZ
Model Number	SCL R30-MD-3-3
Type	Regenerative
Flow Rate	34 SCFM
Discharge Pressure	148 inWC (5.3 PSIG)
Horsepower	3
Number of Units	1

SCL R20 / R30 / R40

MD SERIES

SN 2464-4 1/2

STANDARD FEATURES

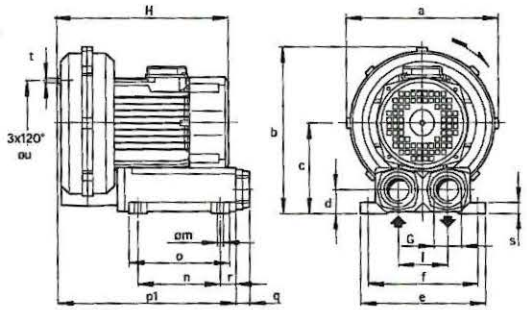
- Low weight cast aluminum construction.
- Quiet operation with integral inlet and outlet muffling.
- Recognized TEFC - cURus motor.
- High efficiency / low noise impeller design.
- No lubrication / maintenance required.
- Allowed ambient: +5 °F to +104 °F.
- Mountable in any plane.

OPTIONS

- Remote drive models (belt or coupling).
- Special voltages.
- Surface treatment or plating.
- Gas tight sealing.
- Special designs available.

ACCESSORIES

- Inlet and/or inline filters.
- Additional inlet/outlet silencers.
- Relief valves.
- Flow converting devices.
- Optionals connectors



Dimensions in inches.
Dimension for reference only.

Model	a	b	c	d	e	f	G	l	m	n	o	p1	q	r	s	t	u
R20-MD	11.14	12.17	6.57	1.85	9.25	8.27	1" ¼ NPT	3.54	0.39	5.91	7.87	13.58	0.71	1.77	0.87	M6	5.91
R30-MD	12.56	13.62	7.36	1.85	9.25	8.27	1" ¼ NPT	3.54	0.39	5.91	7.87	13.94	0.71	1.77	0.87	M6	7.09
R40-MD	13.78	14.65	7.76	1.85	9.25	8.27	1" ¼ NPT	3.54	0.39	5.91	7.87	14.33	0.71	1.77	0.87	M8	8.86

Model	Maximum flow Scfm		Installed power Hp		Maximum differential pressure Δp (In WG)		Noise level Lp dB (A) (1)		Overall dimensions H	Weight
	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	Inches	Lbs
R20-MD	41	35	1 ½	1 ½	161	161	68.5	66.5	13.39	48.5
R30-MD	65	54	2	2	140	170	72.2	69.2	15.58	57.3
			3	-	191	-	72.8	69.7	15.55	66.1
R40-MD	81	69	3	3	141	170	72.8	70.8	16.22	77.2
			4	4	201	201	73.3	71.3	17.09	88.2

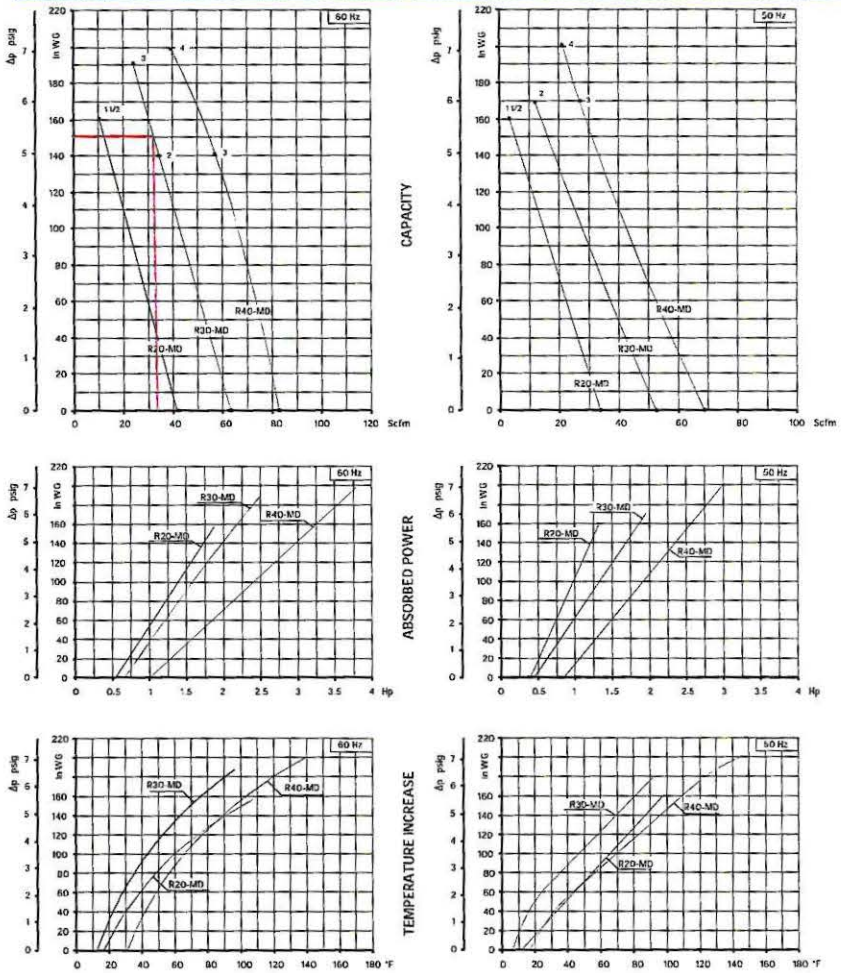
(1) Noise measured at 1 m distance with inlet and outlet ports piped, in accordance to ISO 3744.

- For proper use, the blower should be equipped with inlet filter and relief valve; other accessories available on request.
- Ambient temperature from +5° to +104°F
- Specifications subject to change without notice.

SCL R20 / R30 / R40

MD SERIES

SN 2464-4 2/2



Curves refer to air at 68°F temperature and 29.92 In Hg atmospheric pressure (abs) measured at inlet port.
Values for flow, power consumption and temperature rise: +/-10% tolerance.
Data subject to change without notice.

BioChip Reactor	Tag E-21.1.1
Manufacturer	WSI International, LLC
Process	Moving Bed Bio-Reactor (MBBR)
Wetted Materials	304 Stainless Steel
Volume	4,250 gallons
Media Fill	50%
Surface Area Loading Rate	4.66 g-BOD/m^2/day
Equivalent MLVSS	9,562 mg/l
Volumetric BOD Loading Rate	72.7 lb BOD/ 1000 ft^3/ day
Hydraulic Residence Time	6.0 hrs

BioChip Media	Tag PRT-21.1.1
Manufacturer	WSI International, LLC
Material	High Density Polyethylene
Dimensions	25mm x 10mm
Surface Area	152 ft^2/ft^3
Volume	284 ft^3
Specific Gravity	0.97

Bio-Chip Reactor (BCR) Wastewater Treatment

COMPLETE TREATMENT SYSTEMS FOR ALL WASTEWATER APPLICATIONS

SERIES: BCR

WSI International BCR series wastewater treatment systems are designed to treat 5,000 gpd to over 5 MGD of domestic or industrial wastewater. The BCR treatment system utilizes the Bio-Chip Reactor (BCR) technology for BOD and nitrogen removal. The BCR system can handle BOD concentrations from 150 to over 8,000 mg/l and total Kjeldahl nitrogen concentration exceeding 200 mg-N/l. Due to the unique design of BCR systems, greater removal performance can be achieved in a smaller system footprint with no sludge recycle.

SYSTEM FEATURES

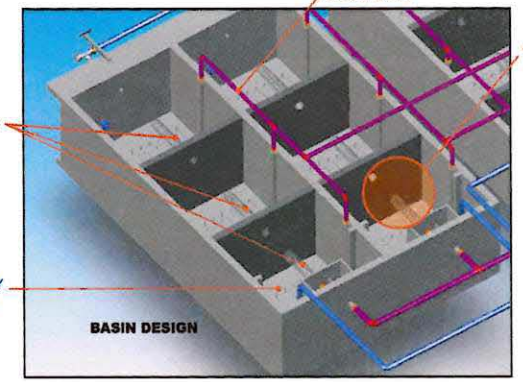
- Attached biofilm growth allows for high MLVSS concentrations (upwards of 10,000 mg/l) while minimizing TSS carryover.
- Increased equivalent MLVSS reduces reactor volume, loading on secondary clarification and overall plant footprint.
- Resistant to shock loading and hydraulic washout.
- Self-regulating process simplifies daily operations. Eliminates need to monitor aeration basin MLVSS, 30-minute Settleability and calculate RAS rates.
- Technology is attractive for both new and existing facilities requiring small footprint or an increase in capacity.
- Ability to achieve 150% to 300% increase in organic loading in existing facilities.

SPECIFICATIONS

Flow Capacity	5,000 gpd to over 5 MGD
Volume Requirements	5 GPD per Gal Reactor Volume @ 250 mg/L BOD
	15 GPD per Gal Anoxic Reactor Volume @ 40 mg-N/L TKN
Water Depth	8 to 24 ft.
System Type	Package, Container, or Concrete (Field Constructed)
Diffuser Type	Medium Bubble
Biocarrier Characteristics	Total Surface Area = 152 ft^2/ft^3
	Protected Surface Area = 113 ft^2/ft^3
	S.G. = 0.94 – 1.05
	Max. Biofilm Thickness = 2 mm
	Void Space = 92%

WSI International, LLC 1709 W Baltic Place • Englewood, CO 80110 • Ph. 303.985.0885 • Fax. 720.998.0871 • www.wsi-llc.com

SYSTEM COMPONENTS



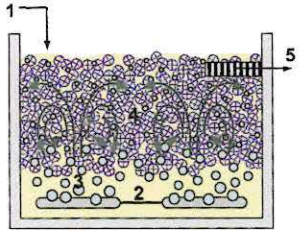
BIOCARRIER FILL
(each basin)

Biocarrier with attached bacterial biofilm.

MULTIPLE BASIN CONFIGURATION

Operation

1. Raw Wastewater enters the reaction basin.
2. Medium bubble diffusers distribute air across basin.
3. Rising air bubbles lift and circulate biocarrier media in basin.
4. Biocarrier rises and falls with basin resulting in high mixing and elimination of "dead" zones.
5. Effluent discharged through wedge wire screen.



BCR Advantages

BCR systems have many advantages including the ability to operate under anoxic conditions for nitrogen removal. Since the majority of biomass within a BCR system is attached, effluent TSS from the reaction basins is typically lower than 200 mg/L. This allows for the use of highly efficient and compact solids separation techniques such as dissolved air flotation (DAF). In addition, the high equivalent MLSS concentration in the reaction basin translates into increased system stability and system capacity.

Tertiary Treatment (add on)

Reuse quality water is easily obtained with the addition of effluent filtration and disinfection without the burden of managing and maintain membranes that foul in a wastewater environment. This also eliminates the need for hazardous chemicals for membrane CIP cycles and the impact on the biomass when spent chemical is returned to the front of the plant.

Sludge Management

Sludge management includes the automatic removal of solids from the secondary solids separation system (typically a DAF unit) into an aerobic digester basin. Onsite Dewatering options are also available.

Main Reactor Blower	Tag M-26.1.1 & M-26.2.1
Manufacturer	FPZ
Model Number	SCL-R40-MD-4-3
Type	Regenerative
Flow Rate	56 SCFM
Discharge Pressure	148 inWC (5.3 PSIG)
Horsepower	4
Number of Units	2 (1 Stand-by)

SCL R20 / R30 / R40

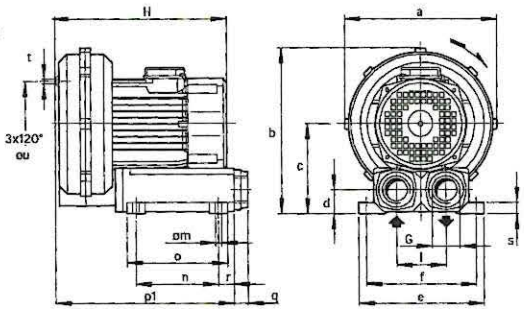
MD SERIES

SN 2464-4 1/2

STANDARD FEATURES
- Low weight cast aluminum construction.
- Quiet operation with integral inlet and outlet muffling.
- Recognized TEFC - cURus motor.
- High efficiency / low noise impeller design.
- No lubrication / maintenance required.
- Allowed ambient: +5 °F to +104 °F.
- Mountable in any plane.

OPTIONS
- Remote drive models (belt or coupling).
- Special voltages.
- Surface treatment or plating.
- Gas tight sealing.
- Special designs available.

ACCESSORIES
- Inlet and/or inline filters.
- Additional inlet/outlet silencers.
- Relief valves.
- Flow converting devices.
- Optionals connectors



Dimensions in inches.
Dimension for reference only.

Model	a	b	c	d	e	f	G	l	m	n	o	p1	q	r	s	t	u
R20-MD	11.14	12.17	6.57	1.85	9.25	8.27	1" ¼ NPT	3.54	0.39	5.91	7.87	13.58	0.71	1.77	0.87	M6	5.91
R30-MD	12.56	13.62	7.36	1.85	9.25	8.27	1" ¼ NPT	3.54	0.39	5.91	7.87	13.94	0.71	1.77	0.87	M6	7.09
R40-MD	13.78	14.65	7.76	1.85	9.25	8.27	1" ¼ NPT	3.54	0.39	5.91	7.87	14.33	0.71	1.77	0.87	M8	8.86

Model	Maximum flow Scfm		Installed power Hp		Maximum differential pressure Δp (In WG)		Noise level Lp dB (A) (1)		Overall dimensions H	Weight
	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	Inches	Lbs
R20-MD	41	35	1 ½	1 ½	161	161	68.5	66.5	13.39	48.5
R30-MD	65	54	2	2	140	170	72.2	69.2	15.58	57.3
			3	-	191	-	72.8	69.7	15.55	66.1
R40-MD	81	69	3	3	141	170	72.8	70.8	16.22	77.2
			4	4	201	201	73.3	71.3	17.09	88.2

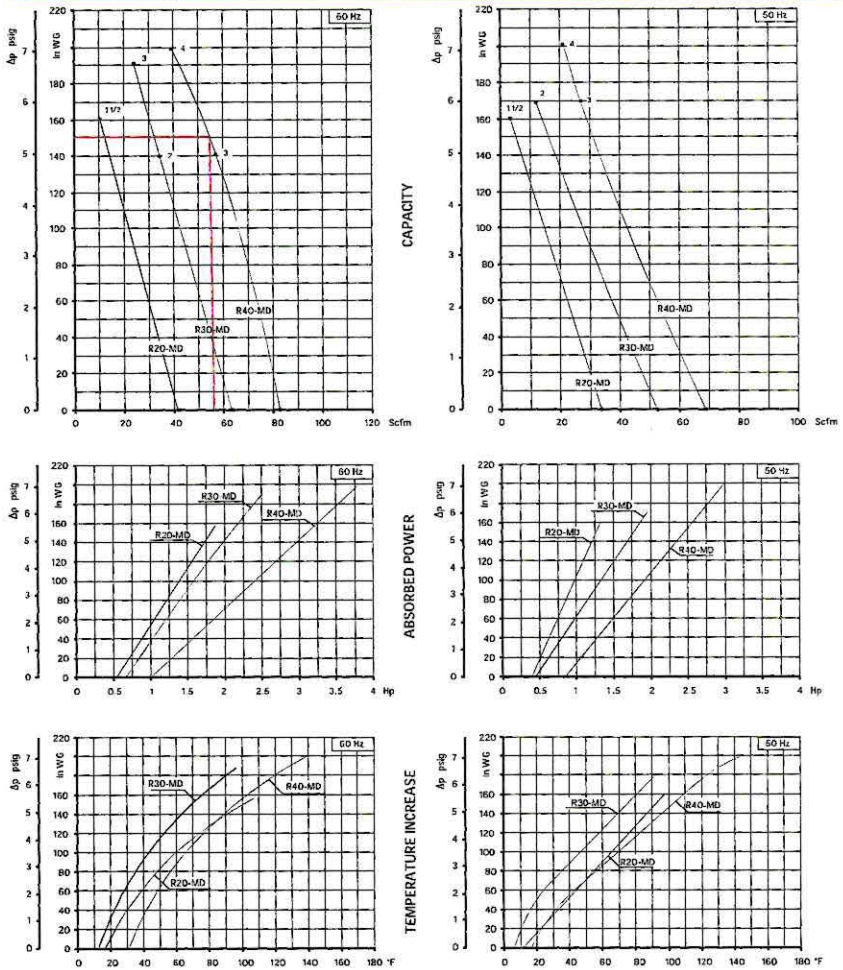
(1) Noise measured at 1 m distance with inlet and outlet ports piped, in accordance to ISO 3744.

- For proper use, the blower should be equipped with inlet filter and relief valve; other accessories available on request.
- Ambient temperaturefrom +5° to +104°F.
- Specifications subject to change without notice.

SCL R20 / R30 / R40

MD SERIES

SN 2464-4 2/2



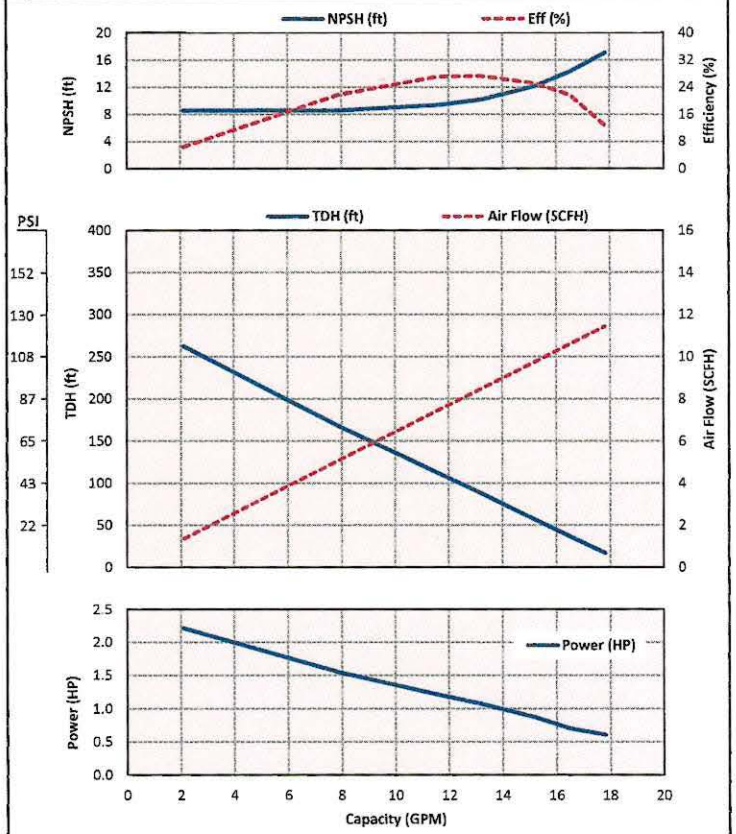
Curves refer to air at 68°F temperature and 29.92 In Hgatmospheric pressure (abs) measured at inlet port.
Values for flow, power consumption and temperature rise: +/-10% tolerance.
Data subject to change without notice.

Whitewater Pump	Tag M-30.1.1 & M-30.1.2
Manufacturer	Nikuni
Model Number	KTM25N
Type	Regenerative Turbine
Flow Rate	11 GPM
Discharge Pressure	56 PSIG
Air Flow	7 SCFH
Number of Units	2 (1 Stand-by)
Material of Construction	304 Stainless Steel

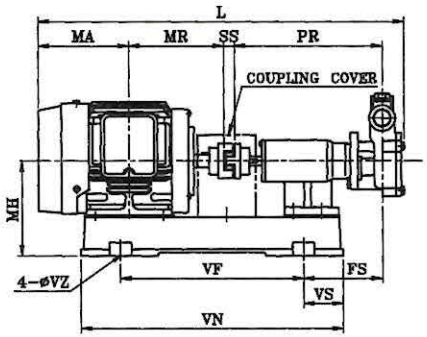
DAF Air Dissolving Pump Curves

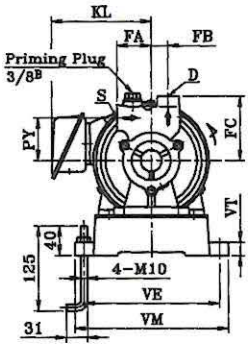
Model: PC-KTM25N/6002
208-460V / 3p / 60Hz

Client:
DAF Model:



NIKUNI MODEL:KTM__N





Dimension and Weights (Unit:mm,kg)

Model	kW	S	D	PR	PY	FA	FB	FS	FC	MH	L	MA	MR	SS	VE	VF	VM	VN	VS	VT	VZ	KL	Weight
KTM15N	0.4	Rc1/2	Rc3/8	219	52	45	21	115	81	130	505	121	120	14	184	243	210	357	58	20	12	-	18
KTM20N	0.4	Rc3/4	Rc1/2	216	63	50	25	114	95	130	505	121	120	14	184	246	210	357	58	20	12	-	20
	0.75	Rc3/4	Rc1/2	216	63	50	25	118	95	140	537	133	140	14	199	269	225	385	58	20	12	146	27
KTM25N	0.75	Rc1	Rc3/4	224	70	60	28	122	105	140	549.5	133	140	14	199	269	225	385	58	20	12	146	27
	1.5	Rc1	Rc3/4	224	70	60	28	129	105	150	592	143	168.5	18	214	300	240	430	65	20	12	147	31
KTM32N	1.5	Rc1 1/4	Rc1	224	80	65	35	129	120	150	597.5	143	168.5	18	214	300	240	430	65	20	12	147	32
	2.2	Rc1 1/4	Rc1	224	80	65	35	129	120	150	597.5	143	168.5	18	214	300	240	430	65	20	12	147	34
KTM40N	2.2	Rc1 1/2	Rc1 1/4	238	85	70	40	123	130	145	617.5	143	168.5	18	230	350	260	500	75	15	12	147	37
	3.7	Rc1 1/2	Rc1 1/4	238	85	70	40	82	130	180	692	186	200	18	260	425	310	616	95	25	12	154	53

-Remarks-

- Above dimensions tables shows the dimensions of our pump-motor set when we use totally enclosed fan cooled type motor.

  We have models with other type of motors when the dimensions would be slightly different from above.

July, 2011

NIKUNI Advanced Aqua Tech

KTM Technical Booklet

Approach to KTM Micro-Bubble Generator

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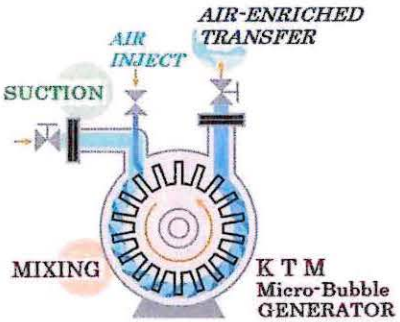
Introduction

NIKUNI have supplied a unique compact micro-bubble generator, called KTM, contributing to remove contaminant particles with a small amount of chemical aid in the water purifying plant.



KTM has a highly precise and sophisticated pumping mechanism that can generates a plenty of micro-bubbles by three hydro-dynamic principles: negative pressure sucking both air and water simultaneously from each port: air effectively mixed into water: finally properly producing pressurized air-enriched discharge.

The pressurized air-enriched water is transferred into the bottom of the dissolved air flotation tank. Then it makes a bubble sparkling formation spreading and growing up to the water surface and finally form a sludge mat. It will be skimmed off.

Features of KTM

- High contaminant removal efficiency
  --- supplying a highly dense micro-bubble formation
- Continuously steady dissolved air flotation
  ---fine adjustment not necessary during operation
- Applicable for additional installation
  --- narrow space installation
- Minimum power consumption
  --- power required for KTM only
- Easy maintenance and minimum operation cost
  --- compact and simple in structure
- Quiet in operation
  --- no compressor, controls, dissolve tank are required
- Any gas of air, oxygen, ozone, etc. available for your purpose

Applications

- **Water clarifications for Dairies, Breweries, Fish/ Meat/ Live Stock Processing, Laundries, Pharmaceuticals, Membrane System Pre-treatment, Textile Effluent.**
- **Food industry** --- Separating oil & fat from water
- **Paper mill** --- Removing or recovering pulp & paper mills
- **Industrial mfg.** --- Removing mold release agent
  power-press lubricant
- **Semiconductor mfg.** --- Removing metallic compounds
  foreign matters for recycling

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Introduction

CONTENTS / KTM Model Selection Guide

1. Technical Comments on KTM Application and relative factors
2. KTM Performance Tables
   - 2-1. Typical Basic Data of KTM Models 50Hz
   - 2-2. Typical Basic Data of KTM Models 60Hz
3. Drawings
   - 3-1 Close-coupled & Bare Pump (KTM__D/F models)
   - 3-2 Bare Pump (KTM20N/F to KTM40N/F)
   - 3-3 Coupling Type (KTM20N/F to KTM40N/F)
   - 3-4 Air Nozzle Assembly
   - 3-5 Bare Pump (KTM50S1/F1 to KTM50S3/F3)
   - 3-6 Bare Pump (KTM65S/F to KTM80S/F)
   - 3-7 Coupling Type (KTM50S/F to KTM80S/F)
   - 3-8 Recommended Accessories
   - 3-9 Sectional Drawings for Cast Iron Made Models
   - 3-10 Sectional Drawings for SS304 Made Models
4. Running procedures of KTM

KTM Model Selection Guide

The KTM models, available for the selection responding to various intension on the plant design stage, are roughly classified into three types; close-coupled type, bare pump and coupling type.

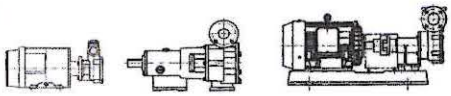
Material of the wetted part can be selected in Cast iron or SS304 for each model. In addition, an assembly of check valve and air inject nozzle assembly is packed in KTM package of each model.

1. Close-coupled Type
A series of the most compact and complete set of the micro-bubble generator has been put in our arrangement, but without pump base. This model arrangement is restricted within a narrow range of KTM15 to KTM40.

2. Bare Pump
Individual KTM core, and basically original of Coupling Type. Pump base or Channel base is basically not attached.

3. Coupling Type
The coupling attached KTM models are most popularly in this market. Nikuni will supply bare pump, pump base (channel base) and coupling set with coupling guard only. Depending on your plant site environmental situation, the drive motor protection system can be applied.

4. Nozzle Assembly --- a nozzle and check valve assembled
Attached to every model, specified in correspondent to each model.



Close-Coupled Type Bare Pump Coupling Type (Motor not included)

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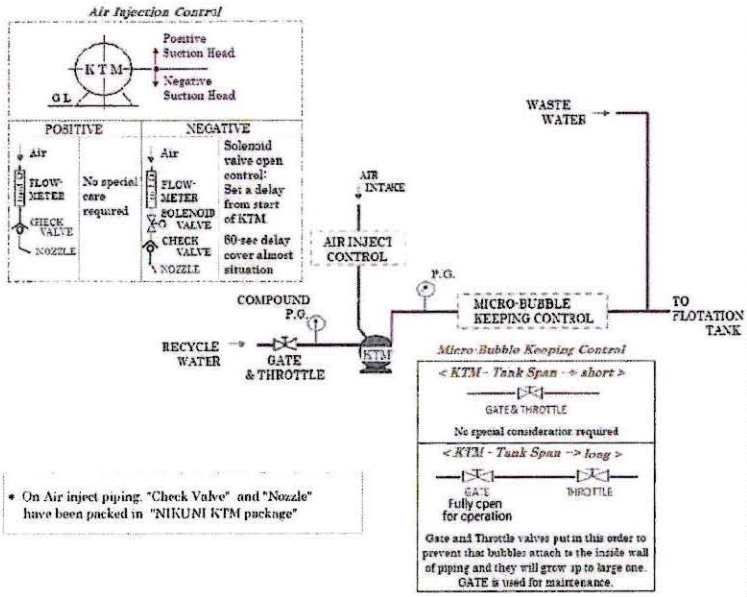
1. Technical Comments on KTM and Relative Factors



Installation Check

1. Power Source Check
   - Voltage
   - Breaker Shutt-off Current
2. On Motor Nameplate
   - Voltage - Output Power
   - Number of Pole (or RPM)
3. Inching Test
   - Rotation Smoothness
   - Rotational Direction
4. Piping
   - KTM - Tank span, short as possible
   - Pumping height
   - Suction height
   - Non-cavitation piping

Note on KTM operation

- Pre-operation Check

Turn power off:
1) Rotation check by hand
2) Prime water
3) Air inject valve: shut
4) Suction valve: open
5) Discharge valve: open

Turn power ON --> Inching Test
1) Start smoothness
2) Rotational direction

Setting on Operation
1) Discharge: 0.3 to 0.4 Mpa (approx.4bar)
2) Suction: -0.04 to -0.05Mpa-G
3) Air inject: 5 to 10% of water discharge flow rate

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2. KTM Performace Tables

2-1. Typical Basic Data for KTM Models (50Hz)

Discharge Pressure : 0.4 MPa = 4kg / cm2 = 4 bar = 56 PSI Air / Water discharge Amount Ratio : 8%

1. Close-coupled Type Motor : Three Phase TEFC indoors motor 200V to 460V, Single-phase(S) 100V to 230V AC available for 0.56kW motor only.

Model	Wetted Part Material	Motor Output (kW)				Air Flow Rate			Current (A)			
			L/min	m³/h	GPM	NL/min	Nm³/h	NGPM	200V	380V	400V	415V
KTM20FD04(S)ZM	Cast Iron / SS	0.56	16.6	1.00	4.4	1.3	0.08	0.4	2.50	1.30	1.30	1.20
KTM20ND04(S)ZM	SS304											
KTM25FD07ZM	Cast Iron / SS	0.075	25	1.50	6.6	2.0	0.12	0.5	4.10	2.20	2.10	2.10
KTM25ND07ZM	SS304											
KTM32FD15ZM	Cast Iron / SS	1.85	50	3.00	13.2	4.0	0.24	1.1	7.60	4.00	4.00	4.00
KTM32ND15ZM	SS304											
KTM40FD22ZM	Cast Iron / SS	2.42	80	4.80	21.1	6.4	0.38	1.7	10.20	5.30	5.10	5.10
KTM40ND22ZM	SS304											

2. Cloupling Type

Model	Wetted Part Material	Water Flow Rate			Air Flow Rate			Required motor power
		L/min	m³/h	GPM	NL/min	Nm³/h	NGPM	kW (HP)
KTM20F	Cast Iron / SS	16.6	1.00	4.4	1.3	0.08	0.4	0.75kW(1HP), 2-Pole
KTM20N	SS304							
KTM25F	Cast Iron / SS	25	1.50	6.6	2.0	0.12	0.5	1.5kW(2HP), 2-Pole
KTM25N	SS304							
KTM32F	Cast Iron / SS	50	3.00	13.2	4.0	0.24	1.1	2.2kW(3HP) 2-Pole
KTM32N	SS304							
KTM40F	Cast Iron / SS	80	4.80	21.1	6.4	0.38	1.7	3.7kW(5HP), 2-Pole
KTM40N	SS304							

3. Cloupling Type (Large flow rate)

Model	Wetted Part Material	Water Flow Rate			Air Flow Rate			Required motor power
		L/min	m³/h	GPM	NL/min	Nm³/h	NGPM	kW (HP)
KTM50F1	Cast Iron / SS	133	8.0	35	11	0.64	3	5.5kW(7HP), 4-Pole
KTM50S2	SS304							
KTM50F2	Cast Iron / SS	200	12.0	53	16	0.96	4	7.5kW(10HP), 4-Pole
KTM50S2	SS304							
KTM50F3	Cast Iron / SS	250	15.0	66	20	1.20	5	11kW(15HP), 4-Pole
KTM50S3	SS304							
KTM65F2	Cast Iron / SS	333	20.0	88	27	1.60	7	15kW(20HP), 4-Pole
KTM65S2	SS304							
KTM80F	Cast Iron / SS	700	12.0	184	56	3.36	15	22kW(30HP), 4-Pole
KTM80S	SS304							

2-2. Typical Basic Data for KTM Models (60Hz)

Discharge Pressure : 0.4 MPa = 4kg / cm2 = 4 bar = 56 PSI Air / Water discharge Amount Ratio : 8%

1. Close-coupled Type

Motor : Three Phase TEFC Indoors motor 200V to 460V

Model	Wetted Part Material	Motor Output (kW)	Water Flow Rate			Air Flow Rate			Current (A)					
			L/min	m^3/h	GPM	NL/min	Nm^3/h	NGPM	200V	220V	380V	400V	440V	460V
KTM20FD07ZM	Cast Iron / SS	0.075	21.7	1.30	5.7	1.7	0.10	0.5	2.50	2.20	1.30	1.20	1.10	1.10
KTM20ND07ZM	SS304													
KTM25FD15ZM	Cast Iron / SS	1.05	41.7	2.50	11.0	3.3	0.20	0.9	4.10	3.70	2.10	2.10	2.00	2.00
KTM25ND15ZM	SS304													
KTM32FD15ZM	Cast Iron / SS	1.05	66.7	4.00	17.5	5.3	0.32	1.4	7.60	6.80	4.00	3.80	3.60	3.60
KTM32ND15ZM	SS304													
KTM40FD22ZM	Cast Iron / SS	2.42	116.7	7.00	30.7	9.3	0.56	2.5	9.60	8.80	5.20	4.80	4.10	4.00
KTM40ND22ZM	SS304													

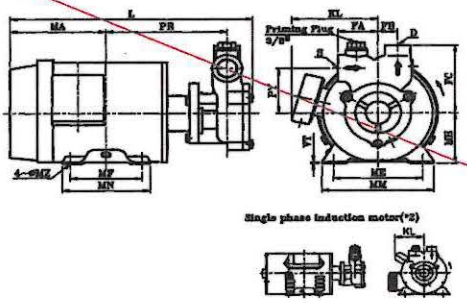
2. Cloupling Type

Model	Wetted Part Material	Water Flow Rate			Air Flow Rate			Required motor power
		L/min	m^3/h	GPM	NL/min	Nm^3/h	NGPM	kW (HP)
KTM20F	Cast Iron / SS	21.7	1.30	5.7	1.7	0.10	0.5	0.75kW(1HP), 2-Pole
KTM20N	SS304							
KTM25F	Cast Iron / SS	41.7	2.50	11.0	3.3	0.20	0.9	1.5kW(2HP), 2-Pole
KTM25N	SS304							
KTM32F	Cast Iron / SS	66.7	4.00	17.5	5.3	0.32	1.4	2.2kW(3HP), 2-Pole
KTM32N	SS304							
KTM40F	Cast Iron / SS	116.7	7.00	30.7	9.3	0.56	2.5	3.7kW(5HP), 2-Pole
KTM40N	SS304							

3. Cloupling Type (Large flow rate)

Model	Wetted Part Material	Water Flow Rate			Air Flow Rate			Required motor power
		L/min	m^3/h	GPM	NL/min	Nm^3/h	NGPM	kW (HP)
KTM50F1	Cast Iron / SS	192	11.5	50	15	0.92	4	7.5kW(10HP), 4-Pole
KTM50S2	SS304							
KTM50F2	Cast Iron / SS	250	15.0	66	20	1.20	5	11kW(15HP), 4-Pole
KTM50S2	SS304							
KTM50F3	Cast Iron / SS	300	18.0	79	24	1.44	6	15kW(20HP), 4-Pole
KTM50S3	SS304							
KTM65F2	Cast Iron / SS	467	28.0	123	37	2.24	10	18.5kW(25HP), 4-Pole
KTM65S2	SS304							
KTM80F	Cast Iron / SS	967	58.0	254	77	4.64	20	30kW(40HP), 4-Pole
KTM80S	SS304							

3-1. Close-coupled Type (KTM__ND / KTM__FD)



Dimension & weight Unit:mm,kg (Net weight)

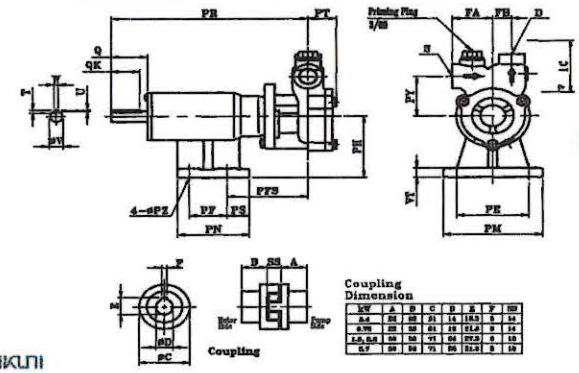
	Model	kW	S	D	FB	FT	FA	FB	FC	MH	L	MA	ME	MF	MM	MN	MZ	VT	KL	Weight
TEFC(*1)	KTM15ND022	0.31	R1/2	R3/8	152	52	45	21	61	71	304	121	112	80	140	110	7×8	2.3	107	8.5
	KTM20ND047	0.56	R3/4	R1/2	151	65	50	25	95	71	304	121	112	80	140	110	7×8	2.3	107	12
	KTM20ND072	0.075	R3/4	R1/2	144.5	63	58	25	95	80	324.5	148	125	100	165	130	10×8	4.5	148	20.5
	KTM25ND072	0.075	R1	R3/4	144.5	70	60	29	105	80	331	148	125	100	165	130	10×8	4.5	148	20.5
	KTM25ND152	1.05	R1	R3/4	167.5	78	60	32	105	80	348	143	140	125	170	150	10×12	10	147	20.5
	KTM32ND152	1.05	R1 1/4	R1	167.5	88	65	35	120	90	354.5	143	140	125	170	150	10×12	10	147	21.5
	KTM40ND222	2.42	R1 1/2	R1 1/4	171.5	89	70	40	130	90	364.5	143	140	125	170	150	10×12	10	147	22.5
Brake	KTM15ND022B	0.3	R1/2	R3/8	153	52	45	21	61	71	292	108	112	80	140	110	7×10	2.8	69	11
	KTM20RD048B	0.56	R3/4	R1/2	184.5	63	50	25	85	80	352.5	134	125	100	165	125	10×20	3.2	88	17

Note : Dimension is for SS304 Model.
For Cast Iron / SS, dimension is almost similar to the above. Please ask for detail.

KTM 20 F D 07 ZM

- Motor Type: Total-Enclosed Fan-Cooled Type
- Motor Output: 04:0.56kW 07:0.075kW 15:1.97kW 22:2.42kW
- Closed-coupled Type
- Wetted Part Material: F:Cast Iron/SS N:SS304
- Suction Port Diameter: 15 20 25 32 40 mm
- Model Name

3-2. Bare Pump fo Coupling Type (KTM20N/F to KTM40N/F)



Coupling Dimension

kW	A	B	C	D	E	F	SD
0.4	80	60	21	14	18.5	5	14
0.75	80	60	21	19	21.5	5	14
1.5, 2.2	90	70	23	24	27.5	8	19
3.7	90	70	23	28	31.5	8	19

Dimension & weight Unit:mm,kg (Net weight)

Model	S	D	FB	FT	FA	FB	FTS	FC	FH	FT	FE	FF	FM	FN	FS	VT	Q	QK	T	U	V	W	Weight
KTM15N	R1/2	R3/8	219	52	45	21	69	61	69	31	95	45	110	80	95	12	41	32	8	8	14	6	5.5
KTM20N	R3/4	R1/2	219	65	50	25	69	65	79	32	99	45	110	80	95	12	41	32	8	8	14	7	7.5
KTM25N	R1	R3/4	224	70	60	29	105	80	89.5	35	45	110	80	95	12	41	32	8	8.5	13	8	7.5
KTM32N	R1 1/4	R1	234	88	65	35	120	90	94	38	45	110	80	95	12	41	32	8	8.5	13	8	8	
KTM40N	R1 1/2	R1 1/4	238	89	70	40	120	90	98	38	100	80	130	95	12	41	45	7	9	24	8	13	

Note : Dimension is for SS304 Model.
For Cast Iron / SS, dimension is almost similar to the above. Please ask for detail.

KTM 20 N

- Wetted Part Material: F:Cast Iron/SS N:SS304
- Suction Port Diameter: 15 20 25 32 40 mm
- Model Name

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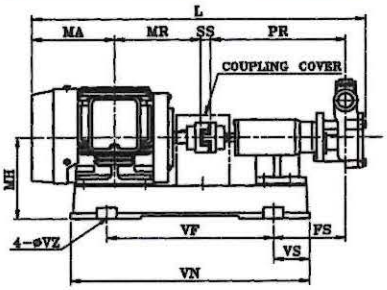
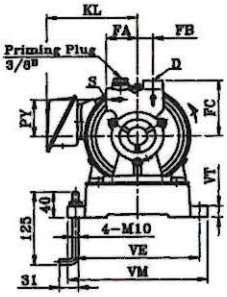
3-3. Coupling Type (KTM20N/F to KTM40N/F)





KTM 20 N 07 CE

- Model Name
- Suction Port Diameter: 15 20 25 32 40 mm
- Wetted Part Material: F:Cast Iron/SS N:SS304
- Motor Output: 07:0.75kW 15:1.5kW 22:2.2kW 37:3.7kW
- Motor Type (Nikuni Mark)

Nikuni will supply bare pump and base with coupling set only.
Electric motor should be prepared by purchaser.

Dimension & weight

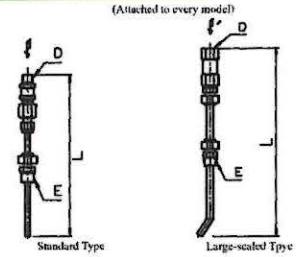
Unit:mm,kg (pump weight only)

Model	kW	S	D	PR	PY	FA	FB	PS	FC	MH	L	MA	MR	SS	VE	VF	VM	VN	VS	VT	VZ	KL	Weight
KTM15N	0.4	Rc1/2	Rc3/8	219	52	46	21	115	81	130	505	121	120	14	184	245	210	357	56	20	12	-	18
KTM20N	0.4	Rc3/4	Rc1/2	219	63	50	25	114	85	130	505	121	120	14	184	245	210	357	56	20	12	-	20
	0.75	Rc3/4	Rc1/2	216	63	50	25	116	85	140	537	133	140	14	199	269	225	385	58	20	12	145	27
KTM25N	0.75	Rc1	Rc3/4	224	70	60	28	122	105	140	549.5	133	140	14	199	269	225	385	58	20	12	146	27
	1.5	Rc1	Rc3/4	224	70	60	28	129	105	150	582	143	168.5	16	214	300	240	430	65	20	12	147	31
KTM32N	1.5	Rc1 1/4	Rc1	224	80	65	35	129	120	150	587.5	143	168.5	16	214	300	240	430	65	20	12	147	32
	2.2	Rc1 1/4	Rc1	224	80	65	35	129	120	150	587.5	143	168.5	16	214	300	240	430	65	20	12	147	34
KTM40N	2.2	Rc1 1/2	Rc1 1/4	239	85	70	40	123	130	145	617.5	145	168.5	16	230	350	280	500	75	15	12	147	37
	3.7	Rc1 1/2	Rc1 1/4	239	85	70	40	62	130	180	692	166	200	19	260	425	310	616	86	25	12	154	53

Note : Dimension is for SS304 Model.
For Cast Iron / SS, dimension is almost similar to the above. Please ask for detail.

3-4. Air (Gas) Nozzle Assembly

(Attached to every model)

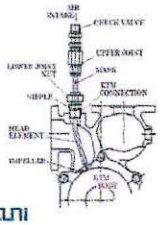


Standard Type

Applicable Models	KTM Joint Dia. E (nominal)	Overall Length L mm	Air Intake Dia. D (nominal)
KTM15 (F)(N)(D)	R 3/8B	121	R 1/4B
KTM20 (F)(N)(D)	R 3/8B	121	R 1/4B
KTM25 (F)(N)(D)	R 3/8B	121	R 1/4B
KTM32 (F)(N)(D)	R 3/8B	121	R 1/4B
KTM40 (F)(N)(D)	R 3/8B	121	R 1/4B
KTM50 (F)(S) 1, 2, 3	R 3/8B	129	R 1/4B

Large-scaled Type

Applicable Models	KTM Joint Dia. E (nominal)	Overall Length L mm	Air Intake Dia. D (nominal)
KTM65 (F)(S)	R 3/8B	304	R 3/8
KTM80 (F)(S)	R 3/8B	319	R 3/8



- How to mount the Air Nozzle-

1) Ready for nozzle Head-Impeller span adjust.
   loosen Lower Joint Nut to allow Nipple freely move.
2) Put mark showing Head direction as shown in the left illustration.
3) Apply sealing tape onto the Nipple of Lower Joint.
4) Insert Head Element into KTM connection opening and tighten Nipple.
5) Direct Head to the center of Impeller by turning Element with refer to the mark.
6) Tighten Lower Joint Nut and ensure Nozzle assembly is firmly fixed.
7) Check to see that Nozzle Head cannot touch with Impeller by turning the motor with a screw-driver at its axis end.

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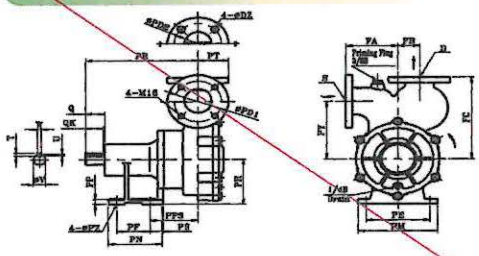
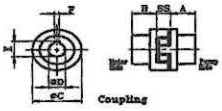
3-5. Bare Pump (KTM50S1/F1 TO KTM50S3/F3)





KTM 50 S1

- Model Name
- Suction Port Diameter: 50 65 80 mm
- Wetted Part Material: S1 to S3: SS304; F1 to F3: Cast Iron / SS

Coupling dimension

KW	A	B	C	D	E	F	SS
0.4, 0.75	40	45	70	36	41.5	10	24
1.5, 2.2	45	55	125	42	46.5	12	40

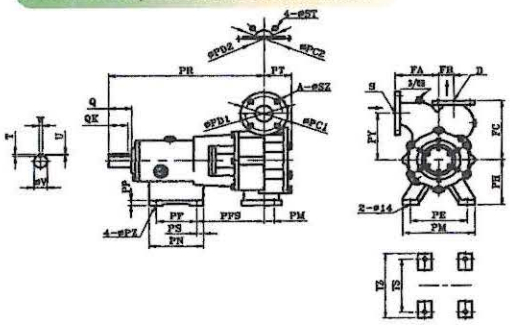
Dimension & weight

Unit:mm,kg (Net weight)

Model	S	D	PR	PY	FA	FB	FC	PE	PM	PT	PD1	PD2	PH	PFS	PS	PF	PN	PP	PZ	Q	QK	T	U	V	W	Weight
KTM50S1	50A	50A	205	160	130	55	230	100	200	77.5	120	120	132	121	33	85	138	14	14	49	45	7	3	30	8	41
KTM50S2	50A	50A	205	170	130	55	240	100	200	77.5	120	120	132	121	33	85	138	14	14	49	45	7	3	30	8	44
KTM50S3	50A	50A	205	170	130	55	240	100	200	77.5	120	120	132	121	33	85	138	14	14	49	45	7	3	30	8	44

Note : Dimension is for SS304 Model. For Cast Iron / SS, dimension is almost similar to the above. Please ask for detail.

3-6. Bare Pump (KTM65S/F TO KTM80S/F)



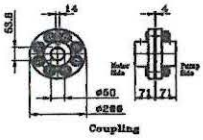
Dimension & weight

Unit:mm,kg (Net weight)

Model	S	D	PR	PY	FA	FB	FC	PH	PE	PM	PT	PD1	PD2	PC1	PC2	PM	PFS
KTM65S2	65A	50A	575.5	190	160	55	240	100	210	266	102	140	120	175	155	36.5	248.5
KTM80S	80A	65A	582	180	170	80	280	100	270	326	127	160	140	185	175	45	255

Model	PS	PF	PN	PP	PZ	SZ	ST	TS	TZ	Q	QK	T	U	V	W	Weight
KTM65S2	25	150	200	20	14	19	19	230	280	87	74	9	3.5	50	14	106
KTM80S	25	150	200	20	18	19	19	230	280	87	74	9	3.5	50	14	130

Note : Dimension is for SS304 Model. For Cast Iron / SS, dimension is almost similar to the above. Please ask for detail.



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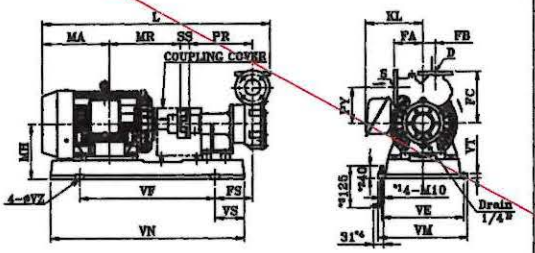
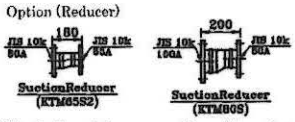
3-7. Coupling Type (KTM50S/F to KTM80S/F)



Option (Reducer)



Nikuni will supply bare pump and base with coupling set only.
Electric motor should be prepared by pruchaser.

Dimension & weight

Unit:mm,kg (Net weight)

Model	kW	S	D	PR	PY	FA	FB	FS	FC	MH	L	MA
KTM50S1	5.5	50A	50A	285	160	130	55	150	230	204	836	210.5
	7.5	50A	50A	285	160	130	55	160	230	204	874	229.5
KTM50S2 KTM50S3	7.5	50A	50A	285	170	130	55	160	240	204	874	229.5
	11	50A	50A	285	170	130	55	169	240	245	1027.5	302
	15	50A	50A	285	170	130	55	169	240	245	1027.5	280
KTM65S2	15	65A	50A	575.5	190	160	55	102.5	240	300	1276.5	250
	18.5	65A	50A	575.5	190	160	55	102.5	240	300	1353	291.5
KTM80S	22	80A	65A	582	180	170	80	109	280	300	1356	291.5
	30	80A	65A	582	180	170	80	39.5	280	360	1429	345.5

Model	MR	SS	VE	VF	VM	VN	VS	VT	VZ	KL	Weight
KTM50S1	239	24	324	448	352	690	121	20	12	189	105
	258	24	324	448	352	690	121	20	12	189	111
KTM50S2 KTM50S3	258	24	324	448	352	690	121	20	12	189	115
	323	40	368	614	404	878	132	20	15	257.5	162
	345	40	368	614	404	878	132	20	15	257.5	177
KTM65S2	345	4	462	835	512	1285	225	30	19	258	303
	351.5	4	462	835	512	1285	225	30	19	335	338
KTM80S	351.5	4	462	835	512	1285	225	30	19	279	372
	370.5	4	356	950	430	1250	150	17.5	19	314	498

Note : Dimension is for SS304 Model. For Cast Iron / SS, dimension is almost similar to the above. Please ask for detail.

3-8. Recommeded Accessories

Air Flow-meter Application

Model	50Hz frequency Water flow rate (M³/Hr x 1 Bar)	Operation Air Flow Rate	Air Flowmeter Range	60Hz frequency Water flow rate (M³/Hr x 1 Bar)	Operation Air Flow Rate	Air Flowmeter Range
KTM20N(D) / KTM20F(D)	1	1.3	0 to 5	1.3	1.7	0 to 5
KTM25N(D) / KTM25F(D)	1.5	2.0	0 to 5	2.5	3.3	0 to 5
KTM32N(D) / KTM32F(D)	3	4.0	0 to 10	4	5.3	0 to 10
KTM40N(D) / KTM40F(D)	4.5	6.4	0 to 10	7	9.3	0 to 20
KTM50S1 / KTM50F1	8	10.6	0 to 20	11.6	15.0	0 to 20
KTM50S2 / KTM50F2	12	16.0	0 to 20	15	20.0	0 to 40
KTM50S3 / KTM50F3	16	20.0	0 to 20	18	24.0	0 to 40
KTM65S2 / KTM65F2	20	26.6	0 to 40	28	38.0	0 to 60
KTM80S / KTM80F	32	56.0	0 to 80	58	78.0	0 to 100

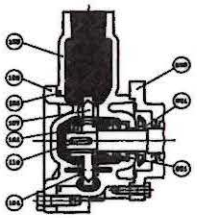
Pressure Guages

Compound Guage
minus 0.1MPa - +0.25MPa
minus 1.0bar - +2.5bar
minus 15psi - +35psi

Pressure Gunge
0MPa - 1.0MPa
0bar - 10bar
0psi - 150psi

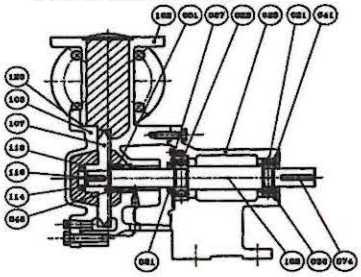
3-9 Sectional drawings for cast iron models (KTM_FD/F)

Model: KTM20FD to KTM40FD



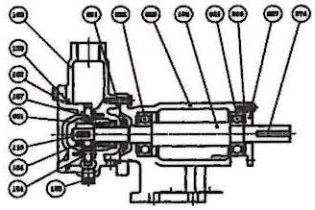
No.	NAME OF PARTS	SET	MATERIALS
051	Mechanical Seal	1	Ceramics - Carbon
081	Slinger	1	NBR
102	Casing	1	FC200
103	Cover	1	FC200
104	Side Plates	2	CAC402
107	Impeller	1	SUS403
116	Key	1	SUS316
122	O-Ring	1	NBR
135	Plug	1	FCMB
184	Set Screws	2	SUS316
500	Motor	1	

Model: KTM50F1 to KTM50F3



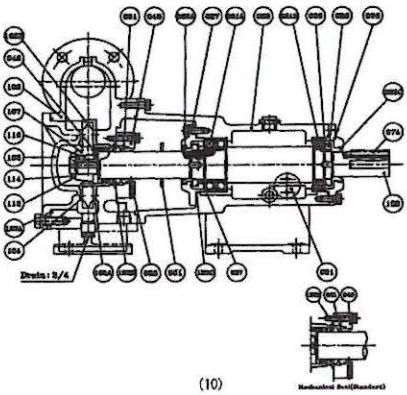
No.	NAME OF PARTS	SET	MATERIALS
021	Ball Bearing	1	SUJ
022	Ball Bearing	1	SUJ
025	Bracket	1	FC200
027	Bearing Gland	1	SPC
036	Bearing Cover	1	SPC
041	Retaining Ring	1	SUS304
048	Mechanical Seal Retainer	1	SUS304
051	Mechanical Seal	1	SiC – SiC
074	Key	1	S45C
081	Slinger	1	NBR
102	Casing	1	FC200
103	Cover	1	FC200
107	Impeller	1	SUS304
108	Shaft	1	SUS304
113	Impeller Washer	1	SUS304
114	Impeller Nut	1	SUS304
116	Impeller Key	1	SUS304
123	O-Ring	1	PTFE

Model: KTM20F & KTM40F



No.	NAME OF PARTS	SET	MATERIALS	No.	NAME OF PARTS	SET	MATERIALS
021	Ball Bearing	1	SUJ	102	Cover	1	FC200
022	Ball Bearing	1	SUJ	104	Side Plates	2	CAC402
025	Bracket	1	FC200	107	Impeller	1	SUS403
027	Bearing Gland	1	FC200	108	Shaft	1	SUS304
051	Mechanical Seal	1	Ceramics - Carbon	116	Key	1	SUS316
088	Wave Washer	2	SK	122	O-Ring	1	NBR
074	Key	1	S45C	135	Plug	1	SUS304
081	Slinger	1	NBR	184	Set Screws	2	SUS304
102	Casing	1	FC200				

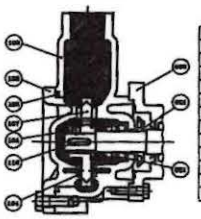
Model: KTM65F2 & KTM80F



No.	NAME OF PARTS	SET	MATERIALS Standard	MATERIALS Stuffing box
021A	Ball Bearing	1	SUJ	
021B	Ball Bearing	1	SUJ	
022A	Oil Seal	1	NBR	
022C	Oil Seal	1	NBR	
025	Bracket	1	FC200	
027	Bearing Gland	1	FC200	
029	Bearing Nut	2	SUJ	
030	Bearing Washer	2	SUJ	
036	Bearing Cover	1	FC200	
037	Bearing Collar	1	SS	
048	Mechanical Seal Retainer	1	SUS304	
049	Mechanical Gland	1	FC200	–
051	Mechanical Seal	1	SiC – Carbon	
055	Pin	1	SUS420J2	–
074	Key	1	S45C	
081	Slinger	1	NBR	
091	Oil Pot Window	1		
102	Casing	1	FC200	
103	Cover	1	FC200	
104	Side Plate	1	SCS13	
106	Side Plate	1	SCS13	
107	Impeller	1	SUS304	
108	Shaft	1	SUS403	
113	Impeller Washer	1	SUS304	
114	Impeller Nut	1	SUS304	
116	Impeller Key	1	SUS304	
123A	O-Ring	1	FPM	
123B	O-Ring	1	FPM	
123C	O-Ring	2	FPM	

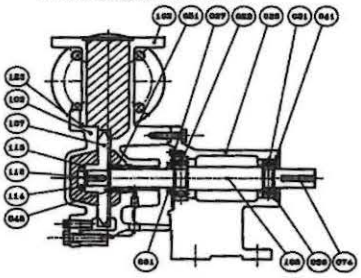
3-10. Sectional drawings for SS304 models (KTM_N/S)

Model: KTM20ND to KTM40ND



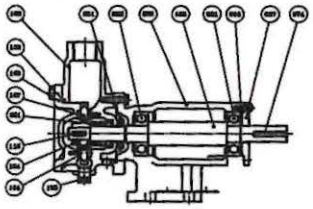
No.	NAME OF PARTS	SET	MATERIALS
038	Collar	1	SUS304
049	Mechanical Gland	1	SUS304
051	Mechanical Seal	1	SiC – SiC
081	Slinger	1	NBR
102	Casing	1	SCS13
103	Cover	1	SCS13
107	Impeller	1	SUS304
118	Key	1	SUS316
123	O-Ring	1	PTFE
184	Bolts	8	SUS304
164	Set Screws	8	SUS304
800	Motor	1	

Model: KTM50S1 to KTM50S3



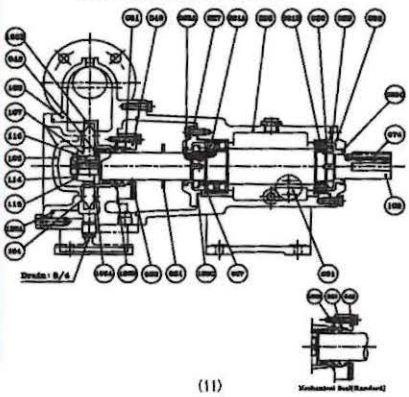
No.	NAME OF PARTS	SET	MATERIALS
021	Ball Bearing	1	SUJ
022	Ball Bearing	1	SUJ
025	Bracket	1	FC200
027	Bearing Gland	1	SPC
036	Bearing Cover	1	SPC
041	Retaining Ring	1	SUS304
048	Mechanical Seal Retainer	1	SUS304
051	Mechanical Seal	1	SiC – SiC
074	Key	1	S45C
081	Slinger	1	NBR
102	Casing	1	SCS13
103	Cover	1	SCS13
107	Impeller	1	SUS304
108	Shaft	1	SUS304
112	Impeller Washer	1	SUS304
114	Impeller Nut	1	SUS304
116	Impeller Key	1	SUS316
123	O-Ring	1	PTFE

Model: KTM20N & KTM40N



No.	NAME OF PARTS	SET	MATERIALS	No.	NAME OF PARTS	SET	MATERIALS
021	Ball Bearing	1	SUJ	081	Slinger	1	NBR
022	Ball Bearing	1	SUJ	102	Casing	1	SCS13
025	Bracket	1	FC200	103	Cover	1	SCS13
027	Bearing Gland	1	FC200	107	Impeller	1	SUS304
049	Mechanical Gland	1	SUS304	108	Shaft	1	SUS304
051	Mechanical Seal	1	SiC – SiC	116	Key	1	SUS316
066	Wave Washers	2	SK	123	O-Ring	1	PTFE
074	Key	1	S45C	184	Set Screws	8	SUS304

Model: KTM65S2 & KTM80S



No.	NAME OF PARTS	SET	MATERIALS (Standard / Mechanical Seal)
021A	Ball Bearing	1	SUJ
021B	Ball Bearing	1	SUJ
023A	Oil Seal	1	NBR
023C	Oil Seal	1	NBR
025	Bracket	1	FC200
027	Bearing Gland	1	FC200
028	Bearing Nut	2	SUJ
030	Bearing Washer	2	SUJ
036	Bearing Cover	1	FC200
037	Bearing Collar	1	SS
048	Mechanical Seal Retainer	1	SUS304
049	Mechanical Gland	1	SUS304 / –
051	Mechanical Seal	1	SiC – Carbon
053	Pin	1	SUS304 / –
074	Key	1	S45C
081	Slinger	1	NBR
091	Oil Pot Window	1	
102	Casing	1	SCS13
103	Cover	1	SCS13
104	Side Plate	1	SCS13
105	Side Plate	1	SCS13
107	Impeller	1	SUS304
108	Shaft	1	SUS304
112	Impeller Washer	1	SUS304
114	Impeller Nut	1	SUS304
116	Impeller Key	1	SUS316
123A	O-Ring	1	FPM
123B	O-Ring	1	FPM
123C	O-Ring	2	FPM

Drain : 3/4

[Mechanical Seal(Standard)]

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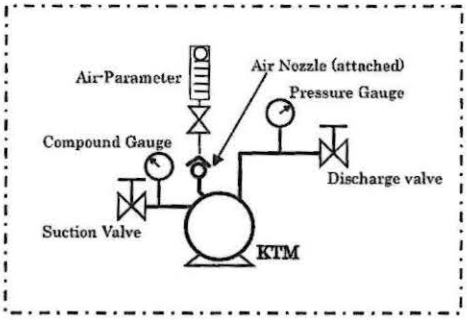
4. KTM Initial Running Procedure

Ensure that "Installation Check" and "Note on KTM Operation" on the page of "1.Technical Comment on KTM and Relative Factors" should have already been understood and completed.



4-1. Pre-operation Check (Turn power off.)

1) Prime KTM with effluent or water.

2) Put Suction and discharge valves both in full-open.
Do not run KTM in close of these vales.

4-2. Starting KTM

1) Discharge side:

Slowly close Discharge valve so as the discharge pressure is put into a range from 0.3MPa to 0.4Mpa (3 bars to 4 bars) with reference to the pressure gage.

In case of locating Discharge valve (or KTM) too far from flotation tank, bubble trends to grow large, in order to keep its size in micron order, an additional control valve should be provided in flotation tank side to control the discharge pressure. While, KTM side existing valve is changed in its purpose to control the gate open-close only.

2) Suction side:

Check to see Compound gage indicating a minus ranging from 0.2MPa to 0.3MPa. If its pressure is over the above minus range, slightly close its valve as to bring the pressure into the above range.

3) Air inject:

Open the knob of Airflow meter to check flow-rate whether around 8% or not. For your reference, see "Air Parameter Range Table".

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Polymer Batching System	Tag E-31.1.1
System Type	Manual Batch (neat and dry)
Capacity	70 gallons
Maximum Concentration	0.5%

Polymer Metering Pump	Tag M-31.1.1
Manufacturer	Pulsatron
Pump Type	Diaphragm/ solenoid driven/ High Viscosity head
Capacity	4 gph
Flow Paced	Yes
Model Number	LVG5-M-A-PTS

PULSAtron® Series HV

Electronic Metering Pumps

PULSAFEEDER®
A Unit of IDEX Corporation

Key Features

- ***Automatic Control,*** available with 4-20 mADC direct or external pacing, with stop function.
- ***Manual Control*** by on-line adjustable stroke rate and stroke length.
- ***Agency approved*** for demanding ***OUTDOOR*** and indoor applications.
- ***Auto-Off-Manual*** switch.
- ***Highly Reliable*** timing circuit.
- ***Circuit Protection*** against voltage and current upsets.
- ***Panel Mounted Fuse.***
- ***Solenoid Protection*** by thermal overload with auto-reset.
- ***Water Resistant,*** for outdoor and indoor applications.
- ***Indicator Lights,*** panel mounted.
- ***Guided Ball Check Valve Systems,*** to reduce back flow and enhance outstanding priming characteristics.
- ***Viscosities to 20,000 CPS.***

Complete Economical Selection

Five distinct models are available, having pressure capabilities to 150 PSIG @ 24 GPD, and flow capacities to 240 GPD @ 80 PSIG, with a turndown ratio of 100:1. Metering performance is reproducible to within ± 2% of maximum capacity.

Please refer to the reverse side for Series HV specifications.

Operating Benefits

Reliable metering performance. Our guided check valves, with their state-of-the-art seat and ball designs, provide precise seating, and excellent priming and suction lift characteristics. Our timing circuit is highly reliable and, by design, virtually unaffected by temperature, EMI and other electrical disturbances.

Rated "hot" for continuous duty. Series HV pumps continue to meet their specifications for pressure and capacity even during extended use. That's because of our high quality solenoid and special enclosure that effectively dissipates heat.

High viscosity capability. A straight flow path and ample clearance between the diaphragm and head enable PULSAtron Series HV pumps to handle viscous chemicals up to a viscosity of 20,000 CPS.

Leak-free, sealless, liquid end. Our diaphragms are of superior construction—PTFE-faced, bonded to a composite of Hypalon and fabric layers, and reinforced with a metal insert for optimum flexibility and durability.

For additional information about PULSAtron's full-featured Series MP & Series E PLUS refer to Technical Sheet No. EMP-027 & EMP-021, about the mid-range Series E, Series D & Series A PLUS refer to Technical Sheet No. EMP-022, EMP-023 & EMP-025. For information about the economical Series C PLUS & Series C, refer to Technical Sheet No. EMP-026 & EMP-024.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

IDEX CORPORATION

System Compatibility

A wide variety of chemicals can be pumped.
Liquid end materials include PVC, PTFE and 316SS.

Immediate installation and start-up.
Included as standard accessories with all models are an injection/back pressure valve assembly and discharge and suction tubing.

Quick and economical liquid end maintenance.
Available for every model is a unique KOPkit®, a convenient, economically priced, package containing new cartridge check valves and other important spare parts.

PULSAtron Series HV Specifications

Pressure and Flow Rate Capacity

MODEL		LVB3	LVF4	LVG4	LVG5	LVH7
Capacity	GPH	0.50	1.00	2.00	4.00	10.00
nominal	GPD	12	24	48	96	240
(max.)	LPH	1.9	3.8	7.6	15.1	37.9
Pressure	PSIG	150	150	110	110	80
(max.)	BAR	10	10	7	7	5.6
Connections:	Tubing	(S) .50" I.D. x .75" O.D. (D) .38" I.D. x .50" O.D. (LVB3 & F4 only) (S & D) .50" I.D. x .75" O.D. (LVG4, G5 & H7 only)				
Reproducibility at max. capacity		+/- 2%				
Viscosity Max CPS		20,000 CPS				
Stroke Frequency Max SPM		125				
Stroke Frequency Turn-Down Ratio		10:1				
Stroke Length Turn-Down Ratio		10:1				
Power Input		115 VAC/50-60 HZ/1 ph 230 VAC/50-60 HZ/1 ph				
Average Current Draw @ 115 VAC: Amps @ 230 VAC: Amps		1.0 0.5				
Peak Input Power Watts		300				
Average Input Power @ max SPM: Watts		130				

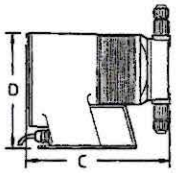
Important: Series HV - 5 model selections. Digit 1 and 2 (LV) signify product class, digit 3 and 4 signify pressure/flow. For full model selection information refer to Price Schedule EMP-PS LP.

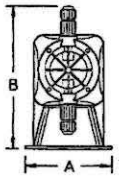
Liquid End Materials

Series	Pump Head	Diaphragm	Check Valves		Fittings	Injection Valve Assembly Foot Valve Assembly	Tubing
			Seats/O-Rings	Balls			
HV	PVC	PTFE-faced Hypalon-backed	PTFE	316SS PTFE	PVC	Same as fitting and check valve selected	Clear Braided PVC White PE

Important: Material Code— PVC = Polyvinyl Chloride. Hypalon and Viton are registered trademarks of E.I. DuPont Company.

Dimensions





Series HV Dimensions (inches)					
Model No.	A	B	C	D	Shipping Weight
LVB3	5.4	9.3	9.5	7.5	13
LVF4	5.4	10.8	10.8	7.5	18
LVG4	5.4	9.5	10.6	7.5	18
LVG5	5.4	10.8	10.8	7.5	18
LVH7	6.1	11.5	11.0	8.2	25

NOTE: Inches X 2.54 = cm

An ISO Certified Company

IDEX CORPORATION

PULSAFEEDER®
A Unit of IDEX Corporation

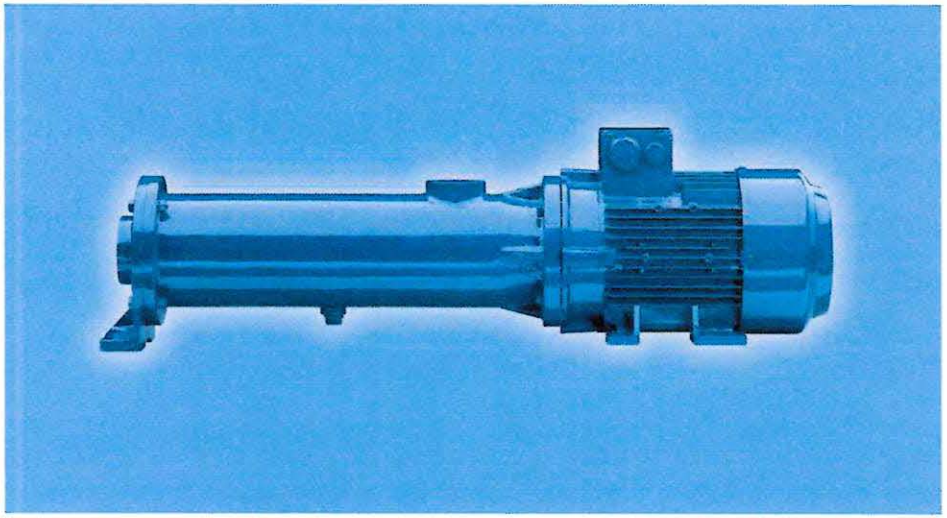
Standard Product Operations
27101 Airport Road • Punta Gorda, Florida 33982
TEL (941) 575-3800 • TEL 800-333-6577
FAX (941) 575-4085 • FAX 800-466-4065
spotech@pulsa.com • www.pulsa.com

Brochure No. EMP-003
Printed in the USA 0404

Sludge Transfer Pumps	Tag M-33.1.1 & M-33.1.2
Manufacturer	Seepex
Model Number	BW2
Type	Progressive Cavity
Flow Rate	6.25 GPM
Discharge Pressure	30 PSIG
Horsepower	1
Rotation Speed	1150 RPM
Number of units	1

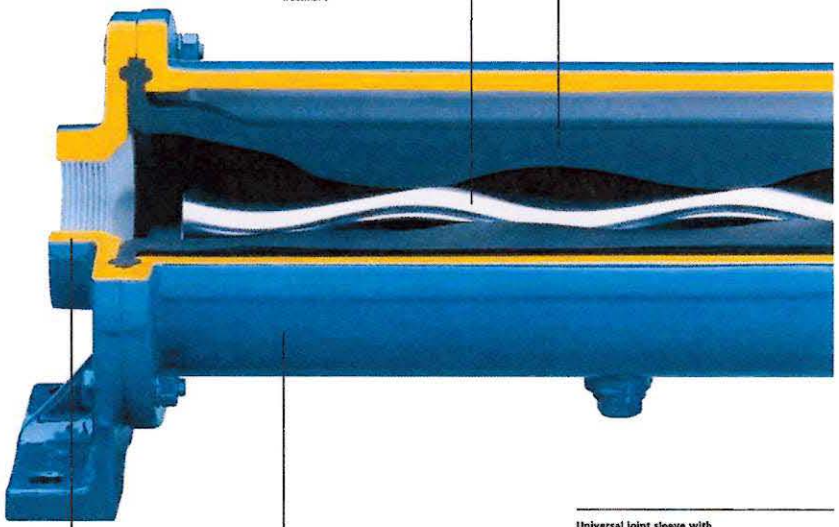
seepex.com
all things flow

Here is your conveying solution: Product group W.



W – Wobble pumps

Pumps of product group W can be used in almost all industries. They are designed to handle liquids of all viscosities and even products with high solids contents. They are cost effective and versatile



Joint connection
consisting of just 5 components. Power transmission through wear resistant, hardened and replaceable joint parts, easily repaired

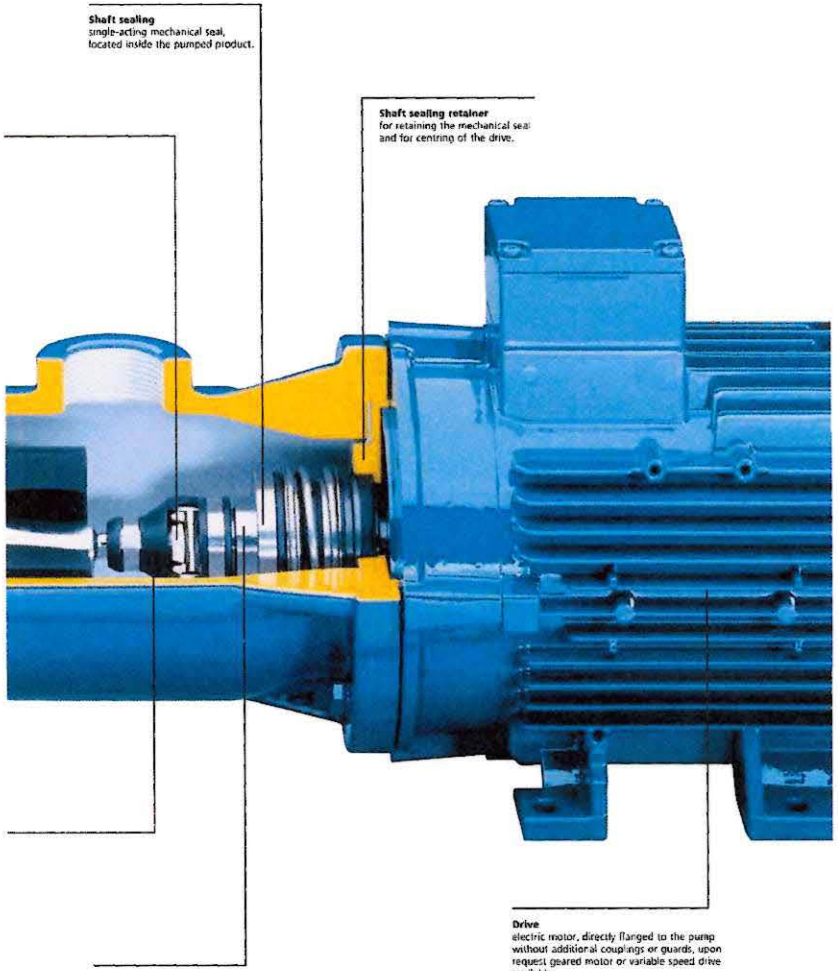
Rotor
wear resistant and corrosionproof materials, with additional surface treatment

Stator
flexible stator, fixed on one side

Universal joint sleeve with holding bands
protects the grease-filled joints from penetration of the pumped product, even in case of maximum vacuum or pressure loading

Suction branch
flange connection according to DIN EN ISO 228-1 or NPT

Pressure casing
with drain plug and connections for pressure/vacuum gauge. Flange connections according to DIN EN ISO 228-1 or NPT, can be rotated in 90° increments



Why wobble pumps?

Because they are used in applications such as agriculture, ceramics, chemical and biochemical industry, construction, dyeing and varnishing, electroplating, environment technology, fish industry, food and beverage industry, mining, non-metallic minerals, oil production and offshore technology, petrochemicals, pharmaceutical and cosmetics industry, pulp and paper industry, shipbuilding, sugar industry, supply and waste disposal industry, textile industry, vehicle construction and equipment and wood processing industry.

Features

- Service-friendly and economical due to simple pump construction
- Rapid exchange of conveying elements due to rotating unit with only one joint
- Space-saving due to short, compact design with directly flanged drive (block design)

> Conveying capacity: up to 10 m³/h (44 GPM), Pressure: up to 4 bar (60 psi)

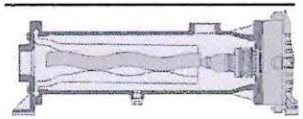
Benefits

- Improved geometries for improved efficiency
- Flat performance curves for predictable performance
- Thick stator cross sections reduce "slip" and improve longevity
- Unique stator design eliminates stress "risers"
- Reliable in thousands of "grinder" pump applications
- The seepex universal joint system, proven for 35 years
- DIN 24960 seals for easy and inexpensive maintenance
- Silicon carbide seal faces for long life
- Close coupled designs with 4 and 6-pole motors
- Energy efficient motors suitable for VFD operation
- Pumps and motors are stocked for immediate shipment
- Available in cast iron and stainless steel
- Available in direct drive and several variable speed designs

Overview of ranges

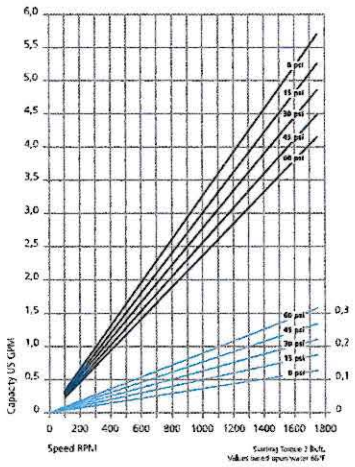
Pumps of the BW range are very easy to handle and economical. In contrast to conventional progressive cavity pumps, they have only one joint, which saves costs and reduces downtime when replacing spare parts. The wobble-stator pump is also space saving because the lantern has been dispensed with – the drive is flanged onto the pump directly

Range BW

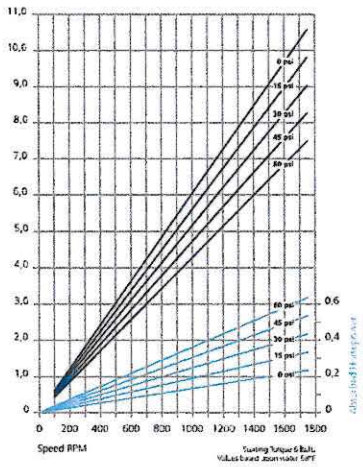


Characteristic Curves

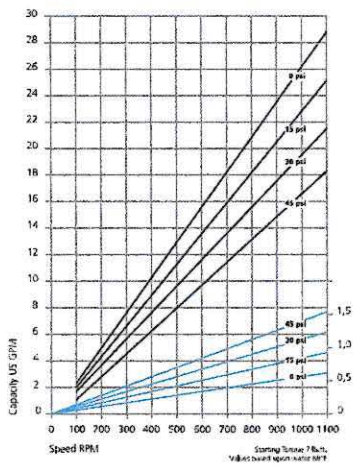
BW 1



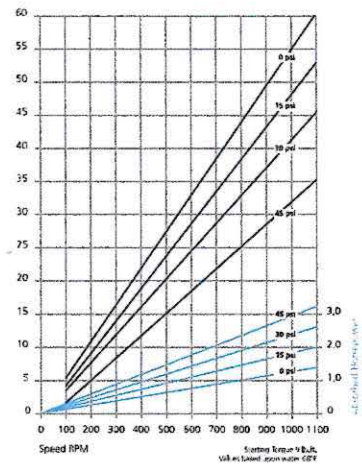
BW 2



BW 5



BW 10



Dimensions and drives

Pump Configuration – *All dimensions in inches*	Overall length	Overall width	Overall height			
	A	B	F	C	D	E
BW 1+2 *with seepex DC motor and controller*	23 9/16"	6 7/8"	6 31/32"	7 7/32"	3 29/32"	2 25/32"
BW 1+2 *with AC motor and controller*	22 15/16"	7 15/32"	11 7/32"	7 7/32"	3 27/32"	3 1/2"
BW 1+2 *with mechanical VS drive SPFD05/M71/B3B5 (1-1.000 rpm)* [1]	24 3/16"	6 5/8"	8 3/8"	7 7/32"	3 13/16"	3 5/32"
BW 1+2 *with Baldor 1 x 120 VAC 60 Hz 1.5 HP, 1750 rpm direct coupled motor*	22 1/2"	9 7/16"	9 1/32"	7 7/32"	5 3/4"	3 1/2"
BW 1+2 *with Baldor 3 x 230/460 VAC 60 Hz 1.5 HP, 1750 rpm direct coupled motor*	22 1/2"	9 3/8"	7 3/32"	7 7/32"	5 3/4"	3 1/2"
BW 1+2 *with Baldor 3 x 230/460 VAC 60 Hz 1 HP, 1150 rpm direct coupled motor*	22 1/2"	9 1/8"	9 1/32"	7 7/32"	5 3/4"	3 1/2"
BW 5 *with Baldor 3 x 230/460 VAC 60 Hz 3 HP, 1750 rpm direct coupled motor*	45 3/8"	9 3/4"	10"	14 1/32"	4 7/8"	4 1/2"
BW 5 *with Baldor 3 x 230/460 VAC 60 Hz 2 HP, 1150 rpm direct coupled motor*	19 1/4"	11 1/4"	8 5/16"	14 1/32"	6 7/8"	4 13/32"
BW 10 *with Baldor 3 x 230/460 VAC 60 Hz 5 HP, 1150 rpm direct coupled motor*	44 5/8"	13 3/8"	12 9/32"	18 5/16"	8 1/2"	5 3/16"

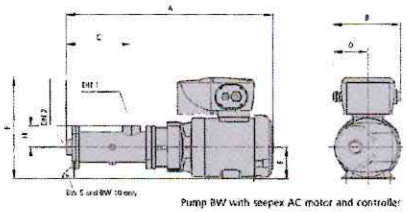
Pump Configuration – *All dimensions in mm*	Overall length	Overall width	Overall height			
	A	B	F	C	D	E
BW 1+2 *with seepex DC motor and controller*	598	175	177	183	99	71
BW 1+2 *with AC motor and controller*	582	190	285	183	98	88,9
BW 1+2 *with mechanical VS drive SPFD05/M71/B3B5 (1-1.000 rpm)* [1]	615	168	213	183	97	80
BW 1+2 *with Baldor 1 x 120 VAC 60 Hz 1.5 HP, 1750 rpm direct coupled motor*	571	240	229	183	146	88,9
BW 1+2 *with Baldor 3 x 230/460 VAC 60 Hz 1.5 HP, 1750 rpm direct coupled motor*	571	238	180	183	146	88,9
BW 1+2 *with Baldor 3 x 230/460 VAC 60 Hz 1 HP, 1150 rpm direct coupled motor*	572	232	229	183	146	88,9
BW 5 *with Baldor 3 x 230/460 VAC 60 Hz 3 HP, 1750 rpm direct coupled motor*	1152	248	254	356	124	114,3
BW 5 *with Baldor 3 x 230/460 VAC 60 Hz 2 HP, 1150 rpm direct coupled motor*	489	286	211	356	175	112
BW 10 *with Baldor 3 x 230/460 VAC 60 Hz 5 HP, 1150 rpm direct coupled motor*	1133	346	312	465	216	132

[1] Handwheel mounts on either side

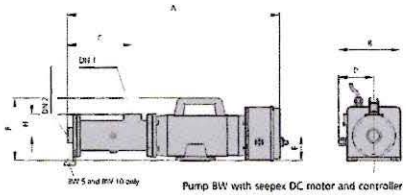
seepex stocks the most common drives. Shown are several close-coupled, VFD-capable motors, a mechanical variable speed drive and a single-phase, fixed speed close-coupled motor. All are available for quick shipment. Special designs are available.

	Pressure connection	Suction connection	Weight
H	DN1	DN2	approx. in lbs
2 3/8"	1" NPT	1" NPT	55
2 3/8"	1" NPT	1" NPT	86
2 3/8"	1" NPT	1" NPT	49
2 3/8"	1" NPT	1" NPT	49
2 3/8"	1" NPT	1" NPT	49
2 3/8"	1" NPT	1" NPT	49
2 15/16"	1 1/4" NPT	1 1/2" NPT	168
2 15/16"	1 1/4" NPT	1 1/2" NPT	143
3 3/4"	2" NPT	2" NPT	213

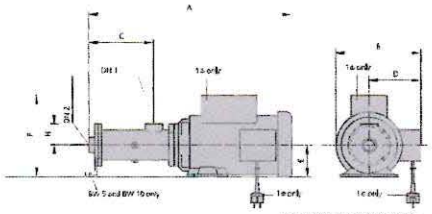
	Pressure connection	Suction connection	Weight
H	DN1	DN2	approx. in kg
60	1" NPT	1" NPT	25
60	1" NPT	1" NPT	39
60	1" NPT	1" NPT	22
60	1" NPT	1" NPT	22
60	1" NPT	1" NPT	22
60	1" NPT	1" NPT	22
75	1 1/4" NPT	1 1/2" NPT	76
75	1 1/4" NPT	1 1/2" NPT	65
95	2" NPT	2" NPT	97



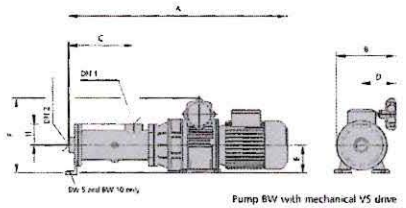
Pump BW with seepex AC motor and controller



Pump BW with seepex DC motor and controller



Pump BW with Baldor motor



Pump BW with mechanical V5 drive

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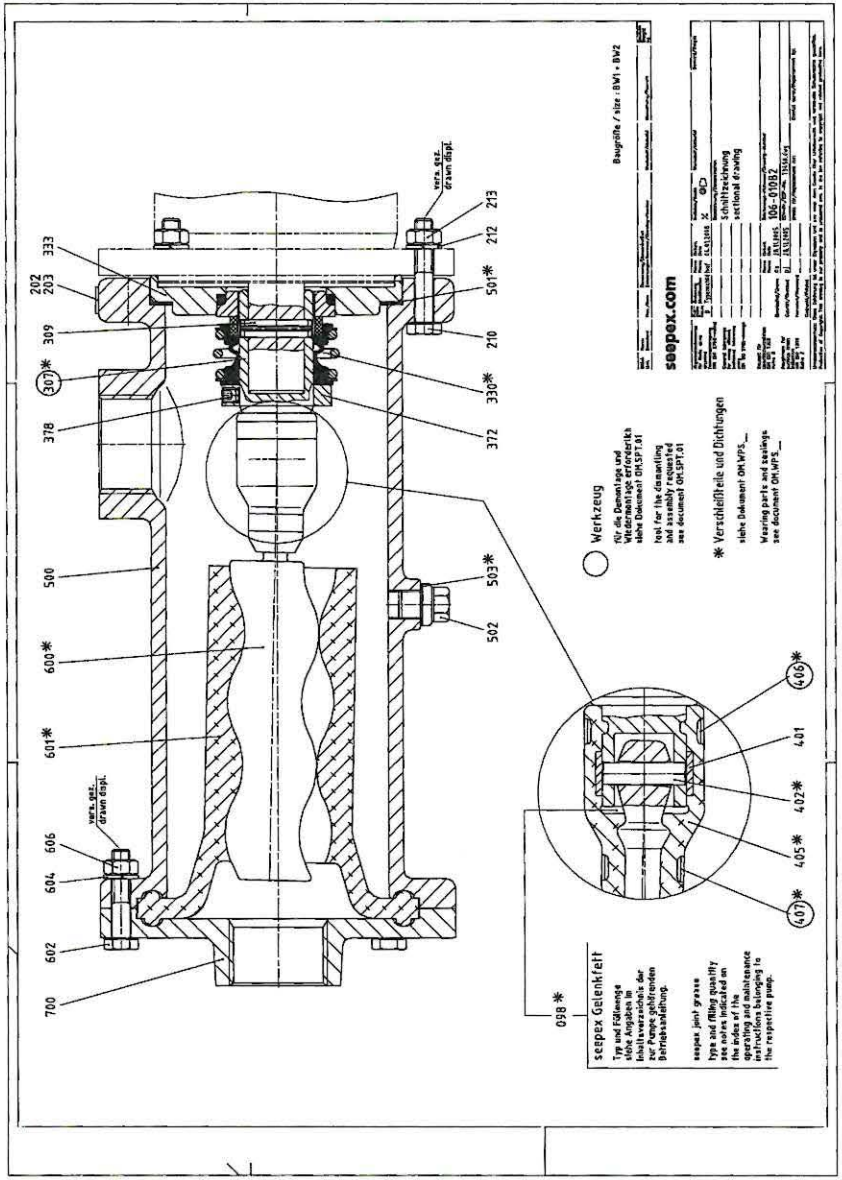
all things flow

And what can we get flowing for you? Your nearest contact:

Or visit www.seepex.com

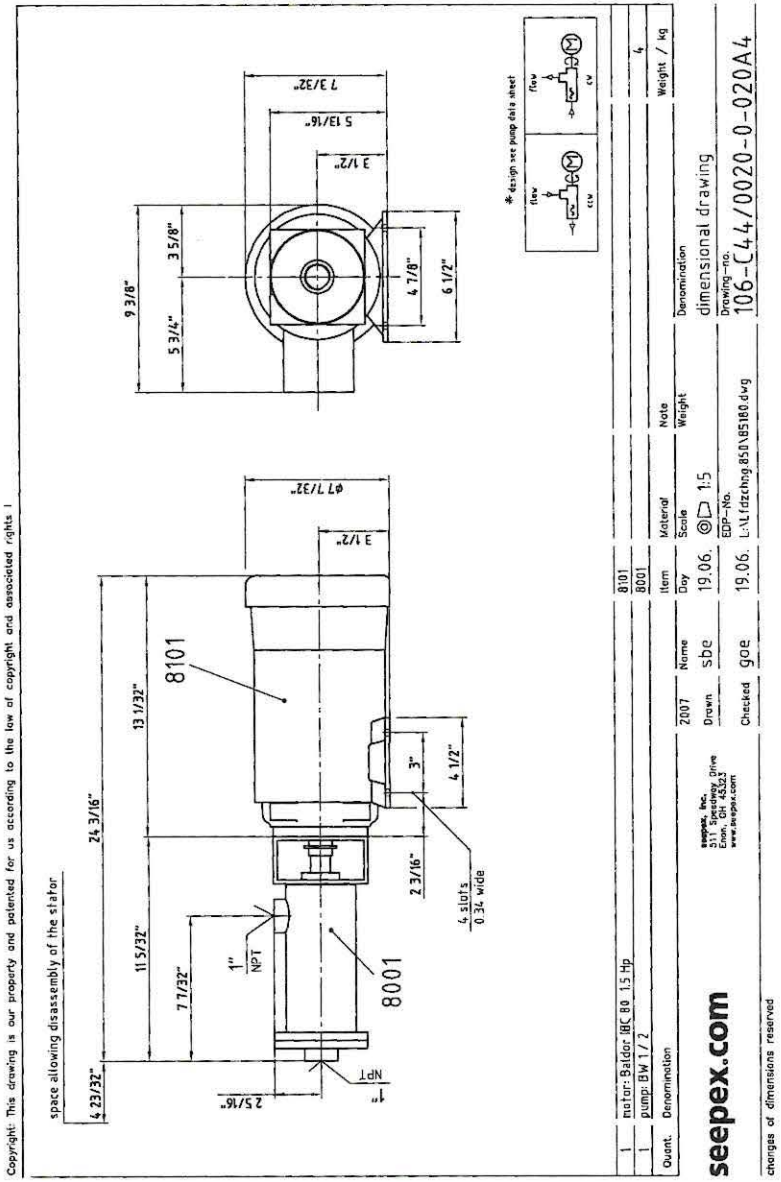
W 2 08US



seepex.com

Stückliste
Parts List
Liste des pièces

Stck.	Pos.	DE	EN	FR
		Baureihe BW	**range BW**	**série BW**
		Schnittzeichnung Nr. 106-010_1	**sectional drawing No. 106-010_1**	**plan no. 106-010_1**
Stck.	**Pos.**	**Benennung Stck. / Pos.**	**denomination Qty. / item**	**désignation Qté. / Poste**
2	202	Halbrundnägel	round head pins	rivet
1	203	Typenschild	type plate	plaque signalique
4	210	6kt-Schraube	hexagon bolt	vis
4	212	Federring	spring washer	rondelle frein
4	213	6kt-Mutter	hexagon nut	écrou
1	307	Steckwelle	plug-in shaft	arbre à broche
1	309	Spannstift	spring pin	goupille fendue
1	330	Gleitringdichtung	mechanical seal	garniture mécanique
1	333	GLRD-Aufnahme	mechanical seal retainer	logement de la garniture mécanique
1	372	Stellring	set collar	anneau ajustable
3	378	Gewindestift	set screw	vis sans tête
1	401	Gelenkhülse	retaining sleeve	douille d'articulation
1	402	Kuppelstangenbolzen	coupling rod pin	axe d'articulation
1	405	Manschette	universal joint sleeve	manchette
1	406	Halteband	holding band	collier de serrage
1	407	Halteband	holding band	collier de serrage
1	500	Druckgehäuse	pressure casing	carter de refoulement
1	501	Gehäusedichtung	casing gasket	étanchéité du carter de refoulement
1	502	Verschlussschraube	screwed plug	bouchon de vidange
1	503	Dichtring	sealing ring	joint d'étanchéité
1	600	Rotor	rotor	rotor
1	601	Stator	stator	stator
4	602	6kt-Schraube	hexagon bolt	vis
4	604	Federring	spring washer	rondelle frein
4	606	6kt-Mutter	hexagon nut	écrou
1	700	Saugstutzen	suction branch	bride d'aspiration
	098	seepex Gelenkfett Typ und Füllmenge: Betriebs- und Wartungsanleitung entnehmen	seepex joint grease type and filling quantity: see Operating and Maintenance Instruction	seepex graisse d' articulations sommaire pour type et quantité: voir Instructions de service et d'entretien
		Verschleißteile und Dichtungen: Betriebs- und Wartungsanleitung entnehmen	Wear parts and sealings: see Operating and Maintenance Instruction	pièces d'usure et étanchéités: voir Instructions de service et d'entretien
		Werkzeuge: Betriebs- und Wartungsanleitung entnehmen	Tools: see Operating and Maintenance Instruction	Outils: voir Instructions de service et d'entretien



Offer No. 500107487/1/
Rocky Mountain Territory

SEEPEX.
ALL THINGS FLOW

9/14/2017	**Item 10**
qty.: 1	**Progressive cavity pump**
	BW 2-0

Application data

Conveyed product	municipal waste water
Flowability	well flowable
Solids content	1-2%
Size of solids	≤2 mm
Specific gravity	unknown, 1 kg/dm³ assumed
product temperature	32°F - 113°F
pH value	5-9
Kind of operation	continuous
Operating hours	8h/day
Location	indoor, dry atmosphere

Performance data

	Capacity	Pressure	Speed	
	1 USGPM	10 psi	171 rpm	norm
Starting torque	8 lb.ft			
Req. power at pump shaft	0.09 HP			
Inlet pressure	flooded suction (up to 0,5bar)			

Tolerances according to SEEPEX standards.

Pump Selection valid for installation below 500/1000m above sea level and 35°C ambient temperature.

Materials and executions

Installation	horizontal
Direction of rotation	clockwise (right)
Suction branch - Material	EN-JL 1040 (gci-25)
Pressure casing - Design	standard
Pressure casing - Material	EN-JL 1040 (gci-25)
Position of branch	Position 1
Pressure casing - Pressure connection	NPT 1"
Suction branch - Suction connection	NPT 1"
Joint - Design	pin joint with joint sleeve, grease filled
Joint - Material	standard
Joint - Universal joint sleeve: material	NBR - Perbunan
Rotor - Design	standard
Rotor - Material	1.4404 / AISI 316L
Stator - Design	standard
Stator - Material	NBR - Perbunan
Shaft sealing	mechanical seal
Code	single acting mech. seal - GA
Shaft diameter	25 mm
Casing - material	EN-JL 1040 (gci-25)
Casing - connection standard	without
Plug-in Shaft - Design	standard
Plug-in Shaft - Material	1.4021 / AISI 420
Bolting - Design	standard
Painting - Number of colors	single-colored standard
Painting - Painted components	1 complete combination
Painting - Color	Standard Enamel (SEEPEX Blue)

From the second quarter of 2015, SEEPEX will replace the material 1.4571 (AISI 316Ti) by the similar material 1.4404 (AISI 316L), step by step.

Offer No. 500107487/1/ Item 10
Rocky Mountain Territory

SEEPEX.
ALL THINGS FLOW

Depending on actual stock levels during the transition period the material delivered may differ from the material offered.

Drive

Type	Motor only
	Norm
Speed	1150 rpm
Frequency	Hz
Rated output	1 HP
Rated speed	
Starting	DOL (direct on line)
Efficiency class	IE1
Voltage	3x230/460V
Frequency	60Hz
Enclosure	TEFC

Baseplate

Design	baseplate for block pump, design with side feet
Material	steel, painted
GPU Type Code	B-ST-LS

Packing

Type of packing	cardboard box (US)
Type of transport	truck / railway
Quantity of pumps per package	1 pump per package

Price composition

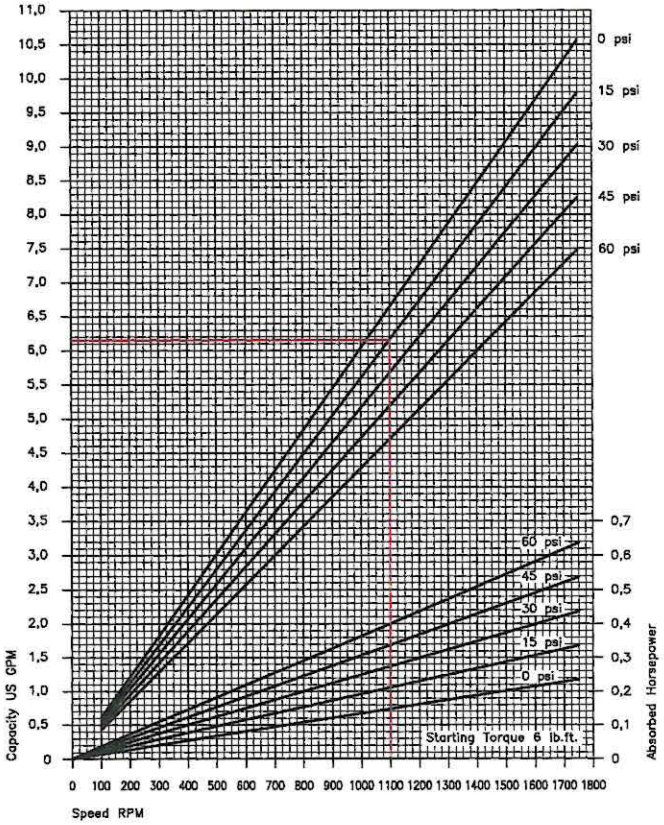
Please send your purchase order to incomingorders@seepex.net

All drawings accompanying this offer is for REFERENCE ONLY, final drawings will be created upon receipt of order. If you need this drawing please request on PO.

In order to process your order, we will require either a copy of the quote this order is based on, or the quote number.

In order to process duplicate wet end orders, we will require the commission number of the pump being duplicated.

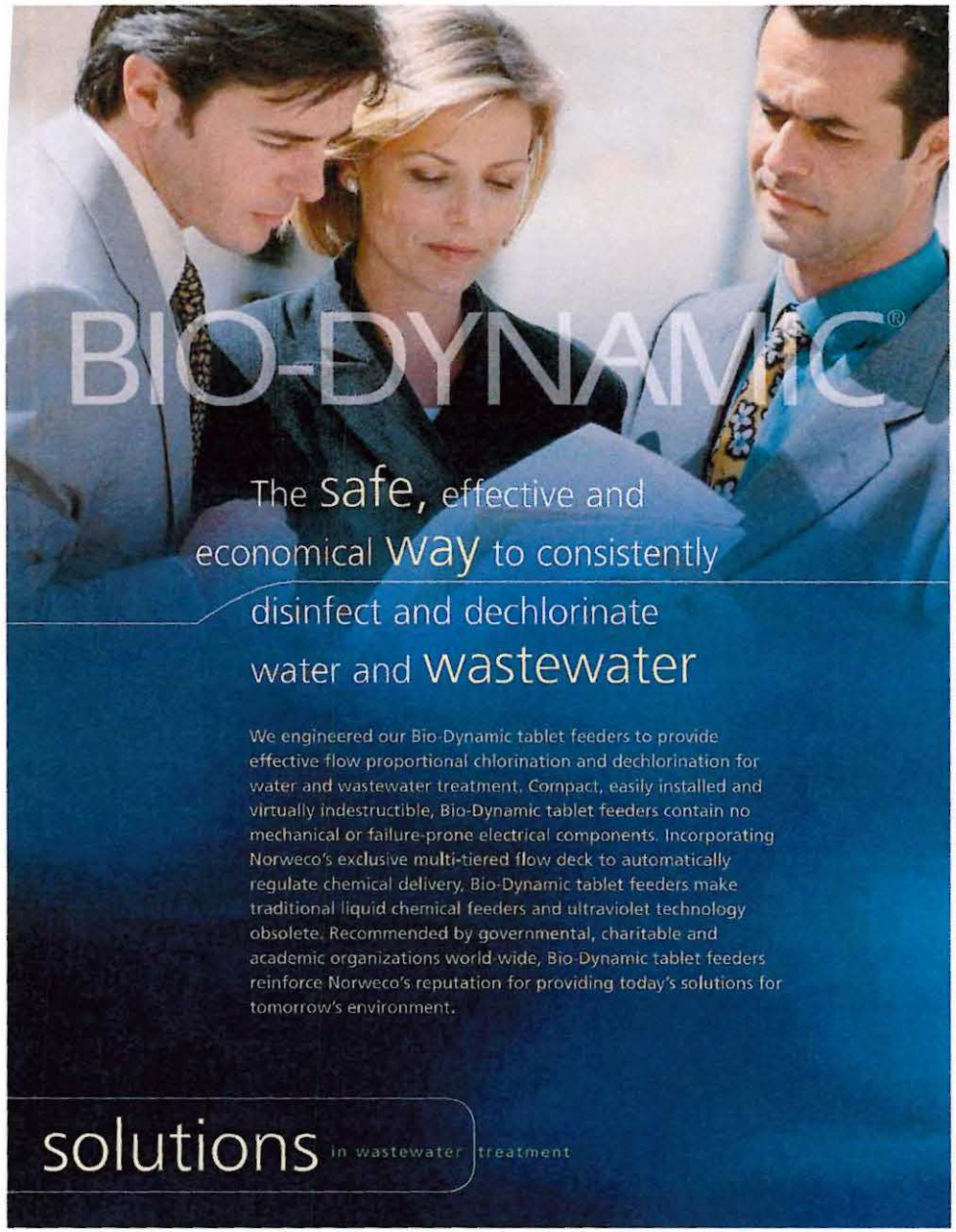
Characteristic Curves
Size
BW 2



Values based upon water 68°F

CHA.BW2 B 04.03us

Disinfection	Tag PRT-41.1.1
Manufacturer	Norweco
Model Number	XT-2000-S
Type	Calcium Hypochlorite Tablet Feeder



BIO-DYNAMIC®

The safe, effective and economical way to consistently disinfect and dechlorinate water and wastewater

We engineered our Bio-Dynamic tablet feeders to provide effective flow proportional chlorination and dechlorination for water and wastewater treatment. Compact, easily installed and virtually indestructible, Bio-Dynamic tablet feeders contain no mechanical or failure-prone electrical components. Incorporating Norweco's exclusive multi-tiered flow deck to automatically regulate chemical delivery, Bio-Dynamic tablet feeders make traditional liquid chemical feeders and ultraviolet technology obsolete. Recommended by governmental, charitable and academic organizations world-wide, Bio-Dynamic tablet feeders reinforce Norweco's reputation for providing today's solutions for tomorrow's environment.

solutions in wastewater treatment

Norweco distributors are located throughout the United States and much of the rest of the world. Research, product development, manufacturing, marketing and sales support are conducted inside our offices and factory in Norwalk, Ohio USA. Everyone at Norweco is committed to shaping the future of our industry.

engineering the future of water and wastewater treatment

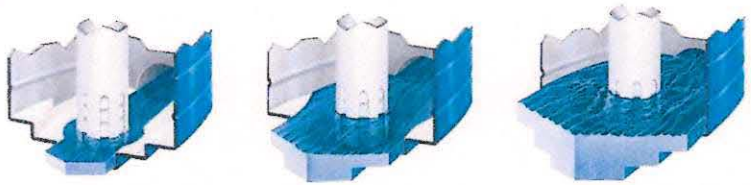
Specify Norweco® Bio-Dynamic® Dry Chemical Tablet Feeders and Tablets

With fifteen different models of Bio-Dynamic tablet feeders available, design engineers have unprecedented flexibility in specifying a feeder ideally suited for their treatment requirements. Multiple installation options include direct burial, in-line and contact chamber mounting. Combine these options with a small unit footprint and you can see how quick and easy Norweco has made installation, even in the tightest areas.

From project inception through final plan review, procurement, installation and operation, Norweco's team of experienced engineers and customer service personnel are available to assist you with your project. Backed by an extensive library of drawings, project research and decades of hands-on experience, we focus on keeping you on schedule and under budget.

The exclusive multi-tiered flow deck delivers consistent chemical treatment, regardless of flow rate

Flow surges are common in any treatment system. This variation in flow rate can cause major problems for conventional tablet feeders and manually adjusted gas or liquid chemical feed systems. That's why we engineered a multi-tiered flow deck to enhance the fluid dynamics of the liquids passing through the system. During low flow, usually at night, liquids are directed through the inert drainage tier, the lowest tier of the feeder. It forms a narrow hydraulic channel that increases the velocity of the flow for uniform tablet exposure. When flow increases during morning hours, the liquid flow rises to the intermediate flow tier. It creates a flume to accelerate the flow passing the tablets. When the flow rate is greater than the capacity of this intermediate tier, liquids rise to the upper flow tier. That tier causes the liquid to lose velocity, preventing excessive tablet consumption.



Compact LF Series Bio-Dynamic® tablet feeders provide a strong chemical dose – ideal for onsite systems.

Compact Bio-Dynamic LF Series tablet feeders provide a chemical dose that is ideal for potable water and wastewater systems subject to high organic loading. Manufactured from ABS for durability and easy installation, integral inlet and outlet hubs accept four, six or eight inch piping. LF Series feeders are typically used for residential or small commercial onsite applications, stormwater treatment or remote potable water systems. Five different models are available to accommodate flows from 500 GPD through 400,000 GPD.

LF Series feeders range in length from 10 to 24½ inches, and 7 to 12 inches in width. The 22½ inch tall, one piece feed tubes are designed to fit inside standard 4" PVC piping, allowing all LF Series feeders to be surface installed or direct buried. For deeper installations, our optional remote feed tube removal system allows convenient feeder maintenance from grade.

The Series 2000 and Series 4000 tablet feeders provide precise chemical dosage with adjustable baffles, weirs or outlet sluice.

For flows ranging from 200 GPD through 100,000 GPD, Bio-Dynamic Series 2000 tablet feeders can treat gravity influent up to 70 GPM. 25½ inches in length, 10½ inches in width and ranging in body height from 12 inches through 48 inches, five different models of Series 2000 feeders are available for different installation conditions. Additional 24 inch risers are available for direct burial installations up to 10 feet. Choose between interchangeable weirs or Norweco's outlet sluice, for desired dosage control.

Treatment capacities from 20,000 GPD through 200,000 GPD with a maximum flow of 150 GPM, give Bio-Dynamic Series 4000 feeders the capability to treat flow from a wide range of facilities. With a length of 35¾ inches, a width of 14½ inches and body heights ranging from 12 inches through 48 inches, five different models of Series 4000 feeders are available for different installation conditions. Additional 24 inch risers are available for direct burial installations up to 10 feet. Interchangeable weirs and Norweco's adjustable outlet sluice are available to maximize your feeder's performance.

"Chlorine addition by tablet feeders is likely to be the most practical method for chlorine addition for onsite applications."
— USEPA Office of Research and Development, *Onsite Wastewater Treatment Systems Manual TFS-21*

maximize performance
of water and wastewater treatment

Uniquely formulated Bio-Sanitizer® Disinfecting Tablets deliver consistent and inexpensive bacteria killing power

Bio-Sanitizer disinfecting tablets are uniquely formulated to provide a consistent dose of chlorine in response to water or wastewater velocity. Containing a minimum of 70% available chlorine and produced in a convenient to use tablet form, Bio-Sanitizer enables plant operators to meet stringent disinfection standards in a safe and economical manner. Recommended for use in Norweco Bio-Dynamic tablet feeders, Bio-Sanitizer tablets will improve the performance of any type of tablet dosing system. Registered with the USEPA, the Canadian Ministry of Environment and a number of state and provincial authorities, Bio-Sanitizer tablets are packaged in easy to open 10, 25, 45 and 100 pound containers.

To remove both free and combined chlorine for water and wastewater, use our Bio-Max® Dechlorination Tablets

Bio-Max dechlorination tablets provide a convenient source of concentrated sodium sulfite to instantly remove chlorine from wastewater, potable water and process water. They contain 92% sodium sulfite as an active ingredient and 8% patent pending inert ingredients. Produced for use in all models of Bio-Dynamic tablet feeders, Bio-Max tablets can also be used in all major brands of gravity or pressure dosing units

Bio-Gem®

Blue Crystal®

Bio-Neutralizer®

Bio-Perc®

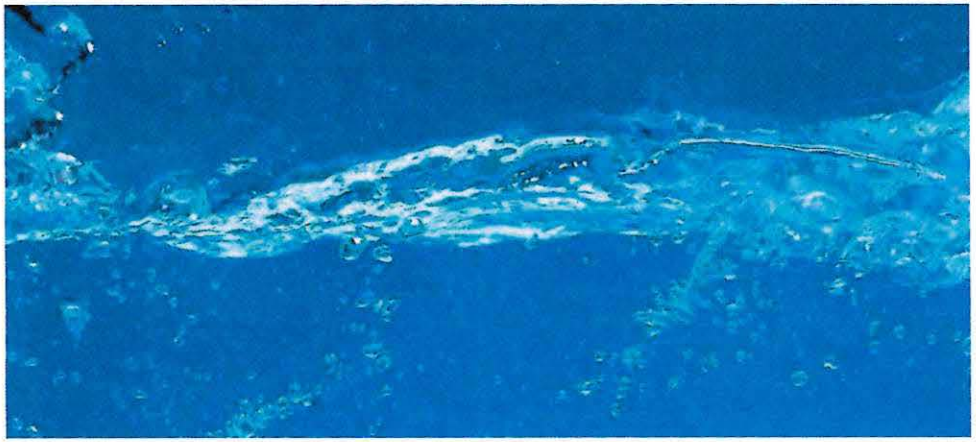
customer focus

Norweco's technical and customer service personnel put decades of experience in wastewater treatment at your disposal. Committed to long term customer satisfaction, our support staff is always available to assist you with the use of Norweco products.

The pure facts about safe, consistent chemical application

- Bio-Dynamic tablet feeders provide effective treatment without the use of mechanical components or electrical connections.
- All Norweco tablet feeders automatically adjust chemical dose in response to changes in daily influent rates and velocity.
- By directing and controlling the velocity of the incoming flow, our exclusive multi-tiered flow deck provides consistent chemical application at sustained, variable and intermittent flow rates.
- Fall built into the floor of Bio-Dynamic feeders allows the units to drain during no flow conditions. This stabilizes the chemical dose and minimizes chemical usage.
- Inlet and outlet hubs in 4", 6" and 8" diameters simplify installation and eliminate the use of costly drop boxes and couplings.
- Bio-Dynamic tablet feeders have a much smaller footprint than any other means of disinfection or dechlorination. This will result in significant design and installation savings.
- All Norweco tablet feeders provide multiple installation options including direct burial, in-line and contact chamber mounting with aluminum mounting brackets.
- The LF Series of Bio-Dynamic tablet feeders are produced from ABS for unmatched durability and ease of installation.
- A variety of optional extension risers and accessories allow Bio-Dynamic tablet feeders to be direct buried up to 10' and still accessible and maintainable from grade, eliminating confined space entry requirements.
- Our molded one-piece ClearCheck feed tubes are extremely durable and have twist-lock caps for safe handling of tablets and dependable performance.
- In the Series 2000 and 4000 tablet feeders, chemical dose is precisely regulated by an adjustable inlet baffle, interchangeable weir plates or optional outlet sluice.
- Norweco's Bio-Sanitizer disinfecting tablets and Bio-Max dechlorination tablets maximize the performance of Bio-Dynamic feeders.
- All Bio-Dynamic tablet feeders and treatment chemicals are listed under NSF Standard 46, Section 11 test criteria.
- To insure complete chemical mixing, all outflow passes through the feeder's hydrodynamic mixing chamber.
- Our tablet feeder customers are protected by a ten year limited warranty.
- Bio-Dynamic tablet feeders have the lowest initial cost of any commercially available disinfection or dechlorination system.
- All models of Bio-Dynamic tablet feeders are used for wastewater, potable water, process water and cooling tower water treatment.

Today's Answer for the Protection of Tomorrow's Environment



comprehensive protection, guaranteed

Bio-Dynamic Tablet Feeder owners are protected from defects in material and workmanship under normal use and service for a full ten year period. A warranty registration card is included with every new tablet feeder Installation and Operation Manual.

norweco®

Engineering the future of water and wastewater treatment

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FAX: 419.663.5440
www.norweco.com

Progress Through Service Since 1906

We engineer, manufacture, install and maintain advanced water and wastewater treatment technologies for residential properties, communities and commercial properties that are not connected to sewer lines. Norweco treatment systems are in service all over the world.

Norweco® Norweco.com®, Singulair®, Modular®, Ironclad®, Singular Green®, Relaxa-Rivet®, Hydro-Kinetic®, Lift-Pal®, Microsonic®, Bio-Dynamic®, Bio-Sentinel®, Bio-Neutralizer®, Bio-Kinetic®, Bio-Static®, Bio-Gen®, Bio-Max® Bio-Regeneration®, Bio Pro®, Blue Crystal®, CleanCheck®, CleanCheck® Hi Max®, Hydro Max®, Service Pro® MCD®, TNT® Grease Buster® and "BUSTER" logo are or registered trademarks of Norwalk Wastewater Equipment Company, Inc.

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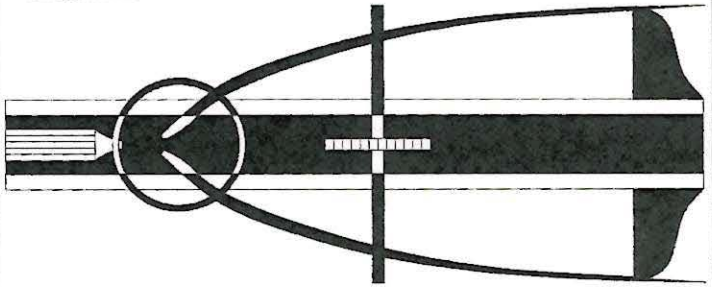
norweco®
BIO-DYNAMIC®
TABLET FEEDER

SPECIFICATIONS

GENERAL SPECIFICATIONS

The contractor shall furnish and install one Bio-Dynamic tablet feeder with all applicable equipment as described in the following specifications. It shall be a flow rated proportional feeder that allows for long-term unattended operation while providing a stable, adjustable chemical dose. Treatment of the water or wastewater flow shall be accomplished by immersion of feed tubes containing vertically stacked chemical tablets. Chemical agents shall be released as the liquid erodes the tablets. The tablet feeder shall be equipped with a self-draining flow channel to allow complete dry down of the chemical tablets during low and/or no flow conditions and to insure long-term tablet integrity.

Principal items of equipment and components of the tablet feeder shall include an integral one-piece molded inlet hub, inlet baffle, tiered flow deck including inert drainage tier, intermediate flow tier and upper flow tier, stationary feed tube insert, feed tubes (2 or 4), outlet weir with optional sluice, hydrodynamic mixing chamber and integral one-piece molded outlet hub. Liquid or gaseous systems requiring extensive handling and safety procedures or dry chemical feeders requiring separate drop boxes, or manholes for in-line mounting shall not be considered for this application.



EQUIPMENT MANUFACTURER

The equipment specified herein shall be the product of a manufacturer having a minimum of seven years experience in the construction of water and/or wastewater treatment systems and equipment. Bids shall be prepared on the basis of the equipment and material specified herein for purposes of determining the low bid. This is not done, however, to eliminate other products or equipment of equal quality and efficiency. If equipment is to be substituted, approval of such substitution must be made prior to execution of any order. It is assumed that substitution will result in a reduction of cost to the contractor and that if accepted, these savings will be passed along by a reduction in the base bid.

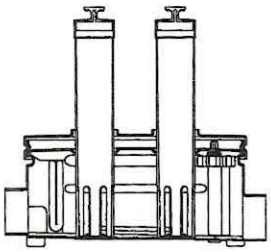
BIO-DYNAMIC®

CONSTRUCTION AND OPERATING CONDITIONS

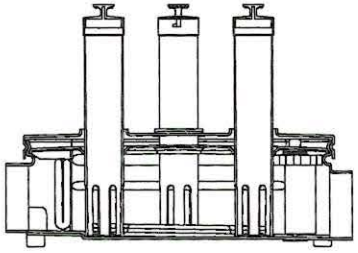
The Bio-Dynamic tablet feeder shall be constructed of heavy duty, UV rated, rotationally molded polyethylene for maximum strength and durability. The feeder shall be a complete dry chemical dosing system that allows dosage capability ranging from 1 to 50 mg/L, according to the operational flow rating (GPD) of the system. A peak flow factor of four shall be used for non-flow equalized wastewater applications to insure proper dosage. The tablet feeder shall be elliptical in shape to utilize the velocity and energy of the liquid for consistent chemical application. The system shall be supplied as a self-enclosed unit suitable for direct burial without the need for a secondary manhole or enclosure.

The integral one-piece molded inlet and outlet hubs shall allow direct in-line connection to standard treatment system piping without the need for special adapters or mounting fixtures. Four reinforced mounting feet shall be molded into the body of the tablet feeder to allow the unit to be directly bolted to tankage or mounting brackets. All feeders shall be equipped with molded in place trim lines located at six inch vertical increments. The trim lines shall accommodate installation of the feeder and risers at the proper operational depth and yet allow field adjustment of the lid location to accommodate landscaping or other functional considerations.

Each translucent ClearCheck feed tube shall contain a vertical stack of tablets which dispense chemical agents into the liquid flow as the tablets are eroded. The chemical feed tubes shall be secured by retaining rings molded into the bottom of the flow deck and with a stationary insert. The retaining rings and stationary insert shall be designed to eliminate the possibility of tube displacement during high flow periods. Direct burial systems utilizing one or more 24" riser assembly shall include extension handles permanently installed on each feed tube. The tablet feeder shall be designed with an internal slope for self-drainage during low and/or no flow conditions to allow complete dry down of chemical tablets. Fall through the tablet feeder from inlet to outlet shall be one inch.



EXTERNAL TUBE - SERIES 2000-S



EXTERNAL TUBE - SERIES 4000-S

INLET HUB AND BAFFLE

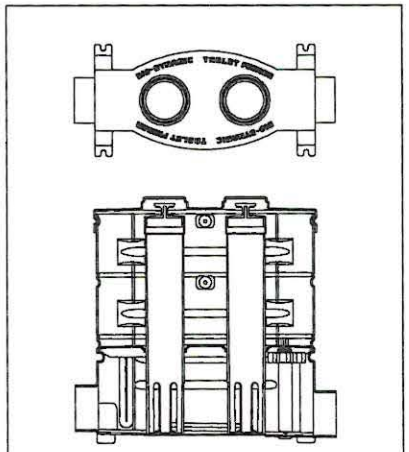
All flow entering the tablet feeder shall pass through the integral one-piece molded inlet hub and be channeled under an adjustable inlet baffle. The molded inlet hub shall allow direct acceptance of (4" or 6") Schedule 40 PVC piping. The inlet baffle shall be located so that the bottom of the baffle is positioned below the mean liquid level. The baffle shall be configured to minimize the effect of periodic flow surges and optimize the dissolution pattern of the chemical tablets. It shall be held in place by molded slots in the feeder sidewall. The baffle shall maintain chemical dosage during low flow periods, while regulating chemical dosage during high flow periods.

FLOW DECK

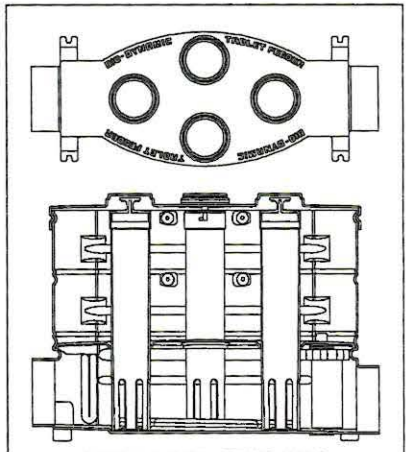
The feeder shall contain a multi-tiered flow deck molded into the bottom of the system and configured to control liquid velocity within the unit. The configuration shall result in a stable chemical dose throughout the operating range of the unit and eliminate the potential for tablet degradation. The flow deck shall consist of three separate tiers designed to optimize the intrinsic energy of the liquid. The lowest tier functions as the inert drainage tier and shall encompass all chemical feed tubes and traverse the length of the feeder. This tier shall be employed during extremely low or no flow conditions to form a drainage channel for inert particles and eliminate tablet swelling. Feed tube retaining rings shall be molded into the inert drainage tier and shall securely locate each feed tube in position. When the flow rate increases up to three gallons per minute, the liquid level shall rise to the intermediate tier. This tier is hyperbolic in shape and traverses the length of the feeder. The intermediate channel shall increase flow velocity to insure accurate and consistent chemical delivery and to reduce or eliminate tablet wicking. At flow rates greater than three gallons per minute, the liquid level shall rise to the upper tier of the unit. This tier shall result in uniform flow velocity and provide adjustable tablet dissolution and consistent chemical dosage throughout the anticipated operating range.

STATIONARY INSERT

Retaining ribs shall be molded into the system housing to support a stationary insert. The insert shall be installed above the solids drainage tier of the tablet feeder and traverse the area of the flow deck. Feed tubes and internal components shall be held in proper position by the insert. Tapered locating holes shall be incorporated into the insert for ease of feed tube installation and removal. For direct burial applications, drill points shall be provided in the feeder body and the stationary insert shall be permanently affixed to the feeder body with synthetic drive rivets.



INTERNAL TUBE - SERIES 2000-S



INTERNAL TUBE - SERIES 4000-S

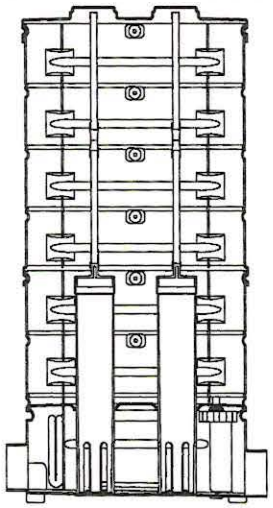
CHEMICAL FEED TUBES

The tablet feeder shall be equipped with one-piece translucent ClearCheck feed tubes. Each feed tube shall be equipped with a twist lock cap for safety. Notches molded into the feed tube body shall prevent accidental cap removal. The feed tubes shall utilize tablets with the nominal weight and dimensions of 5 ounces, $2\frac{5}{8}$" diameter and $\frac{13}{16}$" height. The bottom of each feed tube shall be integrally molded with the tube body and contain two drainage ribs to allow the flow stream to purge inert particles and accomplish dry down of chemical tablets during no flow periods. The liquid shall flow through six equally spaced openings in each feed tube for contact with the chemical tablets.

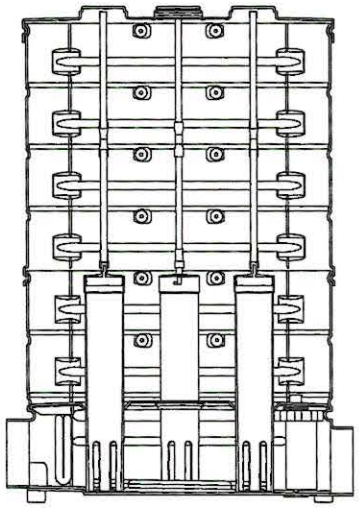
TABLET FEEDER

ADJUSTABLE OUTLET SLUICE

The tablet feeder shall be equipped with an optional adjustable outlet sluice to allow regulation of the liquid static head within the unit and provide precise control over chemical dosage. The adjustable outlet sluice shall provide a one inch to three inch adjustable outlet width. Sluice operation shall permit precise adjustment of the chemical dosage throughout the operating range. Adjustment shall be made by rotating the molded plastic hex nut located at the top of each outlet sluice. The hex nut shall protrude through the stationary insert to allow for adjustment from grade with a standard socket. The right and left sections of the adjustable outlet sluice shall be synchronized by integrally molded gears. Each gear segment shall include adjustment limits to insure that the sluice will operate within the desired design range. Each adjustable sluice shall include a top mounted opening indicator. The indicator will provide the operator with a visual indication of the sluice position and the engraved scale on the stationary insert shall indicate the sluice opening in inches. To provide operational flexibility, the adjustable outlet sluice should always be used when an access riser is installed.



INTERNAL TUBE WITH RISER - SERIES 2000-S



INTERNAL TUBE WITH RISER - SERIES 4000-S

FIXED WEIR

The tablet feeder shall have a fixed weir with interchangeable 1", 2" and 3" plates. The weir plates shall induce a static head within the feeder which regulates the quantity of tablets exposed to the liquid. The fixed weir plates shall be secured by molded slots located within the feeder that allow plates to be removed and exchanged without the need to take the system off-line or the need to make contact with the liquid stream. The molded slots facilitate interchangeability of weir plates and eliminate the need for adhesives or external fasteners. Alternating the fixed weir plates shall allow adjustment of the chemical feed dose in three separate 20% fixed adjustment increments.

SPECIFICATIONS

HYDRODYNAMIC MIXING CHAMBER AND OUTLET HUB

The tablet feeder shall be designed with a hydrodynamic mixing chamber downstream of the outlet weir to induce a turbulent flow prior to discharge. The hydrodynamic mixing chamber shall use the induced turbulence of the outlet weir or sluice to provide thorough mixing of the chemical. The chamber is designed to hydrodynamically eliminate the laminar flow induced upstream by the multi-tiered flow deck and prevent flow from short circuiting the treatment process. The integral one-piece molded outlet hub shall directly accept (4" or 6") Schedule 40 PVC piping. Systems that require separate drop boxes or outlet adapters increase installation costs and shall not be considered for this application.

ACCESS RISERS

To provide maximum installation flexibility and eliminate the need for confined space entry equipment, optional riser assemblies shall be provided. Adjustable access risers will allow direct burial of the tablet feeder and will accommodate direct connection to existing system piping. Each riser shall be molded polyethylene with a nominal height of 24" and adjustable in 6" vertical increments via trim lines molded into each riser section. Risers shall utilize the same molded cover as the tablet feeder body. Each riser section shall contain transverse reinforcing struts and synthetic drive rivets at each joint to allow for direct burial. The reinforcing struts shall be constructed of fiberglass reinforced plastic with a 1" outside diameter and molded nylon couplings on each end. Each strut shall be held in position by an integrally molded retaining boss. Molded drill points shall be provided to locate the drive rivets in the riser assembly. One tube of Bio-Dynamic sealant shall be supplied with each riser section and shall be used to seal each riser joint internally and externally to insure watertight integrity.

BIO-DYNAMIC® TABLET FEEDER DATA CHART

Model	Inlet/Outlet Diameter	Minimum Flow (GPD)	Design Flow (GPD)	Maximum Flow (GPD)	Number of Tubes	Fixed Weir	Adjustable Sluice	Drawing Number
XT 2000 (S)	4"	200	20,000	100,000	2	Standard	Optional	PC-5-9501
IT 2000 (S)	4"	200	20,000	100,000	2	Standard	Optional	PC-5-9500
ITR 2000-S	4"	200	20,000	100,000	2	Not Available	Standard	PC-5-9502
XT 4000 (S)	6"	20,000	50,000	200,000	4	Standard	Optional	PC-5-9503
IT 4000 (S)	6"	20,000	50,000	200,000	4	Standard	Optional	PC-5-9504
ITR 4000-S	6"	20,000	50,000	200,000	4	Not Available	Standard	PC-5-9505

REMOTE FEED TUBE REMOVAL SYSTEM

For removal and reinstallation of feed tubes on systems utilizing riser assemblies, remote feed tube removal systems shall be provided. Each remote feed tube removal system shall be provided with twist lock cap and threaded top extension. A corrosion resistant extension tool shall be threaded to each feed tube cap. One corrosion resistant extension handle shall be provided with each riser section to permit access to each feed tube from grade. The remote feed tube removal system shall allow for the extension handle, attached feed tube and cap to be removed, recharged and reinstalled by the operator with no additional tools or equipment required. Once installed, the feed tube removal handles and caps shall remain in place.

BIO-SANITIZER® CHLORINATION TABLETS

The Bio-Dynamic tablet feeder shall be furnished complete with a (10 lb., 25 lb., 45 lb. or 100 lb.) supply of Bio-Sanitizer disinfecting tablets. Bio-Sanitizer disinfecting tablets shall be manufactured and tested to insure efficient and dependable disinfection for wastewater treatment system effluent and other applications where a predictable long-term source of chlorine is desirable. The dissolve rate of the tablets shall generally lower overall chemical use and provide for consistent control of chlorine residual. The tablets shall be manufactured from pure calcium hypochlorite and contain at least 70% available chlorine. The tablets shall incorporate beveled edges to enhance the chemical dissolution pattern and minimize wicking and jamming. Each tablet within the feed tube shall be 2 5/8" diameter, compressed to a 13/16" thickness, weigh approximately 5 ounces and be white in color for easy identification. All flow through the system shall contact the Bio-Sanitizer tablets. The tablets shall dissolve slowly, releasing controlled amounts of chlorine for water or wastewater disinfection. The chlorine dosage rate shall be automatic and flow dependent. Periods of high flow shall expose more tablets to the liquid passing through the system and during periods of low flow, fewer tablets shall be exposed. The chemical application rate of the tablets shall remain consistent at peak flow factors as high as four.

BIO-NEUTRALIZER® DECHLORINATION TABLETS

The Bio-Dynamic tablet feeder shall be furnished complete with a (25 lb. or 45 lb.) supply of Bio-Neutralizer dechlorination tablets. The dechlorination tablets shall contain active ingredients specially formulated to chemically neutralize both free and combined chlorine. The tablets shall incorporate beveled edges to enhance the chemical dissolution pattern and minimize wicking and jamming. Each tablet within the feed tube shall be 2 5/8" diameter, compressed to a 13/16" thickness, weigh approximately 5 ounces and be green in color for easy identification. All flow through the system shall contact the Bio-Neutralizer tablets prior to discharge. The tablets shall dissolve slowly, releasing controlled amounts of chemical for the instantaneous removal of residual chlorine from the water or wastewater flow. The tablets shall provide a dechlorination rate that is automatic and flow dependent. The chemical application rate of the tablets shall remain consistent at peak flow factors as high as four. The tablets shall generally lower chemical consumption and provide reliable reduction of chlorine residual in a more thorough manner than simple, compressed sodium sulfite.

LIMITED WARRANTY

The manufacturer shall provide a limited warranty against defects in material and workmanship under normal use and service for a period of ten years. The distributor shall provide a detailed copy of the warranty to the regulatory agency, contractor and customer as required.

PROGRESS THROUGH SERVICE SINCE 1906

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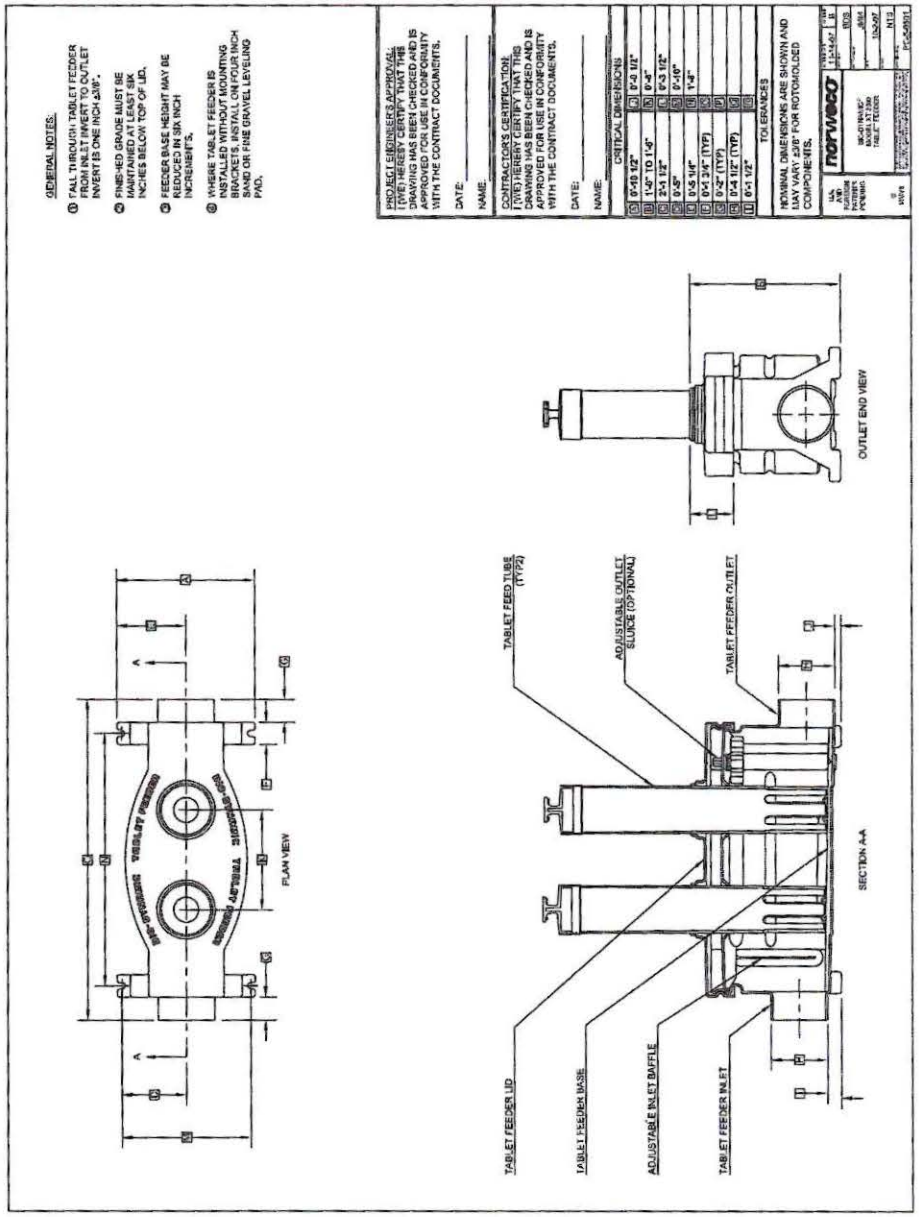


Effluent Flow Meters	Tag FIT-45.1.1
Manufacturer	Open Channel Flow
Model Number	1" Parshall Flume
Type	Parshall Flume – Open Channel
Size	1"
Number of units	1
Accuracy	±3-5%
Flow Range	1.46 – 87.27 gpm

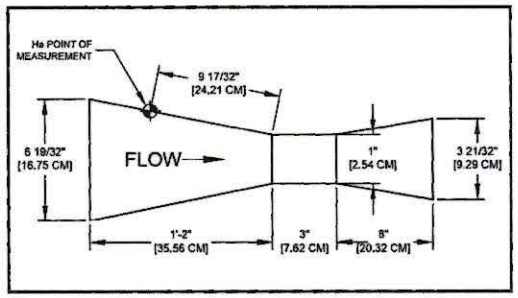
1-Inch Parshall Flume Discharge Table

50% Submergence Transition ±3-5% Accuracy

Formulas (H in feet): $CFS = 0.338\ H_n^{1.55}$ $GPM = 151.7\ H_n^{1.55}$ $MGD = 0.2184\ H_n^{1.55}$

Formulas (H in meters): $L/S = 60.36\ H_m^{1.55}$ $M3/HR = 217.3\ H_m^{1.55}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.01	0.12	0.0030	Excessive error due to fluid-flow properties and boundary conditions				
0.02	0.24	0.0061					
0.03	0.36	0.0091					
0.04	0.48	0.0122					
0.05	0.60	0.0152	0.0033	1.460	0.0021	0.0921	0.3315
0.06	0.72	0.0183	0.0043	1.937	0.0028	0.1222	0.4398
0.07	0.84	0.0213	0.0055	2.460	0.0035	0.1552	0.5585
0.08	0.96	0.0244	0.0067	3.025	0.0044	0.1909	0.6869
0.09	1.08	0.0274	0.0081	3.631	0.0052	0.2291	0.8245
0.10	1.20	0.0305	0.0095	4.275	0.0062	0.2698	0.9707
0.11	1.32	0.0335	0.0110	4.956	0.0071	0.3127	1.125
0.12	1.44	0.0366	0.0126	5.672	0.0082	0.3579	1.288
0.13	1.56	0.0396	0.0143	6.421	0.0092	0.4052	1.458
0.14	1.68	0.0427	0.0160	7.202	0.0104	0.4545	1.635
0.15	1.80	0.0457	0.0179	8.015	0.0115	0.5058	1.820
0.16	1.92	0.0488	0.0197	8.856	0.0128	0.5590	2.011
0.17	2.04	0.0518	0.0217	9.731	0.0140	0.6141	2.209
0.18	2.16	0.0549	0.0237	10.63	0.0153	0.6709	2.414
0.19	2.28	0.0579	0.0258	11.56	0.0167	0.7296	2.625
0.20	2.40	0.0610	0.0279	12.52	0.0180	0.7900	2.842
0.21	2.52	0.0640	0.0301	13.50	0.0194	0.8520	3.066
0.22	2.64	0.0671	0.0323	14.51	0.0209	0.9157	3.295
0.23	2.76	0.0701	0.0346	15.55	0.0224	0.9810	3.530
0.24	2.88	0.0732	0.0370	16.61	0.0239	1.048	3.771
0.25	3.00	0.0762	0.0394	17.69	0.0255	1.116	4.017
0.26	3.12	0.0792	0.0419	18.80	0.0271	1.186	4.269
0.27	3.24	0.0823	0.0444	19.93	0.0287	1.258	4.526
0.28	3.36	0.0853	0.0470	21.09	0.0304	1.331	4.788
0.29	3.48	0.0884	0.0496	22.27	0.0321	1.405	5.056
0.30	3.60	0.0914	0.0523	23.47	0.0338	1.481	5.329



Note: Not suitable for use on unscreened sanitary flows

Sources: Water Measurement Manual, 3rd Edition, United States Department of the Interior, Bureau of Reclamation
ASTM D 1941-91 (2007): Standard Test Method for Open Channel Flow Measurement of Water with Parshall Flume

1-Inch Parshall Flume Discharge Table

50% Submergence Transition ±3-5% Accuracy

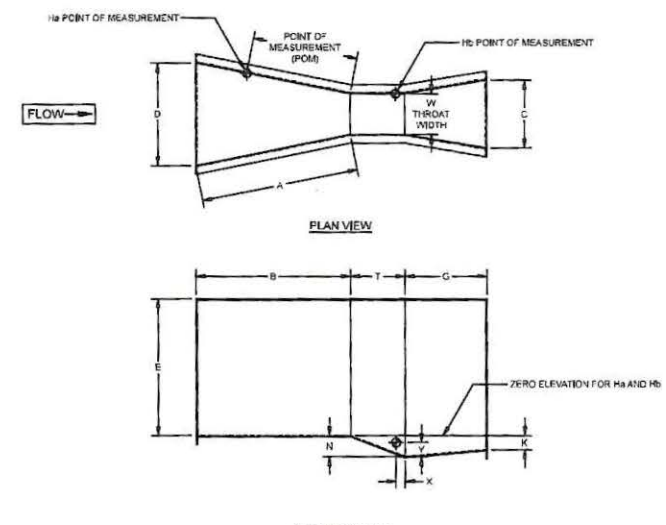
Formulas (H in feet): $CFS = 0.338\ H_a^{1.55}$ $GPM = 151.7\ H_a^{1.55}$ $MGD = 0.2184\ H_a^{1.55}$

Formulas (H in meters): $L/S = 60.36\ H_m^{1.55}$ $M3/HR = 217.3\ H_m^{1.55}$

FEET	INCHES	METERS	CFS	GPM	MGD	L/S	M3/HR
0.31	3.72	0.0945	0.0550	24.69	0.0356	1.558	5.607
0.32	3.84	0.0975	0.0578	25.94	0.0374	1.637	5.889
0.33	3.96	0.1006	0.0606	27.21	0.0392	1.717	6.177
0.34	4.08	0.1036	0.0635	28.49	0.0410	1.798	6.470
0.35	4.20	0.1067	0.0664	29.80	0.0429	1.881	6.767
0.36	4.32	0.1097	0.0694	31.13	0.0448	1.965	7.069
0.37	4.44	0.1128	0.0724	32.48	0.0468	2.050	7.376
0.38	4.56	0.1158	0.0754	33.86	0.0488	2.136	7.687
0.39	4.68	0.1189	0.0785	35.25	0.0508	2.224	8.003
0.40	4.80	0.1219	0.0817	36.66	0.0528	2.313	8.323
0.41	4.92	0.1250	0.0849	38.09	0.0548	2.403	8.648
0.42	5.04	0.1280	0.0881	39.54	0.0569	2.495	8.977
0.43	5.16	0.1311	0.0914	41.01	0.0591	2.588	9.310
0.44	5.28	0.1341	0.0947	42.49	0.0612	2.681	9.648
0.45	5.40	0.1372	0.0980	44.00	0.0634	2.776	9.990
0.46	5.52	0.1402	0.1014	45.52	0.0656	2.873	10.34
0.47	5.64	0.1433	0.1049	47.07	0.0678	2.970	10.69
0.48	5.76	0.1463	0.1084	48.63	0.0700	3.069	11.04
0.49	5.88	0.1494	0.1119	50.21	0.0723	3.168	11.40
0.50	6.00	0.1524	0.1154	51.81	0.0746	3.269	11.76
0.51	6.12	0.1554	0.1190	53.42	0.0769	3.371	12.13
0.52	6.24	0.1585	0.1227	55.05	0.0793	3.474	12.50
0.53	6.36	0.1615	0.1263	56.70	0.0817	3.578	12.87
0.54	6.48	0.1646	0.1301	58.37	0.0841	3.683	13.25
0.55	6.60	0.1676	0.1338	60.05	0.0865	3.789	13.63
0.56	6.72	0.1707	0.1376	61.75	0.0889	3.897	14.02
0.57	6.84	0.1737	0.1414	63.47	0.0914	4.005	14.41
0.58	6.96	0.1768	0.1453	65.21	0.0939	4.115	14.80
0.59	7.08	0.1798	0.1492	66.96	0.0964	4.225	15.20
0.60	7.20	0.1829	0.1531	68.72	0.0990	4.337	15.60
0.61	7.32	0.1859	0.1571	70.51	0.1015	4.449	16.01
0.62	7.44	0.1890	0.1611	72.31	0.1041	4.563	16.42
0.63	7.56	0.1920	0.1652	74.12	0.1067	4.677	16.83
0.64	7.68	0.1951	0.1692	75.95	0.1094	4.793	17.25
0.65	7.80	0.1981	0.1734	77.80	0.1120	4.909	17.66
0.66	7.92	0.2012	0.1775	79.66	0.1147	5.027	18.09
0.67	8.04	0.2042	0.1817	81.54	0.1174	5.145	18.51
0.68	8.16	0.2073	0.1859	83.44	0.1202	5.265	18.94
0.69	8.28	0.2103	0.1902	85.35	0.1229	5.386	19.38
0.70	8.40	0.2134	0.1945	87.27	0.1257	5.507	19.81

Sources: Water Measurement Manual, 3rd Edition, United States Department of the Interior, Bureau of Reclamation

ASTM D 1941-91 (2007): Standard Test Method for Open Channel Flow Measurement of Water with Parshall Flume



W (SIZE)	A	POM	B	C	D	E	T	G	K	N	X	Y
1" [2.54 CM]	1'-2 9/32" [36.37 CM]	9 17/32" [24.21 CM]	1'-3" [38.56 CM]	3 21/32" [9.26 CM]	6 19/32" [16.76 CM]	9" [22.86 CM]	3" [7.62 CM]	8" [20.32 CM]	3/4" [1.91 CM]	1 1/8" [2.86 CM]	3/16" [0.79 CM]	1/2" [1.27 CM]
2" [5.08 CM]	1'-4 5/16" [41.43 CM]	10 7/8" [27.62 CM]	1'-4" [40.64 CM]	5 5/16" [13.49 CM]	8 13/32" [21.26 CM]	10" [25.4 CM]	4 1/2" [11.43 CM]	10" [25.4 CM]	7/8" [2.22 CM]	1 11/16" [4.29 CM]	5/8" [1.59 CM]	1" [2.54 CM]
3" [7.62 CM]	1'-6 3/8" [46.67 CM]	1'-0 1/4" [31.17 CM]	1'-6" [45.72 CM]	1" [17.78 CM]	10 3/16" [47.93 CM]	2" [50.86 CM]	6" [15.24 CM]	1' [30.48 CM]	1" [2.54 CM]	2 1/4" [5.72 CM]	1" [2.54 CM]	1 1/2" [3.81 CM]
6" [15.24 CM]	2'-0 7/16" [62.57 CM]	1'-4 5/16" [41.44 CM]	2" [60.96 CM]	1'-3 1/2" [38.74 CM]	1'-3 5/8" [38.86 CM]	2" [50.86 CM]	1' [30.48 CM]	2" [60.96 CM]	3" [7.62 CM]	4 1/2" [11.43 CM]	2" [5.08 CM]	3" [7.62 CM]
9" [22.86 CM]	2'-10 3/8" [87.95 CM]	1'-11 1/8" [58.74 CM]	2'-10" [86.36 CM]	1'-3" [38.1 CM]	1'-10 5/8" [57.47 CM]	2'-6" [76.2 CM]	1' [30.48 CM]	1'-6" [45.72 CM]	3" [7.62 CM]	4 1/2" [11.43 CM]	2" [5.08 CM]	3" [7.62 CM]
12' [30.48 CM]	4'-6" [137.2 CM]	3' [91.44 CM]	4'-4 1/8" [134.3 CM]	2" [50.86 CM]	2'-8 1/4" [84.45 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3" [7.62 CM]	9" [22.86 CM]	2" [5.08 CM]	3" [7.62 CM]
18' [45.72 CM]	4'-8" [144.8 CM]	3'-2" [96.52 CM]	4'-7 7/8" [141.9 CM]	2'-6" [76.2 CM]	3'-4 3/8" [102.5 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3" [7.62 CM]	9" [22.86 CM]	2" [5.08 CM]	3" [7.62 CM]
24" [60.96 CM]	5' [152.4 CM]	3'-4" [101.6 CM]	4'-10 7/8" [149.5 CM]	3' [91.44 CM]	3'-11 1/2" [120.7 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3" [7.62 CM]	9" [22.86 CM]	2" [5.08 CM]	3" [7.62 CM]
36" [91.44 CM]	5'-6" [167.6 CM]	3'-4" [111.8 CM]	5'-4 3/4" [164.5 CM]	4' [121.9 CM]	5'-1 7/8" [157.2 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3" [7.62 CM]	9" [22.86 CM]	2" [5.08 CM]	3" [7.62 CM]
48" [121.9 CM]	6' [182.8 CM]	4' [121.9 CM]	5'-10 5/8" [179.4 CM]	5' [152.4 CM]	6'-4 1/4" [193.7 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3" [7.62 CM]	9" [22.86 CM]	2" [5.08 CM]	3" [7.62 CM]
60" [152.40 CM]	6'-6" [198.1 CM]	4'-4" [132.1 CM]	6'-4 1/2" [194.3 CM]	6' [182.9 CM]	7'-6 5/8" [230.2 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3" [7.62 CM]	9" [22.86 CM]	2" [5.08 CM]	3" [7.62 CM]
72" [182.9 CM]	7' [213.4 CM]	4'-8" [142.2 CM]	6'-10 3/8" [209.2 CM]	7' [213.4 CM]	8'-9" [266.7 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3" [7.62 CM]	9" [22.86 CM]	2" [5.08 CM]	3" [7.62 CM]
84" [213.4 CM]	7'-6" [228.6 CM]	5' [152.4 CM]	7'-4 1/4" [224.2 CM]	8' [243.8 CM]	9'-11 5/8" [303.2 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3" [7.62 CM]	9" [22.86 CM]	2" [5.08 CM]	3" [7.62 CM]
96" [243.8 CM]	8' [243.8 CM]	5'-4" [162.6 CM]	7'-10 5/8" [239.7 CM]	9' [274.3 CM]	11'-1 3/4" [338.7 CM]	3' [91.44 CM]	2' [60.96 CM]	3' [91.44 CM]	3" [7.62 CM]	9" [22.86 CM]	2" [5.08 CM]	3" [7.62 CM]
120" [304.8 CM]	14'-3 21/64" [435.3 CM]	6' [182.8 CM]	14' [426.7 CM]	12' [365.8 CM]	15'-7 1/4" [475.6 CM]	4' [121.9 CM]	2' [91.44 CM]	6' [182.9 CM]	6" [15.24 CM]	1'-1 1/2" [34.29 CM]	1" [20.45 CM]	8" [22.86 CM]
144" [365.8 CM]	16'-3 51/64" [497.3 CM]	6'-8" [203.2 CM]	16' [487.7 CM]	14'-8" [447.0 CM]	18'-4 3/4" [560.7 CM]	5' [152.4 CM]	3' [91.44 CM]	6' [243.8 CM]	6" [15.24 CM]	1'-1 1/2" [34.29 CM]	1" [30.48 CM]	8" [22.86 CM]

NOTES:
1) FLOW IS FROM LEFT TO RIGHT
2) 12" (18.2 CM) AND 42" (106.7 CM) SIZES ARE NOT ASTM / ISO STANDARD AND ARE NOT PROVIDED
3) 1 INCH (2.54 CM) AND 2 INCH (5.08 CM) SIZES SHOULD NOT BE USED ON SANITARY FLOWS

OPENCHANNELFLOW
BOISE | ATLANTA

DWG NO. PARSHALL FLUME MASTER | DATE 7.23.14

PARSHALL FLUME MASTER DIMENSIONS

REV	REVISION DESCRIPTION	BY	DATE

This drawing and the data contained within is the sole, exclusive intellectual property of OPENCHANNELFLOW (OCF) and may not be copied, reproduced, distributed, in whole or in part, without the prior written consent of OCF. OCF reserves the right to change any dimension on this drawing at will and without notice. This drawing is provided in confidence with the understanding it will be returned to OCF upon request.

Unless otherwise indicated dimensions are in feet and inches, with centerlines indicated in [ ], angles are in degrees.

Digester Tank Blower	Tag M-51.1.1
Manufacturer	FPZ
Model Number	SCL R40-MD-4-3
Type	Regenerative
Flow Rate	56 SCFM
Discharge Pressure	148 inWC (5.3 PSIG)
Horsepower	4
Number of Units	1

FPZ BLOWER TECHNOLOGY

REGENERATIVE BLOWERS - PRESSURE

SCL R20 / R30 / R40

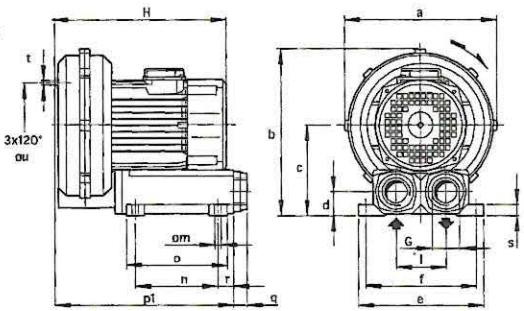
MD SERIES

SN 2464-4 1/2

STANDARD FEATURES
- Low weight cast aluminum construction.
- Quiet operation with integral inlet and outlet muffling.
- Recognized TEFC - cURus motor.
- High efficiency / low noise impeller design.
- No lubrication / maintenance required.
- Allowed ambient: +5 °F to +104 °F.
- Mountable in any plane.

OPTIONS
- Remote drive models (belt or coupling).
- Special voltages.
- Surface treatment or plating.
- Gas tight sealing.
- Special designs available.

ACCESSORIES
- Inlet and/or inline filters.
- Additional inlet/outlet silencers.
- Relief valves.
- Flow converting devices.
- Optionals connectors



Dimensions in inches.
Dimension for reference only.

Model	a	b	c	d	e	f	G	l	m	n	o	p1	q	r	s	t	u
R20-MD	11.14	12.17	6.57	1.85	9.25	8.27	1" ¼ NPT	3.54	0.39	5.91	7.87	13.58	0.71	1.77	0.87	M6	5.91
R30-MD	12.56	13.62	7.36	1.85	9.25	8.27	1" ¼ NPT	3.54	0.39	5.91	7.87	13.94	0.71	1.77	0.87	M6	7.09
R40-MD	13.78	14.65	7.76	1.85	9.25	8.27	1" ¼ NPT	3.54	0.39	5.91	7.87	14.33	0.71	1.77	0.87	M8	8.86

Model	Maximum flow Scfm		Installed power Hp		Maximum differential pressure Δp (In WG)		Noise level Lp dB (A) (1)		Overall dimensions H	Weight
	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	Inches	Lbs
R20-MD	41	35	1 ½	1 ½	161	161	68.5	66.5	13.39	48.5
R30-MD	65	54	2	2	140	170	72.2	69.2	15.58	57.3
			3	-	191	-	72.8	69.7	15.55	66.1
R40-MD	81	69	3	3	141	170	72.8	70.8	16.22	77.2
			4	4	201	201	73.3	71.3	17.09	88.2

(1) Noise measured at 1 m distance with inlet and outlet ports piped, in accordance to ISO 3744.

- For proper use, the blower should be equipped with inlet filter and relief valve; other accessories available on request.
- Ambient temperature from +5° to +104°F.
- Specifications subject to change without notice.

FPZ, Inc. 150 N. Progress Drive Saukville, WI 53080 USA Tel. (262) 268-0180 usa@fpz.com www.fpz.com

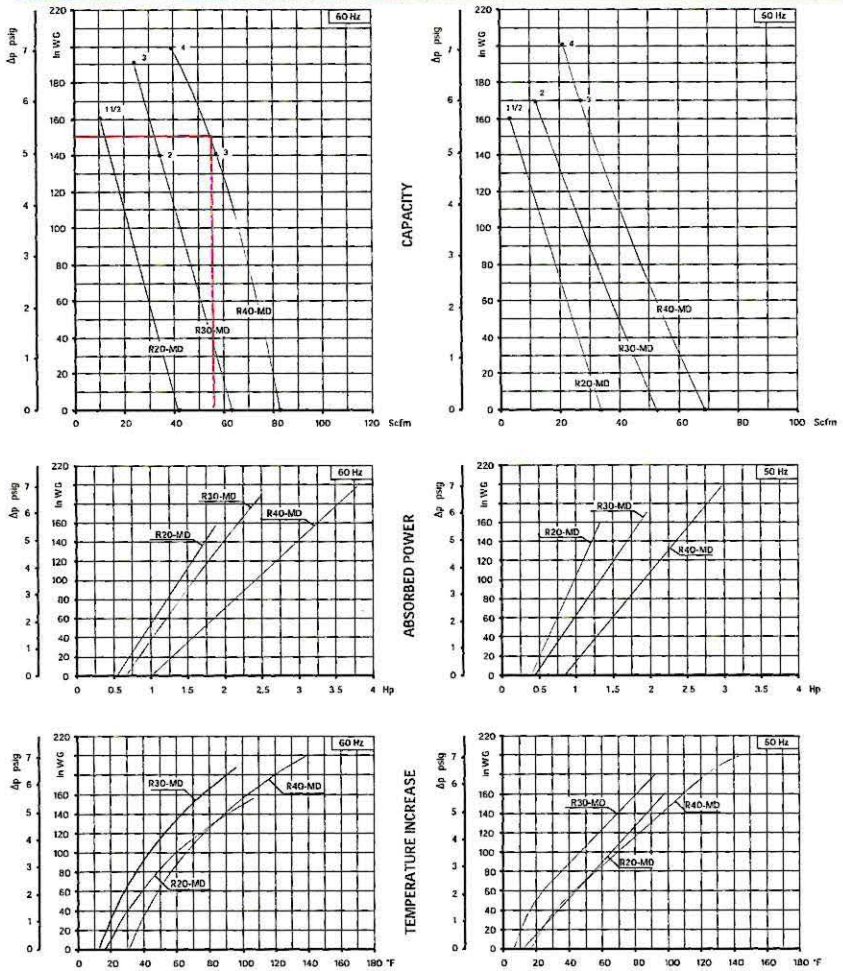
FPZ BLOWER TECHNOLOGY

REGENERATIVE BLOWERS - PRESSURE

SCL R20 / R30 / R40

MD SERIES

SN 2464-4 2/2



Curves refer to air at 68°F temperature and 29.92 In Hgatmospheric pressure (abs) measured at inlet port.
Values for flow, power consumption and temperature rise: +/-10% tolerance.
Data subject to change without notice.

FPZ, Inc. 150 N. Progress Drive Saukville, WI 53080 USA Tel. (262) 268-0180 usa@fpz.com www.fpz.com

WSI International

Odor Control	Tag M-70.1.1
Manufacturer	Carbtrol
Model Number	GC2-2B275
Type	Activated Carbon
Media Charge	170 lbs
Flow Rate	275 CFM
Horsepower	0.5
Number of units	1

CARBTROL®
CORPORATION

SPECIFICATION

AIR PURIFICATION SYSTEM
for
SEWAGE ODOR CONTROL
(CATALYTIC2 CARBON CANISTER WITH BLOWER)

Model	GC2-1B90	GC2-2B175	GC2-2B275	GC2-3B450	GC2-3B1000
Design Flow (CFM):	90	175	275	450	1000
Design Features:					
Carbon Weight (lbs.):	165	140	140	115	230
Canister Model:	GC2-1B	GC2-2B	GC2-2B	GC2-3B	(2) GC2-3P
Motor Rating:	1/3 HP 1Ø 115v	1/3 HP 1Ø 115v	1/2 HP 1O 115/230v	3/4 HP 1Ø 115/230v	3 HP 3Ø 230/460v
Electrical Connection:	Cord and plug	Cord and plug	Manual motor starter	Manual motor starter	Manual motor starter
Blower:	Centrifugal type, flanged suction, direct drive, with 3450 RPM, TEFC motor.				
Carbon:	Vapor phase catalytic activated carbon, 4 X 8 mesh, high activity with H2S capacity of 0.20gH2S /cc carbon, type CAT2.				
Suction Hose:	Eight (8) feet of suction hose provided.				
Options:	1/2 and 3/4 HP motors for 3 Ø, available Explosionproof motors (supplied without cord/plug or motor starters). Explosionproof motor starters Weather shroud with optional sound attenuation material Polyethylene Canister				
Shipping Weight (lbs.):	270	250	275	280	560
Availability:	Standard models - 3 days. Optional models - 4 to 6 weeks.				
Drawing Number:	S-1123	S-1245	S-1246	S-1110	S-1194

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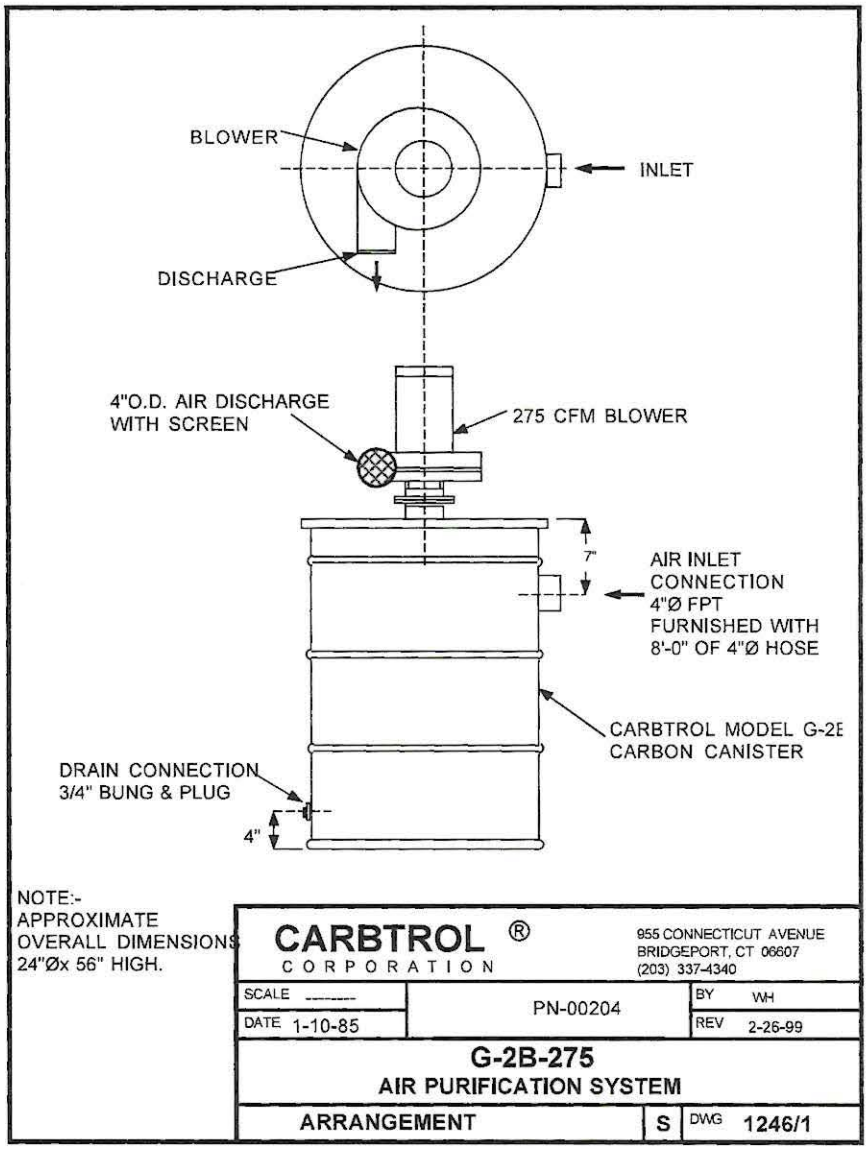
*SP-200/#6



CARBTROL®

TYPE CAT2
VAPOR PHASE CATALYTIC CARBON

DESCRIPTION

CARBTROL CAT2 Vapor Phase Catalytic Carbon is specifically designed for control of hydrogen sulfide (H2S) odors. Through its catalytic capacity, H2S is oxidized and converted to sulfur compounds. The high loading rates provide an extended carbon bed life.

SPECIFICATIONS

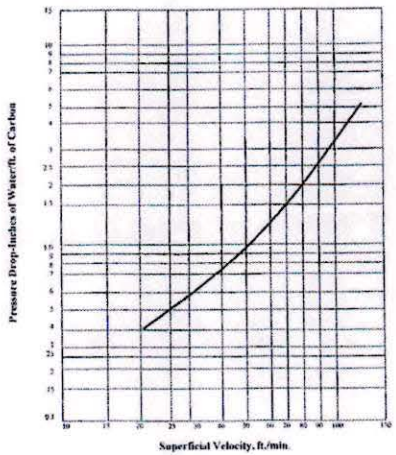
TYPE:	Granular
SIZE (US Sieve):	4 x 8
APPARENT DENSITY (g/cc):	.40
MOISTURE (percent):	3 (max)
H2S CAPACITY (g H2S/cc carbon):	0.20 (min)

APPLICATIONS

- Wastewater treatment plants
- Pump stations/ lift stations
- Forced main vents
- Landfill vents
- Tank vents

SAFETY

Certain chemical compounds in the presence of activated carbon may oxidize, decompose or polymerize. This could result in temperature increases sufficient to cause ignition of the activated carbon or adsorbed material. If a compounds reaction with activated carbon is unknown, appropriate tests should be considered.



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CARBTROL CORPORATION
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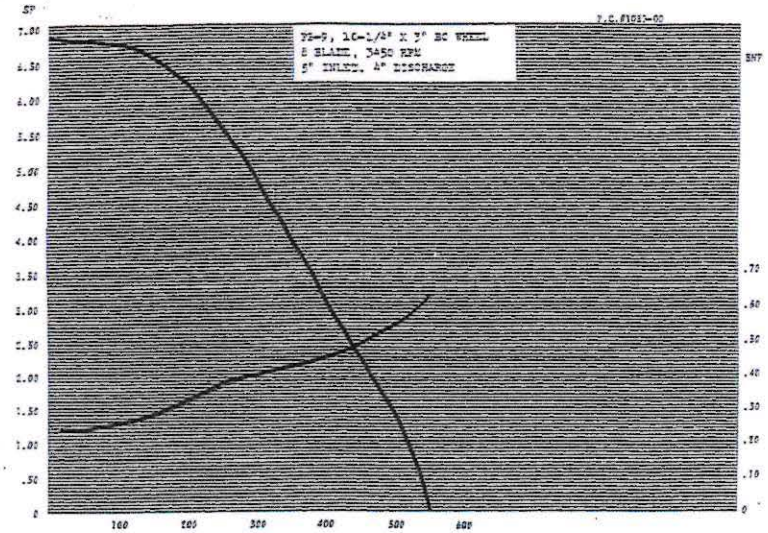
Bridgeport, CT 06607
800-242-1150 Fax: 203-337-4353
www.carbtrol.com info@carbtrol.com

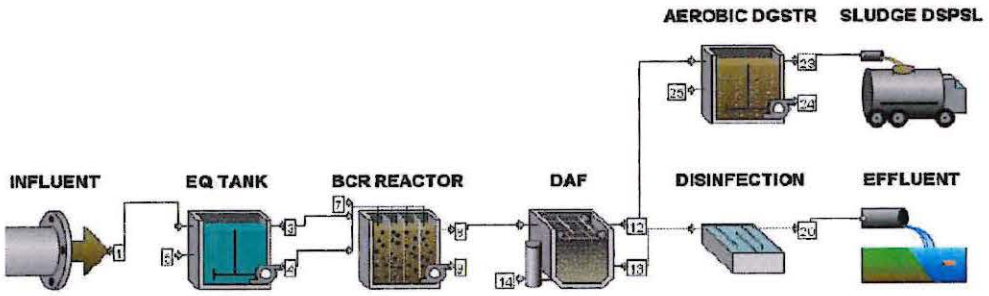
Standard B275 Blower Curve



APPENDIX 4 – GPS-X PROCESS MODELLING OUTPUTS

469-Caviness Beef Packers WWTP, Hereford, TX
Hydromanits GPS-X 7.0 Model Outputs
Proecss Model Flow Diagram

10/8/2018



Wastewater Influent

bodbased	INFLUENT
Influent Characterization	
Influent Composition	
total carbonaceous BOD5	300 [gO2/m3]
total TKN	40 [gN/m3]
total phosphorus	10 [gP/m3]
Soluble Organic Compounds	
colloidal substrate	40 [gCOD/m3]
acetate	0 [gCOD/m3]
propionate	0 [gCOD/m3]
methanol	0 [gCOD/m3]
Particulate Organic Compounds	
unbiodegradable cell products	0 [gCOD/m3]
poly-hydroxy alkanoates in PAO	0 [gCOD/m3]
Active Bacterial Biomass	
heterotrophic biomass	0 [gCOD/m3]
ammonia oxidizer biomass	0 [gCOD/m3]
nitrite oxidixer biomass	0 [gCOD/m3]
phosphate accumulating biomass	0 [gCOD/m3]
acetogenic biomass	0 [gCOD/m3]
acetoclastic methanogenic biomass	0 [gCOD/m3]
hydrogenotrophic methanogenic biomass	0 [gCOD/m3]
methylotrophic biomass	0 [gCOD/m3]
fermenting biomass	0 [gCOD/m3]
anammox biomass	0 [gCOD/m3]
Nitrogen Compounds	
ammonia nitrogen	25 [gN/m3]
nitrite	0 [gN/m3]
nitrate	0 [gN/m3]
Phosphorus Compounds	
ortho-phosphate	8 [gP/m3]
stored poly-phosphate in PAO	0 [gP/m3]
Influent Fractions	
VSS/TSS ratio	0.75 [gVSS/gTSS]
Organic Fractions	
soluble BOD5 to total BOD5 ratio	0.36 [gsBOD5/gtBOD5]
soluble BOD5 to soluble COD ratio	0.61 [gsBOD5/gsCOD]
total BOD5 to total COD ratio	0.58 [gtBOD5/gtCOD]
Nitrogen Fractions	
ammonium fraction of soluble TKN	0.9 [-]
N content of soluble inert material	0.05 [gN/gCOD]
N content of inert particulate material	0.05 [gN/gCOD]
Phosphorus Fractions	
P content of soluble inert material	0.01 [gP/gCOD]
P content of inert particulate material	0.01 [gP/gCOD]
Inorganic Compounds	
total soluble inorganic carbon	84 [gC/m3]

total calcium	140 [gCa/m3]
total magnesium	50 [gMg/m3]
total potassium	28 [gK/m3]
other cation	3 [eq/m3]
other anion	12 [eq/m3]
Inorganic Precipitates	
aluminum hydroxide	0 [gAl(OH)3/m3]
aluminum phosphate	0 [gAlPO4/m3]
iron hydroxide	0 [gFe(OH)3/m3]
iron phosphate	0 [gFePO4/m3]
calcium carbonate	0 [gCaCO3/m3]
calcium phosphate	0 [gCaPO4/m3]
magnesium carbonate	0 [gMgCO3/m3]
magnesium hydrogen phosphate (newberyite)	0 [gMgHPO4/m3]
magnesium ammonium phosphate (struvite)	0 [gMgNH4PO4/m3]
Soluble Gases	
Soluble Gases	
dissolved oxygen	0 [gO2/m3]
Soluble Gases	
dissolved hydrogen gas	0 [gCOD/m3]
dissolved dinitrogen gas	18 [gN/m3]
dissolved methane	0 [gCOD/m3]
Additional States	
Additional Soluble States	
soluble component "a"	0 [notset]
soluble component "b"	0 [notset]
Additional Particulate States	
particulate component "a"	0 [notset]
particulate component "b"	0 [notset]
Environmental Setting	
Temperature Setting	
use local temperature	Off
local liquid temperature	68 [F]
pH setting	
Influent pH	set pH
Set pH	7 [-]
Operating Cost	
Pumping Cost	
hydraulic head	0 [ft]
pump efficiency	0.7 [-]
pumping headloss	0 [ft]
Flow Data	
Flow Type	
flow type	Diurnal Flow Factor

Data

influent flow		16500 [gpd(US)]

Other Flow Options

Sinusoidal

amplitude scaling factor		0.2 [-]
time shift		0.35 [d]
sine wave frequency		1 [1/d]

Diurnal Flow

diurnal flow data	0	1650 [gpd(US)]
	1	365000
	2	338000
	3	333000
	4	328000
	5	441000
	6	555000
	7	571000
	8	586000
	9	571000
	10	555000
	11	557000
	12	560000
	13	547000
	14	534000
	15	555000
	16	576000
	17	608000
	18	639000
	19	676000
	20	713000
	21	637000
	22	560000
	23	476000
	24	391000

Diurnal Flow Factor (to average)

diurnal flow factor	0	0.1 [-]
	1	0.1
	2	0.1
	3	0.1
	4	0.1
	5	1.4
	6	1.6
	7	1.5
	8	2
	9	1.3
	10	0.8
	11	0.8
	12	1.2
	13	1.2
	14	1
	15	1
	16	1
	17	1.5
	18	1.6
	19	2
	20	1.6

	21	1.5
	22	0.4
	23	0.1
	24	0.1

Runoff

rainfall depths	90 [mm/h]
catchment area	1.25E+09 [ft2]
direct runoff coefficient	0.15
indirect runoff coefficient	0.2
direct decay	0.9 [1/d]
indirect decay	0.5 [1/d]
initial direct volume	0 [gal(US)]
initial indirect volume	0 [gal(US)]

Output Variables(influent) 1

Flow

Flow

flow	16500 [gpd(US)]

Temperature

Temperature

Temperature	60 [F]

Composite Variables

Volatile Fraction

VSS/TSS ratio	0.75 [gVSS/gTSS]

Composite Variables

total suspended solids	271 [mg/L]
volatile suspended solids	203 [mg/L]
total inorganic suspended solids	67.8 [mg/L]
total carbonaceous BOD5	300 [mgO2/L]
total COD	517 [mgCOD/L]
total TKN	40 [mgN/L]
total nitrogen	40 [mgN/L]
total phosphorus	10 [mgP/L]
total carbon	250 [gC/m3]

Additional Composite Variables

filtered carbonaceous BOD5	108 [mgO2/L]
particulate carbonaceous BOD5	192 [mgO2/L]
filtered ultimate carbonaceous BOD	130 [mgO2/L]
particulate ultimate carbonaceous BOD	286 [mgO2/L]
total ultimate carbonaceous BOD	416 [mgO2/L]
total substrate BOD5	300 [mgO2/L]
soluble substrate COD	151 [mgCOD/L]
total substrate COD	482 [mgCOD/L]
filtered COD	177 [mgCOD/L]
particulate COD	340 [mgCOD/L]
filtered CODmn	136 [mgCOD/L]
particulate CODmn	199 [mgCOD/L]
total CODmn	334 [mgCOD/L]

Biomass Composite Variables

biomass COD	0 [mgCOD/L]
biomass inert material	0 [mgCOD/L]
biomass VSS	0 [mg/L]

percent active solids	0 [%]
percent inactive solids	100 [%]
Additional Nitrogen Composite Variables	
filtered TKN	27.8 [mgN/L]
particulate TKN	12.2 [mgN/L]
total nitrogen including dinitrogen gas	58 [mgN/L]
nitrite and nitrate	0 [mgN/L]
Additional Phosphorus Composite Variables	
particulate organic phosphorus	1.74 [mgP/L]
particulate inorganic phosphorus	0 [mgP/L]
total particulate phosphorus	1.74 [mgP/L]
total soluble phosphorus	8.26 [mgP/L]
Additional Carbon Composite Variables	
particulate organic carbon	109 [gC/m3]
soluble organic carbon	56.7 [gC/m3]
total organic carbon	166 [gC/m3]
particulate inorganic carbon	0 [gC/m3]
total inorganic carbon	84 [gC/m3]
State Variables	
Soluble Gases	
dissolved oxygen	0 [mgO2/L]
Soluble Gases	
dissolved hydrogen gas	0 [mgCOD/L]
dissolved dinitrogen gas	18 [mgN/L]
dissolved methane	0 [mgCOD/L]
Soluble Organic Compounds	
soluble inert material	26.4 [mgCOD/L]
colloidal substrate	40 [mgCOD/L]
readily degradable soluble substrate	111 [mgCOD/L]
Other Soluble Organic Substrates	
acetate	0 [mgCOD/L]
propionate	0 [mgCOD/L]
methanol	0 [mgCOD/L]
Particulate Organic Compounds	
particulate inert material	9.16 [mgCOD/L]
unbiodegradable cell products	0 [mgCOD/L]
slowly biodegradable substrate	331 [mgCOD/L]
poly-hydroxy alkanoates in PAO	0 [mgCOD/L]
Nitrogen Compounds	
ammonia nitrogen	25 [mgN/L]
soluble organic nitrogen	1.46 [mgN/L]
nitrite	0 [mgN/L]
nitrate	0 [mgN/L]
nitrogen in slowly biodegradable substrate	11.8 [mgN/L]
Phosphorus Compounds	
ortho-phosphate	8 [mgP/L]
phosphorus in slowly biodegradable substrate	1.64 [mgP/L]
poly-phosphate in PAO	0 [mgP/L]
Active Bacterial Biomass	
heterotrophic biomass	0 [mgCOD/L]
fermenting biomass	0 [mgCOD/L]
ammonia oxidizer biomass	0 [mgCOD/L]
nitrite oxidixer biomass	0 [mgCOD/L]
phosphate accumulating biomass	0 [mgCOD/L]
Active Bacterial Biomass	

acetogenic biomass	0 [mgCOD/L]
acetoclastic methanogenic biomass	0 [mgCOD/L]
hydrogenotrophic methanogenic biomass	0 [mgCOD/L]
methylotrophic biomass	0 [mgCOD/L]
anammox biomass	0 [mgCOD/L]
Soluble Inorganic Compounds	
total soluble inorganic carbon	84 [gC/m3]
Soluble Inorganic Compounds	
total calcium	140 [gCa/m3]
total magnesium	50 [gMg/m3]
total potassium	28 [gK/m3]
other cation	4.31 [eq/m3]
other anion	12 [eq/m3]
Particulate Inorganic Compounds	
inorganic inert particulate	62.7 [gSS/m3]
Particulate Inorganic Compounds	
aluminum hydroxide	0 [gAl(OH)3/m3]
aluminum phosphate	0 [gAlPO4/m3]
iron hydroxide	0 [gFe(OH)3/m3]
iron phosphate	0 [gFePO4/m3]
calcium carbonate	0 [mgCaCO3/L]
calcium phosphate	0 [gCaPO4/m3]
magnesium carbonate	0 [gMgCO3/m3]
magnesium hydrogen phosphate (newberyite)	0 [gMgHPO4.3H2O/m3]
magnesium ammonium phosphate (struvite)	0 [gMgNH4PO4.6H2O/m3]
Additional Soluble States	
soluble component "a"	0 [notset]
soluble component "b"	0 [notset]
Additional Particulate States	
particulate component "a"	0 [notset]
particulate component "b"	0 [notset]
pH and Alkalinity	
pH	
estimated pH	7
proton deficiency	-1.5E-07 [eq/L]
Alkalinity	
carbonate alkalinity	278 [mgCaCO3/L]
total alkalinity	283 [mgCaCO3/L]
Alkalinity	
caustic alkalinity	0 [mgCaCO3/L]
p-alkalinity	0.209 [mgCaCO3/L]
Iterations	
number of iteration for solution	18 [-]
Total Molar Concentrations	
molar concentration of TIC	0.007 [moleC/L]
molar concentration of ammonia	0.00178 [moleN/L]
molar concentration of nitrite	0 [moleN/L]
molar concentration of nitrate	0 [moleN/L]
molar concentration of phosphorus	0.000258 [moleP/L]
molar concentration of calcium	0.00349 [moleCa/L]
molar concentration of magnesium	0.00206 [moleMg/L]
molar concentration of potassium	0.000716 [moleK/L]
charge equivalent of cation	4.31 [eq/m3]
charge equivalent of anion	12 [eq/m3]

Ionic Molar Concentrations

molar concentration of HCO3-	0.00555	[moleC/L]
molar concentration of CO32-	2.09E-06	[moleC/L]
molar concentration of H2PO4-	0.000163	[moleP/L]
molar concentration of HPO42-	9.57E-05	[moleP/L]
molar concentration of Ac-	0	[mole Ac/L]
molar concentration of Pr-	0	[mole Pr/L]
molar concentration of PO43-	2.45E-09	[moleP/L]
molar concentration of NH4+	0.00178	[moleN/L]
molar concentration of NO2-	0	[moleN/L]

Dissociation coefficients (corrected for temperature)

dissociation coefficent for acetate	1.75E-05	
dissociation coefficent for propionate	1.32E-05	
dissociation coefficent for ammonium	2.85E-10	
dissociation coefficent for H2CO3	3.84E-07	
dissociation coefficent for HCO3-	0	
dissociation coefficent for H3PO4	0.00777	
dissociation coefficent for H2PO4-	5.88E-08	
dissociation coefficent for HPO42-	0	

Runoff Variables

Runoff Variables

stored direct volume	2.64E-08	[gal(US)]
stored indirect volume	2.64E-08	[gal(US)]
stored direct volume change	9.93E+09	[gal(US)]
stored indirect volume change	1.32E+10	[gal(US)]
excess rainfall	66200	[MGD(US)]

Operating Cost

Pumping Energy Cost

pumping power	0	[hp]
cumulative pumping energy required	0	[kWh]
cumulative pumping energy cost	0	[$]

Influent Characterization

Influent Composition

total carbonaceous BOD5	300	[mgO2/L]
total TKN	40	[mgN/L]
total phosphorus	10	[mgP/L]

Soluble Organic Compounds

colloidal substrate	40	[mgCOD/L]
acetate	0	[mgCOD/L]
propionate	0	[mgCOD/L]
methanol	0	[mgCOD/L]

Particulate Organic Compounds

unbiodegradable cell products	0	[mgCOD/L]
poly-hydroxy alkanoates in PAO	0	[mgCOD/L]

Active Bacterial Biomass

heterotrophic biomass	0	[mgCOD/L]
ammonia oxidizer biomass	0	[mgCOD/L]
nitrite oxidixer biomass	0	[mgCOD/L]
phosphate accumulating biomass	0	[mgCOD/L]
acetogenic biomass	0	[mgCOD/L]
acetoclastic methanogenic biomass	0	[mgCOD/L]
hydrogenotrophic methanogenic biomass	0	[mgCOD/L]
methylotrophic biomass	0	[mgCOD/L]
fermenting biomass	0	[mgCOD/L]
anammox biomass	0	[mgCOD/L]

Nitrogen Compounds

ammonia nitrogen	25	[mgN/L]
nitrite	0	[mgN/L]
nitrate	0	[mgN/L]

Phosphorus Compounds

ortho-phosphate	8	[mgP/L]
stored poly-phosphate in PAO	0	[mgP/L]

Influent Fractions

VSS/TSS ratio	0.75	[gVSS/gTSS]

Organic Fractions

soluble BOD5 to total BOD5 ratio	0.36	[gsBOD5/gtBOD5]
soluble BOD5 to soluble COD ratio	0.61	[gsBOD5/gsCOD]
total BOD5 to total COD ratio	0.58	[gtBOD5/gtCOD]

Nitrogen Fractions

ammonium fraction of soluble TKN	0.9	[-]
N content of soluble inert material	0.05	[gN/gCOD]
N content of inert particulate material	0.05	[gN/gCOD]

Phosphorus Fractions

P content of soluble inert material	0.01	[gP/gCOD]
P content of inert particulate material	0.01	[gP/gCOD]

Inorganic Compounds

total soluble inorganic carbon	84	[gC/m3]
total calcium	140	[gCa/m3]
total magnesium	50	[gMg/m3]
total potassium	28	[gK/m3]
other cation	3	[eq/m3]
other anion	12	[eq/m3]

Inorganic Precipitates

aluminum hydroxide	0	[gAl(OH)3/m3]
aluminum phosphate	0	[gAlPO4/m3]
iron hydroxide	0	[gFe(OH)3/m3]
iron phosphate	0	[gFePO4/m3]
calcium carbonate	0	[mgCaCO3/L]
calcium phosphate	0	[gCaPO4/m3]
magnesium carbonate	0	[gMgCO3/m3]
magnesium hydrogen phosphate (newberyite)	0	[gMgHPO4/m3]
magnesium ammonium phosphate (struvite)	0	[gMgNH4PO4/m3]

Soluble Gases

Soluble Gases

dissolved oxygen	0	[mgO2/L]

Soluble Gases

dissolved hydrogen gas	0	[mgCOD/L]
dissolved dinitrogen gas	18	[mgN/L]
dissolved methane	0	[mgCOD/L]

Additional States

Additional Soluble States

soluble component "a"	0	[notset]
soluble component "b"	0	[notset]

Additional Particulate States

particulate component "a"	0	[notset]
particulate component "b"	0	[notset]

Environmental Setting

Temperature Setting

use local temperature	0	
local liquid temperature	68	[F]

469-Caviness Beef Packers WWTP, Hereford, TX
Hydromanits GPS-X 7.0 Model Outputs
Influent Characterization

10/8/2018

pH setting		
Influent pH	2	
Set pH	7	[-]
Operating Cost		
Pumping Cost		
hydraulic head	0	[ft]
pump efficiency	0.7	[-]
pumping headloss	0	[ft]
Flow Data		
Flow Type		
flow type	4	
Data		
influent flow	16500	[gpd(US)]
Other Flow Options		
Sinusoidal		
amplitude scaling factor	0.2	[-]
time shift	0.35	[d]
sine wave frequency	1	[1/d]
Runoff		
rainfall depths	90	[mm/h]
catchment area	1.25E+09	[ft2]
direct runoff coefficient	0.15	
indirect runoff coefficient	0.2	
direct decay	0.9	[1/d]
indirect decay	0.5	[1/d]
initial direct volume	0	[gal(US)]
initial indirect volume	0	[gal(US)]

469-Caviness Beef Packers WWTP, Hereford, TX
Hydromanits GPS-X 7.0 Model Outputs
Mass Balance

10/8/2018

Parameter	Units	1 Inf	4 EQ	8 BCR Eff	13 DAF Eff	20 CCT Eff	12 Float	23 Dig. Sludge	27 Truck
Flow	gpd(US)	16,500	16,500	16,500	16,412	16,412	88	88	-
TSS	mg/L	271.0	271.0	188.8	2.2	2.2	35,001	21,990	21,990
	lb/d	37.3	37.3	26.0	0.3	0.3	25.7	16.1	-
VSS	mg/L	203.3	203.3	111.2	1.3	1.3	20,616	8,436	8,436
	lb/d	28.0	28.0	15.3	0.2	0.2	15.1	6.2	-
Soluble cBOD5	mgO2/L	108.0	108.0	8.4	8.4	8.4	8.4	0.7	0.7
	lb/d	14.9	14.9	1.2	1.2	1.2	0.0	0.0	-
cBOD5	mgO2/L	300.0	300.0	84.3	9.3	9.3	14,076	2,105	2,105
	lb/d	41.3	41.3	11.6	1.3	1.3	10.3	1.5	-
Soluble COD	mgCOD/L	177.0	177.0	38.2	38.2	38.2	38.2	27.4	27.4
	lb/d	24.4	24.4	5.3	5.2	5.2	0.0	0.0	-
COD	mgCOD/L	517.2	517.2	207.8	40.1	40.1	31,479	12,758	12,758
	lb/d	71.2	71.2	28.6	5.5	5.5	23.1	9.4	-
Ammonia Nitrogen	mgN/L	25.0	25.0	1.5	1.5	1.5	1.5	327.8	327.8
	lb/d	3.4	3.4	0.2	0.2	0.2	0.0	0.2	-
Nitrite	mgN/L	0.0	0.0	0.4	0.4	0.4	0.4	449.9	449.9
	lb/d	0.0	0.0	0.1	0.1	0.1	0.0	0.3	-
Nitrate	mgN/L	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	lb/d	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Soluble TKN	mgN/L	27.8	27.8	3.7	3.7	3.7	3.7	329.8	329.8
	lb/d	3.8	3.8	0.5	0.5	0.5	0.0	0.2	-
TKN	mgN/L	40.0	40.0	14.1	3.8	3.8	1,935	1,215	1,215
	lb/d	5.5	5.5	1.9	0.5	0.5	1.4	0.9	-
TN	mgN/L	40.0	40.0	14.5	4.2	4.2	1,935	1,665	1,665
	lb/d	5.5	5.5	2.0	0.6	0.6	1.4	1.2	-
Ortho-Phosphate	mgP/L	8.0	8.0	6.8	6.8	6.8	6.8	217.1	217.1
	lb/d	1.1	1.1	0.9	0.9	0.9	0.0	0.2	-
TP	mgP/L	10.0	10.0	10.0	7.1	7.1	544.5	544.3	544.3
	lb/d	1.4	1.4	1.4	1.0	1.0	0.4	0.4	-
Dissolved Oxygen	mgO2/L	0.0	9.2	4.0	4.0	4.0	4.0	8.6	8.6
	lb/d	0.0	1.3	0.6	0.5	0.5	0.0	0.0	-
Total Soluble Inorganic Carbon	mgC/L	84.0	84.0	47.5	47.5	47.5	47.5	0.5	0.5
	lb/d	11.6	11.6	6.5	6.5	6.5	0.0	0.0	-
TOC	mgC/L	165.5	165.5	72.8	13.0	13.0	11,242	4,612	4,612
	lb/d	-	-	-	-	-	-	-	-
Alkalinity	mgCaCO3/L	277.8	277.7	187.3	187.3	187.3	187.3	0.2	0.2
	lb/d	-	-	-	-	-	-	-	-

469-Caviness Beef Packers WWTP, Hereford, TX
Hydromanits GPS-X 7.0 Model Outputs
Mass Balance

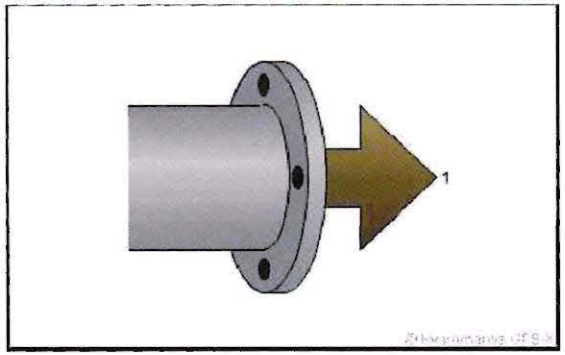
10/8/2018

Parameter	Units	1	4	8	13	20	12	23	27
		Inf	EQ	BCR Eff	DAF Eff	CCT Eff	Float	Dig. Sludge	Truck
pH	-	7.00	7.00	7.64	7.64	7.64	7.64	5.66	5.66

469-Caviness Beef Packers WWTP, Hereford, TX
Hydromanits GPS-X 7.0 Model Outputs
Influent

10/8/2018

INFLUENT



		1
Flow	gpd(US)	16500

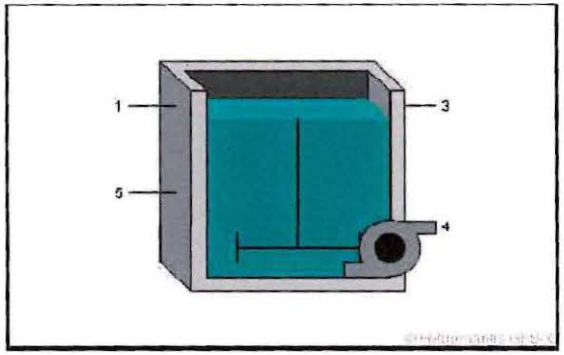
Simulation Results

		1
Flow	gpd(US)	16500
TSS	mg/L	271.0412
VSS	mg/L	203.2809
cBOD5	mg/L	300
COD	mg/L	517.2414
Soluble COD	mg/L	177.0492
Ammonia N	mgN/L	25
TKN	mgN/L	40
TN	mgN/L	40
Soluble PO4-P	mgP/L	8
TP	mgP/L	10
Total Alkalinity	mgCaCO3/L	282.7954
pH	-	7.000053

Mass Flows

		1	Total In	Total Out
TSS	lb/d	37.32204	-	-
COD	lb/d	71.22348	-	-
TN	lb/d	5.507949	-	-
TP	lb/d	1.376987	-	-

EQ TANK



		1	3	4	5
Flow	MGD(US)	0.0165	2.642E-14	0.0165	0

Simulation Results

		1	3	4
Flow	gpd(US)	16500	2.642E-08	16500
TSS	mg/L	271.0412	271.04126	271.04126
VSS	mg/L	203.2809	203.28094	203.28094
cBOD5	mg/L	300	300.00001	300.00001
COD	mg/L	517.2414	517.24139	517.24139
Ammonia N	mgN/L	25	25	25
TKN	mgN/L	40	40.000001	40.000001
TP	mgP/L	10	10.000002	10.000002
Total Alkalinity	mgCaCO3/L	282.7954	282.78045	282.78045
pH	-	7.000053	6.9999466	6.9999466

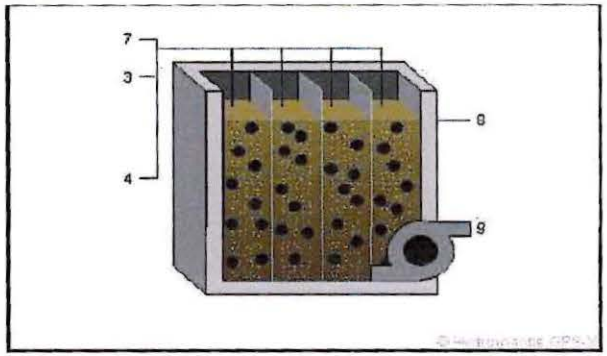
Operational Variables

		3
HRT	h	3.999997
Liquid Volume	gal(US)	2750
DO	mgO2/L	9.209187
Air Flow	cfm	34

Mass Flows

		1	5	3	4	Total In	Total Out
TSS	lb/d	37.32204	-	5.975E-11	37.322039	37.322036	37.322039
COD	lb/d	71.22348	-	1.14E-10	71.223486	71.223484	71.223486
TN	lb/d	5.507949	-	8.818E-12	5.5079498	5.5079494	5.5079498
TP	lb/d	1.376987	-	2.205E-12	1.3769877	1.3769874	1.3769877

BCR REACTOR



		3	7	8	9	4
Flow	MGD(US)	2.64172E-14	0	0.0165	0	0.0165

Simulation Results

Parameter	Units	3	8(1)	8
MLSS	mg/L	271.0	188.8	188.8
MLVSS	mg/L	203.3	111.2	111.2
Soluble COD	mg/L	177.0	38.2	38.2
Ammonia N	mgN/L	25.0	1.5	1.5
Nitrite N	mgN/L	0.0	0.4	0.4
Nitrate N	mgN/L	0.0	0.0	0.0
Soluble PO4-P	mgP/L	8.0	6.8	6.8
Total Alkalinity	mgCaCO3/L	282.8	-	197.6
pH	-	7.0	-	7.6
HRT	h	-	5.6	-
DO	mgO2/L	-	4.0	-
Air Flow	cfm	-	19.6	-
SOTE	%	-	30.0	-
Actual OTR	lb/h	-	1.7	-
Biofilm Thickness	in	-	0.0	-
Biofilm Mass	lb	-	311.6	-
Media Surface Area	ft2	-	43,292	-
TSS / Surf. Area	lb/ft2	-	0.0	-
Reactor Media Fill	%	-	50.0	-
Media Displaced Vol.	ft3	-	51.1	-
Liquid Volume	gal(US)	-	3,868	-

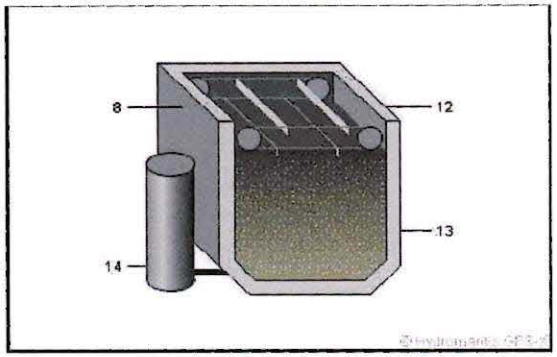
Operational Variables

		8
Total Air Flow	cfm	19.57371175
Total Actual OTR	lb/h	1.681933649
Total Media Surf. Area	ft2	43292.31315
Media Specific Area	ft2/ft3	152.3999951

Mass Flows

		3	4	8	Total In	Total Out
TSS	lb/d	5.97544E-11	37.322039	26.002294	37.322039	26.002294
COD	lb/d	1.14032E-10	71.223486	28.612731	71.223486	28.612731
TN	lb/d	8.81849E-12	5.5079498	1.9931979	5.5079498	1.9931979
TP	lb/d	2.20462E-12	1.3769877	1.3769442	1.3769877	1.3769442

DAF



		8	12	13	14
Flow	MGD(US)	0.0165	8.8E-05	0.016412	0

Simulation Results

		8	13	12
Flow	gpd(US)	16500	16412.001	87.999087
TSS	mg/L	188.8347	2.1763466	35000.927
Total Alkalinity	mgCaCO3/L	197.5574	197.5573	197.5573
pH	-	7.643272	7.6432724	7.6432724

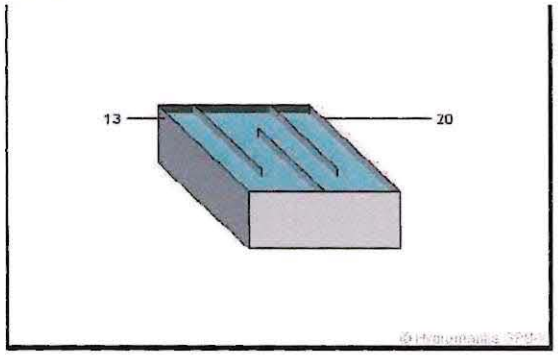
Operational Variables

		13	12
HRT	h	2.584185	-
Hyd. Loading Rate	gal(US)/(ft2.d)	660.0001	-
Solids Loading Rate	lb/(ft2.d)	1.040092	-
Solids Capture - Mass Basis	%	98.8535	-
Float Solids Mass Flow	lb/d	-	25.704178

Mass Flows

		8	13	12	Total In	Total Out
TSS	lb/d	26.00229	0.2980819	25.704178	26.002294	26.00226
COD	lb/d	28.61273	5.4951458	23.117554	28.612731	28.6127
TN	lb/d	1.993198	0.5720938	1.4211024	1.9931979	1.9931961
TP	lb/d	1.376944	0.9770986	0.3998452	1.3769442	1.3769439

DISINFECTION



		13	20
Flow	MGD(US)	0.016412	0.016412

Simulation Results

		13	20
Flow	gpd(US)	16412	16412.001
TSS	mg/L	2.176347	2.1763466
VSS	mg/L	1.281895	1.2818946
cBOD5	mg/L	9.295498	9.2954981
COD	mg/L	40.12099	40.120994
Ammonia N	mgN/L	1.46084	1.4608401
Nitrite N	mgN/L	0.388395	0.3883954
Nitrate N	mgN/L	0.000001	0.000001
TKN	mgN/L	3.788557	3.7885574
TN	mgN/L	4.176954	4.1769538
Soluble PO4-P	mgP/L	6.836335	6.8363345
TP	mgP/L	7.133963	7.1339631
Total Alkalinity	mgCaCO3/L	197.5573	197.5573
pH	-	7.643272	7.6432724

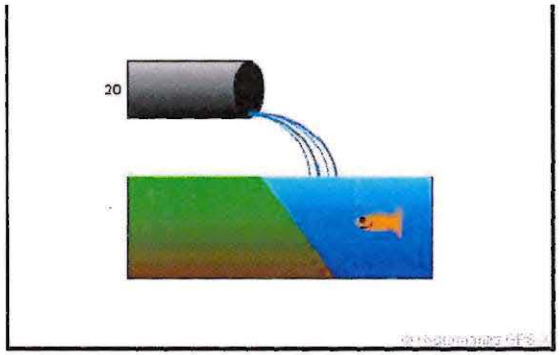
Operational Variables

		20
Detention Time	min	47.29222
Chlorine Dosage	mg/L	10
Free Residual	mg/L	0
Total Residual	mg/L	1.329964
Total Trihalomethane	ppb	2.757784
Eff. Coliform Density	MPN/100mL	0.006553

Mass Flows

		13	20	Total In	Total Out
TSS	lb/d	0.298082	0.2980819	0.2980819	0.2980819
COD	lb/d	5.495146	5.4951458	5.4951458	5.4951458
TN	lb/d	0.572094	0.5720938	0.5720938	0.5720938
TP	lb/d	0.977099	0.9770986	0.9770986	0.9770986

EFFLUENT



		20
Flow	MGD(US)	0.016412

Simulation Results

		20
Flow	gpd(US)	16412
TSS	mg/L	2.176347
VSS	mg/L	1.281895
cBOD5	mg/L	9.295498
COD	mg/L	40.12099
Ammonia N	mgN/L	1.46084
Nitrite N	mgN/L	0.388395
Nitrate N	mgN/L	0.000001
TKN	mgN/L	3.788557
TN	mgN/L	4.176954
Soluble PO4-P	mgP/L	6.836335
TP	mgP/L	7.133963
Total Alkalinity	mgCaCO3/L	197.5573
pH	-	7.643272

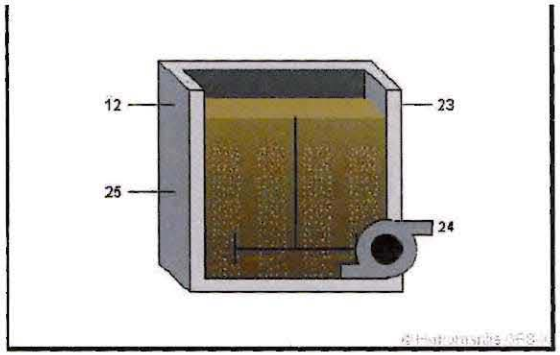
Operational Variables

		20
Overall EQI	lb/d	20.94142
Net EQI	lb/d	1.615311

Mass Flows

		20	Total In	Total Out
TSS	lb/d	0.298082	-	-
COD	lb/d	5.495146	-	-
TN	lb/d	0.572094	-	-
TP	lb/d	0.977099	-	-

AEROBIC DGSTR



		12	23	24	25
Flow	MGD(US)	8.8E-05	8.8E-05	0	0

Simulation Results

		12	Internal	23
MLSS	mg/L	35000.93	21989.526	21989.526
MLVSS	mg/L	20615.97	8435.6562	8435.6562
Soluble COD	mg/L	38.16603	27.408746	27.408746
Ammonia N	mgN/L	1.46084	327.8264	327.8264
Nitrite N	mgN/L	0.388395	449.93263	449.93263
Nitrate N	mgN/L	0.000001	1.1E-06	1.1E-06
Soluble PO4-P	mgP/L	6.836335	217.11729	217.11729
Total Alkalinity	mgCaCO3/L	197.5573	1606.2152	1606.2152
pH	-	7.643272	5.658287	5.658287
HRT	h	-	681.82471	-
DO	mgO2/L	-	8.6411979	-
Total OUR	mgO2/(L.h)	-	30.240961	-
Nitrification Rate	mgN/(L.h)	-	0.9786572	-
Nitrate Util. Rate	mgN/(L.h)	-	6.752E-07	-
Total Air Flow	cfm	-	57	-
SOTE	%	-	30	-
Actual OTR	lb/h	-	0.6311016	-

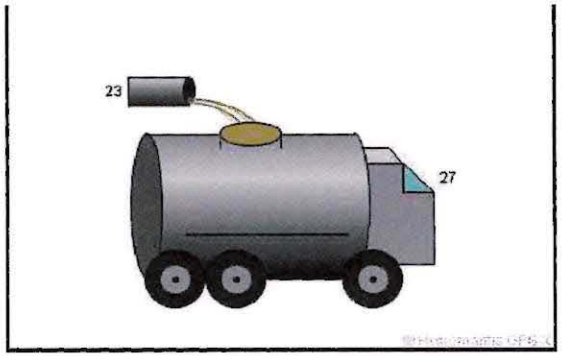
Operational Variables

		23
F to M Ratio	lbBOD5/(lbMLVSS	0.058735
Vol. Org. Loading	lbBOD5/(1000ft3.d	30.93107
RAS Recycle Ratio	%	0

Mass Flows

		12	23	Total In	Total Out
TSS	lb/d	25.70418	16.148792	25.704178	16.148792
COD	lb/d	23.11755	9.369149	23.117554	9.369149
TN	lb/d	1.421102	1.2228306	1.4211024	1.2228306
TP	lb/d	0.399845	0.3997507	0.3998452	0.3997507

SLUDGE DSPSL



		23	27
Flow	MGD(US)	8.8E-05	-

Simulation Results

		23
Flow	gpd(US)	87.99909
TSS	mg/L	21989.53
VSS	mg/L	8435.656
cBOD5	mg/L	2104.887
COD	mg/L	12757.81
Ammonia N	mgN/L	327.8264
Nitrite N	mgN/L	449.9326
Nitrate N	mgN/L	1.1E-06
TKN	mgN/L	1215.174
TN	mgN/L	1665.107
Soluble PO4-P	mgP/L	217.1173
TP	mgP/L	544.3334
Total Alkalinity	mgCaCO3/L	1606.215
pH	-	5.658287

Operational Variables

		23	27
Mass of Hauled Sludge	tonne/d	0.007325	-
Current Sludge Hauling Cost	$/d	-	0.5859975
Total Sludge Hauling Cost	$	-	0

Mass Flows

		23	27	Total In	Total Out
TSS	lb/d	16.14879	-	-	-
COD	lb/d	9.369149	-	-	-
TN	lb/d	1.222831	-	-	-
TP	lb/d	0.399751	-	-	-

Attachment 2

TCEQ Correspondence & Certifications

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Erin E. Chancellor, *Interim Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 13, 2023

Regan Caviness, Vice President
Caviness Development, Ltd.
P.O. Box 790
Hereford, Texas 79045

RE: Caviness Development, Ltd.
Permit No. WQ0015744001

This letter is your notice that the Texas Commission on Environmental Quality (TCEQ) executive director (ED) has acted on the above-named application. According to 30 Texas Administrative Code (TAC) Section 50.135 the ED's action became effective on the date the ED signed the permit or other action. A copy of the final action is enclosed and cites the effective date.

For certain matters, a **motion to overturn**, which is a request that the commission review the executive director's action on an application, may be filed with the chief clerk. Whether a motion to overturn is procedurally available for a specific matter is determined by Title 30 of the Texas Administrative Code Chapter 50. According to 30 TAC Section 50.139, an action by the ED is not affected by a motion to overturn filed under this section unless expressly ordered by the commission.

If a motion to overturn is filed, the motion must be received by the chief clerk within 23 days after the date of this letter. An original and 7 copies of a motion must be filed with the chief clerk in person or by mail. The Chief Clerk's mailing address is Office of the Chief Clerk (MC 105), TCEQ, P.O. Box 13087, Austin, Texas 78711-3087. On the same day the motion is transmitted to the chief clerk, please provide copies to the Environmental Law Deputy Director (MC 173), and the Public Interest Counsel (MC 103), both at the same TCEQ address listed above. If a motion is not acted on by the commission within 45 days after the date of this letter, then the motion shall be deemed overruled.

You may also request **judicial review** of the ED's action. The procedure and timelines for seeking judicial review of a commission or ED action are governed by Texas Water Code Section 5.351.

Individual members of the public may seek further information by calling the TCEQ Public Education Program, toll free, at 1-800-687-4040.

Sincerely,

Laurie Gharis

Laurie Gharis
Chief Clerk

LG/cb

cc: Garrett T. Arthur, TCEQ Public Interest Counsel (MC 103)

Jon Niermann, *Presidente*
Emily Lindley, *Comisionada*
Bobby Janecka, *Comisionado*
Erin E. Chancellor, *Director Ejecutivo interino*

COMISIÓN DE CALIDAD AMBIENTAL DE TEXAS

Protegiendo a Texas al Reducir y Prevenir la Contaminación

March 13, 2023

Regan Caviness, Vice President
Caviness Development, Ltd.
P.O. Box 790
Hereford, Texas 79045

RE: Caviness Development, Ltd.
Permiso No. WQ0015744001

Esta carta es su aviso de que el director ejecutivo (ED, por sus siglas en inglés) de la Comisión de Calidad Ambiental de Texas (TCEQ, por sus siglas en inglés) ha actuado sobre la solicitud mencionada anteriormente. De acuerdo con 30 Código Administrativo de Texas (TAC, por sus siglas en inglés) Sección 50.135, la acción del ED entró en vigencia en la fecha en que el ED firmó el permiso u otra acción. Se adjunta una copia de la acción final y se cita la fecha de vigencia.
Para ciertos asuntos, una **moción para revocar**, que es una solicitud para que la comisión revise la acción del director ejecutivo sobre una solicitud, puede presentarse ante el secretario oficial. Si una moción para revocar está disponible desde el punto de vista procesal para un asunto específico está determinado por el Título 30 del Capítulo 50 del Código Administrativo de Texas. De acuerdo con 30 TAC Sección 50.139, una acción del ED no se ve afectada por una moción de revocación presentada bajo esta sección a menos que la comisión lo ordene expresamente.

Si se presenta una moción para revocarla, la moción debe ser recibida por el secretario oficial dentro de los 23 días posteriores a la fecha de esta carta. Se debe presentar una copia original y 7 copias de una moción ante el secretario oficial en persona o por correo. La dirección postal del Secretario Oficial es Office of the Chief Clerk (MC 105), TCEQ, P.O. Box 13087, Austin, Texas 78711-3087. El mismo día en que se transmite la moción al secretario oficial, proporcione copias al Director Adjunto de Derecho Ambiental D (MC 173) y al Asesor de Interés Público (MC 103), ambos en la misma dirección de la TCEQ mencionada anteriormente. Si una moción no es tomada en cuenta por la comisión dentro de los 45 días posteriores a la fecha de esta carta, entonces la moción se considerará anulada.

También puede solicitar una **revisión judicial** de la acción del ED. El procedimiento y los plazos para solicitar la revisión judicial de una comisión o acción del Departamento de Educación se rigen por la Sección 5.351 del Código de Agua de Texas.

Los miembros individuales del público pueden solicitar más información llamando al Programa de Educación Pública de la TCEQ, al número gratuito, al 1-800-687-4040.

Atentamente,

Laurie Gharis

Laurie Gharis
Secretaria Oficial

LG/cb

cc: Garrett T. Arthur, Asesor de Interés Público de la TCEQ (MC 103)

PERMIT NO. WQ0015744001

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

This amendment supersedes and replaces Permit No. WQ0015744001 issued on January 6, 2020.

PERMIT TO DISCHARGE WASTES
under provisions of Chapter 26
of the Texas Water Code

Caviness Development, Ltd.

whose mailing address is

P.O. Box 790
Hereford, Texas 79045

Nature of Business Producing Waste: Domestic wastewater treatment operation, SIC Code 4952.

General Description and Location of Waste Disposal System:

Description: The Caviness Sanitary Wastewater Treatment Facility consists of a suspended growth and an attached growth process. Treatment units will include bar screens, equalization tank, aerobic BioChip reactor tank, dissolved air flotation for solids removal, aerobic sludge digester, and chlorine contact chamber. The facility is in operation. The permittee is authorized to dispose of treated domestic wastewater effluent at a daily average flow not to exceed 0.0165 million gallons per day (MGD) via surface irrigation of 100 acres of non-public access agricultural land. The facility includes one storage pond with a total surface area of 1.38 acres and total capacity of 6.93 acre-feet for storage of treated effluent prior to irrigation. Application rates to the irrigated land shall not exceed 0.58 acre-feet per year per acre irrigated. The irrigated crops include Improved Bermudagrass or Blend of Kleingrass, Switchgrass & Teff grass with Small Grains for forage production.

Location: The wastewater treatment facility and disposal site are located at 3255 U.S. Highway 60, Hereford, in Deaf Smith County, Texas 79045. (See Attachment A.)

Drainage Area: The wastewater treatment facility and disposal site are located in the drainage basin of Upper Prairie Dog Town Fork Red River in Segment No. 0229 of the River Basin. No discharge of pollutants into water in the state is authorized by this permit.

This permit and the authorization contained herein shall expire at midnight on **January 6, 2025**.

ISSUED DATE: February 23, 2023

Erin E. Chandler

For the Commission

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Conditions of the Permit: No discharge of pollutants into water in the state is authorized.

A. Effluent Limitations

Character: Treated Domestic Sewage Effluent

Volume: Daily Average Flow – 0.0165 MGD from the treatment system

Quality: The following effluent limitations are required:

Parameter	Effluent Concentrations (Not to Exceed) Daily Average mg/l	Single Grab mg/l
Biochemical Oxygen Demand (5-day)	N/A	65

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units.

The effluent shall be chlorinated in a chlorine contact chamber to a residual of 1.0 mg/l with a minimum detention time of 20 minutes. If the effluent is to be transferred to a holding pond or tank, re-chlorination prior to the effluent being delivered into the irrigation system will be required. A trace total chlorine residual shall be maintained in the effluent at the point of irrigation application.

B. Monitoring Requirements:

Parameter	Monitoring Frequency	Sample Type
Flow	Continuous	Totalizing Meter
Biochemical Oxygen Demand (5-day)	One/week	Grab
pH	One/week	Grab
Total Chlorine Residual	Five/week	Grab

The monitoring shall be done after the final treatment unit and prior to storage of the treated effluent. If the effluent is land applied directly from the treatment system, monitoring shall be done after the final treatment unit and prior to land application. These records shall be maintained on a monthly basis and be available at the plant site for inspection by authorized representatives of the Commission for at least three years.

STANDARD PERMIT CONDITIONS

This permit is granted in accordance with the Texas Water Code and the rules and other Orders of the Commission and the laws of the State of Texas.

DEFINITIONS

All definitions in Section 26.001 of the Texas Water Code and 30 TAC Chapter 305 shall apply to this permit and are incorporated by reference. Some specific definitions of words or phrases used in this permit are as follows:

1. Flow Measurements

   a. Daily average flow - the arithmetic average of all determinations of the daily flow within a period of one calendar month. The daily average flow determination shall consist of determinations made on at least four separate days. If instantaneous measurements are used to determine the daily flow, the determination shall be the arithmetic average of all instantaneous measurements taken during that month. Daily average flow determination for intermittent discharges shall consist of a minimum of three flow determinations on days of discharge.

   b. Annual average flow - the arithmetic average of all daily flow determinations taken within the preceding 12 consecutive calendar months. The annual average flow determination shall consist of daily flow volume determinations made by a totalizing meter, charted on a chart recorder and limited to major domestic wastewater discharge facilities with a 1 million gallons per day or greater permitted flow.

   c. Instantaneous flow - the measured flow during the minimum time required to interpret the flow measuring device.

2. Concentration Measurements

   a. Daily average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar month, consisting of at least four separate representative measurements.

      i. For domestic wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values in the previous four consecutive month period consisting of at least four measurements shall be utilized as the daily average concentration.

      ii. For all other wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values taken during the month shall be utilized as the daily average concentration.

   b. 7-day average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar week, Sunday through Saturday.

   c. Daily maximum concentration - the maximum concentration measured on a single day, by the sample type specified in the permit, within a period of one calendar month.

3. Sample Type

   a. Composite sample - For domestic wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC § 319.9 (a). For industrial wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC § 319.9 (b).

   b. Grab sample - an individual sample collected in less than 15 minutes.

4. Treatment Facility (facility) - wastewater facilities used in the conveyance, storage, treatment, recycling, reclamation and/or disposal of domestic sewage, industrial wastes, agricultural wastes, recreational wastes, or other wastes including sludge handling or disposal facilities under the jurisdiction of the Commission.

5. The term "sewage sludge" is defined as solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in 30 TAC Chapter 312. This includes the solids which have not been classified as hazardous waste separated from wastewater by unit processes.

6. The term "biosolids" is defined as sewage sludge that has been tested or processed to meet Class A, Class AB, or Class B pathogen standards in 30 TAC Chapter 312 for beneficial use.

7. Bypass - the intentional diversion of a waste stream from any portion of a treatment facility.

MONITORING REQUIREMENTS

1. Monitoring Requirements

   Monitoring results shall be collected at the intervals specified in the permit. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall conduct effluent sampling in accordance with 30 TAC §§ 319.4 - 319.12.

   As provided by state law, the permittee is subject to administrative, civil and criminal penalties, as applicable, for negligently or knowingly violating the Texas Water Code, Chapters 26, 27, and 28, and Texas Health and Safety Code, Chapter 361, including but not limited to knowingly making any false statement, representation, or certification on any report, record or other document submitted or required to be maintained under this permit, including monitoring reports, records or reports of compliance or noncompliance, or falsifying, tampering with or knowingly rendering inaccurate any monitoring device or method required by this permit or violating any other requirement imposed by state or federal regulations.

2. Test Procedures

   a. 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.

b. All laboratory tests submitted to demonstrate compliance with this permit must meet the requirements of 30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.

3. Records of Results

a. Monitoring samples and measurements shall be taken at times and in a manner so as to be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the permittee's sewage sludge or biosolids use and disposal activities, which shall be retained for a period of at least five years, monitoring and reporting records, including strip charts and records of calibration and maintenance, copies of all records required by this permit, and records of all data used to complete the application for this permit shall be retained at the facility site, or shall be readily available for review by a TCEQ representative for a period of three years from the date of the record or sample, measurement, report, or application. This period shall be extended at the request of the Executive Director.

c. Records of monitoring activities shall include the following:

i. date, time and place of sample or measurement;

ii. identity of individual who collected the sample or made the measurement.

iii. date and time of analysis;

iv. identity of the individual and laboratory who performed the analysis;

v. the technique or method of analysis; and

vi. the results of the analysis or measurement and quality assurance/quality control records.

The period during which records are required to be kept shall be automatically extended to the date of the final disposition of any administrative or judicial enforcement action that may be instituted against the permittee.

4. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit using approved analytical methods as specified above, all results of such monitoring shall be included in determining compliance with permit requirements.

5. Calibration of Instruments

All automatic flow measuring or recording devices and all totalizing meters for measuring flows shall be accurately calibrated by a trained person at plant start-up and as often thereafter as necessary to ensure accuracy, but not less often than annually unless authorized by the Executive Director for a longer period. Such person shall verify in writing that the device is operating properly and giving accurate results. Copies of the verification

shall be retained at the facility site and/or shall be readily available for review by a TCEQ representative for a period of three years.

6. Compliance Schedule Reports

   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 to the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224).

7. Noncompliance Notification

   a. In accordance with 30 TAC § 305.125(9), any noncompliance which may endanger human health or safety, or the environment shall be reported by the permittee to the TCEQ. Except as allowed by 30 TAC § 305.132, report of such information shall be provided orally or by facsimile transmission (FAX) to the Regional Office within 24 hours of becoming aware of the noncompliance. A written submission of such information shall also be provided by the permittee to the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224) within five working 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 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. The following violations shall be reported under Monitoring and Reporting Requirement 7.a.:

      i. Unauthorized discharges as defined in Permit Condition 2(g).

      ii. Any unanticipated bypass which exceeds any effluent limitation in the permit.

   c. In addition to the above, any effluent violation which deviates from the permitted effluent limitation by more than 40% shall be reported by the permittee in writing to the Regional Office and the Compliance Monitoring Team of the Enforcement Division (MC 224) within 5 working days of becoming aware of the noncompliance.

   d. Any noncompliance other than that specified in this section, or any required information not submitted or submitted incorrectly, shall be reported to the Compliance Monitoring Team of the Enforcement Division (MC 224) as promptly as possible.

8. In accordance with the procedures described in 30 TAC §§ 35.301 - 35.303 (relating to Water Quality Emergency and Temporary Orders) if the permittee knows in advance of the need for a bypass, it shall submit prior notice by applying for such authorization.

9. Changes in Discharges of Toxic Substances

   All existing manufacturing, commercial, mining, and silvicultural permittees shall notify the Regional Office, orally or by facsimile transmission within 24 hours, and both the Regional

Office and the Compliance Monitoring Team of the Enforcement Division (MC 224) in writing within five (5) working days, after becoming aware of or having reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   i. One hundred micrograms per liter (100 μg/L);

   ii. Two hundred micrograms per liter (200 μg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 μg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;

   iii. Five (5) times the maximum concentration value reported for that pollutant in the permit application; or

   iv. The level established by the TCEQ.

b. That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

   i. Five hundred micrograms per liter (500 μg/L);

   ii. One milligram per liter (1 mg/L) for antimony;

   iii. Ten (10) times the maximum concentration value reported for that pollutant in the permit application; or

   iv. The level established by the TCEQ.

10. Signatories to Reports

All reports and other information requested by the Executive Director shall be signed by the person and in the manner required by 30 TAC § 305.128 (relating to Signatories to Reports).

PERMIT CONDITIONS

1. General

a. When the permittee becomes aware that it 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, it shall promptly submit such facts or information.

b. 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:

i. Violation of any terms or conditions of this permit;

ii. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

c. The permittee shall furnish to the Executive Director, upon request and within a reasonable time, any information to determine whether cause exists for amending, revoking, suspending or terminating the permit. The permittee shall also furnish to the Executive Director, upon request, copies of records required to be kept by the permit.

2. Compliance

a. Acceptance of the permit by the person to whom it is issued constitutes acknowledgment 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.

b. The permittee has a duty to comply with all conditions of the permit. Failure to comply with any permit condition constitutes a violation of the permit and the Texas Water Code or the Texas Health and Safety Code, and is grounds 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.

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

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

f. A permit may be amended, suspended and reissued, or revoked for cause in accordance with 30 TAC §§ 305.62 and 305.66 and Texas Water Code Section 7.302. The filing of a request by the permittee for a permit amendment, suspension and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

g. There shall be no unauthorized discharge of wastewater or any other waste. For the purpose of this permit, an unauthorized discharge is considered to be any discharge of wastewater into or adjacent to water in the state at any location not permitted as an outfall or otherwise defined in the Special Provisions section of this permit.

h. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under Texas Water Code §§ 7.051 - 7.075 (relating to Administrative Penalties), 7.101 -

7.111 (relating to Civil Penalties), and 7.141 - 7.202 (relating to Criminal Offenses and Penalties).

3. Inspections and Entry

   a. Inspection and entry shall be allowed as prescribed in the Texas Water Code Chapters 26, 27, and 28, and Texas Health and Safety Code Chapter 361.

   b. The members of the Commission and employees and agents of the Commission are entitled to enter any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to the quality of water in the state or the compliance with any rule, regulation, permit or other order of the Commission. Members, employees, or agents of the Commission and Commission contractors are entitled to enter public or private property at any reasonable time to investigate or monitor or, if the responsible party is not responsive or there is an immediate danger to public health or the environment, to remove or remediate a condition related to the quality of water in the state. Members, employees, Commission contractors, or agents acting under this authority who enter private property shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials. If any member, employee, Commission contractor, or agent is refused the right to enter in or on public or private property under this authority, the Executive Director may invoke the remedies authorized in Texas Water Code Section 7.002. The statement above, that Commission entry 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 an inspection.

4. Permit Amendment and/or Renewal

   a. The permittee shall give notice to the Executive Director as soon as possible of any planned 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. Notice shall also be required under this paragraph when:

      i. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements in Monitoring and Reporting Requirements No. 9;

      ii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

   b. Prior to any facility modifications, additions, or expansions that will increase the plant capacity beyond the permitted flow, the permittee must apply for and obtain proper authorization from the Commission before commencing construction.

c. The permittee must apply for an amendment or renewal at least 180 days prior to expiration of the existing permit in order to continue a permitted activity after the expiration date of the permit. If an application is submitted prior to the expiration date of the permit, the existing permit shall remain in effect until the application is approved, denied, or returned. If the application is returned or denied, authorization to continue such activity shall terminate upon the effective date of the action. If an application is not submitted prior to the expiration date of the permit, the permit shall expire and authorization to continue such activity shall terminate.

d. Prior to accepting or generating wastes which are not described in the permit application, or which would result in a significant change in the quantity or quality of the existing discharge, the permittee must report the proposed changes to the Commission. The permittee must apply for a permit amendment reflecting any necessary changes in permit conditions, including effluent limitations for pollutants not identified and limited by this permit.

e. 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.

5. Permit Transfer

a. Prior to any transfer of this permit, Commission approval must be obtained. The Commission shall be notified in writing of any change in control or ownership of facilities authorized by this permit. Such notification should be sent to the Applications Review and Processing Team (MC 148) of the Water Quality Division.

b. A permit may be transferred only according to the provisions of 30 TAC § 305.64 (relating to Transfer of Permits) and 30 TAC § 50.133 (relating to Executive Director Action on Application or WQMP update).

6. Relationship to Hazardous Waste Activities

This permit does not authorize any activity of hazardous waste storage, processing, or disposal which requires a permit or other authorization pursuant to the Texas Health and Safety Code.

7. Property Rights

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

8. Permit Enforceability

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.

9. Relationship to Permit Application

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.

10. Notice of Bankruptcy.

    a. 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:

        i. the permittee;

        ii. 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

        iii. an affiliate (as that term is defined in 11 USC, § 101(2)) of the permittee.

    b. This notification must indicate:

        i. the name of the permittee;

        ii. the permit number(s);

        iii. the bankruptcy court in which the petition for bankruptcy was filed; and

        iv. the date of filing of the petition.

OPERATIONAL REQUIREMENTS

1. The permittee shall at all times ensure that the facility and all of its systems of collection, treatment, and disposal are properly operated and maintained. This includes, but is not limited to, the regular, periodic examination of wastewater solids within the treatment plant by the operator in order to maintain an appropriate quantity and quality of solids inventory as described in the various operator training manuals and according to accepted industry standards for process control. Process control, maintenance, and operations records shall be retained at the facility site, or shall be readily available for review by a TCEQ representative, for a period of three years.

2. Upon request by the Executive Director, the permittee shall take appropriate samples and provide proper analysis in order to demonstrate compliance with Commission rules. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall comply with all applicable provisions of 30 TAC Chapter 312 concerning sewage sludge or biosolids use and disposal and 30 TAC §§ 319.21 - 319.29 concerning the discharge of certain hazardous metals.

3. Domestic wastewater treatment facilities shall comply with the following provisions:

    a. The permittee shall notify the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, in writing, of any facility expansion at least 90 days prior to conducting such activity.

b. The permittee shall submit a closure plan for review and approval to the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, for any closure activity at least 90 days prior to conducting such activity. Closure is the act of permanently taking a waste management unit or treatment facility out of service and includes the permanent removal from service of any pit, tank, pond, lagoon, surface impoundment and/or other treatment unit regulated by this permit.

4. The permittee is responsible for installing prior to plant start-up, and subsequently maintaining, adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failures by means of alternate power sources, standby generators, and/or retention of inadequately treated wastewater.

5. Unless otherwise specified, the permittee shall provide a readily accessible sampling point and, where applicable, an effluent flow measuring device or other acceptable means by which effluent flow may be determined.

6. The permittee shall remit an annual water quality fee to the Commission as required by 30 TAC Chapter 21. Failure to pay the fee may result in revocation of this permit under Texas Water Code § 7.302(b)(6).

7. Documentation

   For all written notifications to the Commission required of the permittee by this permit, the permittee shall keep and make available a copy of each such notification under the same conditions as self-monitoring data are required to be kept and made available. Except for information specified as not confidential in 30 TAC § 1.5(d), any information submitted pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted in the manner prescribed in the application form or by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, information may be made available to the public without further notice. If the Commission or Executive Director agrees with the designation of confidentiality, the TCEQ will not provide the information for public inspection unless required by the Texas Attorney General or a court pursuant to an open records request. If the Executive Director does not agree with the designation of confidentiality, the person submitting the information will be notified.

8. Facilities which generate domestic wastewater shall comply with the following provisions; domestic wastewater treatment facilities at permitted industrial sites are excluded.

   a. Whenever flow measurements for any domestic sewage treatment facility reach 75 percent of the permitted daily average or annual average flow for three consecutive months, the permittee must initiate engineering and financial planning for expansion and/or upgrading of the domestic wastewater treatment and/or collection facilities. Whenever the flow reaches 90 percent of the permitted daily average or annual average flow for three consecutive months, the permittee shall obtain necessary authorization from the Commission to commence construction of the necessary additional treatment and/or collection facilities. In the case of a domestic wastewater treatment facility which reaches 75 percent of the permitted daily average or annual average flow for three consecutive months, and the planned population to be served or the quantity of waste produced is not expected to exceed the design limitations of the treatment facility, the permittee shall submit an engineering report supporting this claim to the Executive Director of the Commission.

If in the judgement of the Executive Director the population to be served will not cause permit noncompliance, then the requirement of this section may be waived. To be effective, any waiver must be in writing and signed by the Director of the Enforcement Division (MC 219) of the Commission, and such waiver of these requirements will be reviewed upon expiration of the existing permit; however, any such waiver shall not be interpreted as condoning or excusing any violation of any permit parameter.

b. The plans and specifications for domestic sewage collection and treatment works associated with any domestic permit must be approved by the Commission and failure to secure approval before commencing construction of such works or making a discharge is a violation of this permit and each day is an additional violation until approval has been secured.

c. Permits for domestic wastewater treatment plants are granted subject to the policy of the Commission to encourage the development of area-wide waste collection, treatment and disposal systems. The Commission reserves the right to amend any domestic wastewater permit in accordance with applicable procedural requirements to require the system covered by this permit to be integrated into an area-wide system, should such be developed; to require the delivery of the wastes authorized to be collected in, treated by or discharged from said system, to such area-wide system; or to amend this permit in any other particular to effectuate the Commission's policy. Such amendments may be made when the changes required are advisable for water quality control purposes and are feasible on the basis of waste treatment technology, engineering, financial, and related considerations existing at the time the changes are required, exclusive of the loss of investment in or revenues from any then existing or proposed waste collection, treatment or disposal system.

9. Domestic wastewater treatment plants shall be operated and maintained by sewage plant operators holding a valid certificate of competency at the required level as defined in 30 TAC Chapter 30.

10. Facilities which generate industrial solid waste as defined in 30 TAC § 335.1 shall comply with these provisions:

a. Any solid waste, as defined in 30 TAC § 335.1 (including but not limited to such wastes as garbage, refuse, sludge from a waste treatment, water supply treatment plant or air pollution control facility, discarded materials, discarded materials to be recycled, whether the waste is solid, liquid, or semisolid), generated by the permittee during the management and treatment of wastewater, must be managed in accordance with all applicable provisions of 30 TAC Chapter 335, relating to Industrial Solid Waste Management.

b. Industrial wastewater that is being collected, accumulated, stored, or processed before discharge through any final discharge outfall, specified by this permit, is considered to be industrial solid waste until the wastewater passes through the actual point source discharge and must be managed in accordance with all applicable provisions of 30 TAC Chapter 335.

c. The permittee shall provide written notification, pursuant to the requirements of 30 TAC § 335.8(b)(1), to the Corrective Action Section (MC 127) of the Remediation Division

informing the Commission of any closure activity involving an Industrial Solid Waste Management Unit, at least 90 days prior to conducting such an activity.

d. Construction of any industrial solid waste management unit requires the prior written notification of the proposed activity to the Registration and Reporting Section (MC 129) of the Permitting and Remediation Support Division. No person shall dispose of industrial solid waste, including sludge or other solids from wastewater treatment processes, prior to fulfilling the deed recordation requirements of 30 TAC § 335.5.

e. The term "industrial solid waste management unit" means a landfill, surface impoundment, waste-pile, industrial furnace, incinerator, cement kiln, injection well, container, drum, salt dome waste containment cavern, or any other structure vessel, appurtenance, or other improvement on land used to manage industrial solid waste.

f. The permittee shall keep management records for all sludge (or other waste) removed from any wastewater treatment process. These records shall fulfill all applicable requirements of 30 TAC Chapter 335 and must include the following, as it pertains to wastewater treatment and discharge:

   i. Volume of waste and date(s) generated from treatment process;

   ii. Volume of waste disposed of on-site or shipped off-site;

   iii. Date(s) of disposal;

   iv. Identity of hauler or transporter;

   v. Location of disposal site; and

   vi. Method of final disposal.

   The above records shall be maintained on a monthly basis. The records shall be retained at the facility site, or shall be readily available for review by authorized representatives of the TCEQ for at least five years.

11. For industrial facilities to which the requirements of 30 TAC Chapter 335 do not apply, sludge and solid wastes, including tank cleaning and contaminated solids for disposal, shall be disposed of in accordance with Chapter 361 of the Texas Health and Safety Code.

SLUDGE PROVISIONS

The permittee is authorized to dispose of sludge or biosolids only at a Texas Commission on Environmental Quality (TCEQ) authorized land application site, co-disposal landfill, wastewater treatment facility, or facility that further processes sludge. **The disposal of sludge or biosolids by land application on property owned, leased or under the direct control of the permittee is a violation of the permit unless the site is authorized with the TCEQ. This provision does not authorize Distribution and Marketing of Class A or Class AB Biosolids. This provision does not authorize the permittee to land apply biosolids on property owned, leased or under the direct control of the permittee.**

SECTION I. REQUIREMENTS APPLYING TO ALL SEWAGE SLUDGE OR BIOSOLIDS LAND APPLICATION

A. General Requirements

1. The permittee shall handle and dispose of sewage sludge or biosolids in accordance with 30 TAC § 312 and all other applicable state and federal regulations in a manner that protects public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present in the sludge or biosolids.

2. In all cases, if the person (permit holder) who prepares the sewage sludge or biosolids supplies the sewage sludge or biosolids to another person for land application use or to the owner or lease holder of the land, the permit holder shall provide necessary information to the parties who receive the sludge or biosolids to assure compliance with these regulations.

3. The land application of processed or unprocessed chemical toilet waste, grease trap waste, grit trap waste, milk solids, or similar non-hazardous municipal or industrial solid wastes, or any of the wastes listed in this provision combined with biosolids, WTP residuals or domestic septage is prohibited unless the grease trap waste is added at a fats, oil and grease (FOG) receiving facility as part of an anaerobic digestion process.

B. Testing Requirements

1. Sewage sludge or biosolids shall be tested once during the term of this permit in accordance with the method specified in both 40 CFR Part 261, Appendix II and 40 CFR Part 268, Appendix I [Toxicity Characteristic Leaching Procedure (TCLP)] or other method that receives the prior approval of the TCEQ for the contaminants listed in 40 CFR Part 261.24, Table 1. Sewage sludge or biosolids failing this test shall be managed according to RCRA standards for generators of hazardous waste, and the waste's disposition must be in accordance with all applicable requirements for hazardous waste processing, storage, or disposal. Following failure of any TCLP test, the management or disposal of sewage sludge or biosolids at a facility other than an authorized hazardous waste processing, storage, or disposal facility shall be prohibited until such time as the permittee can demonstrate the sewage sludge or biosolids no longer exhibits the hazardous waste toxicity characteristics (as demonstrated by the results of the TCLP tests). A written report shall be provided to both the TCEQ Registration and Reporting Section (MC 129) of the Permitting and Registration Support Division and the Regional Director (MC Region 1) within seven (7) days after failing the TCLP Test.

The report shall contain test results, certification that unauthorized waste management has stopped, and a summary of alternative disposal plans that comply with RCRA standards for the management of hazardous waste. The report shall be addressed to: Director, Permitting and Registration Support Division (MC 129), Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087. In addition, the permittee shall prepare an annual report on the results of all sludge toxicity testing. This annual report shall be submitted to the TCEQ Regional Office (MC Region 1) and the Compliance Monitoring Team (MC 224) of the Enforcement Division by September 30th of each year.

2. Biosolids shall not be applied to the land if the concentration of the pollutants exceeds the pollutant concentration criteria in Table 1. The frequency of testing for pollutants in Table 1 is found in Section I.C. of this permit.

TABLE 1

Pollutant	Ceiling Concentration (Milligrams per kilogram)*
Arsenic	75
Cadmium	85
Chromium	3000
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
PCBs	49
Selenium	100
Zinc	7500

* Dry weight basis

3. Pathogen Control

All sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site must be treated by one of the following methods to ensure that the sludge meets either the Class A, Class AB or Class B biosolids pathogen requirements.

a. For sewage sludge to be classified as Class A biosolids with respect to pathogens, the density of fecal coliform in the sewage sludge must be less than 1,000 most probable number (MPN) per gram of total solids (dry weight basis), or the density of Salmonella sp. bacteria in the sewage sludge must be less than three MPN per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed. In addition, one of the alternatives listed below must be met:

Alternative 1 - The temperature of the sewage sludge that is used or disposed shall be maintained at or above a specific value for a period of time. See 30 TAC § 312.82(a)(2)(A) for specific information;

Alternative 5 (PFRP) - Sewage sludge that is used or disposed of must be treated in one of the Processes to Further Reduce Pathogens (PFRP) described in 40 CFR Part 503, Appendix B. PFRP include composting, heat drying, heat treatment, and thermophilic aerobic digestion; or

Alternative 6 (PFRP Equivalent) - Sewage sludge that is used or disposed of must be treated in a process that has been approved by the U. S. Environmental Protection Agency as being equivalent to those in Alternative 5.

b. For sewage sludge to be classified as Class AB biosolids with respect to pathogens, the density of fecal coliform in the sewage sludge must be less than 1,000 MPN per gram of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge be less than three MPN per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed. In addition, one of the alternatives listed below must be met:

   Alternative 2 - The pH of the sewage sludge that is used or disposed shall be raised to above 12 std. units and shall remain above 12 std. units for 72 hours.

   The temperature of the sewage sludge shall be above 52° Celsius for 12 hours or longer during the period that the pH of the sewage sludge is above 12 std. units.

   At the end of the 72-hour period during which the pH of the sewage sludge is above 12 std. units, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50%; or

   Alternative 3 - The sewage sludge shall be analyzed for enteric viruses prior to pathogen treatment. The limit for enteric viruses is less than one Plaque-forming Unit per four grams of total solids (dry weight basis) either before or following pathogen treatment. See 30 TAC § 312.82(a)(2)(C)(i-iii) for specific information. The sewage sludge shall be analyzed for viable helminth ova prior to pathogen treatment. The limit for viable helminth ova is less than one per four grams of total solids (dry weight basis) either before or following pathogen treatment. See 30 TAC § 312.82(a)(2)(C)(iv-vi) for specific information; or

   Alternative 4 - The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed. The density of viable helminth ova in the sewage sludge shall be less than one per four grams of total solids (dry weight basis) at the time the sewage sludge is used or disposed.

c. Sewage sludge that meets the requirements of Class AB biosolids may be classified a Class A biosolids if a variance request is submitted in writing that is supported by substantial documentation demonstrating equivalent methods for reducing odors and written approval is granted by the executive director. The executive director may deny the variance request or revoke that approved variance if it is determined that the variance may potentially endanger human health or the environment or create nuisance odor conditions.

d. Three alternatives are available to demonstrate compliance with Class B biosolids criteria.

Alternative 1

i. A minimum of seven random samples of the sewage sludge shall be collected within 48 hours of the time the sewage sludge is used or disposed of during each monitoring episode for the sewage sludge.

ii. The geometric mean of the density of fecal coliform in the samples collected shall be less than either 2,000,000 MPN per gram of total solids (dry weight basis) or 2,000,000 Colony Forming Units per gram of total solids (dry weight basis).

Alternative 2 - Sewage sludge that is used or disposed of shall be treated in one of the Processes to Significantly Reduce Pathogens (PSRP) described in 40 CFR Part 503, Appendix B, so long as all of the following requirements are met by the generator of the sewage sludge.

i. Prior to use or disposal, all the sewage sludge must have been generated from a single location, except as provided in paragraph v. below;

ii. An independent Texas Licensed Professional Engineer must make a certification to the generator of a sewage sludge that the wastewater treatment facility generating the sewage sludge is designed to achieve one of the PSRP at the permitted design loading of the facility. The certification need only be repeated if the design loading of the facility is increased. The certification shall include a statement indicating the design meets all the applicable standards specified in Appendix B of 40 CFR Part 503;

iii. Prior to any off-site transportation or on-site use or disposal of any sewage sludge generated at a wastewater treatment facility, the chief certified operator of the wastewater treatment facility or other responsible official who manages the processes to significantly reduce pathogens at the wastewater treatment facility for the permittee, shall certify that the sewage sludge underwent at least the minimum operational requirements necessary in order to meet one of the PSRP. The acceptable processes and the minimum operational and record keeping requirements shall be in accordance with established U.S. Environmental Protection Agency final guidance;

iv. All certification records and operational records describing how the requirements of this paragraph were met shall be kept by the generator for a minimum of three years and be available for inspection by commission staff for review; and

v. If the sewage sludge is generated from a mixture of sources, resulting from a person who prepares sewage sludge from more than one wastewater treatment facility, the resulting derived product shall meet one of the PSRP, and shall meet the certification, operation, and record keeping requirements of this paragraph.

Alternative 3 - Sewage sludge shall be treated in an equivalent process that has been approved by the U.S. Environmental Protection Agency, so long as all of the following requirements are met by the generator of the sewage sludge.

i. Prior to use or disposal, all the sewage sludge must have been generated from a single location, except as provided in paragraph v. below;

ii. Prior to any off-site transportation or on-site use or disposal of any sewage sludge generated at a wastewater treatment facility, the chief certified operator of the wastewater treatment facility or other responsible official who manages the processes to significantly reduce pathogens at the wastewater treatment facility for the permittee, shall certify that the sewage sludge underwent at least the minimum operational requirements necessary in order to meet one of the PSRP. The acceptable processes and the minimum operational and record keeping requirements shall be in accordance with established U.S. Environmental Protection Agency final guidance;

iii. All certification records and operational records describing how the requirements of this paragraph were met shall be kept by the generator for a minimum of three years and be available for inspection by commission staff for review;

iv. The Executive Director will accept from the U.S. Environmental Protection Agency a finding of equivalency to the defined PSRP; and

v. If the sewage sludge is generated from a mixture of sources resulting from a person who prepares sewage sludge from more than one wastewater treatment facility, the resulting derived product shall meet one of the Processes to Significantly Reduce Pathogens, and shall meet the certification, operation, and record keeping requirements of this paragraph.

In addition to the Alternatives 1 – 3, the following site restrictions must be met if Class B biosolids are land applied:

i. Food crops with harvested parts that touch the biosolids /soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids.

ii. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain the land surface for 4 months or longer prior to incorporation into the soil.

iii. Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than 4 months prior to incorporation into the soil.

iv. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids.

v. Domestic livestock shall not be allowed to graze on the land for 30 days after application of biosolids.

vi. Turf grown on land where biosolids are applied shall not be harvested for 1 year after application of the biosolids when the harvested turf is placed on either land with a high potential for public exposure or a lawn.

vii. Public access to land with a high potential for public exposure shall be restricted for 1 year after application of biosolids.

viii. Public access to land with a low potential for public exposure shall be restricted for 30 days after application of biosolids.

ix. Land application of biosolids shall be in accordance with the buffer zone requirements found in 30 TAC § 312.44.

4. Vector Attraction Reduction Requirements

All bulk sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site shall be treated by one of the following Alternatives 1 through 10 for vector attraction reduction.

Alternative 1 - The mass of volatile solids in the sewage sludge shall be reduced by a minimum of 38%.

Alternative 2 - If Alternative 1 cannot be met for an anaerobically digested sludge, demonstration can be made by digesting a portion of the previously digested sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30° and 37° Celsius. Volatile solids must be reduced by less than 17% to demonstrate compliance.

Alternative 3 - If Alternative 1 cannot be met for an aerobically digested sludge, demonstration can be made by digesting a portion of the previously digested sludge with percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20° Celsius. Volatile solids must be reduced by less than 15% to demonstrate compliance.

Alternative 4 - The specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20° Celsius.

Alternative 5 - Sewage sludge shall be treated in an aerobic process for 14 days or longer. During that time, the temperature of the sewage sludge shall be higher than 40° Celsius and the average temperature of the sewage sludge shall be higher than 45° Celsius.

Alternative 6 - The pH of sewage sludge shall be raised to 12 or higher by alkali addition and, without the addition of more alkali shall remain at 12 or higher for two hours and then remain at a pH of 11.5 or higher for an additional 22 hours at the time the sewage sludge is prepared for sale or given away in a bag or other container.

Alternative 7 - The percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75% based on the moisture content and total solids prior to mixing with other materials. Unstabilized solids are defined as organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Alternative 8 - The percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90% based on the moisture content and total solids prior to mixing with other materials at the time the sludge is used. Unstabilized solids are defined as organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process.

Alternative 9 -

i. Sewage sludge shall be injected below the surface of the land.

ii. No significant amount of the sewage sludge shall be present on the land surface within one hour after the sewage sludge is injected.

iii. When sewage sludge that is injected below the surface of the land is Class A or Class AB with respect to pathogens, the biosolids shall be injected below the land surface within eight hours after being discharged from the pathogen treatment process.

Alternative 10-

i. Biosolids applied to the land surface or placed on a surface disposal site shall be incorporated into the soil within six hours after application to or placement on the land.

ii. When biosolids that are incorporated into the soil is Class A or Class AB with respect to pathogens, the sewage sludge shall be applied to or placed on the land within eight hours after being discharged from the pathogen treatment process.

C. Monitoring Requirements

Toxicity Characteristic Leaching Procedure (TCLP) Test	- once during the term of this permit
PCBs	- once during the term of this permit

All metal constituents and fecal coliform or *Salmonella* sp. bacteria shall be monitored at the appropriate frequency shown below, pursuant to 30 TAC § 312.46(a)(1):

Amount of biosolids (*) metric tons per 365-day period	Monitoring Frequency
0 to less than 290	Once/Year
290 to less than 1,500	Once/Quarter
1,500 to less than 15,000	Once/Two Months
15,000 or greater	Once/Month

(*) *The amount of bulk biosolids applied to the land (dry wt. basis).*

Representative samples of sewage sludge shall be collected and analyzed in accordance with the methods referenced in 30 TAC § 312.7

Identify each of the analytic methods used by the facility to analyze enteric viruses, fecal coliforms, helminth ova, *Salmonella* sp., and other regulated parameters.

Identify in the following categories (as applicable) the sewage sludge or biosolids treatment process or processes at the facility: preliminary operations (e.g., sludge or biosolids grinding and degritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.

Identify the nature of material generated by the facility (such as a biosolid for beneficial use or land-farming, sewage sludge or biosolids for disposal at a monofill) and whether the material is ultimately conveyed off-site in bulk or in bags.

SECTION II. REQUIREMENTS SPECIFIC TO BULK SEWAGE SLUDGE FOR APPLICATION TO THE LAND MEETING CLASS A, CLASS AB or B BIOSOLIDS PATHOGEN REDUCTION AND THE CUMULATIVE LOADING RATES IN TABLE 2, OR CLASS B PATHOGEN REDUCTION AND THE POLLUTANT CONCENTRATIONS IN TABLE 3

For those permittees meeting Class A, Class AB or B pathogen reduction requirements and that meet the cumulative loading rates in Table 2 below, or the Class B pathogen reduction requirements and contain concentrations of pollutants below listed in Table 3, the following conditions apply:

A. Pollutant Limits

Table 2

Pollutant	Cumulative Pollutant Loading Rate (pounds per acre)*
Arsenic	36
Cadmium	35
Chromium	2677
Copper	1339
Lead	268
Mercury	15
Molybdenum	Report Only
Nickel	375
Selenium	89
Zinc	2500

Table 3

Pollutant	Monthly Average Concentration (milligrams per kilogram)*
Arsenic	41
Cadmium	39
Chromium	1200
Copper	1500
Lead	300
Mercury	17
Molybdenum	Report Only
Nickel	420
Selenium	36
Zinc	2800

*Dry weight basis

B. Pathogen Control

All bulk sewage sludge that is applied to agricultural land, forest, a public contact site, a reclamation site, shall be treated by either Class A, Class AB or Class B biosolids pathogen reduction requirements as defined above in Section I.B.3.

C. Management Practices

1. Bulk biosolids shall not be applied to agricultural land, forest, a public contact site, or a reclamation site that is flooded, frozen, or snow-covered so that the bulk sewage sludge or biosolids enters a wetland or other waters in the State.

2. Bulk sewage sludge not meeting Class A biosolids requirements shall be land applied in a manner which complies with Applicability in accordance with 30 TAC §312.41 and the Management Requirements in accordance with 30 TAC § 312.44.

3. Bulk biosolids shall be applied at or below the agronomic rate of the cover crop.

4. An information sheet shall be provided to the person who receives bulk Class A or AB biosolids sold or given away. The information sheet shall contain the following information:

   a. The name and address of the person who prepared the Class A or AB biosolids that are sold or given away in a bag or other container for application to the land.

   b. A statement that application of the Class A or AB biosolids to the land is prohibited except in accordance with the instruction on the label or information sheet.

   c. The annual whole sludge application rate for the sewage sludge application rate for the biosolids that does not cause any of the cumulative pollutant loading rates in Table 2 above to be exceeded, unless the pollutant concentrations in Table 3 found in Section II above are met.

D. Notification Requirements

1. If bulk biosolids are applied to land in a State other than Texas, written notice shall be provided prior to the initial land application to the permitting authority for the State in which the bulk biosolids are proposed to be applied. The notice shall include:

   a. The location, by street address, and specific latitude and longitude, of each land application site.

   b. The approximate time period bulk biosolids will be applied to the site.

   c. The name, address, telephone number, and National Pollutant Discharge Elimination System permit number (if appropriate) for the person who will apply the bulk biosolids.

2. The permittee shall give 180 days prior notice to the Executive Director in care of the Wastewater Permitting Section (MC 148) of the Water Quality Division of any change planned in the biosolids disposal practice.

E. Record Keeping Requirements

The documents will be retained at the facility site and/or shall be readily available for review by a TCEQ representative. The person who prepares bulk sewage sludge or a biosolids material shall develop the following information and shall retain the information at the facility site and/or shall be readily available for review by a TCEQ representative for a period

of five years. If the permittee supplies the sludge to another person who land applies the sludge, the permittee shall notify the land applier of the requirements for record keeping found in 30 TAC § 312.47 for persons who land apply.

1. The concentration (mg/kg) in the sludge of each pollutant listed in Table 3 above and the applicable pollutant concentration criteria (mg/kg), or the applicable cumulative pollutant loading rate and the applicable cumulative pollutant loading rate limit (lbs/ac) listed in Table 2 above.

2. A description of how the pathogen reduction requirements are met (including site restrictions for Class AB and Class B biosolids, if applicable).

3. A description of how the vector attraction reduction requirements are met.

4. A description of how the management practices listed above in Section II.C are being met.

5. The following certification statement:

   "I certify, under penalty of law, that the applicable pathogen requirements in 30 TAC § 312.82(a) or (b) and the vector attraction reduction requirements in 30 TAC § 312.83(b) have been met for each site on which bulk biosolids are applied. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices have been met. I am aware that there are significant penalties for false certification including fine and imprisonment."

6. The recommended agronomic loading rate from the references listed in Section II.C.3. above, as well as the actual agronomic loading rate shall be retained. The person who applies bulk biosolids shall develop the following information and shall retain the information at the facility site and/or shall be readily available for review by a TCEQ representative indefinitely. If the permittee supplies the sludge to another person who land applies the sludge, the permittee shall notify the land applier of the requirements for record keeping found in 30 TAC § 312.47 for persons who land apply:

   a. A certification statement that all applicable requirements (specifically listed) have been met, and that the permittee understands that there are significant penalties for false certification including fine and imprisonment. See 30 TAC § 312.47(a)(4)(A)(ii) or 30 TAC § 312.47(a)(5)(A)(ii), as applicable, and to the permittee's specific sludge or biosolids treatment activities.

   b. The location, by street address, and specific latitude and longitude, of each site on which sludge or biosolids are applied.

   c. The number of acres in each site on which bulk sludge or biosolids are applied.

   d. The date and time sludge or biosolids are applied to each site.

   e. The cumulative amount of each pollutant in pounds/acre listed in Table 2 applied to each site.

   f. The total amount of sludge applied to each site in dry tons.

The above records shall be maintained on-site on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

F. Reporting Requirements

The permittee shall report annually to the TCEQ Regional Office (MC Region 1) and Compliance Monitoring Team (MC 224) of the Enforcement Division, by September 30th of each year the following information.

1. Identify in the following categories (as applicable) the sewage sludge or biosolids treatment process or processes at the facility: preliminary operations (e.g., sludge or biosolids grinding and degritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.

2. Identify the nature of material generated by the facility (such as a biosolid for beneficial use or land-farming, or sewage sludge for disposal at a monofill) and whether the material is ultimately conveyed off-site in bulk or in bags.

3. Results of tests performed for pollutants found in either Table 2 or 3 as appropriate for the permittee's land application practices.

4. The frequency of monitoring listed in Section I.C. that applies to the permittee.

5. Toxicity Characteristic Leaching Procedure (TCLP) results.

6. PCB concentration in sludge or biosolids in mg/kg.

7. Identity of hauler(s) and TCEQ transporter number.

8. Date(s) of transport.

9. Texas Commission on Environmental Quality registration number, if applicable.

10. Amount of sludge or biosolids disposal dry weight (lbs/acre) at each disposal site.

11. The concentration (mg/kg) in the sludge or biosolids of each pollutant listed in Table 1 (defined as a monthly average) as well as the applicable pollutant concentration criteria (mg/kg) listed in Table 3 above, or the applicable pollutant loading rate limit (lbs/acre) listed in Table 2 above if it exceeds 90% of the limit.

12. Level of pathogen reduction achieved (Class A, Class AB or Class B).

13. Alternative used as listed in Section I.B.3.(a. or b.). Alternatives describe how the pathogen reduction requirements are met. If Class B biosolids, include information on how site restrictions were met.

14. Identify each of the analytic methods used by the facility to analyze enteric viruses, fecal coliforms, helminth ova, *Salmonella* sp., and other regulated parameters.

15. Vector attraction reduction alternative used as listed in Section I.B.4.

16. Amount of sludge or biosolids transported in dry tons/year.

17. The certification statement listed in either 30 TAC § 312.47(a)(4)(A)(ii) or 30 TAC § 312.47(a)(5)(A)(ii) as applicable to the permittee's sludge or biosolids treatment activities, shall be attached to the annual reporting form.

18. When the amount of any pollutant applied to the land exceeds 90% of the cumulative pollutant loading rate for that pollutant, as described in Table 2, the permittee shall report the following information as an attachment to the annual reporting form.

    a. The location, by street address, and specific latitude and longitude.

    b. The number of acres in each site on which bulk biosolids are applied.

    c. The date and time bulk biosolids are applied to each site.

    d. The cumulative amount of each pollutant (i.e., pounds/acre) listed in Table 2 in the bulk biosolids applied to each site.

    e. The amount of biosolids (i.e., dry tons) applied to each site.

    The above records shall be maintained on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

SECTION III. REQUIREMENTS APPLYING TO ALL SEWAGE SLUDGE OR BIOSOLIDS DISPOSED IN A MUNICIPAL SOLID WASTE LANDFILL

A. The permittee shall handle and dispose of sewage sludge or biosolids in accordance with 30 TAC § 330 and all other applicable state and federal regulations to protect public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present. The permittee shall ensure that the sewage sludge or biosolids meet the requirements in 30 TAC § 330 concerning the quality of the sludge disposed in a municipal solid waste landfill.

B. If the permittee generates sewage sludge or biosolids and supplies that sewage sludge or biosolids to the owner or operator of a municipal solid waste landfill (MSWLF) for disposal, the permittee shall provide to the owner or operator of the MSWLF appropriate information needed to be in compliance with the provisions of this permit.

C. The permittee shall give 180 days prior notice to the Executive Director in care of the Wastewater Permitting Section (MC 148) of the Water Quality Division of any change planned in the sewage sludge or biosolids disposal practice.

D. Sewage sludge or biosolids shall be tested once during the term of this permit in accordance with the method specified in both 40 CFR Part 261, Appendix II and 40 CFR Part 268, Appendix I (Toxicity Characteristic Leaching Procedure) or other method, which receives the prior approval of the TCEQ for contaminants listed in Table 1 of 40 CFR § 261.24. Sewage sludge or biosolids failing this test shall be managed according to RCRA standards for generators of hazardous waste, and the waste's disposition must be in accordance with all applicable requirements for hazardous waste processing, storage, or disposal.

   Following failure of any TCLP test, the management or disposal of sewage sludge or biosolids at a facility other than an authorized hazardous waste processing, storage, or disposal facility shall be prohibited until such time as the permittee can demonstrate the sewage sludge or biosolids no longer exhibits the hazardous waste toxicity characteristics (as demonstrated by the results of the TCLP tests). A written report shall be provided to both the TCEQ Registration and Reporting Section (MC 129) of the Permitting and Registration Support Division and the Regional Director (MC Region 1) of the appropriate TCEQ field office within 7 days after failing the TCLP Test.

   The report shall contain test results, certification that unauthorized waste management has stopped, and a summary of alternative disposal plans that comply with RCRA standards for the management of hazardous waste. The report shall be addressed to: Director, Permitting and Registration Support Division (MC 129), Texas Commission on Environmental Quality, P. O. Box 13087, Austin, Texas 78711-3087. In addition, the permittee shall prepare an annual report on the results of all sludge toxicity testing. This annual report shall be submitted to the TCEQ Regional Office (MC Region 1) and the Compliance Monitoring Team (MC 224) of the Enforcement Division by September 30 of each year.

E. Sewage sludge or biosolids shall be tested as needed, in accordance with the requirements of 30 TAC Chapter 330.

F. Record Keeping Requirements

   The permittee shall develop the following information and shall retain the information for five years.

1. The description (including procedures followed and the results) of all liquid Paint Filter Tests performed.

2. The description (including procedures followed and results) of all TCLP tests performed.

The above records shall be maintained on-site on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

G. Reporting Requirements

The permittee shall report annually to the TCEQ Regional Office (MC Region 1) and Compliance Monitoring Team (MC 224) of the Enforcement Division by September 30th of each year the following information.

1. Identify in the following categories (as applicable) the sewage sludge or biosolids treatment process or processes at the facility: preliminary operations (e.g., sludge or biosolids grinding and degritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.

2. Toxicity Characteristic Leaching Procedure (TCLP) results.

3. Annual sludge or biosolids production in dry tons/year.

4. Amount of sludge or biosolids disposed in a municipal solid waste landfill in dry tons/year.

5. Amount of sludge or biosolids transported interstate in dry tons/year.

6. A certification that the sewage sludge or biosolids meets the requirements of 30 TAC § 330 concerning the quality of the sludge disposed in a municipal solid waste landfill.

7. Identity of hauler(s) and transporter registration number.

8. Owner of disposal site(s).

9. Location of disposal site(s).

10. Date(s) of disposal.

The above records shall be maintained on-site on a monthly basis and shall be made available to the Texas Commission on Environmental Quality upon request.

SECTION IV. REQUIREMENTS APPLYING TO SLUDGE OR BIOSOLIDS TRANSPORTED TO ANOTHER FACILITY FOR FURTHER PROCESSING

These provisions apply to sludge or biosolids that is transported to another wastewater treatment facility or facility that further processes sludge or biosolids. These provisions are intended to allow transport of sludge or biosolids to facilities that have been authorized to accept sludge or biosolids. These provisions do not limit the ability of the receiving facility to determine whether to accept the sludge or biosolids, nor do they limit the ability of the receiving facility to request additional testing or documentation.

A. General Requirements

1. The permittee shall handle and dispose of sewage sludge or biosolids in accordance with 30 TAC Chapter 312 and all other applicable state and federal regulations in a manner that protects public health and the environment from any reasonably anticipated adverse effects due to any toxic pollutants that may be present in the sludge.

2. Sludge or biosolids may only be transported using a registered transporter or using an approved pipeline.

B. Record Keeping Requirements

1. For sludge or biosolids transported by an approved pipeline, the permittee must maintain records of the following:

   a. the amount of sludge or biosolids transported;

   b. the date of transport;

   c. the name and TCEQ permit number of the receiving facility or facilities;

   d. the location of the receiving facility or facilities;

   e. the name and TCEQ permit number of the facility that generated the waste; and

   f. copy of the written agreement between the permittee and the receiving facility to accept sludge or biosolids.

2. For sludge or biosolids transported by a registered transporter, the permittee must maintain records of the completed trip tickets in accordance with 30 TAC § 312.145(a)(1)-(7) and amount of sludge or biosolids transported.

3. The above records shall be maintained on-site on a monthly basis and shall be made available to the TCEQ upon request. These records shall be retained for at least five years.

C. Reporting Requirements

The permittee shall report the following information annually to the TCEQ Regional Office (MC Region 1) and Compliance Monitoring Team (MC 224) of the Enforcement Division, by September 30th of each year.

1. Identify in the following categories (as applicable) the sewage sludge or biosolids treatment process or processes at the facility: preliminary operations (e.g., sludge or biosolids grinding and degritting), thickening (concentration), stabilization, anaerobic digestion, aerobic digestion, composting, conditioning, disinfection (e.g., beta ray irradiation, gamma ray irradiation, pasteurization), dewatering (e.g., centrifugation, sludge drying beds, sludge lagoons), heat drying, thermal reduction, and methane or biogas capture and recovery.

2. the annual sludge or biosolids production;

3. the amount of sludge or biosolids transported;

4. the owner of each receiving facility;

5. the location of each receiving facility; and

6. the date(s) of disposal at each receiving facility.

SPECIAL PROVISIONS:

1. This permit is granted subject to the policy of the Commission to encourage the development of area-wide waste collection, treatment, and disposal systems. The Commission reserves the right to amend this permit in accordance with applicable procedural requirements to require the system covered by this permit to be integrated into an area-wide system, if an area-wide system is developed; to require the delivery of the wastes authorized to be collected in, treated by, or discharged from the system, to an area-wide system; or to amend this permit in any other particular to effectuate the Commission's policy. Such amendments may be made when the changes required are advisable for water quality control purposes and are feasible on the basis of waste treatment technology, engineering, financial, and related considerations existing at the time the changes are required, exclusive of the loss of investment in or revenues from any then existing or proposed waste collection, treatment, or disposal system.

2. The permittee shall employ or contract with one or more licensed wastewater treatment facility operators or wastewater system operations companies holding a valid license or registration according to the requirements of 30 TAC Chapter 30, Occupational Licenses and Registrations, and in particular 30 TAC Chapter 30, Subchapter J, Wastewater Operators and Operations Companies.

   This Category C facility must be operated by a chief operator or an operator holding a Class C license or higher. The facility must be operated a minimum of five days per week by the licensed chief operator or an operator holding the required level of license or higher. The licensed chief operator or operator holding the required level of license or higher must be available by telephone or pager seven days per week. Where shift operation of the wastewater treatment facility is necessary, each shift which does not have the on-site supervision of the licensed chief operator must be supervised by an operator in charge who is licensed not less than one level below the category for the facility.

3. The permittee shall maintain and operate the treatment facility in order to achieve optimum efficiency of treatment capability. This shall include required monitoring of effluent flow and quality as well as appropriate grounds and building maintenance.

4. The permittee shall comply with the requirements of 30 TAC § 309.13(a) through (d). In addition, by ownership of the required buffer zone area, the permittee shall comply with the requirements of 30 TAC § 309.13(e).

5. Effluent shall not be applied for irrigation during rainfall events or when the ground is frozen or saturated.

6. The permittee shall erect adequate signs stating that the irrigation water is from a non-potable water supply for any area where treated effluent is stored or where there exist hose bibs or faucets. Signs shall consist of a red slash superimposed over the international symbol for drinking water accompanied by the message "DO NOT DRINK THE WATER" in both English and Spanish. All piping transporting the effluent shall be clearly marked with these same signs.

7. Spray fixtures for the irrigation system shall be of such design that they cannot be operated by unauthorized personnel.

8. The permittee shall maintain a long-term contract with the owner(s) of the land application site which is authorized for use in this permit, or own the land authorized for land application of treated effluent.

9. Application rates to the irrigated land shall not exceed 0.58 acre-feet/acre/year. The permittee is responsible for providing equipment to determine application rates and maintaining accurate records of the volume of effluent applied. These records shall be made available for review by the Texas Commission on Environmental Quality and shall be maintained for at least three years.

10. The permittee shall use cultural practices to promote and maintain the health and propagation of the Improved Bermudagrass or Blend of Kleingrass, Switchgrass & Teff grass (warm season) and small grains for forage production (cool season) and avoid plant lodging. The permittee shall harvest the crops (cut and remove it from the field) at least once during the year. Harvesting and mowing dates shall be recorded in a log book kept on site to be made available to TCEQ personnel upon request.

11. The physical condition of the spray irrigation fields will be monitored on a weekly basis when the fields are being utilized for the purpose of wastewater irrigation. Any areas with problems such as surface runoff, surficial erosion, stressed or damaged vegetation will be recorded in the field log kept onsite and corrective measures will be initiated within 24 hours of discovery.

12. Irrigation practices shall be designed and managed as to prevent ponding of effluent or contamination of ground and surface waters and to prevent the occurrence of nuisance conditions in the area. Crops or other ground cover shall be established and well maintained in the irrigation area throughout the year for effluent and nutrient uptake by the crop and to prevent pathways for effluent surfacing. Tailwater control facilities shall be provided as necessary to prevent the discharge of any effluent from the irrigated land.

13. The permittee shall obtain representative soil samples from the root zones of the land application areas receiving wastewater. Composite sampling techniques shall be used. Each composite sample shall represent no more than 80 acres with no less than 10 to 15 subsamples representing each composite sample. Subsamples shall be composited by like sampling depth, type of crop and soil type for analysis and reporting. Soil types are soils that have like topsoil or plow layer textures. These soils shall be sampled individually from 0 to 6, 6 to 18 inches, and 18 to 30 inches below ground level. The permittee shall sample soils in December to February of each year. Soil samples shall be analyzed within 30 days of sample collection.

Parameter	**Method**	**Minimum Analytical Level (MAL)**	**Reporting units**
pH	2:1 (v/v) water to soil mixture		Reported to 0.1 pH units after calibration of pH meter
Electrical Conductivity	2:1 (v/v) water to soil mixture	0.01	dS/m (same as mmho/cm)

Parameter	Method	Minimum Analytical Level (MAL)	Reporting units
Parameter	**Method**	**Minimum Analytical Level (MAL)**	**Reporting units**
Nitrate-nitrogen	From a 1 N KCl soil extract	1	mg/kg (dry weight basis)
Total Kjeldahl Nitrogen (TKN)	For determination of Organic plus Ammonium Nitrogen. Procedures that use Mercury (Hg) are not acceptable.	20	mg/kg (dry weight basis)
Total Nitrogen	= TKN plus Nitrate-nitrogen		mg/kg (dry weight basis)
Plant-available: Phosphorus	Mehlich III with inductively coupled plasma	1(P)	mg/kg (dry weight basis)
Plant-available: Potassium (K)	May be determined in the same Mehlich III extract with inductively coupled plasma	5 (K)	mg/kg (dry weight basis)
Amendment addition, e.g., gypsum			Report in short tons/acre in the year effected

A copy of this soil testing plan shall be provided to the analytical laboratory prior to sample analysis. The permittee shall submit the results of the annual soil sample analyses with copies of the laboratory reports and a map depicting the areas that have received wastewater within the permanent land application fields to the TCEQ Regional Office (MC Region 1) and to the Enforcement Division (MC 224) no later than the end of September of each sampling year. If wastewater is not applied in a particular year, the permittee shall notify the same TCEQ offices and indicate that wastewater has not been applied on the approved land irrigation site(s) during that year.

14. Any new or modified wastewater pond shall be adequately lined to control seepage in accordance with 30 TAC §217.203 **and** 30 TAC §309.13(d) since the facility overlies the recharge zone of an aquifer.

15. Holding or storage ponds shall conform to the design criteria for stabilization ponds with regard to construction and levee design and shall maintain a minimum freeboard of two feet according to 30 TAC Chapter 217, Design Criteria for Domestic Wastewater Systems.

16. Permanent transmission lines shall be installed from the holding pond to each tract of land to be irrigated utilizing effluent from that pond.

17. The permittee shall comply with buffer zone requirements of 30 TAC Section §309.13(c).

    A wastewater treatment plant unit, defined by 30 TAC Section §309.11(9), must be located a minimum horizontal distance of 250 feet from a private well and a minimum horizontal distance of 500 feet from a public water well site, spring, or other similar sources of public drinking water, as provided by §290.41(c)(1) of this title, unless the Executive Director grants an exception to this requirement.

    A wastewater treatment plant unit, defined by 30 TAC Section §309.11(9), or land where surface irrigation using wastewater effluent occurs, must be located a minimum horizontal distance of 500 feet from an elevated or ground potable-water storage tank as provided by §290.43(b)(1) of this title, unless the Executive Director grants an exception to this requirement.

    A land application field must be located a minimum horizontal distance of 150 feet from a private well and a minimum horizontal distance of 500 feet from a public water well site, spring, or other similar sources of public drinking water, unless the Executive Director grants an exception to this requirement.

18. Facilities for the retention of treated or untreated wastewater shall be adequately managed and lined to control seepage. At least once per month, the permittee shall inspect the sides and bottom (if visible) of the wastewater ponds for signs of damage and leakage, and any pond leak detection systems that are in service. Leaking ponds shall be removed from service, or operated in a manner to prevent discharge, until repairs are made, or replacement ponds are constructed.

    The permittee shall submit the liner certification for a newly constructed or modified wastewater pond to the Water Quality Assessment Team (MC-150), the TCEQ Regional Office (MC-Region 1), and the TCEQ Compliance Monitoring Section (MC-224) within 30 days of completion and prior to use. The certification shall be signed and sealed by a Texas-licensed professional engineer and include a description of how the liner meets the requirements of 30 TAC §217.203 **and** 30 TAC §309.13(d).

19. The permittee shall maintain a minimum horizontal buffer distance of 100 feet from all surface waters where no land application of effluent will occur.

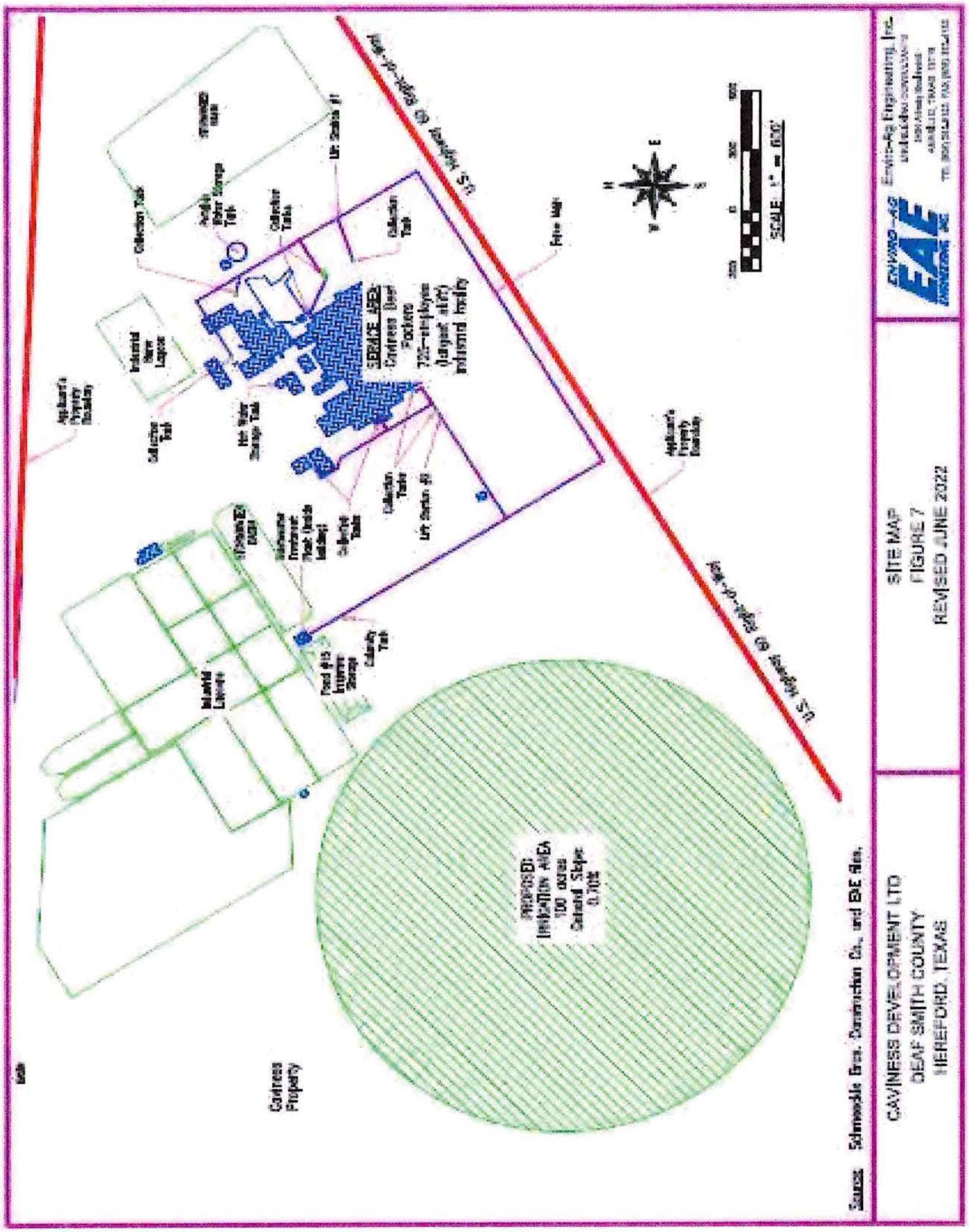
20. The permittee shall monitor the accumulation of solids in the septic tank once every six months. Solids shall be removed once every two years or more frequently if necessary, based upon accumulation of solids. The permittee shall maintain records of the dates of inspection and the dates on which solids were removed. These records shall be maintained on-site for a minimum of three years.

21. The permittee shall provide facilities for the protection of its wastewater treatment facility from a 100-year flood.

22. All abandoned and unused wells shall be properly plugged per 16 TAC §76.104. A copy of the

State of Texas Well Plugging report for each well plugged shall be submitted to the TCEQ Water Quality Assessment Team (MC-150) and the TCEQ Regional Office (MC-Region 1) within 30 days of plugging. Non-deteriorated, unused wells should be capped in accordance with 16 TAC §76.104(d)

Attachment A



ENVIRO-AG ENGINEERING, INC.
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203 East Main Street
Artesia NM 88210

April 5, 2019

Via FedEx

Mr. Baltazar Lucero-Ramirez, P.E.
TCEQ – Wastewater Permitting Section, MC 148
P.O. Box 13087
Austin, TX 78711-3087

Re: Chapter 217.6 Summary Transmittal Letter

Permittee: Caviness Sanitary Waste Facility

Permit Number: WQ0015744001

Project Name: Caviness Domestic Wastewater Lift Station and Forced Main Addition

County: Deaf Smith

Dear Mr. Ramirez,

The purpose of this letter is to provide the Texas Commission of Environmental Quality (TCEQ) with the information necessary to comply with the requirements of 217.6(d) of the TCEQ's rules entitled "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS." The necessary information includes:

Project Name:
Caviness Domestic Wastewater Lift Station and Forced Main Addition

Project Location:
On the property of Caviness Packing Plant at 3255 West U.S. Highway 60, Hereford, TX 79045

Owner:
Caviness Development, Ltd.
P.O. Box 790
Hereford, TX 79045
Deaf Smith County
Contact: Terry Caviness
P (806) 357-2443
F (806) 357-2377

Permit Number - WQ0015744001
Reference Number – RN110569571
Customer Number – CN 602835209

Design Firm:
Enviro-Ag Engineering, Inc.
TBPE Firm Reg. #2507
3404 Airway Blvd.
Amarillo, TX 79118
P (806) 353-6123
F (806) 353-4132

Design Engineer:
Shane Self, P.E.
P (806) 220-5935
F (806) 353-4132
Email: sself@enviroag.com

Brief Engineering Description:
Caviness Development operates an existing beef packing plant west of Hereford Texas. Currently, the packing plant's domestic waste facility treatment and disposal system utilizes two On-Site Sewage Facilities (OSSF). The OSSFs consists of septic tanks and leach fields. The OSSF is composed of an east and west system.

Since the plant is adding another shift to the plant this will increase the daily demand and therefore make the existing OSSF under sized and would need additional capacity. To accommodate this expansion a 16,500 gpd WWTP has been proposed to TCEQ under permit WQ0015744001 instead of increasing the existing OSSF. The expected average daily flow for the facility is 8,600 gpd. The proposed WWTP has an equalization tank capacity of 4,500 gallons. The existing septic tanks and conveyance system will remain in service. The existing east leach field will be abandoned in place while the west leach field will be demolished and removed off site.

The proposed conveyance system to transfer the domestic wastewater from the existing system to the proposed WWTP will consist of connecting to the existing system, extending one gravity line, connecting to one existing multi-compartment septic tank and installing two lift stations.

The proposed connection on the east side of the plant will consist of disconnecting the existing 4-inch SDR 21 PVC gravity main outfall to the east leach field at an existing cleanout. A new SCH. 40 PVC cleanout will be installed along with an extension of approximately 106 linear feet of 4-inch SDR 21, PS115 (ASTM D3034) PVC to the east lift station. The proposed grade for the 4-inch gravity line extension is 1.0%.

The proposed connection on the west side of the plant will consist of removing existing transfer pumps from a three-compartment fiberglass septic tank, cutting a hole/modifying the bottom of the third stage compartment tank adding with a 6-inch SDR 21 (ASTM D3034) PVC gravity line. The 6-inch gravity line will connect to a new lift station. The grade for the 6-inch gravity line from the existing tank to the proposed wet well will be a minimum of 0.5%

Both lift stations will consist of 6-foot diameter FRP (fiberglass reinforced plastic) wet wells, 2 submersible pumps, 2 FRP valve vaults and the necessary all-weather electrical control panel. All wet wells and vault structures will be naturally vented with a 4-inch dia. pipe with two 90 deg bends and stainless-steel screen. All process piping within wet well, valve vault and connecting will either be stainless steel or epoxy coated ductile iron pipe.

The submersible pumps in both lift stations are designed to transfer at 124 gpm and 200 gpm with a TDH of 63-ft and 48-ft in the east and west lift stations respectively. Each pump will alternate between cycles to help extend the life of the pumps. The pumps to be used in both lift stations will be rated at 4 hp, for standardization at the facility.

	East Lift Station	West Lift Station
Inactive/Storage	844 gal	1,633 gal
Active	1,055 gal	2,055 gal
Total Storage Capacity	1,899 gal	3,688 gal
Pump Cycle Time	33 min.	65 min.

The conveyance system from each lift station to the WWTP will consist of 4-inch PVC forced main piping. The flows from the two lift stations will empty into the 4,500-gallon equalization tank (EQ Tank) in the WWTP. The owner has the option of utilizing either SDR 21, 200 psi rated (ASTM D2241) IPS PVC or DR 18, Class 235 (ANSI/AWWA C900) PVC. There will be approximately 3,100 linear feet and 1,000 linear feet of pipe installed from the east and west lift stations, respectively, to the WWTP.

The owner will provide emergency generator to power for both lift stations and the WWTP. The generator will be stationary. The owner has not provided details and specifics to date regarding the proposed generator.

Variances:

A variance is requested from 30 TAC Chapter 217.59(b). An intruder-resistant fence is not included in the design for the following reasons:

- All wet wells, valve vaults and electrical control boxes/panels will be locked at each point of access. Authorized personnel only will be available with keyed access.

TCEQ – Wastewater Permitting Section, MC 148

Certifying Statement:
I hereby certify that the plans and specifications for the proposed domestic wastewater conveyance system are in substantial compliance with the requirements of TCEQ Chapter 217 – Design Criteria for Domestic Wastewater Systems.

Respectfully Submitted,

STATE OF TEXAS
SHANE D. SELF
108366
LICENSED
PROFESSIONAL ENGINEER

Shane Self, P.E.
4/5/2019 F-2507

Shane Self, P.E.

Enviro-Ag Engineering, Inc.

Enclosures

Cc: Caviness Development, LLC
TCEQ Region 1 – Amarillo Office, Water Program Manager
EAE file

Attachment 3

Laboratory Reports

SOIL ANALYSIS REPORT

CLIENT:	ENVIRO-AG ENGINEERING INC 3404 AIRWAY BLVD AMARILLO, TX 79118
6224	

Servi-Tech Laboratories
www.servitechlabs.com

6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	23951 - 23962
INVOICE NO:	170026
DATE RECEIVED:	12/13/2023
DATE REPORTED:	12/14/2023

SOIL ANALYSIS RESULTS FOR: CAVINESS BEEF PACKERS **FIELD IDENTIFICATION:** LANDY CLIFTON

METHOD USED:			1:2 Soil-Water		1:2 Soil-Water	XSL(i)	LOI(r)	Cd Reduction		Mehlich 3 ICP	Ammonium Acetate						DTPA				
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrate-Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	Sulfur lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
23951	LMU 1N	0 - 6	8.5		0.65	No	1.8	60.6	109	310	862	34	61	2503	670	879	1.5	11	4.3	1.1	
23952	LMU 1N	6 - 18	8.7		0.62	Lo	1.0	34.8	125	78	390	33	119	3761	749	1060	0.4	8	1.5	0.9	
23953	LMU 1N	18 - 30	8.6		0.80	Lo	0.9	62.1	224	45	305	31	112	4536	712	1040	0.2	8	1.1	0.9	
23954	LMU 1S	0 - 6	8.3		0.61	No	2.0	56.1	101	451	1001	41	74	2397	669	767	1.4	11	4.3	1.0	
23955	LMU 1S	6 - 18	8.7		0.66	Hi	0.9	36.3	131	93	401	31	112	4146	773	986	0.4	9	2.3	0.9	
23956	LMU 1S	18 - 30	8.7		0.73	Hi	0.9	63.9	230	40	258	31	112	4809	671	961	0.3	8	1.5	0.8	
23957	LMU 5N	0 - 6	8.4		0.97	Hi	1.7	95.7	172	129	730	33	59	4220	641	986	1.5	8	2.6	0.9	
23958	LMU 5N	6 - 18	8.5		0.76	Hi	0.9	58.2	210	35	249	44	158	5039	626	784	0.2	6	0.9	0.8	
23959	LMU 5N	18 - 30	8.5		0.79	Hi	0.7	73.5	265	15	171	48	173	5252	525	583	0.2	5	0.6	0.7	
23960	LMU 5S	0 - 6	8.8		0.65	Lo	1.7	83.7	151	157	736	44	79	2612	561	980	2.1	8	3.1	1.0	
23961	LMU 5S	6 - 18	8.6		1.03	Hi	1.0	94.5	340	33	326	62	223	4442	647	1054	0.3	7	1.3	0.9	
23962	LMU 5S	18 - 30	8.4		1.04	Hi	0.9	121	436	15	194	59	212	5195	593	747	0.2	5	0.8	0.7	

Analyses are representative of the samples submitted Samples are retained 30 days after report of analysis Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

06/24/2024 3:05 pm

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SOIL ANALYSIS REPORT

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806.677.0093
Fax 806.677.0329

LAB NO:	23951 - 23962
INVOICE NO:	170026
DATE RECEIVED:	12/13/2023
DATE REPORTED:	12/14/2023

SOIL ANALYSIS RESULTS FOR: CAVINESS BEEF PACKERS **FIELD IDENTIFICATION:** LANDY CLIFTON

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P2O5	K2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl	Cation Exchange Capacity CEC	%H	%K	%Ca	%Mg	%Na
23951	LMU 1N																	24	0	9	52	23	16
23952	LMU 1N																	31	0	3	61	20	15
23953	LMU 1N																	34	0	2	67	17	13
23954	LMU 1S																	23	0	11	51	24	14
23955	LMU 1S																	32	0	3	64	20	13
23956	LMU 1S																	34	0	2	70	16	12
23957	LMU 5N																	33	0	6	65	16	13
23958	LMU 5N																	34	0	2	73	15	10
23959	LMU 5N																	32	0	1	77	14	8
23960	LMU 5S																	24	0	8	55	20	18
23961	LMU 5S																	33	0	3	67	16	14
23962	LMU 5S																	34	0	1	74	15	10

SPECIAL COMMENTS AND SUGGESTIONS:

Lab Number(s): 23951, 23954, 23960

SODIUM - VERY HIGH (over 12% Na): The exchangeable soil sodium (as % Na) is very high for medium-textured soils. Typical symptoms of a sodic soil are surface crusting, soil sealing, and poor water penetration. Additional soil analysis can determine the proper rate of gypsum or other soil amendment. If irrigated, water analysis can help identify the sodium source. Contact the laboratory for more information.

Lab Number(s): 23952, 23953, 23955, 23956, 23957, 23961

SODIUM - VERY HIGH (over 10% Na): The exchangeable soil sodium (as % Na) is very high for fine-textured soils. Typical symptoms of a sodic soil are surface crusting, soil sealing, and poor water penetration. Additional soil analysis can determine the proper rate of gypsum or other soil amendment. If irrigated, water analysis can help identify the sodium source. Contact the laboratory for more information.

Lab Number(s): 23951, 23954, 23957, 23960

Servi-Tech Laboratory fertilizer recommendations were not requested.

Analyses are representative of the samples submitted Samples are retained 30 days after report of analysis Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator Amy Meier

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SOIL ANALYSIS REPORT

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6224	

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806.677.0093
Fax 806.677.0329

LAB NO:	23951 - 23962
INVOICE NO:	170026
DATE RECEIVED:	12/13/2023
DATE REPORTED:	12/14/2023

SOIL ANALYSIS RESULTS FOR: CAVINESS BEEF PACKERS **FIELD IDENTIFICATION:** LANDY CLIFTON

Lab Number(s): 23955, 23956, 23957, 23958, 23959, 23961, 23962

The CEC value calculated by cation summation has been adjusted to compensate for the presence of excess lime (reactive carbonates).

Lab Number(s): 23958, 23959, 23962

SODIUM - WARNING (7% to 10% Na): The exchangeable soil sodium (as % Na) is high for fine-textured soils. Typical symptoms of a sodium problem are soil sealing, crusting, and poor water penetration. Applying gypsum may be beneficial, but additional soil analysis may be required to determine the rate. If irrigated, water analysis can help identify the sodium source. Contact the laboratory for more information.

Analyses are representative of the samples submitted Samples are retained 30 days after report of analysis Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Amy Meier, Data Review Coordinator

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LABORATORY REPORT

Report Date: 06/11/2024 09:48 AM

Lab #: D-2024NL004475

NELAP ACCREDITED TNI LABORATORY

Send To: ENVIRO-AG ENGINEERING INC
6224 3404 AIRWAY BLVD
AMARILLO, TX 79118

Michele Lawson
Michele Lawson
Data Review Coordinator

Project ID:
Project Title:
Sample ID: DOMESTIC WASTEWATER
Client Name: CAVINESS BEEF PACKERS
Subject: Wastewater Lab Analysis

Date/Time Received: 05/30/2024
Name of Submitter: UPS
Date/Time Sampled: 05/22/2024
Name of Sampler: ANDY CRIST

Location: DEAF SMITH
Invoice No: 390356
P.O. #: AMY PEOPLES
Depth:
Flow Rate:

Analysis	Result	Unit	RL	Method	Analysis	Tech
Accredited Tests						
Nitrate+Nitrite Nitrogen, NO3+NO2-N	ND	ppm AR	0.20	EPA 353.2	6/4/2024 12:40PM	FN
Ammonia Nitrogen, NH3-N	21	ppm AR	2.0	EPA 350.1	6/4/2024 12:25PM	KV
Total Kjeldahl Nitrogen, TKN	32	ppm AR	2.50	EPA 351.2	6/7/2024 10:47AM	K
Organic Nitrogen, Org-N	11	ppm AR	2.5	Calculation		
Total Nitrogen, Total N	32.2	ppm AR	2.50	Calculation		
Phosphorus, P	21.5	ppm AR	2.00	EPA 200.7	5/31/2024 5:11PM	
Total Alkalinity, CaCO3	670	ppm AR	10.0	SM 2320 B 2011	6/3/2024	
Bicarbonate, HCO3	820	ppm AR	10	SM 2320 B	6/3/2024	
Carbonate, CO3	ND	ppm AR	10	SM 2320 B	6/3/2024	
Hydroxide, OH	ND	ppm AR	10	SM 2320 B	6/3/2024	
Total Calcium, Ca	33	ppm AR	4.0	EPA 200.7	5/31/2024 5:11PM	
Total Magnesium, Mg	32	ppm AR	4.0	EPA 200.7	5/31/2024 5:11PM	
Total Potassium, K	57	ppm AR	4.0	EPA 200.7	5/31/2024 5:11PM	

Test Basis: AR=As Received

ND = Not Detected at RL

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LABORATORY REPORT

Lab #: D-2024NL**004475**

Report Date: 06/11/2024 09:48 AM

Analysis	Result	Unit		RL	Method	Analysis	Tech
Total Sodium, Na	470	ppm	AR	4.0	EPA 200.7	5/31/2024 5:11PM	CF
Electrical Conductivity, EC @ 25C	4430	µmho/cm	AR	0.1	SM 2510 B-2011	5/31/2024 8:39AM	FN
pH	8.4	unit	AR	NA	SM 4500-H+ B-2011	5/31/2024 8:39AM	FN
Total Solids, TS	30	ppm	AR	10	SM 2540 B-2015	5/30/2024 7:52AM	FN
Volatile Solids, VS	25	ppm	AR	10	EPA 160.4	5/30/2024 7:52AM	FN
Non-Accredited Tests							
Phosphorus as P2O5	49	ppm		4.58	Calculation		
Potassium as K2O	68.4	ppm		4.8	Calculation		
Fixed Solids (Ash), FS	ND	ppm		10	Calculation		
Sodium Adsorption Ratio, SAR	14.0	ratio		0.1	Calculation		
Adjusted SAR, SARa	16.2	ratio		0.1	Calculation		

NELAP Statement

Laboratory Accreditation: The analytical results included in this report meet all the requirements of the National Environmental Laboratory Accreditation Program (NELAP), unless otherwise noted.

Sample Acceptability Criteria

Sample not received 'on ice'.

Test Basis: AR=As Received

ND = Not Detected at RL

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LABORATORY REPORT

Report Date: 06/11/2024 09:48 AM

Lab #: D-2024NL004475

Accreditation Agency	Accreditation Number
KDHE	E-10150
TCEQ	T104704505
OK DEQ	State Lab ID 9707
TCEQ	T104704505-16-7
OK DEQ	Lab ID 9707 Cert # 2016-028
TCEQ	T104704505-17-8
OK DEQ	Lab ID 9707 Cert # 2017-062
OK DEQ	Lab ID 9707 Cert # 2018-023
TCEQ	T104704505-18-9
OK DEQ	Lab ID 9707 Cert# 2018-166
OK DEQ	Lab ID 9707 Cert. # 2018-178
TCEQ	T104704505-19-10
OK DEQ	Lab ID 9707 Cert# 2019-110
OK DEQ	Lab ID 9707 Cert# 2020-056
KDHE	E-10150
TCEQ	T10404505-21-12
OK DEQ	Lab ID 9707 Cert# 2021-037
KDHE	E-10150
KDHE	E-10150
OK DEQ	Lab ID 9707 Cert# 2022-070
TCEQ	T10404505-22-13
TCEQ	T10404505-23-14
OK DEQ	Lab ID 9707 Cert# 2023-090
KDHE	E-10150

Test Basis: AR=As Received

Not Detected at RL

F

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Web Site: www.batlaboratoriesllc.com
Email: admin@batlaboratoriesllc.com

T104704346-20-17

Caviness
3255 West Hwy 60
Hereford, TX. 79045
Attn: Terry Caviness

Sample Cross Reference and Identification

Lab ID	Customer ID	Matrix	Collected
21050047-001	Domestic Sludge	Solid	05/17/2021 11:00

Sample(s) Received: 05/17/2021 16:25

Certified By
Vincient R Barnes
President

The results provided with this report solely reflect the analysis of the samples provided. B.A.T. Laboratories, LLC is not responsible for the use or characterization of this data as representative for any sample or material not specifically analyzed by the laboratory or its subcontractors.

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Email: admin@batlaboratoriesllc.com

T104704346-20-17

Analytical Report

BATLabs ID: 21050047-001 **Customer ID: Domestic Sludge** **Sample Collected: 05/17/2021 11:00**

Analyte	Run	Result	Flag	Analyst	Analysis Date
TCLP PREP					
TCLP Extraction	1	Type 2 Fluid		vrb	05/10/2021
TCLP Initial pH	1	5.10		VRB	05/25/2021 16:00
TCLP Final pH	1	1.63		VRB	05/26/2021

Analyte	Run	Result	Flag	Units	MQL	SQL	FAC	Analyst	Analysis Date	QC Batch ID
TCLP METALS										
Silver	1	ND	N1	mg/L	0.5	0.5	100	VRB	06/14/2021	ICPMS21-06-14
Arsenic	1	ND		mg/L	0.5	0.5	100	VRB	06/14/2021	ICPMS21-06-14
Barium	1	ND		mg/L	0.2	0.2	100	VRB	06/14/2021	ICPMS21-06-14
Cadmium	1	ND		mg/L	0.2	0.2	100	VRB	06/14/2021	ICPMS21-06-14
Chromium	1	ND		mg/L	5.00	0.8	100	VRB	06/14/2021	ICPMS21-06-14
Mercury	1	ND		mg/L	0.0002	0.0001	1	Client	06/14/2021	HGCV210614
Lead	1	ND		mg/L	0.2	0.2	100	VRB	06/14/2021	ICPMS21-06-14
Selenium	1	ND		mg/L	0.2	0.2	100	VRB	06/14/2021	ICPMS21-06-14

Analyte	Run	Result	Flag	Units	MQL	SQL	FAC	Analyst	Analysis Date	QC Batch ID
TCLP SEMIS										
o-Cresol (2-methylphenol)	1	ND		mg/L	200	133	100	VRB	06/14/2021	SVMS01-210614
m,p-Cresol (3,4-methylphenol)	1	ND		mg/L	100	79.0	100	VRB	06/14/2021	SVMS01-210614
Pyridine	1	ND		mg/L	200	152	100	VRB	06/14/2021	SVMS01-210614
2,4-Dinitrotoluene	1	ND		mg/L	500	138	100	VRB	06/14/2021	SVMS01-210614
Hexachlorobutadiene	1	ND		mg/L	100	42.0	100	VRB	06/14/2021	SVMS01-210614
Nitrobenzene	1	ND		mg/L	100	89.0	100	VRB	06/14/2021	SVMS01-210614
Pentachlorophenol	1	ND		mg/L	500	176	100	VRB	06/14/2021	SVMS01-210614
2,4,5-Trichlorophenol	1	ND		mg/L	100	58.0	100	VRB	06/14/2021	SVMS01-210614
2,4,6-Trichlorophenol	1	ND		mg/L	100	39.0	100	VRB	06/14/2021	SVMS01-210614
1,4-Dichlorobenzene	1	ND		mg/L	100	70.0	100	VRB	06/14/2021	SVMS01-210614
Hexachloroethane	1	ND		mg/L	500	66.0	100	VRB	06/14/2021	SVMS01-210614
Hexachlorobenzene	1	ND		mg/L	100	48.0	100	VRB	06/14/2021	SVMS01-210614

Surrogates	Run	Result	Flag	Limits
2-Fluorophenol	1	90%		20% - 100%
Phenol-d6	1	80%		5% - 94%
Nitrobenzene-d5	1	70%		35% - 114%
2-Fluorobiphenyl	1	75%		43% - 116%
2,4,6-Tribromophenol	1	60%		10% - 123%
Terphenyl-d14	1	50%		33% - 141%

Analyte	Run	Result	Flag	Units	MQL	SQL	FAC	Analyst	Analysis Date	QC Batch ID
TCLP VOLATILES										
Vinyl chloride	1	ND		mg/L	0.04	0.033	10	VRB	06/14/2021	VOMS01-210614
1,1-Dichloroethylene	1	ND		mg/L	0.02	0.016	10	VRB	06/14/2021	VOMS01-210614
1,2-Dichloroethane	1	ND		mg/L	0.02	0.016	10	VRB	06/14/2021	VOMS01-210614
Benzene	1	ND	N1	mg/L	0.02	0.02	10	VRB	06/14/2021	VOMS01-210614
Carbon tetrachloride	1	ND		mg/L	0.02	0.01	10	VRB	06/14/2021	VOMS01-210614
Chloroform	1	ND		mg/L	0.02	0.013	10	VRB	06/14/2021	VOMS01-210614
Methyl ethyl ketone (2-butanone)	1	ND		mg/L	0.10	0.077	10	VRB	06/14/2021	VOMS01-210614
Tetrachloroethylene (perchlorethylene)	1	ND		mg/L	0.02	0.017	10	VRB	06/14/2021	VOMS01-210614
Trichloroethylene	1	ND		mg/L	0.02	0.018	10	VRB	06/14/2021	VOMS01-210614

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Basic Analytical Testing
5935 Glenoak Ln
Amarillo, TX 79109
806-353-4425 • 800-423-9443
Web Site: www.batlaboratoriesllc.com
Email: admin@batlaboratoriesllc.com

T104704346-20-17

Analytical Report

BATLabs ID: 21050047-001 **Customer ID: Domestic Sludge** **Sample Collected: 05/17/2021 11:00**

Analyte	Run	Result	Flag	Units	MQL	SQL	FAC	Analyst	Analysis Date	QC Batch ID
Chlorobenzene	1	ND		mg/L	0.02	0.019	10	VRB	06/14/2021	VOMS01-210614
1,4-Dichlorobenzene	1	ND		mg/L	0.04	0.029	10	VRB	06/14/2021	VOMS01-210614

Analyte	Run	Result	Flag	Analyst	Analysis Date
TCLP ZeroHeadspace Extraction -VOA	1	Type 1 Fluid		vrb	06/14/2021

Surrogates	Run	Result	Flag	Limits
1,2-Dichloroethane-d4	1	80%		70% - 130%
Toluene-d8	1	87%		70% - 130%
4-bromofluorobenzene	1	91%		70% - 130%

Analyte	Run	Result	Flag	Units	MQL	SQL	FAC	Analyst	Analysis Date	QC Batch ID
Percent Solids - Dry Weight		7.33		wt %	0.01%	0.01%		BAC	05/17/2021 16:25	PREP03-21-05-07

Data associated with this Sample is Dry Weight corrected unless otherwise flagged.

TX1005										
TPH C6 - C12	1	ND		mg/Kg	273	273	1	VRB	05/26/2021	GCFID01-21-05-22
TPH C12 - C28	1	ND		mg/Kg	273	273	1	VRB	05/26/2021	GCFID01-21-05-22
TPH C28 - C35	1	ND		mg/Kg	273	273	1	VRB	05/26/2021	GCFID01-21-05-22
TPH C6 - C35		ND		mg/Kg	273	273	1	VRB	05/26/2021	GCFID01-21-05-22

Surrogates	Run	Result	Flag	Limits
[1-Chlorooctadecane]	1	99%		70% - 130%
[1-Chlorooctane]	1	92%		70% - 130%

Analyte	Run	Result	Flag	Units	MQL	SQL	FAC	Analyst	Analysis Date	QC Batch ID
Corrosivity (pH)	1	6.05		units	2.00	1.00	2.94	MMB	05/21/2021	WCPRB01-21-05-05
Ignitability (Flash Point)	1	>150	N1	° F	40.0	40.0	1	MMB	05/20/2021	WCOBS03-21-05-02
Moisture Content	1	92.7		%	1.36	1.36	1	VRB	05/20/2021	PREP03-21-05-07

QC Summary

Blank and Laboratory Control Samples

QC Batch ID: GCFID01-21-05-22	Blank	LCS Conc	Units	LCS Results	LCS Recov	LCSD Results	LCSD Recov	RPD	Flags
TPH C6 - C12	ND	150	mg/Kg	92.0	61%				Qlcsl
TPH C12 - C28	ND	100	mg/Kg	168	168%				Qlcsh
TPH C28 - C35	ND	0	mg/Kg						
TPH C6 - C35	ND	250	mg/Kg	260	104%				
				Limits: 75%-125%		75%-125%		20%	

Surrogates	Blank	LCS	LCSD	Limits	Flags
1-Chlorooctane				70% - 130%	
1-Chlorooctadecane				70% - 130%	

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T104704346-20-17

QC Summary

Blank and Laboratory Control Samples

QC Batch ID: HGCV210614	Blank	LCS Conc	Units	LCS Results	LCS Recov	LCSD Results	LCSD Recov	RPD	Flags
Mercury	ND	0.001	mg/L	0.0010	99%	0.0010	99%	0.0%	
				Limits: 85%-115%		85%-115%		20%	

QC Batch ID: ICPMS21-06-14	Blank	LCS Conc	Units	LCS Results	LCS Recov	LCSD Results	LCSD Recov	RPD	Flags
Chromium	ND	0.050	mg/L	0.044	88%				
Arsenic	ND	0.050	mg/L	0.051	102%				
Selenium	ND	0.050	mg/L	0.058	116%				Qlcsh
Silver	ND	0.050	mg/L	0.055	110%				
Cadmium	ND	0.050	mg/L	0.051	102%				
Barium	ND	0.050	mg/L	0.049	98%				
Lead	ND	0.050	mg/L	0.051	102%				
				Limits: 85%-115%		85%-115%		20%	

QC Batch ID: WCOBS03-21-05-02	Blank	LCS Conc	Units	LCS Results	LCS Recov	LCSD Results	LCSD Recov	RPD	Flags
Ignitability (Flash Point)	ND	81.1	° F	81.0	100%				
				Limits: 99%-101%		99%-101%		20%	

QC Batch ID: WCPRB01-21-05-05	Blank	LCS Conc	Units	LCS Results	LCS Recov	LCSD Results	LCSD Recov	RPD	Flags
Corrosivity (pH)	ND	7.00	units	7.01	100%	7.00	100%	0.1%	
				Limits: 95%-105%		95%-105%		10%	

Laboratory Fortified Blank

QC Batch ID: ICPMS21-06-14	LFB Conc	Units	LFB Results	LFB Recov	LFBD Results	LFBD Recov	RPD	Flags
Chromium	0.050	mg/L	0.056	112%				Qspkh,Qspkh
Arsenic	0.050	mg/L	0.058	116%				Qspkh,Qspkh
Selenium	0.050	mg/L	0.052	104%				
Silver	0.025	mg/L	0.051	204%				Qspkh,Qspkh
Cadmium	0.050	mg/L	0.051	102%				
Barium	0.050	mg/L	0.052	104%				
Lead	0.050	mg/L	0.058	116%				Qspkh,Qspkh
			Limits: 75%-125%		75%-125%		20%	

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T104704346-20-17

QC Summary

Batch Duplicates

QC Batch ID: GCFID01-21-05-22	Reference	Results	Dup Results	RPD	Flags
TPH C6 - C12	21050047-001A Run 1	ND	ND	0.0%	
TPH C12 - C28	21050047-001A Run 1	ND	ND	0.0%	
TPH C28 - C35	21050047-001A Run 1	ND	ND	0.0%	
TPH C6 - C35	21050047-001A Run 1	ND	ND	0.0%	
			Limits:	20%	

Matrix Spike

QC Batch ID: GCFID01-21-05-22	Sample ID	Result	Spike Conc	Units	MS Result	MS Recov	MSD Result	MSD Recov	RPD	Flags
TPH C6 - C12	21050047-001A	ND		mg/Kg	93.0	0%	94.0	0%	1.1%	Qspkl
TPH C12 - C28	21050047-001A	ND		mg/Kg	95.0	0%	87.0	0%	8.8%	Qspkl
TPH C28 - C35	21050047-001A	ND		mg/Kg	105	0%	123	0%	15.8%	Qspkl
TPH C6 - C35	21050047-001A	ND	6820	mg/Kg	293	4%	304	4%	3.7%	Qspkl
					Limits: 75%-125%		75%-125%		20%	

Surrogates	MS	MSD	Limits	Flags
1-Chlorooctane			70% - 130%	
1-Chlorooctadecane			70% - 130%	

Methods Cross Reference

GCFID01_2007	Total Petroleum Hydcarbons by GCFID Reference method: TNRCC 1005
HGCV01_2007	Total Mercury Reference Methods: EPA 245.1, EPA 245.7, SW-846 7470, 7471
ICPMS01_2007	Trace Metals by Inductively Coupled Plasma-Mass Spectrometry Reference Methods: EPA 200.8, SW-846 6020 Hardness by Calculation SM2340D
Solids	% Solids for Dry Weight Corrections. Reference Methods: SW-846 5035 section 7.5; or CLP protocol Section IV Part F. Land Application solids are predried where appropriate at a temperature known not to remove interstitial waters.
SVMS01_2007	Semi-Volatile Organic Compounds by GCMS Liquid sample analysis reference methods:SW-846 8270, EPA 625, EPA 625.1 Solid sample analysis reference method SW-846 8270.
VOMS01_2007	Volatile Organic Compounds by GCMS Liquid sample analysis reference methods: SW-846 8260, EPA 624, EPA 624.1 Solid sample analysis reference methods: SW-846 8260

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Methods Cross Reference

WCBAL_MOISTURE	% Moisture calculation from % solids determination Reference Method: SW-846 5035
WCOBS03_2007	Ignitability (flash point) Reference Method: SW-846 1010, 1030
WCPRB01_2007	pH (Hydrogen ion) Reference Method: SM 4500-H+ B, SW-846 9045, 9040

Definitions

Abbreviations

[...]	Analyte accreditation not currently available through NELAC protocols.
[T]	Analyte determined using method protocols for Tentatively Indentified compounds. Results should be considered estimated values only.
BATCH	A sample other than the order number listed was spiked within this analytical run. Alternately, a post preparation matrix spike may have been used on a diluted sample due to high matrix constituents.
CCV	Continuing Calibration Verification
Conc	Concentration
CV	Calibration Verification
FAC	Preparation and/or Dilution factor for the analysis listed.
ICS	Interference Control Sample...A = Control Matrix, B = Spiked Control Matrix
LCS/LCSD	Laboratory control spike/Laboratory control spike duplicate A laboratory spike of a clean matrix, carried through all method preparation and analysis steps.
LFB/LFBD	Lab fortified blank/duplicate For ICPMS or Hg results from this laboratory the LFB/LFBD cannot be substituted for an LCS/LCSD. The LFB/LFBD is not carried through all preparation steps for the method; the LCS/LCSD is carried through the entire method.
MQL	Method quantitation limit (the LOQ adjusted to reflect any laboratory adjustments made to the sample during analysis such as dry weight or dilutions) i.e. the Method reporting Limit.
MS/MSD	Matrix spike/Matrix spike duplicate Laboratory spike of a client sample.
NA	Not Applicable/Not Analyzed
ND	Analyte not detected at or below SQL
PMS/PMSD	Post Preparation Matrix spike/duplicate

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T104704346-20-17

Definitions

Abbreviations

PQL	Project quantitation limit (reflects any laboratory adjustments made to the sample during analysis such as dry weight or dilutions) i.e. the Project reporting Limit.
QC	Quality Control
RPD	Relative percent difference
SQL	Sample quantitation limit analogous to the sample detection limit (the MDL adjusted to reflect any laboratory adjustments made to the sample during analysis such as dry weight or dilutions) i.e. the Sample Detection Limit for the method as prepared. Or same as MQL.
Sub	Analysis performed by subcontract laboratory. See listing of subcontractor certficates for analysis laboratory.

Units of Measurement

%	% =percent, 1/100 of whole, percentage
mg/Kg	mg/Kg = milligrams per kilogram (ppm)
mg/L	mg/L = milligrams per liter (ppm)
units	Standard Units (pH)
wt %	wt% = percent by weight. 1 wt% = 10000 ppm
° F	Degrees Farenheit

Flags

N1	For multi-analyte methods, laboratory is approved for methods, but analyte not in laboratory NELAC accredited list. Results provided may be considered estimated values, and/or QC information should be used to validate results where available. For single analyte methods, analyte not in laboratory NELAC accredited list. Results provided may be considered estimated values, and/or QC information should be used to validate results where available.
Qlcsh	LCS or LCSD recovery outside laboratory limits - high
Qlcsl	LCS or LCSD recovery outside laboratory limits - low
Qspkh	LFB/PMS/ MS or LFBD/PMSD/MSD recovery outside laboratory limits - high
Qspkl	LFB/PMS/ MS or LFBD/PMSD/MSD recovery outside laboratory limits - low

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T104704346-20-17

Chain of Custody Record

B.A.T. Laboratories, LLC
Basic Analytical Testing
5935 Glenoak Lane,
Amarillo, Texas 79109
Telephone: (806) 353-4425
Fax: (806) 352-6454

Purchase Order No.
Client Name: TAYLOR SALLARS
Project I.D. / Location: CAVINESS BEEF
Address: 2255 WEST HWY 60
Telephone: 806-357-2443 EXT 4581
Sampled By: OPERATOR
Email:

Please note: Liability and Damages. B.A.T. Laboratories, LLC liability and clients remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing received by B.A.T. Laboratories, LLC within thirty days of the applicable service. In no event shall B.A.T. Laboratories, LLC be liable for incidental or consequential damages. Including those without limitation, business interruption, loss of use, or loss of profits incurred by the client, its subsidiaries, affiliates, or successors arising out of or related to the performance of services rendered by B.A.T. Laboratories, LLC regardless of whether such claim is based upon any of the preceding stated reasons or otherwise.

For Laboratory Use Only
Bottles Received: P=plastic, G=glass, GA=amber
250: None, HCl, H2SO4, HNO3, NaOH — Preserved Y/N
500: None, H2SO4, HNO3, NaOH — Preserved Y/N
1L: None, H2SO4, HNO3 — Preserved Y/N
#VOAs for each sample: ___w/HCl ___w/sHCl
Headspace (Y/N): ___
Bottle Samples: ___4oz ___8oz ___16oz
Plastic Bags
___#VOA for each sample
SVOAs/Pest/Herb/Metals: ___Core samples in VOA vial; ___+ Bulk Jar; ___Bulk Sample Jars Only

Sample #	Date Collected	Time Collected	Matrix (soil, liquid, drinking water)	Composite	Grab	Sample Description	No. of Containers	Analyses Requested	Remarks
001	5-17-21	1100	WW		X	DOMESTIC SLUDGE	1	TPH, Metals, Total Solids, Total Volatile Solids, pH, Total Solids	
002									
003									
004									
005									
006									
007									
008									
009									
010									

Relinquished by: (Signature)	Date: 5-17-21	Time: 1100	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received by: (Signature)

For Laboratory Use Only
Sample Receipt Conditions: Yes / No
Wet Ice: X
Cooler Seals: X
Bottle Seals: X
Temp/Corr: 11.4°C
Thermometer ID:
pH Paper Lot #:
Initials:

Comments/Notes: 3A cooling process

Client agrees to accept return sample or pay disposal fee:
Accept Returned Sample
Pay for sample Disposal ($30 per 100 grams)
Client's Signature

The results provided with this report for Work Order 21-05-0047 are consistent with the National Environment Laboratory Accreditation Program, except where otherwise noted, and solely reflect the analysis of the samples provided. B.A.T. Laboratories, LLC is not responsible for the use or characterization of this data as representative for any sample or material not specifically analyzed by the laboratory or its subcontractors. ipage Number8 is the last ipage of the report.

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Attachment 4

Well Logs

FORM NO. 263 AWP

☐ Alphabetical file ☐ X-file ☒ Posted ☐ Depth Plotted

MAP ID 2

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 2674 A
Time of Filing 4:45 P.M.
Date Application Filed 9-16-63
Expiration Date 1-16-64
Date Recommended By County Committee 9-18-63
Size of Pump 6 Maximum Yield 560 GPM

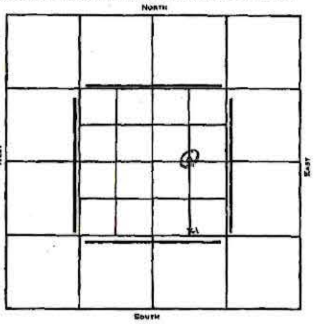
I, Ky Lawrence (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
NW¼, NE¼, SW¼, SE¼ of Section 158 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
Drilling to start about Soon, 19__
Survey ____ Abstract ____
This well will be located 3 miles N or S and (MARK OUT ONE THAT DOES NOT APPLY) 3 miles E or W of the
Township ____ Range ____
Labor ____ League ____
town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 440 measured yards from (N S) S (MARK OUT ONE THAT DOES NOT APPLY) and 220 measured yards from (E W) W E property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 430 measured yards from proposed well site.
Owned by Applicant
Address ____

No. 2 ____ measured yards from proposed well site.
Owned by ____
Address ____

No. 3 ____ measured yards from proposed well site.
Owned by ____
Address ____

COMMENT
No other wells within 440 yds.

1 1/10 ins... 440 yds. .. Minimum for 10-in. well .. yield—more than 1000 G.P.M.
1 in....... 400 yds. .. Minimum for 8-in. well .. yield—500 to 1000 G.P.M.
3/4 in...... 300 yds. .. Minimum for 6-in. well .. yield—300 to 500 G.P.M.
5/8 in...... 250 yds. .. Minimum for 5-in. well .. yield—265 to 300 G.P.M.
1/2 in...... 200 yds. Minimum for 3 or 4-in. well .. yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: [signature] (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
1. Clinton Jackson 2. Charles Packard 3. Lahey E. Ballard
Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. · DIAL PO 6-5619

AB

FORM NO. 263 AWP

☒ Alphabetical file ☒ X-file ☒ Posted ☐ Depth Plotted

MAP ID 1

J

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 2730
Time of Filing 5000 P.M.
Date Application Filed 9-16-63
Expiration Date 1-16-64
Date Recommended By County Committee 9-18-63
Size of Pump 6 Maximum Yield 560 GPM

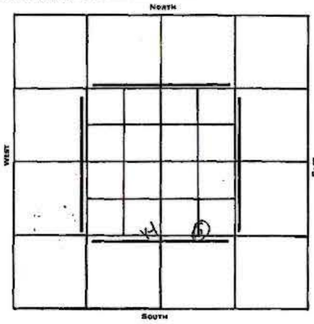
I, Ky Lawrence (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
NW¼, NE¼, SW¼, SE¼ of Section 157 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
Drilling to start about Soon, 19__
Survey ____ Abstract ____
This well will be located 3 miles N or S and (MARK OUT ONE THAT DOES NOT APPLY) 3 miles E or W of the
Township ____ Range ____
Labor ____ League ____
town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 10 measured yards from (N S) S (MARK OUT ONE THAT DOES NOT APPLY) and 220 measured yards from (E W) E property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 300 measured yards from proposed well site.
Owned by Applicant # 2688 A
Address ____

No. 2 ____ measured yards from proposed well site.
Owned by ____
Address ____

No. 3 ____ measured yards from proposed well site.
Owned by ____
Address ____

COMMENT
No other wells within 400 yds

RECEIVED
LUBBOCK, TEXAS
OCT – 1963
HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

1 1/10 ins... 440 yds. Minimum for 10-in. well .. yield—more than 1000 G.P.M.
1 in....... 400 yds. Minimum for 8-in. well .. yield—500 to 1000 G.P.M.
3/4 in...... 300 yds. Minimum for 6-in. well .. yield—300 to 500 G.P.M.
5/8 in...... 250 yds. Minimum for 5-in. well .. yield—265 to 300 G.P.M.
1/2 in...... 200 yds. Minimum for 3 or 4-in. well .. yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: R. Saull Lawrence (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
1. Clinton Jackson 2. Charles Packard 3. Lahey E. Ballard
Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. · DIAL PO 6-5619

AB.

FORM NO. 263 AWP

☒ Alphabetical file ☒ X-file ☐ Posted ☐ Depth Plotted

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 2674
Time of Filing 5:00 P.M.
Date Application Filed 6-19-63
Expiration Date 10-19-63 / July 1, 1963
Size of Pump 6 Maximum Yield 760 GPM

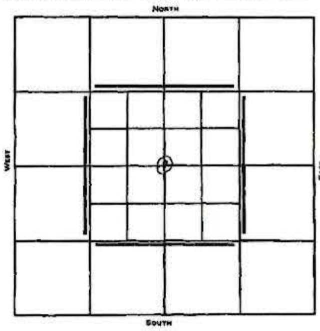
I, Ky Lawrence (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
NW¼, NE¼, SW¼, SE¼ of Section 158 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
Drilling to start about Soon, 19__
Survey ____ Abstract ____
This well will be located 3 miles N or S and (MARK OUT ONE THAT DOES NOT APPLY) 3 miles E or W of the
Township ____ Range ____
Labor ____ League ____
town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 440 measured yards from (N S) N (MARK OUT ONE THAT DOES NOT APPLY) and 440 measured yards from (E W) E property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 [illegible] measured yards from proposed well site.
Owned by ____
Address ____

No. 2 ____ measured yards from proposed well site.
Owned by ____
Address ____

No. 3 ____ measured yards from proposed well site. July 1963
Owned by ____
Address ____

COMMENT
No other wells within 440 yds.

1 1/10 ins... 440 yds. Minimum for 10-in. well .. yield—more than 1000 G.P.M.
1 in....... 400 yds. ...Minimum for 8-in. well .. yield—500 to 1000 G.P.M.
3/4 in...... 300 yds. ...Minimum for 6-in. well .. yield—300 to 500 G.P.M.
5/8 in...... 250 yds. ...Minimum for 5-in. well .. yield—265 to 300 G.P.M.
1/2 in...... 200 yds. Minimum for 3 or 4-in. well .. yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Ky Lawrence (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
1. Lahey E. Ballard 2. Charles Packard 3. Billy Strand
Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. · DIAL PO 6-5619

#3

FORM NO. 263AW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 2730
Date Received 9-30-63
Permit Size of Pump 6 Maximum Yield 560 GPM

1. Land Owner Ky Lawrence Address Box 14 Summerfield Texas
2. Well located ____ miles N. 3 miles S. ____ miles E. 3 miles W of the town of Hereford
3. County ____ Labor ____ League ____ Abstract No. ____
4. NW¼ NE¼ SW¼ SE¼ (MARK OUT THOSE THAT DO NOT APPLY) Section 157 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 19 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	50	Caliche			
50	95	Dry Sand + Sand Rock			
95	120	Sand + Sand Rock			
120	150	Clay			
150	240	Sand, Sandrock + Clay			
240	260	Clay w/ Some Sand + Small Gravel			
260	262	Green + Red Clay			

ED
1963
WATER CONS. DIST. No. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling Co. Address Hereford Tx Date Drilled 6/28 1963

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new) used, gas line, or shop made. Diameter 16 in. Total casing length 262 ft.
7. Casing perforations: from 145 / 202 ft. to 202 / 260 ft. Size 1/8 / 3/16 Number of rows 8 / 6
8. Pump Column: Size 6 in. Column, shaft length 240 ft. Suction pipe size 6 in. Suction pipe length 5 ft.
9. Pump bowls: Size 10 Number of stages 6 Pump discharge pipe: Size 6 in.
10. Depth to water level 128 ft. Pump yield 500 GPM. Pumping level: 175 ft.
11. Power Unit: (Electrical), Natural Gas, Butane, Other ____ Horsepower 40

Signature ____ (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

Form No. 259-A-W

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3970
Date Received 4-16-68
Permit Size of Pump 6 in. Maximum Yield 560 GPM

1. Land Owner GRIFFIN & KENDELL Address 101 E AUSTIN RD.
2. Well located 3 miles N. ____ miles S. ____ miles E. 6 miles W of the town of HEREFORD
3. County DEAF SMITH Labor ____ League ____ Abstract No. ____
4. NW¼ ~~NE¼ SW¼ SE¼~~ (Mark out those that do not apply) Section 158 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ (Mark out one that does not apply) Diameter of Well ____ inches.

From (Feet)	To (Feet)	Description of Formation Material	From (Feet)	To (Feet)	Description of Formation Material
0	4	top soil			
4	50	caliche			
50	129	sand			
129	155	sand & CLAY			
155	200	sand			
200	230	sand & sandrock			
230	235	sandy clay			RECEIVED LUBBOCK, TEXAS
235	255	clay			APR 16 1968
255	260	red bed			HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS: did not ream Insufficient water.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller walco drilling inc. Address box 805 HEREFORD Date Drilled 1 / 10 1968

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter ____ in. Total casing length ____ ft.
7. Casing perforations: from ____ ft. to ____ ft. Size ____ Number of rows ____
8. Pump Column: Size ____ in. Column, shaft length ____ ft. Suction pipe size ____ in. Suction pipe length ____ ft.
9. Pump bowls: Size ____ Number of stages ____ Pump discharge pipe: Size ____ in.
10. Depth to water level ____ ft. Pump yield ____ GPM. Pumping level: ____ ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature Billy Wolf (Landowner or Agent) Title ____ Address 519 J.

#2

Form No. 259-A-W

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 2674A
Date Received 9-30-63
Permit Size of Pump 6 in. Maximum Yield 560 GPM

1. Land Owner Ky Lawrence Address Box 14 Summerfield Texas
2. Well located ____ miles N. 3 miles S. ____ miles E. 3 miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. NW¼ ~~NE¼ SW¼ SE¼~~ (Mark out those that do not apply) Section 158 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X ~~Spudder~~ (Mark out one that does not apply) Diameter of Well 19 inches.

From (Feet)	To (Feet)	Description of Formation Material	From (Feet)	To (Feet)	Description of Formation Material
0	4	Top Soil			
4	48	Caliche			
48	105	Dry Sand			
105	135	Sand + Rock			
135	150	Clay + Sand			
150	205	Sand			RECEIVED
205	240	Clay w/ Sand			OCT 1963
240	244	Red Bed			HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling Co. Address Hereford, Texas Date Drilled 6/27 1963

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new), used, gas line, or shop made. Diameter 16 in. Total casing length 244 ft.
7. Casing perforations: from ~~185~~ 155 ft. to ~~240~~ 185 ft. Size ~~3/16~~ 1/8 Number of rows ~~8~~ 6
8. Pump Column: Size 6 in. Column, shaft length 230 ft. Suction pipe size 6 in. Suction pipe length 0 ft.
9. Pump bowls: Size 10 Number of stages 6 Pump discharge pipe: Size 6 in.
10. Depth to water level 125 ft. Pump yield 500 GPM. Pumping level: 163 ft.
11. Power Unit: (Electrical), Natural Gas, Butane, Other ____ Horsepower 40

Signature ____ (Landowner or Agent) Title ____ Address ____

☑ I-13 ☑ 188 ☑ NEW APP. BOOK ☑ APP. FILE ☑ R FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

MAP ID 4

Form No. 448 AWP

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 3969
Time of Filing 11:50 A.M.
Date Application Filed 12-29-67
Expiration Date 4-29-68
Date Recommended by County Committee 1-9-68
Size of Pump ~~8~~ 6 Maximum Yield ~~1000~~ 200 GPM

I, Griffin & Kendall (Name of Landowner) Box 306, Hereford, Texas (Landowner's Address) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NW¼, ~~NE¼ SW¼ SE¼~~ Section 158 Block M-7 (Mark out ones that do not apply)

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation) (Mark out ones that do not apply)

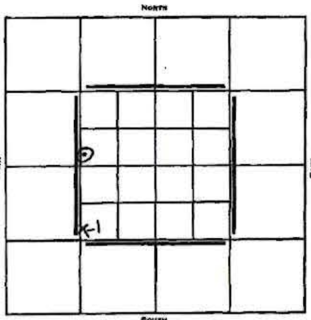
Drilling to start about Soon, 19__

This well will be located 3 miles ~~N~~ or S and 3 miles ~~E~~ or W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 374 measured yards from (N S) and 10 measured yards from (E W) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 411 measured yards from proposed well site. Owned by Applicant # 2979 Address ____

No. 2 ____ measured yards from proposed well site. Owned by ____ Address ____

RECEIVED LUBBOCK, TEXAS JAN 11 1968 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

No. 3 ____ measured yards from proposed well site. Owned by ____ Address ____

COMMENT

No other wells within 440 yds.

1 1/10 in...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds.....Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—300 to 500 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—205 to 300 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 205 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Billy F. Wolf (Signature Landowner or Agent) Agent (Title) 519 Ave. J, Hereford, Texas (Address)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Frank Reinartz Jr. 2. Bill Gentry 3. [signature]

☒ Pinned on County Map ☐ Deposit Received ☐ Refunded Check No. ____

AB

Smith Printing Co.

☑ I-13 ☑ 188 ☑ NEW APP. BOOK ☑ APP. FILE ☑ R FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

MAP ID 3

Form No. 448 AWP

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 3970
Time of Filing 11:55 A.M.
Date Application Filed 12-29-67
Expiration Date 4-29-68
Date Recommended by County Committee 1-9-68
Size of Pump 6 Maximum Yield 560 GPM

I, Griffin & ~~XXXXX~~ Kendall (Name of Landowner) Box 306, Hereford, Texas (Landowner's Address) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NW¼, ~~NE¼ SW¼ SE¼~~ Section 158 Block M-7 (Mark out ones that do not apply)

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation) (Mark out ones that do not apply)

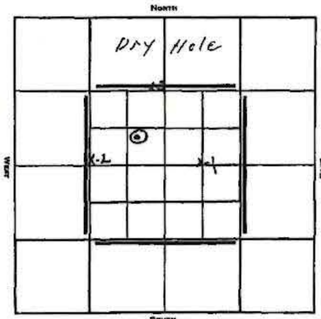
Drilling to start about Soon, 19__

This well will be located 3 miles ~~N~~ or S and 3 miles ~~E~~ or W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 270 measured yards from (N S) and 272 measured yards from (E W) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 400 measured yards from proposed well site. Owned by Applicant # 2674A Address ____

No. 2 300 measured yards from proposed well site. Owned by Applicant # 3969 Address ____

No. 3 301 measured yards from proposed well site. Owned by Applicant # 2686A Address ____

COMMENT

No other wells within 440 yds.

RECEIVED LUBBOCK, TEXAS JAN 11 1968 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

1 1/10 in...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds.....Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—300 to 500 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—205 to 300 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 205 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Billy F. Wolf (Signature Landowner or Agent) Agent (Title) 519 Ave. J, Hereford, Texas (Address)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Frank Reinartz Jr. 2. Bill Gentry 3. [signature]

☐ Pinned on County Map ☐ Deposit Received ☐ Refunded Check No. ____

AB

Smith Printing Co.

FORM NO. 200W-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeemen for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN	
Field Well No.	2979
Date Received	8-3-64
Permit Size of Pump	8 in.
Maximum Yield	1000 GPM

1. Land Owner J. B. Noland Address Box 16, Summerfield, Texas Hereford, Texas
2. Well located ____ miles N, ____ miles S, ____ miles E, 6½ miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. NW¼ ~~NE¼ SW¼ SE¼~~ Section 158 Block M-7 Survey ____
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: ____ inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3½	Top Soil	230	240	Sandy Clay
3½	13	Caliche	240	245	Sand
13	35	Red Clay	245	252	Clay
35	95	Sand & Sand Rock	252	266	Red Sand & Clay
95	97	Rock	266	269	Shale
97	120	Sand	269	271	Red Bed
120	165	Sandy Clay			
165	180	Med. Fine Sand			
180	190	Clay & Sand			
190	230	Sand			

RECEIVED LUBBOCK, TEXAS AUG - 7 1964 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling Co. Address Hereford, Texas Date Drilled July 1964

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length 273 ft.
7. Casing perforations: from 173 ft. to 273 ft. Size ¼" Number of rows 6
8. Pump Column: Size 6 in. Column, shaft length 240 ft. Suction pipe size 6 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12" Number of stages 4 Pump discharge pipe: Size 6 in.
10. Depth to water level 138" ft. Pump yield 500 GPM. Pumping level: 195 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature Bist Pump Co, Inc - Box 827 - Hereford, Texas
LANDOWNER OR AGENT TITLE ADDRESS

FORM NO. 200W-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No.	3969
Date Received	4-15-68
Permit Size of Pump	6 in.
Maximum Yield	560 GPM

1. Land Owner GRIFFIN & KENDELL Address 101 E AUSTIN RD.
2. Well located ____ miles N, ____ miles S, ____ miles E, 6 miles W of the town of hereford
3. County deaf smith Labor ____ League ____ Abstract No. ____
4. NW¼ ~~XXXXXXXXXX~~ Section 158 Block M-7 Survey ____
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary x Spudder ____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 19" inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	top soil	268	273	red bed
m3	45	caliche			
45	115	sand sandrock			
115	125	clay & sand			
125	145	sand & sandrock			
145	150	sandy clay			
150	210	sand & sandrock			
210	237	sand & sandrock layers			
237	255	sandy clay &sandrock			
255	268	sandy clay			

RECEIVED LUBBOCK, TEXAS APR 16 1968 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller walco drilling inc. Address Box 805 m Date Drilled 1/13 1968

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16" in. Total casing length 275' ft.
7. Casing perforations: from 173 / 193 / 233 ft. to 193 / 233 / 273 ft. Size 1/8 / 3/16 / 1/4 Number of rows 6 / 8 / 6
8. Pump Column: Size 6 in. Column, shaft length 255 ft. Suction pipe size 6 in. Suction pipe length 1' ft.
9. Pump bowls: Size 12 Number of stages 5 Pump discharge pipe: Size 6 in.
10. Depth to water level 158 ft. Pump yield 550 GPM. Pumping level: 198 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower 40

Signature Billy Wolf 519 S.
LANDOWNER OR AGENT TITLE ADDRESS

☑ ☑ ☑ NEW APP. BOOK ☑ ABC FILE ☑ X FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED MAP ID 6

FORM NO. 488 AWP

ORIGINAL—DISTRICT OFFICE COPY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY	
Field Well No.	5621
Time of Filing	10:20 AM
Date Application Filed	2-10-78
Expiration Date	6-10-78
Date Recommended by County Committee	2-22-78
Size of Pump	8 5
Maximum Yield	390 GPM

I, Griffin & Brand (NAME OF LANDOWNER) Box 833 - Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NW¼, NE¼, (SW¼) SE¼ Section 158 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

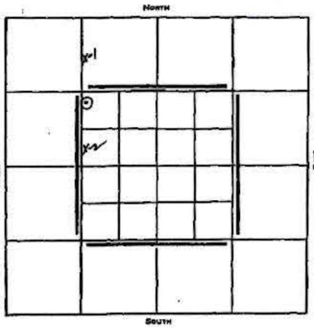
Drilling to start about week 19__

This well will be located 4 miles ~~N~~ S and 5 miles ~~E~~ W of the (MARK OUT ONE THAT DOES NOT APPLY) town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 809 measured yards from (N) S and 10 measured yards from (E) W quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 255 measured yards from proposed well site. Owned by applicant #2979 Address ____

No. 2 259 measured yards from proposed well site. Owned by applicant #2922A Address ____

No. 3 ____ measured yards from proposed well site. Owned by ____ Address ____

RECEIVED FEB 23 1978

COMMENT

No other wells within 440 yds.

1 1/10 ins.. 440 yds. Minimum for 10-in. well. yield—more than 1000 G.P.M
1 in. ..... 400 yds.. Minimum for 8-in. well yield—500 to 1000 G.P.M.
3/4 in. 300 yds.. Minimum for 6-in. well yield—390 to 500 G.P.M.
5/8 in. 250 yds.... Minimum for 5-in. well yield—265 to 390 G.P.M.
1/2 in. 200 yds. Minimum for 3 or 4-in. well yield—70 to 265 G.P.M

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by Billy Wolf (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 1815, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. James E. Higgins 2. [signature] 3. [signature]

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded Check No. ____

FORM NO. 443 AWP BB ☒ Alphabetical file ☒ X-file ☒ Pinned ☐ Depth Plotted MAP ID 5

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY	
Field Well No.	2979
Time of Filing	11:30 A.M.
Date Application Filed	5-26-64
Expiration Date	9-26-64
Date Recommended by County Committee	6-1-64
Size of Pump	8
Maximum Yield	1000 GPM

I, J. B. Noland (NAME OF LANDOWNER) Box 16, Summerfield, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NW¼, ~~NE¼, SW¼, SE¼~~ of Section 158 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

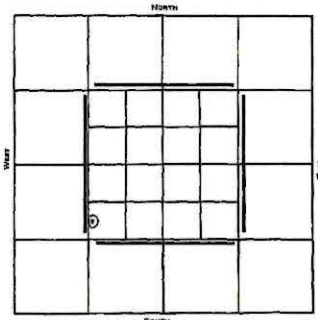
Drilling to start about 60 days 19__

This well will be located ____ miles N or S and 6½ miles ~~E~~ or W of the (MARK OUT ONE THAT DOES NOT APPLY) town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ½ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 95 measured yards from (N S) S and 10 measured yards from (E W) W property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ____ measured yards from proposed well site. Owned by ____ Address ____

No. 2 ____ measured yards from proposed well site. Owned by ____

RECEIVED LUBBOCK, TEXAS JUN 3 1964 HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

No. 3 ____ measured yards from proposed well site. Owned by ____ Address ____

COMMENT

No wells within 440 yds.

1 1/10 ins...440 yds.....Minimum for 10-in. well.. yield—more than 1000 G.P.M.
1 in. .... 400 yds.....Minimum for 8-in. well.. yield—500 to 1000 G.P.M.
3/4 in. 300 yds.....Minimum for 6-in. well...yield—390 to 500 G.P.M.
5/8 in. 250 yds.....Minimum for 5-in. well.. yield—265 to 390 G.P.M.
1/2 in.... 200 yds..Minimum for 3 or 4-in. well ..yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by J. B. Noland (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Box 16, Summerfield, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Billy Bmaal 2. Lahey E. Ballard 3. Clinton Jackson

Check here: ☒ when well is located on the County map. ☒ Deposit Received

SMITH PRINTING CO. • DIAL PO 5-5510

MS. AB

MAP ID 7 123 1-10

FORM NO. 263 AWP

[?] Alphabetical file [X] X-file [ ] Pinned [ ] Depth Plotted

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 2922 A
Time of Filing 11:30 A.M.
Date Application Filed 5-26-64
Expiration Date 9-26-64
Date Recommended by County Committee 6-1-64
Size of Pump 8 Maximum Yield 1000 GPM

X

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, J. B. Noland (NAME OF LANDOWNER) Box 16, Summerfield, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated.

County Deaf Smith

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

~~NW¼~~, ~~NE¼~~, SW¼, ~~SE¼~~ of Section 158 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about Soon, 19__

Survey ____ Abstract ____

This well will be located ____ miles N or S and 6½ miles ~~E~~ or W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

Township ____ Range ____

Labor ____ League ____

MARK DOT INSIDE CIRCLE 3 within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

Location of proposed Well as submitted by applicant is 475 measured yards from (N S) S (MARK OUT ONE THAT DOES NOT APPLY) and 10 measured yards from (E W) W property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ____ measured yards from proposed well site.
Owned by ____
Address ____

No. 2 ____ measured yards from proposed well site.
Owned by ____
Address ____

RECEIVED JUN 3 1964 HIGH PLAINS UNDERGROUND WATER CONS. DIST. No. 1 LUBBOCK, TEXAS

No. 3 ____ measured yards from proposed well site.
Owned by ____
Address ____

NORTH / WEST / EAST / SOUTH

COMMENT

No wells within 440 yds.

Corrects measurements on original permit.

1 1/16 in. ... 440 yds. ... Minimum for 10-in. well ... yield—more than 1000 G.P.M.
1 in. ... 400 yds. ... Minimum for 8-in. well ... yield—500 to 1000 G.P.M.
3/4 in. ... 300 yds. ... Minimum for 6-in. well ... yield—390 to 560 G.P.M.
5/8 in. ... 250 yds. ... Minimum for 5-in. well ... yield—265 to 390 G.P.M.
1/2 in. ... 200 yds. Minimum for 3 or 4-in. well ... yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: J. B. Noland (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Box 16, Summerfield, Tex (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Billy Bonaul 2. Lahey E. Ballard 3. Clinton Jackson

Check here: [X] when well is located on the County map. [X] Deposit Received.

SMITH PRINTING CO. - DIAL PO 3-5819

AB

FORM NO. 265AWR

✓ ✓

ORIGINAL—DISTRICT OFFICE COPY

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 5621
Date Received 4-25-78
Permit Size of Pump 5 Maximum in Yield 390 GPM

1. Land Owner Griffin & Brand Address ____
2. Well located ____ miles N. 4 miles S. ____ miles E. 5 miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. ~~NW¼ NE¼~~ SW¼ ~~SE¼~~ Section 158 Block M-7 Survey ____ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 16 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	270	277	Red Bed
3	30	Caliche			
30	60	Caliche			
60	90	Caliche, Sand & Sandrock			
90	120	Sand, Sandrock & Some Clay			
120	150	Sand & Sandrock			
150	180	Sand			
180	210	Sand & Sandrock			
210	240	Sand, Sandrock & Some Clay			
240	270	Sand, Sandrock & Clay			RECEIVED MAY 30 1978

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller B Wall & Son's Drilling Inc Address P.O. Box 1815 Date Drilled 3-17- 19 78

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 12 3/4 in. Total casing length 277 ft.
7. Casing perforations: from 202 ft. to 277 ft. Size 1/8 Row Screen Number of rows Millelot
8. Pump Column: Size 6 in. Column, shaft length 260 ft. Suction pipe size 6 in. Suction pipe length 3 ft.
9. Pump bowls: Size 10 Number of stages 6 Pump discharge pipe: Size 6 in.
10. Depth to water level 214 ft. Pump yield 300 GPM. Pumping level: 245 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower 40

Signature ____ (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

FORM NO. 263 AWP

GB

[X] Alphabetical file [X] X-file [X] Pinned [ ] Depth Plotted 123

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 2922
Time of Filing 9:45 A.M.
Date Application Filed 4-9-64
Expiration Date 8-9-64
Date Recommended by County Committee 4/15/64
Size of Pump 8 Maximum Yield 1000 GPM

X

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, J. B. Noland (NAME OF LANDOWNER) Box 16, Summerfield, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated.

County Deaf Smith

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

~~NW¼~~, ~~NE¼~~, SW¼, ~~SE¼~~ of Section 158 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about 2 weeks 19__

Survey ____ Abstract ____

This well will be located ____ miles N or S and 6½ miles ~~E~~ or W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

Township ____ Range ____

Labor ____ League ____

MARK DOT INSIDE CIRCLE 3 within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

Location of proposed Well as submitted by applicant is 390 measured yards from (N S) S (MARK OUT ONE THAT DOES NOT APPLY) and 10 measured yards from (E W) W property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 400 measured yards from proposed well site.
Owned by Chester Wiggians
Address Summerfield, Texas

No. 2 ____ measured yards from proposed well site.
Owned by ____
Address ____

No. 3 ____ measured yards from proposed well site.
Owned by ____
Address ____

NORTH / WEST / EAST / SOUTH

COMMENT

No other wells within 440 yds.

1 1/16 in. ... 440 yds. ... Minimum for 10-in. well ... yield—more than 1000 G.P.M.
1 in. ... 400 yds. ... Minimum for 8-in. well ... yield—500 to 1000 G.P.M.
3/4 in. ... 300 yds. ... Minimum for 6-in. well ... yield—390 to 560 G.P.M.
5/8 in. ... 250 yds. ... Minimum for 5-in. well ... yield—265 to 390 G.P.M.
1/2 in. ... 200 yds. Minimum for 3 or 4-in. well ... yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: J. B. Noland (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Box 16, Summerfield, Tex (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. J. T. McCatter 2. Lahey E. Ballard 3. Clinton Jackson

Check here: [X] when well is located on the County map. [X] Deposit Received.

SMITH PRINTING CO. - DIAL PO 3-5819

MS.

FORM NO. 1984 AFF.

ORIGINAL — District Office — File

THIS FORM MUST BE FILLED IN WITH TYPEWRITER

SUPPLEMENT TO APPLICATION

DEAF SMITH County No. 5621

APPLICATION AND AFFIDAVIT

I, Billy F. Wall, HEREBY CERTIFY: that upon the granting of a permit by the High Plains Underground Water Conservation District No. 1, to use a 6-inch column pipe at a distance less than that required by the rules and regulations of said District, I will equip my pump with impellers so that it will not pump more than 390 gallons of water per minute when said pump is operated at a rate of 1750 revolutions per minute and do hereby agree that the maximum output for this pump shall at all times, not exceed 390 gallons per minute, which rate has been set out by the rules and regulations of said District as the ordinary pumping capacity for a 5-inch pump, for which I qualify under the minimum spacing regulations as set forth by the District and I do hereby agree to furnish said District with a certificate or statement from a reliable pump company or water engineer, certifying that said pump has been equipped as above set forth.

The above mentioned pump is to be placed in a well on property owned by:

Billy F Wall

XXXXXXXXXXXXXXXXXX

ADDRESS GRIFFIN & BRAND, Hereford, Texas

in Deaf Smith County, Texas in

Section: 158 Block: M-7 Survey: ____
or
Labor: ____ League: ____ Survey: ____

in the southwest quarter of the section or labor

at 809 measured yards from the ~~North~~, South line of this quarter or labor (CROSS OUT ONE)

and 10 measured yards from the ~~East~~, West line of this quarter or labor. (CROSS OUT ONE)

Billy F Wall
SIGNATURE XXXXXX AGENT

May 17, 1978
DATE

RECEIVED MAY 30 1978

I do solemnly swear or affirm that I have read the above and foregoing statements and the facts contained therein are true and correct and I hereby agree to abide by the foregoing statements.

See Signature above
SIGNATURE XXXXXX AGENT

May 17, 1978
DATE

THE STATE OF TEXAS } BEFORE ME B. F. CAIN, COUNTY CLERK
COUNTY OF DEAF SMITH } XXXXXXXXXX in and for Deaf Smith County, Texas

on this day personally appeared Billy F/ Wall known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS 17th day of May A.D., 19 78

(L.S.)

B.F. CAIN, COUNTY CLERK
DEAF SMITH COUNTY
HEREFORD, TEXAS 79045

Wilma Clarke Deputy
Notary Public in and for Deaf Smith County, Texas

FORM NO. 288M-LW

- #1

Original---District Office Copy

FOR USE OF COMMITTEEMEN
Field Well No. 2672
Date Received 9-30-63
Permit Size of Pump 6 in. Maximum Yield 560 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

1. Land Owner Ky Lawrence Address Box 14 Summerfield Texas
2. Well located ___ miles N, 3 miles S, ___ miles E, 3 miles W of the town of Hereford
3. County Deaf Smith Labor ___ League ___ Abstract No. ___
4. NW¼ ~~NE¼ SW¼ SE¼~~ Section 158 Block M-7 Survey ___
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X ~~Spudder~~ MARK OUT ONE THAT DOES NOT APPLY Diameter of Well: 19 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	124	150	Sand w/ Some Clay
3	45	Caliche + Clay	150	180	Sand, Sand Rock, Little
45	60	Dry Sand + Caliche			Clay
		Rock	180	210	Sand & Sand Rock + Clay
60	90	Dry Coarse Sand +	210		Green + Brown Clay
		Sand Rock			Red Bed
90	118	Fine Brown Sand w/			
		Clay + Sand Rock			RECEIVED
118	124	Loose Clean Med.			LUBBOCK, TEXAS
		Sand			OCT 1963

REMARKS: HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling Address Hereford Tex. Date Drilled 6-25 1963

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new) used, gas line, or shop made. Diameter 16 in. Total casing length 210 ft.
7. Casing perforations: from 154 (129) ft. to 210 (154) ft. Size 3/16 (1/8) Number of rows 6 (8)
8. Pump Column: Size 6 in. Column, shaft length 200 ft. Suction pipe size 6 in. Suction pipe length 0 ft.
9. Pump bowls: Size 10 Number of stages 5 Pump discharge pipe: Size 6 in.
10. Depth to water level 128 ft. Pump yield 500 GPM. Pumping level: 150 ft.
11. Power Units: (Electrical), Natural Gas, Butane, Other ___ Horsepower 40

Signature ___ LANDOWNER OR AGENT TITLE ADDRESS

FORM NO. 288M-LW

Original---District Office Copy

FOR USE OF COMMITTEEMEN
Field Well No. 2922A
Date Received 6-2-64
Permit Size of Pump 8 in. Maximum Yield 1000 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

1. Land Owner J. B. Noland Address Box 16, Summerfield, Texas
2. Well located ___ miles N, ___ miles S, ___ miles E, 7 miles W of the town of Hereford
3. County Deaf Smith Labor ___ League ___ Abstract No. ___
4. ~~NW¼ NE¼~~ SW¼ ~~SE¼~~ Section 158 Block M-7 Survey ___
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: (Rotary) ~~Spudder~~ MARK OUT ONE THAT DOES NOT APPLY Diameter of Well: 19 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil	240	270	Sand
4	70	caliche	270	280	Sand + clay
70	116	Sand clay Rock	280	282	Red Bed
116	120	Sand Rock			
120	150	clay + Rock			
150	180	Sand clay			RECEIVED LUBBOCK, TEXAS
180	190	Clay Rock			
190	210	Sand			JUN 8 1964
210	240	clay Sand			HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling Address 519 J. Date Drilled 5/15 19 64

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new) used, gas line, or shop made. Diameter 16 in. Total casing length 284 ft.
7. Casing perforations: from 150 ft. to 280 ft. Size 1/4 Number of rows 6
8. Pump Column: Size 8 in. Column, shaft length 298 ft. Suction pipe size 8 in. Suction pipe length 11 ft.
9. Pump bowls: Size 12" Number of stages 5 Pump discharge pipe: Size 8 in.
10. Depth to water level 130 ft. Pump yield 1000 GPM. Pumping level: 120 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ___ Horsepower ___

Signature Big T Pump Co., Inc. - Box 827 - Hereford, Tex.
LANDOWNER OR AGENT TITLE ADDRESS

FORM NO. 269 AWP

MAP ID 9

☒ Alphabetical file ☒ X-file ☒ Posted ☐ Depth Plotted

Original—District Office Copy (Test hole)

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 2673
Time of Filing 5:00 P.M.
Date Application Filed 6-19-63
Expiration Date 10-19-63
Date Recommended By County Committee July 1, 1963
Size of Pump 6 Maximum Yield 560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Ky Lawrence (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

~~NW¼~~, NE¼, ~~SW¼~~, ~~SE¼~~ of Section 158 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

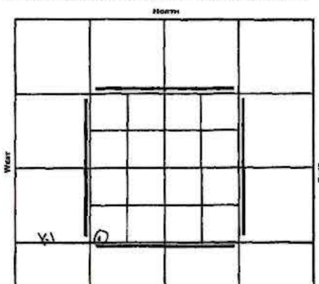
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

Drilling to start about Soon 19__

This well will be located 3 miles ~~N~~ or S and (MARK OUT ONE THAT DOES NOT APPLY) 3 miles ~~E~~ or W of the town of Hereford

MARK DOT INSIDE CIRCLE 3 within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.



1 1/10 in. .440 yds. ... Minimum for 10-in. well ... yield—more than 1000 G.P.M.
1 in. .... 400 yds. ... Minimum for 8-in. well ... yield—500 to 1000 G.P.M.
3/4 in. .... 300 yds. ... Minimum for 6-in. well ... yield—300 to 500 G.P.M.
5/8 in. .... 250 yds. ... Minimum for 5-in. well ... yield—265 to 300 G.P.M.
1/2 in. .... 200 yds. Minimum for 3 or 4-in. well ... yield—70 to 265 G.P.M.

Location of proposed Well as submitted by applicant is 10 measured yards from (N S) S (MARK OUT ONE THAT DOES NOT APPLY) and 800 measured yards from (E W) E property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 300 measured yards from proposed well site.
Owned by Applicant # 2672
Address ___

No. 2 ___ measured yards from proposed well site.
Owned by ___
Address ___

No. 3 ___ measured yards from proposed well site.
Owned by ___
Address ___

COMMENT

No other wells within 440 yds.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Ky Lawrence (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Lahey E. Ballard 2. Charles Packard 3. Billy B. Moore

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL PO 2-9619

AB

FORM NO 263 AWP

MAP ID 8

☒ Alphabetical file ☒ X-file ☒ Posted ☐ Depth Plotted

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 2672
Time of Filing 5:00 P.M.
Date Application Filed 6-19-63
Expiration Date 10-19-63
Date Recommended By County Committee 7-1-63
Size of Pump 6 Maximum Yield 560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Ky Lawrence (NAME OF LANDOWNER) Route 5, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NW¼, ~~NE¼~~, ~~SW¼~~, ~~SE¼~~ of Section 158 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

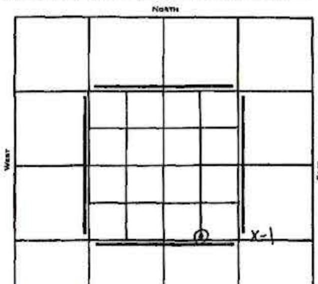
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

Drilling to start about Soon 19__

This well will be located 3 miles ~~N~~ or S and (MARK OUT ONE THAT DOES NOT APPLY) 3 miles ~~E~~ or W of the town of Hereford

MARK DOT INSIDE CIRCLE 3 within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.



1 1/10 ins. .440 yds. ... Minimum for 10-in. well ... yield—more than 1000 G.P.M.
1 in. .... 400 yds. ... Minimum for 8-in. well ... yield—500 to 1000 G.P.M.
3/4 in. .... 300 yds. ... Minimum for 6-in. well ... yield—300 to 500 G.P.M.
5/8 in. .... 250 yds. ... Minimum for 5-in. well ... yield—265 to 300 G.P.M.
1/2 in. .... 200 yds. Minimum for 3 or 4-in. well ... yield—70 to 265 G.P.M.

Location of proposed Well as submitted by applicant is 10 measured yards from (N S) S (MARK OUT ONE THAT DOES NOT APPLY) and 220 measured yards from (E W) E property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 300 measured yards from proposed well site.
Owned by Applicant # 2673
Address ___

No. 2 ___ measured yards from proposed well site.
Owned by ___
Address ___

No. 3 ___ measured yards from proposed well site.
Owned by ___
Address ___

COMMENT

No other wells within 440 yds.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Ky Lawrence (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Clinton Jackson 2. Lahey E. Ballard 3. Charles Packard

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL PO 2-9619

AB

FORM NO. 2548-LW

Original—District Office Copy

District File No. _____

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeemen for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN	
Field Well No.	1172
Date Received	2-7-55
Size of Well	8 in.
Maximum Yield	GPM

1. Well Owner J. B. Noland Address Box 16, Summerfield, Texas
2. Well located ____ miles N, ____ miles S, ____ miles E, 6½ miles W of the town of Hereford, Tex.
3. County Deaf Smith Labor ____ League ____ Homestead ____
4. NW¼ NE¼ SW¼ SE¼ (CIRCLE ONE) Section 158 Block M-7 Survey ____
5. ACTUAL LOCATION OF THIS WELL IS { 465 measured yards from N or S line of this tract of land; 660 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil			
3	15	Caliche			
15	30	Clay			
30	110	Sandy Clay			
110	222	Sand			
222	230	Red Bed			

HIGH PLAINS UNDERGROUND WATER CONS. DIST. No. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller J. H. Fish Address Hereford, Texas Date Drilled Jan. 27 1955

DESCRIPTION OF WELL

6. Casing: new, used, gas line, or shop made Diameter 16 x ½ in. Total length 230 ft.
   130 to 170 - ½" - 6 row
7. Casing perforations: from 170 ft to 230 ft. Size ½ Number per foot 6 row
8. Pump Column: Size 8 in. Total length 200 ft. Suction pipe: Size 8 in. Length 17 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level ____ ft. Pump discharge 1000 GPM. Pumping level: 165 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature Big T Pump Co., Hereford, Texas (OWNER OR AGENT / TITLE / ADDRESS)

Final Completion of Well — Date Jan. 28 '55 19__

TEX HOLE

FORM NO. 2548-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeemen for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN	
Field Well No.	2673
Date Received	9-30-63
Permit Size of Pump	6 in. Maximum Yield 560 GPM

1. Land Owner Ky Lawrence Address Box 14 Summerfield Tex.
2. Well located ____ miles N, 3 miles S, ____ miles E, 3 miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. ~~NW¼~~ NE¼ ~~SW¼~~ ~~SE¼~~ Section 158 Block M-7 Survey ____ (MARK OUT WORDS THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X ~~Cable~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 11 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	180	195	Brown Clay
3	45	Caliche + Clay	195	210	Green, Yellow, Brown
45	60	Dry Sand + Caliche Rock			Clay + Shale
60	90	" Coarse " + Sand Rock	210	225	Brown Clay
90	120	Fine Brown Sand w/ Some Clay + Sand Rock	225	240	Green, Brown + Red Clay
120	135	Loose Clean Med. Sand			
135	170	Sand w/ Clay + Sand Rock			
170	180	White + Brown Clay w/ Some Small Gravel			

REMARKS: Did Not Ream

HI-PLAINS UNDERGROUND WATER-CONS. DIST. No. 1 1963

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling Co Address Hereford Texas Date Drilled 6/22 1963

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(Test Hole Only) (This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made, Diameter ____ in. Total casing length ____ ft.
7. Casing perforations: from ____ ft. to ____ ft. Size ____ Number of rows ____
8. Pump Column: Size ____ in. Column, shaft length ____ ft. Suction pipe size ____ in. Suction pipe length ____ ft.
9. Pump bowls: Size ____ Number of stages ____ Pump discharge pipe: Size ____ in.
10. Depth to water level ____ ft. Pump yield ____ GPM. Pumping level: ____ ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature ____ (LANDOWNER OR AGENT / TITLE / ADDRESS)

PINNED X-FILE MAP ID 12

FORM NO. 289 AWP

Original—District Office Copy

District File No. 993 (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

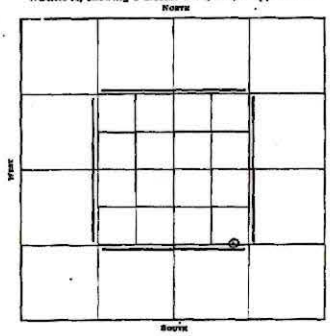
INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for approval. (PLEASE TYPE or PRINT.)

FIELD WELL NO.	1690
DATE APPLICATION FILED OUT	8-1-56
DATE APPROVED BY COUNTY COMMITTEE	8-16-56
SIZE OF PUMP 8	MAXIMUM YIELD 1000 GPM

I, Ky Lawrence (J. B. Noland) (NAME OF LANDOWNER) Route 5 Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1, for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. NW¼, NE¼, SW¼, SE¼ of Section 158 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
   Survey ____
3. Labor ____ League ____
4. Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)
5. Drilling to start about Soon 19__
   This well will be located: 2 miles N or S and 4 miles E or W of the town of Hereford, Texas
6. Permit good for 120 days only from date of approval.

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest wells, and/or applications.



Please Make Sure Your Measurements Are Correct—They Will Be Checked for Accuracy

Location of Proposed Well as submitted by applicant is 10 measured yards from (N S) and 60 measured yards from (E W) property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number the three adjacent wells, and/or applications, on the plat as 1, 2 and 3, to correspond with the following:

Well 1 ____ measured yards from proposed well. Owned by ____ Address ____

Well 2 ____ measured yards from proposed well. Owned by ____ Address ____

Well 3 ____ measured yards from proposed well. Owned by ____ Address ____

SCALE FOR ABOVE PLAT

1 1/10 inches	440 yards	Minimum for 10-inch well
1 inch	400 yards	Minimum for 8-inch well
3/4 inch	300 yards	Minimum for 6-inch well
5/8 inch	250 yards	Minimum for 5-inch well
1/2 inch	200 yards	Minimum for 3 or 4-inch well

COMMENTS: This replacement and will be within 150 feet of abandoned well.

Dep. Transfer from 1584 PE

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by: J. B. Noland (SIGNATURE OWNER OR AGENT / TITLE / ADDRESS)

This permit approved subject to the rules for spacing from existing wells and/or prior permits

1. H. E. Walton 2. Grant Muse 3. W. Smalley

Check here [X] when well is located on the County map.

SMITH PRINTING CO - DIAL 3-2478

PINNED X-FILE MAP ID 10

FORM NO. 1944—REVISED 3-55

Original—District Office Copy

District File No. 334 (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

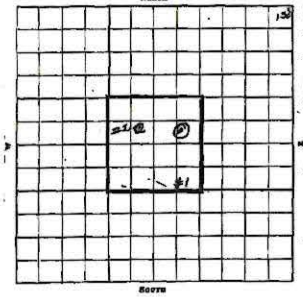
INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeemen for approval. (PLEASE TYPE or PRINT.)

FOR USE OF COMMITTEEMAN	
FIELD WELL NO.	1198
DATE RECEIVED	12-29-54
DATE APPROVED	1-10-55

I, J B Noland (NAME OF LANDOWNER) Summerfield, Texas Box 16 (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. Section 158 Block M-7
   Survey ____
3. Labor ____ League ____
4. Homestead ____ Abstract No. ____
5. Circle quarter section or labor in which well is to be located. NE¼ NW¼ SE¼ (SW¼)
6. Proposed use (municipal-industrial-irrigation) ____ Acres
7. Well will be pumped about 120 days per year.
8. Casing—new, used, gas line, or shop made—Dia 6 in. (CIRCLE TYPE USED)
9. Drilling to start about within two weeks 19__
10. Driller or Contractor ____ Address ____
11. Pump Size 8 Expected Gal. per Minute 1000 (CIRCLE EXPECTED PUMPS)
12. Type of Power—Electrical - Engine - Horsepower Gas

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor.)
MARK X, showing 3 closest adjacent wells.



This well will be located approximately ____ miles N, ____ miles E, ____ miles S, 6½ miles W, of the town of Hereford, Texas

LOCATION OF PROPOSED WELL as submitted by applicant is 465 measured yards from (N S) property line and 660 measured yards from (E W) property line. (CIRCLE N OR S) (CIRCLE E OR W)

Number the three adjacent wells on the map as 1, 2, and 3, to correspond with the following:

Existing well 1 465 measured yards from proposed well. Owned by Applicant Address ____

Existing well 2 465 measured yards from proposed well. Owned by Ky Lawrence Address ____

Existing well 3 ____ measured yards from proposed well. Owned by ____ Address ____

COMMENT: There are no other wells within one half mile of the proposed location.

Dep $26.00 NH

FOR FURTHER COMMENT USE BACK OF FORM

I hereby certify that I have read the foregoing statement, and that each and all of the items therein contained are true to the best of my knowledge and belief, and I agree that I must furnish my County Committeeman, as required by law, the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: J. B. Noland (SIGNATURE OWNER OR AGENT / TITLE / ADDRESS) Summerfield Texas

APPROVED BY

1. H. E. Walton 2. P. L. Carmichael 3. Frank J. Bergner

I, the undersigned, do hereby certify that I have furnished to my County Committeeman the completed well registration and log of well as required by Article 7880-3c, Sec. D-3, Texas Revised Civil Statutes.

Received by: H. E. Walton (COUNTY COMMITTEEMAN) (COUNTY) ____ (APPLICANT) ____ (DATE) 19__

SMITH PRINTING CO - DIAL 3-2478

FORM NO. [illegible]

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 4878
Date Received 12-6-73
Permit Size of Pump 5 in Maximum Yield 390 GPM

1. Land Owner Griffin & Brand Sales Agency, Inc. Address P.O. Box 833 Hereford, Texas 79045
2. Well located ____ miles N, 6 miles S, ____ miles E, 5 miles W of town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. ~~NW¼~~ ~~NE¼~~ SW¼ ~~SE¼~~ Section 158 Block M-7 Survey ____
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ____ Spudder ____ Diameter of Well, ____ Inches.
MARK OUT ONE THAT DOES NOT APPLY

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil			
3	30	Caliche			
30	50	Caliche			
50	80	Sand, Sandrock, & Clay			
80	100	Sand & Sandrock			
100	230	Sand, Sandrock, & Clay			
230	250	Sand & Some Sandrock			
250	257	Red Bed			
					RECEIVED DEC 7 1973

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Water Industries Inc. Address Box 871 Hereford, Tex. Date Drilled 11-7 19 73

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16" in. Total casing length 257' ft.
7. Casing perforations: from 190' ft. to 257' ft. Size 1/8" Number of rows 16
8. Pump Column: Size 6" in. Column, shaft length 240' ft. Suction pipe size 5" in. Suction pipe length 3' ft.
9. Pump bowls: Size 8" Number of stages 6 Pump discharge pipe: Size 5 [illegible] in.
10. Depth to water level 210' ft. Pump yield 225 GPM. Pumping level: 225' ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower 20 H.P.

Signature ____
LANDOWNER OR AGENT TITLE ADDRESS

FORM NO. 354R LW

Original—District Office Copy

District File No. 749
FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 1660
Date Received 1-7-57
Size of Pump 8 in Maximum Yield 1000 GPM

1. Well Owner Ky Lawrence (J. B. Noland) Address Route 6, Hereford, Texas
2. Well located ____ miles N, 2 miles S, ____ miles E, 4 miles W of the town of Hereford, Texa
3. County Deaf Smith Labor ____ League ____ Homestead ____
4. NW¼ NE¼ (SW¼) SE¼ (CIRCLE ONE) Section 158 Block M-7 Survey ____
5. ACTUAL LOCATION OF THIS WELL IS { 10 measured yards from N or S line of this tract of land. 60 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil			
3	25	Caliche			
25	60	Clay			
60	120	Sandy Clay			
120	150	Sand			
150	236	Sandy Clay			
236	240	Red Bed (240' to 289 Red Bed)			

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller J. H. Fish Drill Co. Address Hereford, Texas Date Drilled Sept. 12 1956

DESCRIPTION OF WELL

6. Casing: new, ~~used~~, gas line, ~~or shop made~~. Diameter 16 x ¼ in. Total length 240' ft.
7. Casing perforations: from ____ ft to ____ ft. Size ____ Number per foot ____ 60' of ¾" - 6 row; 60' of ¼" - 4 row
8. Pump Column: Size 8 in. Total length 216 ft. Suction pipe: Size 8 in. Length 10 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8" Std in.
10. Depth to water level ____ ft. Pump discharge ____ GPM. Pumping level: ____ ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature Big T Pump Co., Inc., Hereford, Texas
OWNER OR AGENT TITLE ADDRESS

Final Completion of Well — Date Sept. 17 '56 19__.

MAP ID 16

Form No. 101 AWP PINNED X-FILE

District File No. 110
FOR USE OF DISTRICT OFFICE ONLY

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No. 2044
Date Application Filed 2-27-59
Time of Filing 3:25 P. M.
Date Recommended By County Committee 3/2/59
Size of Pump 8 Maximum Yield 1000 GPM

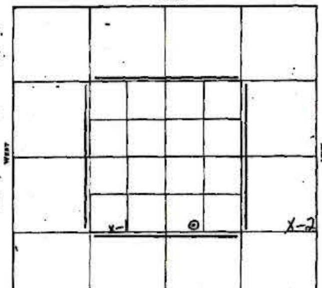
I, ~~ZF~~ J. Frances Dobbs (NAME OF LANDOWNER) 10762 Hoyt, Portland 20, Ore (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1. for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. NW¼, NE¼, (SW¼), SE¼ of Section 173 Block M-7
MARK OUT ONES THAT DO NOT APPLY
Survey ____ Abstract ____
3. Labor ____ League ____
4. Proposed Use (Municipal-Industrial-Irrigation)
MARK OUT ONES THAT DO NOT APPLY
5. Drilling to start about soon, 19__

This well will be located: { 4 miles ~~N~~ or S and 6 miles ~~E~~ or W of the (MARK OUT ONE THAT DOES NOT APPLY) town of Hereford, Texas

• Permit good for 4 months only from date of filing.

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest wells, and/or authorized well site.



Please Make Sure
Your Measurements Are Correct—
(They will be checked for accuracy)

Location of proposed Well as submitted by applicant is 20 measured yards from (~~N~~ south S) and 680 measured yards from (~~E~~ W) (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, and/or authorized well sites, on the plat as 1, 2, and 3, to correspond with the following:

Well 1 440 measured yards from proposed well site. abandoned well
Owned by ____
Address ____

Well 2 651 measured yards from proposed well site.
Owned by Chester Wiggains
Address Box 8, Summerfield, Texas

RECEIVED
LUBBOCK, TEXAS
MAR [illegible] 1959

Well 3 ____ measured yards from proposed well site.
Owned by ____
Address ____

HI PLAINS UNDERGROUND WATER DIST. NO. 1

SCALE FOR ABOVE PLAT

1 1/10 inches ...... 440 yards...... Minimum for 10-inch well
1 inch .... 400 yards...... Minimum for 8-inch well
3/4 inch .... 300 yards...... Minimum for 6-inch well
5/8 inch .... 250 yards...... Minimum for 5-inch well
1/2 inch .... 200 yards...... Minimum for 3 or 4-inch well

COMMENTS: There no other well within ¼ of mile except the abandoned well which 440 yards from propose well.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: J. Frances Dobbs, By Roy Phillips atty in fact (SIGNATURE LANDOWNER OR AGENT) Box 593 Hereford Tex (ADDRESS)

This permit recommended subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. [signature] 3. [signature]

Check here [X] when well is located on the County map. [X] Deposit Received. $10.00

SMITH PRINTING CO. - DIAL PO2-0499 LUBBOCK

AB

MAP ID 13

[X] [illegible] [X] 123 [X] NEW APP. BOOK [X] ABC FILE [X] X FILE [X] MASTER SHEET [X] WELLS COMPLETED BOOK [ ] PINNED [ ] DEPTH PLOTTED

FORM NO. 402 AWP

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No. 4878
Time of Filing 3:15 P.M.
Date Application Filed 10-16-73
Expiration Date 2-16-74
Date Recommended By County Committee 10-18-73
Size of Pump 5 Maximum Yield 390 GPM

I, Griffin & Brand Sales Agency, Inc. (NAME OF LANDOWNER) Box 833, Hereford, Texas 79045 (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

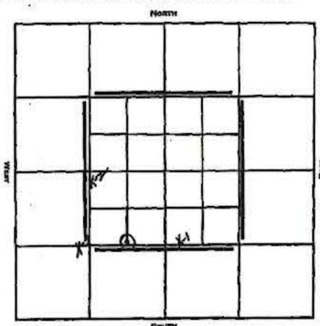
County Deaf Smith
~~NW¼, NE¼~~, SW¼, ~~SE¼~~ Section 158 Block M-7
MARK OUT ONES THAT DO NOT APPLY
Survey ____ Abstract ____
Township ____ Range ____
Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation)
MARK OUT ONES THAT DO NOT APPLY
Drilling to start about two weeks, 19__

This well will be located { 5 miles ~~N~~, S and 4½ miles ~~E~~ W of the (MARK OUT ONE THAT DOES NOT APPLY) town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is 10 measured yards from (~~N~~ S) and 219 measured yards from (~~E~~ W) (MARK OUT ONE THAT DOES NOT APPLY) quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 296 measured yards from proposed well site.
Owned by J. B. Noland
Address Hereford, Texas

No. 2 400 measured yards from proposed well site.
Owned by applicant #2922A
Address ____

No. 3 258 measured yards from proposed well site.
Owned by Chester Wiggains
Address Summerfield, Texas

COMMENT

No other wells within 440 yds.

1 1/10 in....440 yds....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in........400 yds....Minimum for 8-in. well...yield—600 to 1000 G.P.M.
3/4 in......300 yds....Minimum for 6-in. well...yield—390 to 600 G.P.M.
5/8 in......250 yds....Minimum for 5-in. well...yield—265 to 390 G.P.M.
1/2 in......200 yds..Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

RECEIVED OCT 1 9 1973

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

John Seiver

This notice given by: [signature] (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 833, Hereford, Texas 79045 (ADDRESS)

This permit recommended by County Committee subject to the rules for spacing from existing wells and/or authorized well site.

1. Jarrad C. Higgins 2. [signature] 3. W. L. Davis, Jr.

[X] Pinned on County Map [X] Deposit Received [ ] Refunded
Check No. ____

Smith Printing Co.—Lubbock

FORM NO. 3545-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 5528
Date Received 8-29-77
Permit Size of Pump 6 Maximum Yield 560 GPM

1. Land Owner: Chester Wiggains Address P.O. Box 8 Summerfield, Texas
2. Well located ____ miles N, 4 miles S, ____ miles E, 8.5 miles W of town of Hereford, Texas
3. County Deaf Smith Labor ____ League ____ Abstract No. ____

SW¼ Section 173 Block M-7 Survey ____
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ Diameter of Well: 25 inches.
MARK OUT ONE THAT DOES NOT APPLY

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	270	300	Sand & Sandrock
3	30	Caliche	300	330	Sand & Sandrock
30	60	Caliche	330	360	Sand, Sandrock & Clay
60	90	Caliche, Sand & Sandrock	360	376	Sand & Clay
90	120	Sand, Sandrock & Clay	376	385	Red Bed
120	150	Sand & Sandrock			
150	180	Loose Sand & Sandrock			
180	210	Sand & Some Sandrock			
210	240	Sand & Some Sandrock			
240	270	Loose Sand & Sandrock			

RECEIVED SEP 6 1977

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Wall & Son's Drilling Inc. Address P.O. Box 1815 Date Drilled 3-22- 19 77

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length 385 ft.
7. Casing perforations: from 210 ft. to 375 ft. Size 1/8" Number of rows Millslot
8. Pump Column: Size 8 in. Column, shaft length 340 ft. Suction pipe size 6 in. Suction pipe length 2 ft.
9. Pump bowls: Size 10" Number of stages 6 Pump discharge pipe: Size 6 in.
10. Depth to water level 218 ft. Pump yield 560 GPM. Pumping level: ____ ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature ____
LANDOWNER OR AGENT TITLE ADDRESS

FORM NO. 3545-LW

Original—District Office Copy District File No. ____
FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 2044
Date Received 4-15-59
Permit Size of Pump 8 Maximum Yield 1000 GPM

1. Land Owner J. Frances Dobbs Address 10762 Hoyt, Portland 20, Oregon
2. Well located ____ miles N, 4 miles S, ____ miles E, 6 miles W of the town of Hereford, Tex.
3. County Deaf Smith Labor ____ League ____ Abstract No. ____

XXXXXXXX SW¼ XXXX Section 173 Block M-7 Survey ____
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary Diameter of Well: 18 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	65	Caliche			
65	125	Sand and Sand Clay			
125	245	Sand, Little Strips of Stone			
245	280	Sand and Stone			
280	335	Med. Coarse Sand			
335	347	Red Clay			

RECEIVED APR 17 1959 UNDERGROUND DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller West Texas Drilling, Inc. Address Box 926, Hereford, Tex. Date Drilled 3/11 1959

DESCRIPTION OF WELL

6. Casing: new, Diameter 16 in. Total length 347 ft.
7. Casing perforations: from 245 ft to 347 ft. Size 3/16 Number per foot 6
8. Pump Column: Size 8 in. Total length 220 ft. Suction pipe: Size 8 in. Length 10 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level 140 ft. Pump yield 800 GPM. Pumping level: 185' ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature Big T Pump Co., Inc., Hereford, Texas
LANDOWNER OR AGENT TITLE ADDRESS

Final Completion of Well — Date Apr. 10'59 19__

FORM NO. 1924 APP.
ORIGINAL – District Office – File
THIS FORM MUST BE FILLED IN WITH TYPEWRITER

SUPPLEMENT TO APPLICATION
Deaf Smith County No. 5528

APPLICATION AND AFFIDAVIT

I, C. R. Winget, Agent HEREBY CERTIFY: that upon the granting of a permit by the High Plains Underground Water Conservation District No. 1, to use a 8 -inch column pipe at a distance less than that required by the rules and regulations of said District, I will equip my pump with impellers so that it will not pump more than 560 gallons of water per minute when said pump is operated at a rate of 1750 revolutions per minute and do hereby agree that the maximum output for this pump shall at all times, not exceed 560 gallons per minute, which rate has been set out by the rules and regulations of said District as the ordinary pumping capacity for a 6 -inch pump, for which I qualify under the minimum spacing regulations as set forth by the District and I do hereby agree to furnish said District with a certificate or statement from a reliable pump company or water engineer, certifying that said pump has been equipped as above set forth.

The above mentioned pump is to be placed in a well on property owned by:

Chester Wiggains
P.O. Box 8, Summerfield, Texas
ADDRESS

in Deaf Smith County, Texas in

Section: 173 Block: M-7 Survey: ____
or
Labor: ____ League: ____ Survey: ____

in the southwest quarter of the section or labor

at 15 measured yards from the XXXXX South line of this quarter or labor (CROSS OUT ONE)

and 25 measured yards from the XXX West line of this quarter or labor. (CROSS OUT ONE)

CRWinget
SIGNATURE (XXXXXX AGENT)

September 1, 1977
DATE

RECEIVED SEP 6 1977

I do solemnly swear or affirm that I have read the above and foregoing statements and the facts contained therein are true and correct and I hereby agree to abide by the foregoing statements.

CRWinget
SIGNATURE (XXXXXX AGENT)

September 1, 1977
DATE

THE STATE OF TEXAS } BEFORE ME B. F. CAIN, COUNTY CLERK
COUNTY OF Deaf Smith } XXXXXXXXXXX in and for Deaf Smith County, Texas

on this day personally appeared C. R. Winget, Agent
known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS 1st day of September, A.D., 19 77

(L.S.)

B. F. CAIN, COUNTY CLERK
DEAF SMITH COUNTY
HEREFORD, TEXAS 79045

Wilma Clark, Deputy
XXXXXXXXXXX Deaf Smith County, Texas

MAP ID 17

☑ ☑ ☑ NEW APP. BOOK ☑ ARC FILE ☑ A FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED 120 120A

FORM NO. 466 AWP

ORIGINAL—DISTRICT OFFICE COPY
FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No. 5528
Time of Filing 3:15 PM
Date Application Filed 2-11-77
Expiration Date 6-11-77
Date Recommended by County Committee 2-15-77
Size of Pump 6 Maximum Yield 560 GPM

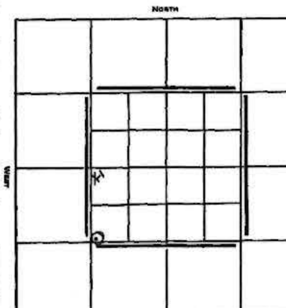
I, Chester Wiggains (NAME OF LANDOWNER) Box D, Summerfield, Texas 79085 (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
XXXXX SW¼ XXXX Section 173 Block M-7
MARK OUT ONES THAT DO NOT APPLY
Survey ____ Abstract ____
Township ____ Range ____
Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation)
MARK OUT ONES THAT DO NOT APPLY
Drilling to start about week, 19__
This well will be located { 4 miles XXXX S and 5 miles XXX W of the } town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest well or authorized well sites within ¼ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 15 measured yards from XX S) and 25 measured yards from XX W) quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 364 measured yards from proposed well site.
Owned by applicant #3151
Address ____

No. 2 ____ measured yards from proposed well site.
Owned by ____
Address ____

No. 3 ____ measured yards from proposed well site.
Owned by ____
Address RECEIVED FEB 22 1977

COMMENT

No other wells within 440 yds.

1 1/10 in.	440 yds.	Minimum for 10-in. well	yield—more than 1000 G.P.M
1 in.	400 yds.	Minimum for 8-in. well	yield—560 to 1000 G.P.M.
3/4 in.	300 yds.	Minimum for 6-in. well	yield—390 to 560 G.P.M.
5/8 in.	250 yds.	Minimum for 5-in. well	yield—265 to 390 G.P.M.
1/2 in.	200 yds.	Minimum for 3 or 4-in. well	yield—70 to 265 G.P.M

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

Chester Wiggains
This notice given by: Chester Wiggains Owner Box D, Summerfield, Texas
(SIGNATURE LANDOWNER OR AGENT) TITLE ADDRESS

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. James E. Higgins 2. Robert Solomon 3. [signature]

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded
Check No. ____

FORM NO. 450 AWP — 120 — MAP ID 19

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	4483
Time of Filing	3:30 P.M.
Date Application Filed	2-11-71
Expiration Date	6-11-71
Date Recommended by County Committee	2-17-71
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Chester Wiggains (NAME OF LANDOWNER) Box 8, Summerfield, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County: Deaf Smith

NW¼, XXXXXXXXXX Section 173 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

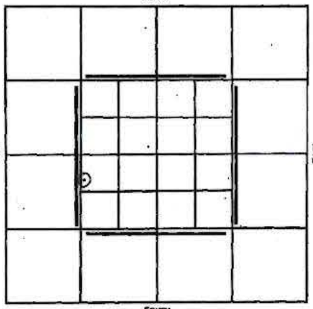
Drilling to start about Sept., 19__

This well will be located 4 miles S and 6 miles W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 582 measured yards from (N XX) and 5 measured yards from (XX W) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ______ measured yards from proposed well site.
Owned by ______
Address ______

No. 2 ______ measured yards from proposed well site.
Owned by ______
Address ______

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address RECEIVED FEB 22 1971

COMMENT

No wells within 440 yds.

1 1/10 ins...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in..........400 yds.....Minimum for 8-in. well...yield—560 to 1000 G.P.M.
3/4 in........300 yds.....Minimum for 6-in. well...yield—300 to 560 G.P.M.
5/8 in........250 yds.....Minimum for 5-in. well...yield—265 to 300 G.P.M.
1/2 in........200 yds..Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: [signature] Chester Wiggains (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Box 8, Summerfield, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. W. L. Davis, Jr. 2. George W. Ritter 3. [signature]

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded

Check No. ______

SMITH PRINTING CO. - DAIL. PO 5-5613

FORM NO. 464 AWP — MAP ID 18 — PINNED

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	3151
Time of Filing	12-15-64 -4:30 P.M.
Date Application Filed	12-15-65
Expiration Date	4-15-65
Date Recommended by County Committee	1-4-65
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, J. Frances Dobbs (NAME OF LANDOWNER) 10762 Hoyt, Portland, 20, Oregon (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County: Deaf Smith

~~NW¼, NE¼~~, SW¼, ~~SE¼~~ of Section 173 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

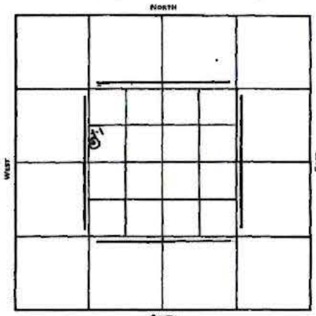
Drilling to start about 30 days, 19__

This well will be located 1 miles N or ~~S~~ and ______ miles E or W of the town of Summerfield

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 317 measured yards from (N S) N and 10 measured yards from (E W) W property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 67 measured yards from proposed well site.
Owned by Applicant-drilled before
Address Dist. - abandoned

No. 2 ______ measured yards from proposed well site.
Owned by ______
Address ______

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address ______

COMMENT

No wells within 440 yds.

RECEIVED ~~LUBBOCK, TEXAS~~ JAN 6 1965 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

1 1/10 ins...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in..........400 yds.....Minimum for 8-in. well...yield—560 to 1000 G.P.M.
3/4 in........300 yds.....Minimum for 6-in. well...yield—300 to 560 G.P.M.
5/8 in........250 yds.....Minimum for 5-in. well...yield—265 to 300 G.P.M.
1/2 in........200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: [signature] (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 593, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. J. E. McCathern 2. Billy Bonar 3. [signature] E. Ballard

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL PO 5-5613

M. S. AB

FORM NO. 3000-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN

Field Well No.	4483
Date Received	7-23-71
Permit Size of Pump	8
Maximum Yield	1000 GPM

1. Land Owner Chester Wiggains Address Box 8 Summerfield
2. Well located XXXX miles N, 4 miles S, ______ miles E, 6 miles W of town of Hereford (~~XXXXXXXXXXXXXXX~~)
3. County Deaf Smith Labor ______ League ______ Abstract No. ______
4. NW¼ XXXXX SW¼—SE¼ Section 173 Block M7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ______ ~~Spudder~~ ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 16 inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	top soil			
3	30	clay + rock			
30	90	clay-sand-rock			
90	180	sand + sandstone			
180	240	fine sand			
240	290	sand + sandstone			
290	378	sand + clay			
	378	red clay			
					RECEIVED JUL 29 1971

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Raymond Adams Address 601 E 11th St Date Drilled 7-1 1971

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, ~~used, gas line, or stovepipe~~. Diameter 16 in. Total casing length 374 ft.
7. Casing perforations from 174 ft. to 374 ft. Size 1/8 X 3 Number of rows 32
8. Pump Column: Size 8 in. Column, shaft length 280 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level 175 ft. Pump yield 800 GPM. Pumping level: 270 ft.
11. Power Unit: ~~Electrical~~, Natural Gas, ~~Butane~~, Other ______ Horsepower 80

Signature Chester Wiggains (LANDOWNER OR AGENT) (TITLE) Box 8 Summerfield, Tex (ADDRESS)

FORM NO. 3000-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN

Field Well No.	3151
Date Received	2-8-65
Permit Size of Pump	8
Maximum Yield	1000 GPM

1. Land Owner J. F. Dobbs Address c/o Big T Pump Co., Hereford, Texas
2. Well located 1 miles N ______ miles S ______ miles E ______ miles W of the town of Summerfield
3. County Deaf Smith Labor ______ League ______ Abstract No. ______
4. NW¼ NE¼ (SW¼) SE¼ Section 173 Block M-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ______ ~~Spudder~~ ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 28 Inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	30	Caliche			
30	33	Sandstone			
33	90	Sand, Clay & Caliche			
90	120	Sand & Stone, Some Clay			
120	155	Sand & Clay Streaks			
155	230	Sand			
230	240	Sand & Stone			
240	375	Sand, Some Stone			
375	387	Red Bed			

RECEIVED LUBBOCK, TEXAS FEB 9 1965 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller West Texas Drilling, Inc. Address Box 926, Hereford, Tex. Date Drilled January 18 1965

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, ~~XXXXXXXXXXXXXXXXXXXX~~ Diameter 16 in. Total casing length 387 ft.
7. Casing perforations: from 156 ft. to 377 ft. Size ______ Number of rows ______ (221' 16 row 1/8; 10' Blank)
8. Pump Column: Size 8 in. Column, shaft length 250 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12" Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level 150 ft. Pump yield 1000 GPM. Pumping level: 217 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ______ Horsepower ______

Signature Big T Pump Co., Inc.—Box 827—Hereford, Tex. (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

STATE OF TEXAS WELL REPORT for Tracking #305344

Owner:	BRANDON SIDES	Owner Well #:	No Data
Address:	17400 WHITE WING ROAD CANYON, TX 79015	Grid #:	10-12-9
Well Location:	No Data	Latitude:	34° 45' 44" N
		Longitude:	102° 30' 38" W
Well County:	Deaf Smith	Elevation:	No Data
Type of Work:	New Well	Proposed Use:	Irrigation

Drilling Start Date: 10/17/2012 Drilling End Date: 10/18/2012

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	20	0	372

Drilling Method: Reverse Circulation

Borehole Completion: Filter Packed

	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
Filter Pack Intervals:	10	372	Gravel	3/8

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	-1	10	CEMENT

Seal Method: Unknown

Sealed By: Driller

Distance to Property Line (ft.): No Data

Distance to Septic Field or other concentrated contamination (ft.): No Data

Distance to Septic Tank (ft.): No Data

Method of Verification: No Data

Surface Completion: Surface Slab Installed

Water Level: No Data

Packers: No Data

Type of Pump: No Data

Well Tests: No Test Data Specified

	Strata Depth (ft.)	Water Type
Water Quality:	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: HI PLAINS DRILLING, INC.
P. O. BOX 730
ABERNATHY, TX 79311

Driller Name: SELSO TORREZ License Number: 58987

Comments: No Data

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	4	TOP SOIL
4	25	CALICHE AND CLAY
25	60	SAND, SANDY CLAY, SANDSTONE
60	93	SAND, HARD SANDSTONE, CLAY STRKS
93	96	SAND, HARD SANDSTONE
96	116	SAND, SANDY CLAY, SANDSTONE
116	206	FINE SAND, SANDSTONE
206	228	SAND, SANDY CLAY, SANDSTONE
228	256	FINE SAND, HARD SANDSTOEN
256	316	SAND, SANDY CLAY, SANDSTONE
316	330	SANDY CLAY, SANDSTONE, A LITTLE GRVL
330	346	SANDY CLAY, SANDSTONE
346	356	COARSE SAND, GRVL, CLAY, SNDSTN
356	368	SAND, SANDY CLAY, SNDSTN

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.) New/Used Type Setting From/To (ft.)
12 3/4 N BLANK STEEL +1 - 266 .188
12 3/4 N MILLSLOT PERF 48 SPF 266 - 372 .188

☐ PMA ☐ Platted ☐ Mailed ☐ Wells Completed ☐ GPS Correction ☐ Mastersheet Deposit: ☐ Forfeited ☐ Refunded
x Ogallala
___ Dockum
Check # ___

County	Deaf Smith
GIS Permit No.	6839
Time Filed	10:30
Date Filed	9-11-12
Expiration Date	5-11-13
Max Allowed Production	265 GPM

ORIGINAL - DISTRICT OFFICE

High Plains Underground Water Conservation District No. 1

Application For Water Well Permit

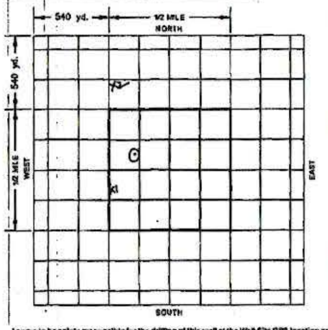
Brandon Sides — NAME OF LANDOWNER

17400 Whitewing Canyon, TX 79015 (806)584-8739 — LANDOWNERS ADDRESS/PHONE NUMBER

hereby make an application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill a water well at the site described below:

County Deaf Smith
(NW ¼) NE ¼ SW ¼ SE ¼
Block M-7 Section 173
Survey ___ Abstract No. ___
Township ___ Range ___
Labor ___ League ___
Other ___

CIRCLE TYPE OF WELL TO BE DRILLED
Municipal - Industrial - Irrigation - Domestic
Other: ___
Drilling will start on or about ASAP
Tract located ___ N, 8 S,W ___ E, ___ W
miles, of the town of Hereford



DISTRICT USE ONLY

Well Site GPS:
Lat 34.76219
Long -102.51063

339 yards N or (S) of accepted property line, which is fence line
Lat/Long: 34.76499 -102.51063

191 yards (E) or W of accepted property line, which is FM 1057
Lat/Long: 34.76219 -102.51754

Distance in yards to wells within 540 yards (maximum of 3) of proposed well site. Number to correspond with grid.

X-1 306 measured yards from proposed well site.
Permit No. 4483
Lat/Long: 34.76010 -102.51234

X-2 490 measured yards from proposed well site.
Permit No. 4061
Lat/Long: 34.76603 -102.51220

X-3 ___ measured yards from proposed well site.
Permit No. ___
Lat/Long: ___

COMMENT / EXPLANATION
No Other Valid Wells Within 540 Yards

I agree to be solely responsible for the drilling of this well at the Well Site GPS location as stated on this application. I further agree to be solely responsible for informing the well driller of this Well Site GPS location and in making certain that the well is drilled within a ten (10) yard radius of the Well Site GPS location. I agree to abide by all minimum spacing requirements of the High Plains Underground Water Conservation District No. 1 should it become necessary to drill the proposed well site in another location other than the exact Well Site GPS location but within the ten (10) yard radius noted above.

I will furnish the district the complete well registration and log immediately upon completion of this well and prior to the production of water from site identified.

I further agree not to allow irrigation tailwater to escape from land on which this well is used for irrigation nor to convey water from this well in an open, unlined ditch, nor to "waste" the ground water from this well as defined by Section 36.001 of the Texas Water Code. I understand that if I violate any of this agreement, the Board of Directors of the District may order that I may no longer use the well for any purpose until the problem is permanently resolved.

If the General Manager/Designee shall recommend the granting of the application and if there be no contest thereon or conflicting application, the applicant may thereupon proceed at his own risk to drill such well. Should the applicant proceed to drill such well prior to the application having been officially granted by the Board, applicant assumes sole responsibility for potentially losing the well site, all expenses associated with the drilling and equipping of said well, potential expenses of the District associated with any legal proceeding related to said well, and any other risks of any type which might be associated with said well. The application shall not, however, be officially granted until the same shall have been passed upon and granted by the Board of Directors of the High Plains Underground Water Conservation District No. 1.

I have reviewed the information contained within this application, including the Well Site GPS location, and agree to be bound by all terms and conditions of this application and of the rules and regulations of the High Plains Underground Water Conservation District No. 1 and all applicable laws of the State of Texas, as may be amended from time to time.

TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL ABOVE INFORMATION IS TRUE AND ACCURATE.

[signature] Dwain Coody 3971 E US Hwy 60 Hereford, TX 79045 (806)344-6857
SIGNATURE OF APPLICANT — PRINTED NAME — ADDRESS — TELEPHONE

RULE BOOK RECEIVED ___ owner/agent Initials I do ☐ or do not ☐ receive the Cross Section

Recommended for approval to the Board of Directors of High Plains Underground Water Conservation District No. 1 by the General Manager/Designee: Sherry Stephens Date recommended for approval: 9-12-2012

DATE BOARD APPROVED: ___ Date Log Mailed: ___ By: ___ REV

ORIGINAL - DISTRICT OFFICE

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

County	Deaf Smith
Permit No.	10839
Date Received	12-5-12
Pump Size	Maximum in Yield 265 GPM

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Land Owner Brandon Sides Address 17400 Whitewing Canyon TX 79015

Well located ___ miles N, 8 miles SW miles E, ___ miles W of the town of Hereford

County Deaf Smith Labor ___ League ___ Abstract No. ___

(NW ¼) NE ¼ SW ¼ SE ¼ (Circle One) Section 173 Block M-7 Survey ___

Township ___ Range ___

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ___, Reverse Rotary x, Air ___, Spudder ___, Other ___, Diameter of Well: 20 inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	top soil	368	372	red and blue clay
4	25	caliche and clay			
25	60	sand, sandy clay, sandstoen			
60	93	sand, hard sandstone, clay strks			
93	96	sand, hard sandstone			
96	116	sand, sandy clay, sandstone			
116	206	fine sand, sandstone			
206	228	sand, sandy clay, sandstone			
228	256	fine sand, hard sandstone			
256	316	sand, sandy clay, sandstone			
316	330	sandy clay, sandstone, a little grvl			
330	346	sandy clay, sandstone			
346	356	coarse sand, grvl, clay, sndstn			
356	368	sand, sandy clay, sandstone			

Gravel packed: Yes x No ___ Gravel Size 3/8 Quantity in yards 69

Cementing record: filled with cement between casing and wall of well from 10 feet to surface, including pump base.

Casing: Steel x, Plastic ___, Other ___ Diameter 12 3/4 in. Total casing length including screen or perforated casing 372 ft.

Manufactured well screen from ___ ft. to ___ ft. Size ___ Number of rows ___

Casing perforated from 266 ft. to 372 ft. Size 48 SPF Number of rows ___

Latitude Of Well: N 34° 45' 43.9" Longitude Of Well: W 102° 30' 38.4"

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Hi Plains Drilling, Inc. (SIGNATURE) Address Box 730, Abernathy, TX Date drilled 10/17/12

Texas License No. 58987

DESCRIPTION OF PERMANENTLY INSTALLED PRODUCTION EQUIPMENT
(This Does Not Mean Testing or Development Pump)

Discharge pipe size 4" in. Pump Column: Size 4" in. Length 345 ft. Suction pipe length — ft.

Pump bowls: Size 6" Number of stages 6 Pump yield 250 GPM Estimated ___ Measured ✓

Depth to static water level 277 Ft. Estimated ___ Measured ✓ Pumping level: 340' ft.

Power Unit: Electrical ✓ Natural Gas ___ Other ___ Horsepower 30

Type of Pump: Turbine ___ Submersible ✓ Other ___ Well chlorinated after pump installed ___ (yes/no)

I hereby certify that the well was equipped as stated above.

Pump Installer [signature] (SIGNATURE) Address 3971 Hwy 60 Date 9-12-2012

Texas License No. 4504 I

If this is a replacement well, I certify that the abandoned well is properly capped or filled in accordance with state law and the rules of the district. To the best of my knowledge and belief, all above information is true and accurate.

Landowner ___ (SIGNATURE) Date ___

REV

ORIGINAL - DISTRICT OFFICE

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

County: Deaf Smith
Permit No.: 6840
Date Received: 12-5-12
Pump Size / Maximum in Yield: 265 GPM

Land Owner: Brandon Sides   Address: 17400 Whitewing, Canyon TX 79015

Well located ___ miles N, 8 miles SW ___ miles E, ___ miles W of the town of Hereford

County: Deaf Smith   Labor ___ League ___ Abstract No. ___

(NW¼) NE¼ SW¼ SE¼ (Circle One)   Section 173   Block M-7   Survey ___

Township ___   Range ___

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ___, Reverse Rotary x, Air ___, Spudder ___, Other ___, Diameter of Well: 20 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	top soil			
4	23	caliche and clay			
23	66	sand, sandy clay, sandstone hard			
66	106	fine sand, sandstone, clay			
106	217	sand, sandy clay, sandstone			
217	257	sand, sanstone			
257	275	sand, sandy clay, sandstone			
275	300	fine sand, sandstone			
300	335	sand, sandy clay, sandstone			
335	345	sand, sandy clay, a little grvl			
345	356	course sand, grvl, clay strks			
356	364	red and blue			

Gravel packed: Yes x No ___   Gravel Size 3/8   Quantity in yards 89

Cementing record: filled with cement between casing and wall of well from 10 feet to surface, including pump base.

Casing: Steel x, Plastic ___, Other ___ Diameter 12 7/8 in. Total casing length including screen or perforated casing 364 ft.

Manufactured well screen from ___ ft. to ___ ft. Size ___ Number of rows ___

Casing perforated from 260 ft. to 364 ft. Size 48 SPF Number of rows ___

Latitude Of Well: N 34° 45' 51.2" Longitude Of Well: W 102° 30' 31.3"

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller: Hi Plains Drilling, Inc. (SIGNATURE) Address Box 730, Abernathy, TX Date drilled 10/15/12

Texas License No. 58987

DESCRIPTION OF PERMANENTLY INSTALLED PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

Discharge pipe size 4" in. Pump Column: Size 4" in. Length 355' ft. Suction pipe length — ft.

Pump bowls: Size 6" Number of stages 6 Pump yield 200 GPM Estimated ___ Measured —

Depth to static water level 227' Ft. Estimated ___ Measured ✓ Pumping level: 346' ft.

Power Unit: Electrical ✓ Natural Gas ___ Other ___ Horsepower 70

Type of Pump: Turbine ___ Submersible ✓ Other ___ Well chlorinated after pump installed ___ (yes/no)

I hereby certify that this well was equipped as stated above.

Pump Installer: [signature] (SIGNATURE) Address 3971 Hwy 60 Date 12-5-12

Texas License No. 4504I

If this is a replacement well, I certify that the abandoned well is properly capped or filled in accordance with state law and the rules of the district. To the best of my knowledge and belief, all above information is true and accurate.

Landowner ___ (SIGNATURE) Date ___

REV 3/2010/G.000

MAP ID 21

STATE OF TEXAS WELL REPORT for Tracking #305345

Owner:	BRANDON SIDES	Owner Well #:	No Data
Address:	17400 WHITEWING CANYON, TX 79015	Grid #:	10-12-9
Well Location:	No Data	Latitude:	34° 45' 51" N
		Longitude:	102° 30' 31" W
Well County:	Deaf Smith	Elevation:	No Data
Type of Work:	New Well	Proposed Use:	Irrigation

Drilling Start Date: 10/15/2012   Drilling End Date: 10/16/2012

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	20	0	364

Drilling Method: Reverse Circulation

Borehole Completion: Filter Packed

	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
Filter Pack Intervals:	10	364	Gravel	3/8

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	-1	10	CEMENT

Seal Method: Unknown   Distance to Property Line (ft.): No Data

Sealed By: Driller   Distance to Septic Field or other concentrated contamination (ft.): No Data

Distance to Septic Tank (ft.): No Data

Method of Verification: No Data

Surface Completion: Surface Slab Installed

Water Level:	No Data
Packers:	No Data
Type of Pump:	No Data
Well Tests:	No Test Data Specified

368	372	RED AND BLUE CLAY

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

MAP ID 21

☐ PMA ☐ Mailed ☐ Wells Completed ☐ GPS Correction Deposit: ☐ Forfeited ☐ Refunded
☐ Plotted ☐ Mastersheet x Ogallala ___ Dockum   Check # ___

ORIGINAL - DISTRICT OFFICE

County: Deaf Smith
GIS Permit No.: 6840
Time Filed: 10:30
Date Filed: 9-11-12
Expiration Date: 5-11-13
Max Allowed Production: 265 GPM

High Plains Underground Water Conservation District No. 1

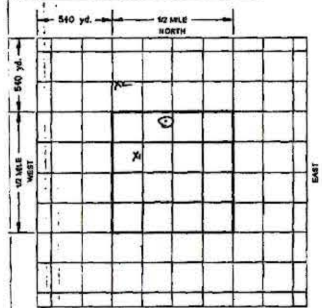
Application For Water Well Permit

Brandon Sides (NAME OF LANDOWNER)   17400 Whitewing Canyon, TX 79015 (806)584-8739 (LANDOWNERS ADDRESS/PHONE NUMBER)

hereby make an application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill a water well at the site described below:

County: Deaf Smith
(NW ¼) NE ¼ SW ¼ SE ¼
Block M-7 Section 173
Survey ___ Abstract No. ___
Township ___ Range ___
Labor ___ League ___
Other ___

CIRCLE TYPE OF WELL TO BE DRILLED
Municipal - Industrial - Irrigation - Domestic
Other: ___
Drilling will start on or about ASAP
Tract located ___ N, 8 S, W ___ E, ___ W
miles, of the town of Hereford



DISTRICT USE ONLY

Well Site GPS:
Lat: 34.76429
Long: -102.50871

82 yards N or S of accepted property line, which is fence line
Lat/Long: 34.76497 -102.50871

380 yards E or W of accepted property line, which is FM 1057
Lat/Long: 34.76429 -102.51250

Distance in yards to wells within 540 yards (maximum of 3) of proposed well site. Number to correspond with grid.

X-1 318 measured yards from proposed well site. Permit No. 6839
Lat/Long: 34.76219 -102.51063

X-2 408 measured yards from proposed well site, Permit No. 4061
Lat/Long: 34.76603 -102.51220

X-3 ___ measured yards from proposed well site. Permit No. ___
Lat/Long: ___

COMMENT / EXPLANATION

~~No Other Valid Wells Within 540 Yards~~

I agree to be solely responsible for the drilling of this well at the Well Site GPS location as stated on this application. I further agree to be solely responsible for informing the well driller of this Well Site GPS location and in making certain that the well is drilled within a ten (10) yard radius of the Well Site GPS location. I agree to abide by all minimum spacing requirements of the High Plains Underground Water Conservation District No. 1 should it become necessary to drill the proposed well site in another location other than the exact Well Site GPS location but within the ten (10) yard radius noted above.

I will furnish the district the complete well registration and log immediately upon completion of this well and prior to the production of water from site identified.

I further agree not to allow irrigation tailwater to escape from land on which this well is used for irrigation nor to convey water from this well in an open, unlined ditch, nor to "waste" the ground water from this well as defined by Section 36.001 of the Texas Water Code. I understand that if I violate any of this agreement, the Board of Directors of the District may order that I may no longer use the well for any purpose until the problem is permanently resolved.

If the General Manager/Designee shall recommend the granting of the application and if there be no contest thereon or conflicting application, the applicant may thereupon proceed at his own risk to drill such well. Should the applicant proceed to drill such well prior to the application having been officially granted by the Board, applicant assumes sole responsibility for potentially losing the well site, all expenses associated with the drilling and equipping of said well, potential expenses of the District associated with any legal proceeding related to said well, and any other risks of any type which might be associated with said well. The application shall not, however, be officially granted until the same shall have been passed upon and granted by the Board of Directors of the High Plains Underground Water Conservation District No. 1.

I have reviewed the information contained within this application, including the Well Site GPS location, and agree to be bound by all terms and conditions of this application and of the rules and regulations of the High Plains Underground Water Conservation District No. 1 and all applicable laws of the State of Texas, as may be amended from time to time.

TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL ABOVE INFORMATION IS TRUE AND ACCURATE.

[signature] Dwain Coody 3971 E US Hwy 60 Hereford, TX 79045 (806)344-6857

SIGNATURE OF APPLICANT   PRINTED NAME   ADDRESS   TELEPHONE

RULE BOOK RECEIVED ___ owner/agent initials   I do ☐ or do not ☐ receive the Cross Section

Recommended for approval to the Board of Directors of High Plains Underground Water Conservation District No. 1 by the General Manager/Designee: Sherry Stephens   Date recommended for approval: 9-12-2012

DATE BOARD APPROVED: ___   Date Log Mailed ___ By: ___   REV 11/08

FORM NO. 250 AWP BB 12-3

MAP ID 22

Alphabetical file — X-file — Filmed — Depth Plotted

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 3204
Time of Filing 8:00 A.M.
Date Application Filed 1-14-65
Registration Date 5-14-65
Date Recommended by County Committee 2-1-65
Size of Pump 8 Maximum Yield 1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Ky Lawrence (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

~~NW/4, NE/4, SW/4~~, SE/4 of Section 174 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey _____ Abstract _____

Township _____ Range _____

Labor _____ League _____

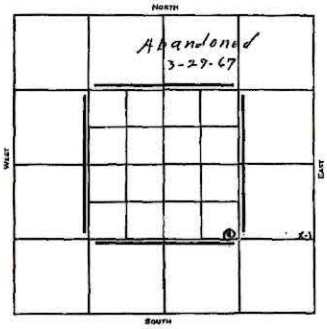
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about 3 weeks 19__

This well will be located 3½ miles N or S and 6 miles E or W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE 3 within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ½ mile.



1 1/10 in. 440 yds. ... Minimum for 10-in. well . yield—more than 1000 G.P.M.
1 in. ... 400 yds. .. Minimum for 8-in. well . yield—500 to 1000 G.P.M.
3/4 in. ... 300 yds. .. Minimum for 6-in. well . yield—300 to 500 G.P.M.
5/8 in. ... 250 yds. .. Minimum for 5-in. well . yield—200 to 300 G.P.M.
1/2 in. 200 yds. .Minimum for 3 or 4-in. well . yield—70 to 200 G.P.M.

Location of proposed Well as submitted by applicant is 10 measured yards from (N or S) S and 420 measured yards from (E or W) E property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number these adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the followings

No. 1 400 measured yards from proposed well site.
Owned by Applicant # 26884
Address _____

No. 2 _____ measured yards from proposed well site.
Owned by _____
Address _____

No. 3 _____ measured yards from proposed well site.
Owned by _____
Address _____

other COMMENT
No wells within 440 yds.

RECEIVED
LUBBOCK, TEXAS
FEB 3 1965
HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

I agree that this well will be drilled within ten (10) yards of the location specified, to avoid the minimum spacing requirements of existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by J. B. Roland (SIGNATURE LANDOWNER OR AGENT) Partner (TITLE) Box 16, Summerfield, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Leroy C. Ballard 2. T. McCutchen Jr. 3. Claude Rhodes

Check here ☐ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL PO 3-8619

M.S. AB

[redacted]

FORM NO. 2020-LW

Original—District Office Copy

FOR USE OF COMMITTEEMEN
Field Well No. 3204
Date Received 6-29-65
Permit Size of Pump 8 Maximum Yield 1000 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

1. Land Owner Ky Lawrence J. B. Roland Address Rt. 5, Hereford, Texas Box 16, Summerfield, Texas

2. Well located _____ miles N. 3½ miles S. _____ miles E. 6 miles W of the town of Hereford

3. County Deaf Smith Labor _____ League _____ Abstract No. _____

4. ~~NW/4~~ ~~NE/4~~ ~~SW/4~~ SE/4 Section 174 Block M-7 Survey _____ (MARK OUT ONES THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary Spudder _____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well _____ Inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	5	Top Soil			
5	45	Caliche + Clay			
45	85	Sand + Sand Rock - Clay			
85	125	Sand + Rock			
125	155	Some Sand + Clay			
155	245	Fine Sand + Some Rock			
245	285	Sandy Clay + Sand Rock			
285	287	Red Bed			

RECEIVED JUL 6 1965

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Wilco Drilling Co. Address 519 J. Date Drilled 2/16 19 65

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing (new) used, gas line, or shop made. Diameter 16" in. Total casing length 289 ft.
7. Casing perforations: from 126 191 240 ft. to 191 240 287 ft. Size ¾ ¾ ¾ Number of rows 6 6 4
8. Pump Column: Size 6 in. Column shaft length 250 ft. Suction pipe size 6 in. Suction pipe length 10 ft.
9. Pump bowls: Size #10" Number of stages 7 Pump discharge pipe: Size 6 in.
10. Depth to water level 134' ft. Pump yield 500 GPM. Pumping level: 210 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other _____ Horsepower _____

Signature Bigt Pump & Line - Box 827 - Hereford, Texas (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

[redacted]

	Strata Depth (ft.)	Water Type
Water Quality:	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: HI PLAINS DRILLING, INC.
P. O. BOX 730
ABERNATHY, TX 79311

Driller Name: SELSO TORREZ License Number: 58987

Comments: No Data

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	4	TOP SOIL
4	23	CALICHE AND CLAY
23	66	SAND, SANDY CLAY, SANDSTONE HARD
66	106	FINE SAND, SANDSTONE, CLAY
106	217	SAND, SANDY CLAY, SNDSTONE
217	257	SAND, SANDSTONE
257	275	SAND, SANDY CLAY, SANDSTONE
275	300	FINE SAND, SANDSTONE
300	335	SAND, SANDY CLAY, SANDSTONE
335	345	SAND, SANDY CLAY, A LITTLE GRVL
345	356	COARE SAND, GRVL, CLAY STRKS
356	364	RED AND BLUE

Casing: BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
12 3/4	N	BLANK STEEL	+1 - 260 .188
12 3/4	N	MILLSLOT PERF 48 SPF	260 - 364 .188

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

FORM NO. 528-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Ky Lawrence – Owner

FOR USE OF COMMITTEEMEN
Field Well No. 3791
Date Received 7-6-67
Permit Size Maximum of Pump 8 in. Yield 1000 GPM

1. Land Owner J. B. Noland – Tenant Address Rt. 5, Hereford, Texas
2. Well located ___ miles N, ½ miles S, ___ miles E, 6 miles W of the town of Hereford
3. County Deaf Smith Labor ___ League ___ Abstract No. ___
4. ~~NW~~ SE¼ Section 174 Block M-7 Survey ___

MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ~~Cable~~ Diameter of Well: 26 inches.

MARK OUT ONE THAT DOES NOT APPLY

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top soil	255	285	Sand
3	65	Clay & caliche	285	288	Red bed
65	130	Sand			
130	140	Sand & sandy clay			
140	145	Fine sand			
145	175	Med. sand			
175	230	Sand & sandrock			
230	235	Sandrock			
235	250	Sand			
250	255	Clay			

RECEIVED LUBBOCK, TEXAS JUL 17 1967 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling, Inc. Address Box 805, Hereford, Texas Date Drilled 4/13 19 67

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: New, ~~Used~~ Diameter 16 in. Total casing length 290 ft.
7. Casing perforations: from 140 ft. to 283 ft. Size 2 1/8 Number of rows 16
8. Pump Column: Size 6 in. Column shaft length 260 ft. Suction pipe size 6 in. Suction pipe length 10 ft.
9. Pump bowls: Size 10" Number of stages 7 Pump discharge pipe: Size 6 in.
10. Depth to water level 142' ft. Pump yield 500 GPM. Pumping level: 191 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ___ Horsepower ___

Signature: Big Pump by, Inc. – Box 827 – Hereford, Texas
LANDOWNER OR AGENT TITLE ADDRESS

High Plains Underground Water Conservation District No. 1.

Notification of abandonment of Irrigation
Industrial well
Municipal

Permit # 3204
County Deaf Smith

I Ky Lawrence do hereby certify that I have abandoned and ~~plugged~~/capped irrigation Well No. 3204.

Located in Deaf Smith County, on ~~[illegible]~~

SE 1/4 of Section 174 Block M-7,

Survey ___, Reason for abandonment ___

Caved in and broke the casing

RECEIVED LUBBOCK, TEXAS APR 4 1967 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

Date March 29, 19 67.

J. B. Ballard
Signature of ~~owner~~ or agent

FORM NO. 523 AWP

☐ Alphabetical file ☐ X-file ☑ Plotted ☐ Depth Plotted MAP ID 24

Original—District Office Copy FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No. 2688 A
Time of Filing 5:00 P.M.
Date Application Filed 9-16-63
Construction Date 1-16-64
Date Recommended by County Committee 9-18-63
Size of Pump 6 Maximum Yield 500 GPM

1. Ky Lawrence (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

~~NW¼, NE¼~~, SW¼, ~~SE¼~~ of Section 157 Block N-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

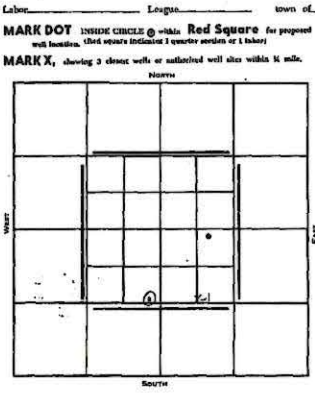
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

Drilling to start about Soon 19 ___

This well will be located 3 miles ~~N~~ or S and 3 miles ~~E~~ or W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ½ mile.



1 1/10 ins. 440 yds. Minimum for 10-in. well yield—more than 1000 G.P.M.
1 in. 400 yds. Minimum for 8-in. well yield—500 to 1000 G.P.M.
3/4 in. 300 yds. Minimum for 6-in. well yield—300 to 500 G.P.M.
5/8 in. 250 yds. Minimum for 5-in. well yield—255 to 300 G.P.M.
1/2 in. 200 yds. Minimum for 3 or 4-in. well yield—70 to 255 G.P.M.

Location of proposed Well as submitted by applicant is 10 measured yards from (N S) and 360 measured yards from (E W) property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 300 measured yards from proposed well site. Owned by Applicant # 2730 Address Hereford, Texas

No. 2 ___ measured yards from proposed well site. Owned by ___ Address ___

No. 3 ___ measured yards from proposed well site. Owned by ___ Address ___

COMMENT

No other wells within 440 yds.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by ___ (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Clinton Jackson 2. Edward Glasscock 3. John E. Ballard

Check here: ☑ when well is located on the County map. ☑ Deposit Received.

SMITH PRINTING CO. - DIAL PO 5-5818

AB

FORM NO. 523 AWP

☑ File ☑ TFS ☑ New Appl. Book ☑ Map File ☑ X File ☑ Master Sheet ☑ Wells Completed Book ☐ Plotted ☐ Depth Plotted MAP ID 23

Original—District Office Copy FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No. 3791
Time of Filing 1-10-67 8:30 A.M.
Date Application Filed 1-30-67
Construction Date 7-10-67
Date Recommended by County Committee 7-7-67
Size of Pump 8 Maximum Yield 1000 GPM

1. Ky Lawrence (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

~~NW¼, NE¼~~, SE¼ of Section 174 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

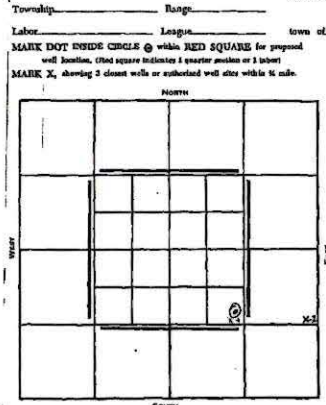
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

Drilling to start about Soon 19 ___

This well will be located 3½ miles ~~N~~ or S and 6 miles ~~E~~ or W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ½ mile.



1 1/10 ins. 440 yds. Minimum for 10-in. well yield—more than 1000 G.P.M.
1 in. 400 yds. Minimum for 8-in. well yield—500 to 1000 G.P.M.
3/4 in. 300 yds. Minimum for 6-in. well yield—300 to 500 G.P.M.
5/8 in. 250 yds. Minimum for 5-in. well yield—255 to 300 G.P.M.
1/2 in. 200 yds. Minimum for 3 or 4-in. well yield—70 to 255 G.P.M.

Location of proposed Well as submitted by applicant is 77 measured yards from (N S) and 40 measured yards from (E W) property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 67 measured yards from proposed well site. Owned by Applicant # 3204 abandoned Address ___

No. 2 425 measured yards from proposed well site. Owned by Applicant # 2688A Address ___

No. 3 ___ measured yards from proposed well site. Owned by ___ Address ___

RECEIVED LUBBOCK, TEXAS APR 4 1967 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

COMMENT

No other wells within 440 yds.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by J. B. Ballard (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Bill Gentry 2. L. B. Matthews 3. Billy Boone

☑ Plotted on County Map ☑ Deposit Received ☐ Refunded Check No. ___

SMITH PRINTING CO. - DIAL PO 5-5818

AB

☑ ☑ ☑ NEW APP. BOOK ☑ ABC FILE ☑ AFR2 ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM NO. 448 AWP

MAP ID 25

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	~~XXXX~~ 4866
Time of Filing	3:00 P.M.
Date Application Filed	8-1-73
Expiration Date	12-1-73
Date Recommended by County Committee	8-22-73
Size of Pump	6
Maximum Yield	560 GPM

I, Noland and Lawrence (NAME OF LANDOWNER) Box 16, Summerfield, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

~~XXXXXXX~~ SW¼, ~~XXX~~ Section 157 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

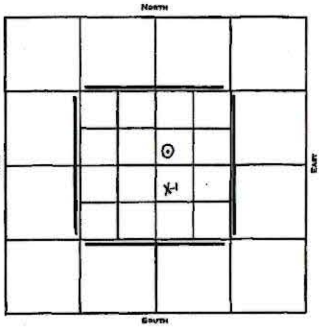
Drilling to start about soon, 19__

This well will be located 3½ miles ~~XXX~~ S and 4½ miles ~~XXX~~ W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.

NORTH



SOUTH

1 1/10 ins...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in........400 yds.....Minimum for 8-in. well...yield—580 to 1000 G.P.M.
3/4 in......300 yds.....Minimum for 6-in. well...yield—390 to 560 G.P.M.
5/8 in......250 yds.....Minimum for 5-in. well...yield—265 to 390 G.P.M.
1/2 in......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

Location of proposed Well as submitted by applicant is 500 measured yards from (~~N~~ S) and 500 measured yards from (~~E~~ W) quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 333 measured yards from proposed well site. To abandon
Owned by applicant - old well
Address drilled prior to district

No. 2 ______ measured yards from proposed well site.
Owned by ______
Address ______

No. 3 ______ measured yards from proposed well site.
Owned by RECEIVED SEP 24 1973
Address ______

COMMENT

No other wells within 440 yds.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

Joe Don Noland

This notice given by: J.B. Noland by Joe Don Noland (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 16, Summerfield, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. W.L. Davis Jr. 2. [signature] 3. George Ritter

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded

Check No. 2554

SMITH PRINTING CO.—LUBBOCK

FORM NO. 263 AWP

☒ Alphabetical file ☒ X-file ☒ Pinned ☐ Depth Plotted

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No.	2688
Time of Filing	8:30 AM
Date Application Filed	7-10-63 ✓
Expiration Date	11-10-63
Date Recommended by County Committee	7-16-63
Size of Pump	8
Maximum Yield	1000 GPM

I, Ky Lawrence (NAME OF LANDOWNER) Route 5, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

~~NW¼ NE¼~~ SW¼, ~~SE¼~~ Section 157 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

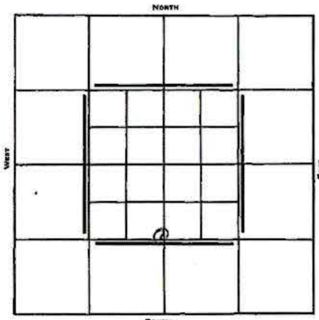
Drilling to start about Soon, 19__

This well will be located 3 miles ~~N~~ or S and 3 miles ~~E~~ or W of the town of Hereford, Texas (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH



SOUTH

1 1/10 ins. .440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in........400 yds.....Minimum for 8-in. well...yield—580 to 1000 G.P.M.
3/4 in......300 yds.....Minimum for 6-in. well...yield—390 to 560 G.P.M.
5/8 in......250 yds.....Minimum for 5-in. well...yield—265 to 390 G.P.M.
1/2 in......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

Location of proposed Well as submitted by applicant is 10 measured yards from (N S) S and 440 measured yards from (E W) W property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ______ measured yards from proposed well site.
Owned by ______
Address ______

No. 2 ______ measured yards from proposed well site.
Owned by ______
Address ______

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address ______

COMMENT

No wells within 440 yds.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Ky Lawrence (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Charles Packard 2. Haley E. Ballard 3. J. E. McCaithen

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL PO 5-8610

FORM NO. 8889-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN

Field Well No.	4866
Date Received	12-11-73
Permit Size of Pump	6 in.
Maximum Yield	560 GPM

1. Land Owner Noland and Lawrence J.B. Noland Address Box 14, Summerfield, Texas 79085

2. Well located 6 miles N, ___ miles S, South west miles E, ___ miles W of town of Hereford

3. County Deaf Smith Labor ______ League ______ Abstract No. ______

4. NW¼ NE¼ (SW¼) SE¼ Section 157 Block M-7 Survey B S & F (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 19" inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	5	Top Soil			
5	28	Caliche			
28	80	Sand			
80	110	Sand & Stone			
110	130	Sand - S ome Clay			
130	150	Fine Sand - Some Stone			
150	185	Fine Sand			
185	240	Sand & Stone			
240	285	Sand & Stone - Some Clay			
285	290	Red Bed (TD)			RECEIVED OCT 17 1973

REMARKS:

NEW WELL - GRAVEL PACK

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Big T Pump Company, Inc Address Hereford, Texas Date Drilled 8-18 19 73

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new), used, gas line, or shop made. Diameter 16" in. Total casing length 290 ft.
7. Casing perforations from 154 ft. to 290 ft. Size 1/8" Number of rows 32
8. Pump Column: Size 6" in. Column, shaft length 1-3/16 ft. Suction pipe size 0 in. Suction pipe length ___ ft.
9. Pump bowls: Size 6" Number of stages 6 Pump discharge pipe: Size 6" in.
10. Depth to water level 165' ft. Pump yield 500 GPM. Pumping level: 275 ft.
11. Power Unit: (Electrical) Natural Gas, Butane, Other ______ Horsepower 40HP

Signature BIG T PUMP COMPANY, INC., P.O. BOX 827, HEREFORD, TEXAS 79045 (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

#4

FORM NO. 8889-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN

Field Well No.	2688 A
Date Received	9-30-63
Permit Size of Pump	6 in.
Maximum Yield	560 GPM

1. Land Owner Ky Lawrence Address Box 14 Summerfield Tx

2. Well located ___ miles N ___ 3 ___ miles S ___ miles E ___ 3 ___ miles W of the town of Hereford

3. County Deaf Smith Labor ______ League ______ Abstract No. ______

4. ~~NW¼ NE¼~~ SW¼ ~~SE¼~~ Section 157 Block M-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X ~~Spudder~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 19 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	51	Caliche + Clay			
51	98	Dry Sand + Sand Rock			
98	125	Sand + Sand Rock			
125	155	Clay + Sand			[stamp]
155	245	Sand			
245	270	Sandy Clay			
270	274	Red Bed			HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Ward Drilling Co Address Hereford Tx Date Drilled 7/17 1963

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new), used, gas line, or shop made. Diameter 16 in. Total casing length 274 ft.
7. Casing perforations: from ~~210~~ 145 ft. to ~~270~~ 210 ft. Size 1/8" 3/16 Number of rows 8 6
8. Pump Column: Size 6 in. Column, shaft length 240 ft. Suction pipe size 6 in. Suction pipe length 10 ft.
9. Pump bowls: Size 10 Number of stages 6 Pump discharge pipe: Size 6 in.
10. Depth to water level 130 ft. Pump yield 500 GPM. Pumping level: 170 ft.
11. Power Unit: (Electric), Natural Gas, Butane, Other ______ Horsepower 40

Signature ______ (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

FORM NO. 3548-LW

District File No. _____ FOR USE OF DISTRICT OFFICE ONLY

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

FOR USE OF COMMITTEEMEN	
Field Well No.	1584
Date Received	8-1-56
Size of Pump 8 in Tested	Maximum 1000 GPM

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

1. Well Owner Ky Lawerence Address Route 5 Hereford, Texas
2. Well located ____ miles N, 3 miles S, ____ miles E, 3 miles W of the town of Hereford, Tex.
3. County Deaf Smith Labor ____ League ____ Homestead ____
4. NW¼ NE¼ (SW¼) SE¼ (CIRCLE ONE) Section 157 Block M-7 Survey ____
5. ACTUAL LOCATION OF THIS WELL IS { 700 measured yards from N or S line of this tract of land. / 500 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	6	Top Soil			
6	40	Caliche			
40	80	Clay			
80	137	Loose Sand			
137	160	Clay			(REPLACEMENT WELL)
160	210	Loose Sand			
210	212	Rock			
212	260	Coarse Sand			
260	304	Sand & Clay			
304	308	Red Bed			

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller J. H. Fish Address Hereford, Texas Date Drilled June 1 1956

DESCRIPTION OF WELL (Gravel Pack)

6. Casing: new, used gas line, Diameter 16 x ½ in. Total length 308 ft.
7. Casing perforations: from 108 ft to 308 ft. Size 1/8" Number per foot 12 row
8. Pump Column: Size 8 in. Total length 170 ft. Suction pipe: Size 8 in. Length 10 ft.
9. Pump bowls: Size 14 in Number of stages 2 Pump discharge pipe: Size 8 in.
10. Depth to water level ____ ft. Pump discharge 1000 GPM. Pumping level: ____ ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower 50

Signature Big T Pump Co., Inc., Hereford, Texas (OWNER OR AGENT / TITLE / ADDRESS)

Final Completion of Well — Date July 31 1956, 19__

High Plains Underground Water Conservation District No. 1.

Notification of abandonment of Irrigation / Industrial well / Municipal — Permit # 4866 — County Deaf Smith

I Joe Don Noland, Agent do hereby certify that I have abandoned and plugged/capped plugged Well No. drilledprior to dist.

Located in Deaf Smith County, on SW 1/4.

of Section 157 Block M-7

Survey ____ Reason for abandonment not deep enough

RECEIVED SEP 24 1973

Date August 1, 19 73.

Noland and Lawrence
By Joe Don Noland, Agent
Box 454
Hereford, Texas 79045

Joe Don Noland
Signature of owner or agent

FORM NO. 243 AWP

Original—District Office Copy

☐ Alphabetical file ☒ X-file ☐ Posted ☐ Depth Plotted — MAP ID 27 — 123

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	2923
Date of Filing	9:45 A.M.
Date Application Filed	4-8-66
Expiration Date	4-8-66
Date Reexaminated by Cleaar Committee	4/15/66
Size of Pump 8 Maximum Tested	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Ky Lawrence (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

N½, NE¼, SW¼, SE¼ of Section 157 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about 2 weeks, 19__

Survey ____ Abstract ____

Township ____ Range ____

This well will be located { ____ miles N or S and 6½ miles E or W of the (MARK OUT ONE THAT DOES NOT APPLY)

Labor ____ League ____

town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

Location of proposed Well as submitted by applicant is 30 measured yards from (N or S) S and 10 measured yards from (E or W) W property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number these adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ____ measured yards from proposed well site. Owned by ____ Address ____

No. 2 ____ measured yards from proposed well site. Owned by ____ Address ____

No. 3 ____ measured yards from proposed well site. Owned by ____ Address ____

WATER CONS DIST. No 1

COMMENT

No wells within 440 yds.

1 1/10 ins.	440 yds.	Minimum for 10-in. well	yield—more than 1000 G.P.M.
1 in.	400 yds.	Minimum for 8-in. well	yield—500 to 1000 G.P.M.
3/4 in.	300 yds.	Minimum for 6-in. well	yield—300 to 500 G.P.M.
5/8 in.	250 yds.	Minimum for 5-in. well	yield—255 to 300 G.P.M.
1/2 in.	200 yds.	Minimum for 3 or 4-in. well	yield—70 to 255 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: J. B. Weland (SIGNATURE LANDOWNER OR AGENT) Tenant (TITLE) Box 26, Summerfield, Tex (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. J. M. Collins 2. Robert L. Ballard 3. Clifton Jackson

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

M. S. AB

SMITH PRINTING CO. - DIAL PO 5-0019

FORM NO. 255-AWP

PINNED — X-FILE — MAP ID 26

Original—District Office Copy — District File No. 910 — FOR USE OF DISTRICT OFFICE ONLY

FIELD WELL NO.	1584
DATE APPLICATION FILED OUT	5-28-56
DATE APPROVED BY COUNTY COMMITTEE	6-4-56
SIZE OF PUMP 8 MAXIMUM YIELD	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for approval. (PLEASE TYPE OR PRINT.)

I, Ky Lawrence (NAME OF LANDOWNER) Route 5 Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1. for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. NW¼, NE¼, SW¼, SE¼ of Section 157 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
3. Labor ____ League ____
4. Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)
5. Drilling to start about soon, 19__

This well will be located: { 3 miles N or S and 3 miles E or W of the (MARK OUT ONE THAT DOES NOT APPLY)

Permit good for 120 days only from date of approval.

town of Hereford, Texas

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells, and/or applications.

Please Make Sure Your Measurements Are Correct— They Will Be Checked for Accuracy

Location of Proposed Well as submitted by applicant is 70 8 measured yards from (N or S) S and 300 measured yards from (E W) W property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number the three adjacent wells, and/or applications, on the plat as 1, 2 and 3, to correspond with the following:

Well 1 ____ measured yards from proposed well. Owned by ____ Address ____

Well 2 ____ measured yards from proposed well. Owned by ____ Address ____

Well 3 ____ measured yards from proposed well. Owned by ____ Address ____

SCALE FOR ABOVE PLAT

1 1/10 inches	440 yards	Minimum for 10-inch well	
1 inch	400 yards	Minimum for 8-inch well	
3/4 inch	300 yards	Minimum for 6-inch well	
5/8 inch	250 yards	Minimum for 5-inch well	
1/2 inch	200 yards	Minimum for 3 or 4-inch well	

COMMENTS: There no other well with'n ½ mile of propose well. This a replacement well. Dep. 610 ft.

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by: J. B. Weland (SIGNATURE LANDOWNER OR AGENT) Tenant (TITLE) Box 26, Summerfield, Texas (ADDRESS)

This permit approved subject to the rules for spacing from existing wells and/or prior permits

W. Hastings — J. A. Mauss — George E. Jackson

Check here ☒ when well is located on the County map.

SMITH PRINTING CO - DIAL PO5-5019 LUBBOCK

AB

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY
Organization No. _____ Lab No. _____
Work No. _____

TDWR-HPUWCDH1 Special

CHEMICAL WATER ANALYSIS REPORT

County 069 D. Smith
State Well No. 10-13-703
Well No. 2923
Date Collected 09 08 80

Send report to:
Data Collection and Evaluation Section
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

KEY PURCHER

Location SE¼, NW¼, Sec. 157, Blk. M-7 Sample No. [ ] By HPUWCDH1 BE
Source (type of well) submersible Owner Ky Lawrence Box 14, Summerfield Tx
Date Drilled May 1964 Depth 285 ft. WBF Ogallala
Producing Intervals _____ Water level _____ ft. Sample depth _____ ft.
Sampled after pumping cont hrs. Yield _____ GPM Temperature _____ °F _____ °C
Point of collection valve on discharge pipe Appearance ☒ clear ☐ turbid ☐ colored ☐ other
Use Irr. Remarks near Barrett-Crofoot East Feedyard

(FOR LABORATORY USE ONLY)
Laboratory [redacted]

CHEMICAL ANALYSIS

Date Received FEB 11 1981 Date Reported APR 23 '81

		MG/L	ME/L
Silica	00955	46	
Calcium	00915	43	2.15
Magnesium	00925	32	2.65
Sodium	00929	51	2.22
Total			7.02
☐ Potassium	00037	5.0	0.13
☐ Manganese	01055		
☐ Boron	01022		
☐ Total Iron	01045		
☐ (other) _____		MG/L	
Specific Conductance (micromhos/cm³)	00095	507	
Diluted Conductance (micromhos/cm³)		5 x 148	740

SNa _____ SAR _____ RSC _____

" ☐ " Items will be analyzed if checked.

		MG/L	ME/L
Carbonate	00445	4	0.12
Bicarbonate	00440	298	4.88
Sulfate	00945	57	1.19
Chloride	00940	27	0.76
Fluoride	00951	2.3	0.12
Nitrate	71850	5.6	
pH	00403	8.4	
Total			7.07
[1] Dissolved Solids (residue at 180°C)	70300		3.64
Phenolphthalein Alkalinity as C CO_3	00416		0
Total Alkalinity as C CO_3	00410		2.50
Total Hardness as C CO_3	00900		2.40
[2] Nitrogen Cycle			
Ammonia - N	00610		
Nitrite - N	00615		
Nitrate - N	00620		
Organic Nitrogen	00605		

146 (2.98) (5.40) (4.80) (0.06)

[1] The bicarbonate reported in this analysis can be converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure used in the computation of dissolved solids.
[2] Nitrogen cycle requires separate sample.
[3] Total Iron and Manganese require separate sample.

Analyst _____ Checked By _____

TDWR-0148 (Rev. 1-8-80)

NOV 10 1981
TDWR

Form No. 516-LW
Original--District Office Copy

FOR USE OF COMMITTEEMEN
Field Well No. 2923
Date Received 6-2-64
Permit Size _____ Maximum of Pump 84 in Yield 1000 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

1. Land Owner Ky Lawrence Address Rt. 5, Hereford, Texas
2. Well located _____ miles N. _____ miles S. _____ miles E. 6½ miles W of the town of Hereford
3. County Deaf Smith Labor _____ League _____ Abstract No. _____
4. ~~NW¼~~ NE¼ ~~NW¼NW¼~~ Section 157 Block M-7 Survey _____
(MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder _____ Diameter of Well: 19 Inches.
(MARK OUT ONE THAT DOES NOT APPLY)

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top soil	283	285	Red bed
4	50	Caliche			
50	90	Sanch Clay			
90	140	Loose sand & sand rock			
140	170	Clay & sand			
170	195	Sand			
195	210	Sand & sand rock			
210	240	Clay & sand rock			
240	270	Sandy clay			
270	283	Coarse sand			

REMARKS:

RECEIVED
LUBBOCK, TEXAS
JUN 8 1964
HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

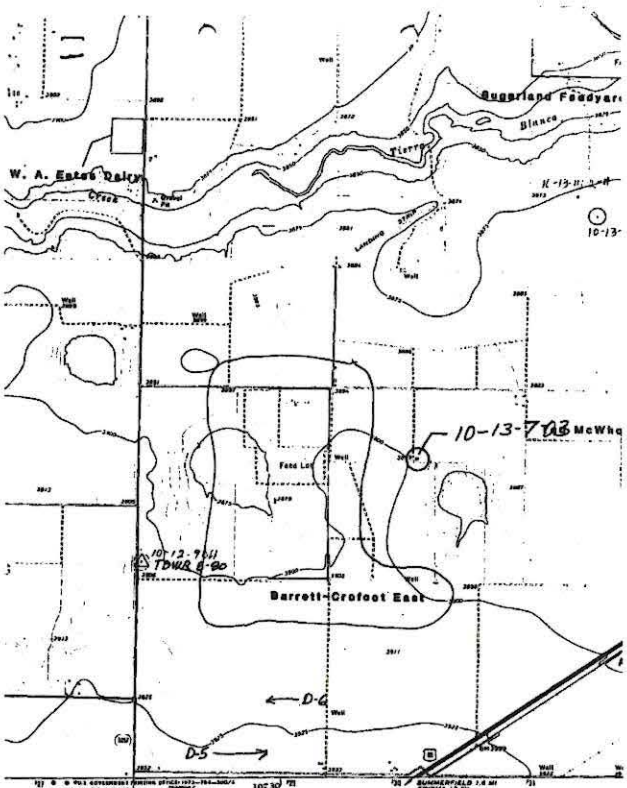
Driller Walco Drilling Co. Address Hereford, Texas Date Drilled May 19 64

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length 287 ft.
7. Casing perforations: from 225 ft. to 285 ft. Size 1/8 Number of rows 12
8. Pump Column: Size 8 in. Column, shaft, length 238 ft. Suction pipe size 8 in. Suction pipe length 11 ft.
9. Pump bowls: Size 12" Number of stages 5 Pump discharge pipe: Size 8 in.
10. Depth to water level 130 ft. Pump yield 1000 GPM. Pumping level: 190 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other _____ Horsepower _____

Signature Big T Pump Company Inc. Box 827, Hereford, Texas
(SIGNATURE OF AGENT) (TITLE) (ADDRESS)



MAP ID 27

TEXAS DEPARTMENT OF WATER RESOURCES
WELL SCHEDULE

Aquifer(s) Ogallala Project No. _____ State Well No. 10-13-703
~~Field Well No.~~ 2923 County Deaf Smith
1. Location: SE ¼, Sec. 157, Block M-7 Survey _____ Lat. 34-46-26, Long. 102-29-12
2. Owner: Guy Lawrence Address: Box 14 Summerfield Tx.
Tenant (other) J. B. Noland Address: Box 16 Summerfield Tx
Driller: Walco Drilling Address: Hereford, Tx.
3. Land Surface Elevation: 3898 ft. above msl determined by Map of Cont. Inc.
4. Drilled: May 19 64 Dug, Cable Tool, Rotary, Air,
5. Depth: Rept. 285 ft. Meas. _____ ft.
6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfr. _____ Type Turbine
No. Stages 5 Bowls Diam. 12 in., Setting 238 ft.
Column Diam. 8 in., Length Tailpipe 11 ft.
8. Motor: Mfr. _____ Fuel Nat. Gas HP. _____
9. Yield: Flow _____ gpm, Pump 1000 gpm, Meas., Rept., Est. Date May 64
10. Performance Test: Date _____ Length of Test _____ Made by _____
Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.
Production _____ gpm Specific Capacity _____ gpm/ft.
11. Quality: (Remarks on taste, odor, color, etc.) _____
Analyses
Date _____ Laboratory _____ TDS _____ Sp Cond _____
Date _____ Laboratory _____ TDS _____ Sp Cond _____
12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Log(s) _____
13. Water Level(s): 130.0 ft. rept. meas. May 19 64 above below (Type) MP which is 10.0 ft. above below Land Surface
_____ ft. rept. meas. 19 above below which is _____ ft. above below Land Surface
14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.)
15. Recorded by: B. Bates Source of data: Field & Driller's Log Date: 9-12-80
16. Remarks: _____
17. Location or Sketch:

Received
JUL 23 1981
TDWR

TDWR-0308

W/Q Obs. Well _____ W/Q Obs. Well ✓
State Well No. 10-13-703

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-13-703

groundwater

Water Quality Analysis

Sample Date: 9/8/1980 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:** Groundwater Conservation District (general)

Sampled Aquifer: Ogallala Formation

Analyzed Lab: Texas Department of Health **Reliability:** Collected from pumped well, but not filtered or preserved

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		3	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		250	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		297.76	mg/L	
00910	CALCIUM (MG/L)		43	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		3.6	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		27	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		2.3	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		239	mg/L	
00920	MAGNESIUM (MG/L)		32	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		5.6	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.4	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		5	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0.22		
00955	SILICA, DISSOLVED (MG/L AS SI02)		46	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		1.44		
00932	SODIUM, CALCULATED, PERCENT		31	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		51	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		740	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		57	mg/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		416	mg/L	

* Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork.

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (http://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov

FORM NO. [illegible]

Duplicate—File Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. ______
Date Received ______
Permit Size of Pump ______ Maximum Yield ______ GPM

1. Land Owner [illegible] Address [illegible]

2. Well located ______ miles N, ______ miles S, ______ miles E, [illegible] miles W of the town of [illegible]

3. County [illegible] Labor ______ League ______ Abstract No. ______

4. NW¼ NE¼ SW¼ SE¼ (MARK OUT THOSE THAT DO NOT APPLY) Section [illegible] Block [illegible] Survey ______

DRILLER'S LOG OF WELL

Method of Drilling: Rotary [illegible] Spudder ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: [illegible] Inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	[illegible]	Top soil	[illegible]	285	[illegible]
[illegible]	50	Caliche			
50	90	[illegible] Clay			
[illegible]	110	[illegible] rock			
110	170	[illegible]			
170	195	[illegible]			
195	210	[illegible] rock			
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller [illegible] Address [illegible] Date Drilled [illegible] 19 [illegible]

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter [illegible] in. Total casing length 287 ft.

7. Casing perforations: from 173 ft. to 285 ft. Size 1/8 Number of rows 12

8. Pump Column: Size [illegible] in. Column, shaft length [illegible] ft. Suction pipe size [illegible] in. Suction pipe length [illegible] ft.

9. Pump bowls: Size [illegible] Number of stages [illegible] Pump discharge pipe: Size [illegible] in.

10. Depth to water level [illegible] ft. Pump yield [illegible] GPM. Pumping level: [illegible] ft.

11. Power Unit: Electrical, Natural Gas, Butane, Other ______ Horsepower ______

Signature [illegible] (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

RECEIVED JUL 23 1981

10-13-703

FORM NO. 283 AWP 123 BB

Original—District Office Copy

☒ Alphabetical file ☒ K-file ☐ Planned ☐ Depth Plotted R. W.

MAP ID 28

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 3203
Time of Filing 8:00 A.M.
Date Application Filed 1-14-65
Expiration Date 5-14-65
Date Recommended by County Committee 2-1-65
Size of Pump 8 Maximum Yield 1000 GPM

I, Ky Lawrence (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NW¼, ~~NE¼, SW¼, SE¼~~ of Section 157 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

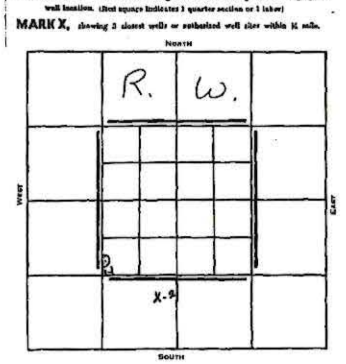
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

Drilling to start about 3 weeks, 19__

This well will be located 3 miles N or S and (MARK OUT ONE THAT DOES NOT APPLY) 3 miles E or W of the town of Hereford

MARK DOT INSIDE CIRCLE within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 60 measured yards from (N S) S and 10 measured yards from (E W) W (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 50 measured yards from proposed well site. Owned by Applicant -No number ABANDONED Address ______

No. 2 400 measured yards from proposed well site. Owned by Applicant # 1584 Address ______

No. 3 ______ measured yards from proposed well site. Owned by ______ Address ______

COMMENT

This is a replacement well.

No other wells within 440 yds.

1 1/10 in.	440 yds.	Minimum for 10-in. well	yield—more than 1000 G.P.M.
1 in.	400 yds.	Minimum for 8-in. well	yield—500 to 1000 G.P.M.
3/4 in.	300 yds.	Minimum for 6-in. well	yield—390 to 500 G.P.M.
5/8 in.	250 yds.	Minimum for 5-in. well	yield—205 to 390 G.P.M.
1/2 in.	200 yds.	Minimum for 3 or 4-in. well	yield—70 to 205 G.P.M.

RECEIVED LUBBOCK, TEX. FEB 3 1965 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

I agree that this well will be drilled within ten (10) yards of the location specified [illegible] existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by [signature] (SIGNATURE LANDOWNER OR AGENT) Partner (TITLE) Box 16, Summerfield, Tex (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. [signature] 3. [signature]

Check here: ☐ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL PO 5-8418

MS. AB

MAP ID 27

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-13-703

groundwater

GWDB Reports and Downloads **Well Basic Details** Scanned Documents

State Well Number	1013703	Well Type	Withdrawal of Water
County	Deaf Smith	Well Use	Irrigation
River Basin	Red	Water Level Observation	None
Groundwater Management Area	2	Water Quality Available	Yes
Regional Water Planning Area	O - Llano Estacado	Pump	Turbine
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.773889	Power Type	Natural-Gas Engine
Latitude (degrees minutes seconds)	34° 46' 26" N	Annular Seal Method	
Longitude (decimal degrees)	-102.487222	Surface Completion	
Longitude (degrees minutes seconds)	102° 29' 14" W	Owner	Guy Lawrence
Coordinate Source	+/- 1 Second	Driller	Walco Drilling
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	Drillers Log
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3898	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)	285	Groundwater Conservation District Well Number	
Well Depth Source	Driller's Log	Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date	5/0/1964	Previous State Well Number	
Drilling Method		Reporting Agency	Groundwater Conservation District
Borehole Completion		Created Date	3/5/1996
		Last Update Date	3/5/1996

Remarks

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
16	Screen				173	285

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data *Plugged Back - No Data*

Filter Pack - No Data *Packers - No Data*

Form No.

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 4279
Date Received 11-21-69
Permit Size of Pump 4 Maximum Yield 265 GPM

1. Land Owner Big Tex Cattle & Grain, Inc. Address Box 83, Hereford, Texas 79045
2. Well located ____ miles N, 3 miles S, ____ miles E, 5 miles W of town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. N200A of E½ NW¼ NE¼ SW¼ SE¼ Section 174 Block M-7 Survey ____
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ Diameter of Well: 28 inches.
MARK OUT ONE THAT DOES NOT APPLY

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	5	Top Soil	318	330	Red Bed
5	12	Caliche			
12	125	Sandy Clay			
125	150	Sand Stone			Perforations -
150	180	Fine Sand & Sand Stone			123' to 318' - 32 Row 1/8" Mill Slot
180	185	Hard Sand Rock			
185	200	Sand w/Sand Stone Ledges			318' to 324' - Blank
200	210	Hard Sand Rock			
210	260	Fine Sand - Some Stone			RECEIVED DEC 5 1969
260	318	Fine Sand - Some Clay			

REMARKS:
Gravel - Pack Well - Kansas Gravel
Reamed to 324' (Sub. Pump)

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Big T - Drill. Div. Address Box 827 Hereford, Tex Date Drilled Sept. 19 1969

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made Diameter 16 in. Total casing length 324 ft.
7. Casing perforations: from as noted ft. to ____ ft. Size ____ Number of rows ____
8. Pump Column: Size 6 in. Column, shaft length 210 ft. Suction pipe size --- in. Suction pipe length --- ft.
9. Pump bowls: Size 7" Number of stages 3 Pump discharge pipe: Size 4 in.
10. Depth to water level 136 ft. Pump yield 200 GPM. Pumping level 156 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower 20 HP

Signature Big T Pump Co., Inc. Box 827 Hereford, Texas 79045
LANDOWNER OR AGENT — TITLE — ADDRESS

Form No.

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3203
Date Received 4-26-65
Permit Size of Pump 8 Maximum Yield 1000 GPM

1. Land Owner Ky Lawrence J. B. Noland Address Rt. 5, Hereford, Texas
2. Well located ____ miles N. 3 miles S. ____ miles E. 3 miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. NW¼ NE¼ SW¼ SE¼ Section 157 Block M-7 Survey ____
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: (Rotary) Spudder ____ Diameter of Well: 19" inches.
MARK OUT ONE THAT DOES NOT APPLY

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	5	Top Soil	238	240	Clay
5	65	Caliche	240	260	Sand Fine
65	88	Sand	260	290	Sand
88	95	Sand Rock	290	292	Clay
95	135	Sand	292	317	Sand
135	145	Clay	317	320	Red Bed
145	170	Sand Fine			RECEIVED LUBBOCK, TEXAS
170	195				APR 27 1965
195	238	Sand + Clay			HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS:
Replacement Well

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling Co. Address 519 J. Date Drilled 2/15 1965

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new) used, gas line, or shop made. Diameter 16 in. Total casing length 322 ft.
7. Casing perforations: from 170 190 270 ft. to 190 274 320 ft. Size 4 3/16 Number of rows 6 6 6
8. Pump Column: Size 8 in. Column, shaft length 250 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12" Number of stages 4 Pump discharge pipe: Size 8" in.
10. Depth to water level 199' ft. Pump yield 900 GPM. Pumping level: 201 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature Big T Pump Co., Inc. - Box 827 - Hereford, Tex.
LANDOWNER OR AGENT — TITLE — ADDRESS

☑ MAP ☑ IBM ☑ NEW APP. BOOK ☑ ARC FILE ☑ S FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ FINNED ☐ DEPTH PLOTTED

MAP ID 30

Form No. 460 AWP

ORIGINAL—DISTRICT OFFICE COPY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

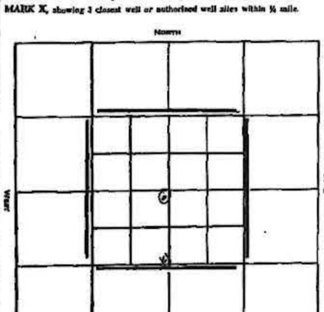
FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 5582
Time of Filing 4:40 PM
Date Application Filed 6-14-77
Expiration Date 10-14-77
Date Recommended by County Committee 6-17-77
Size of Pump 6 Maximum Yield 560 GPM

I, Barrett & Crofoot (NAME OF LANDOWNER) Box 670, Hereford, Texas 79045 (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
NW¼, NE¼, SW¼, SE¼ Section 174 Block M-7
MARK OUT ONES THAT DO NOT APPLY
Survey ____ Abstract ____
Township ____ Range ____
Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation)
MARK OUT ONES THAT DO NOT APPLY
Drilling to start about week 19__
This well will be located 3 miles N S and 5 miles E W of the town of Hereford
MARK OUT ONE THAT DOES NOT APPLY

MARK DOT INSIDE CIRCLE ◉ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest well or authorized well sites within ¼ mile.

NORTH

SOUTH

Location of proposed Well as submitted by applicant is 475 measured yards from (N S) and 469 measured yards from (E W) quarter section line, or labor line.
MARK OUT ONE THAT DOES NOT APPLY

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:
No. 1 378 measured yards from proposed well site.
Owned by applicant #4279
Address ____
No. 2 ____ measured yards from proposed well site.
Owned by ____
Address ____
No. 3 ____ measured yards from proposed well site.
Owned by ____
Address RECEIVED JUN 20 1977

COMMENT
No other wells within 440 yds.

1 1/10 ins...440 yds....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds....Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in.......300 yds....Minimum for 6-in. well...yield—300 to 500 G.P.M.
5/8 in.......250 yds....Minimum for 5-in. well...yield—205 to 300 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Steve Conaway, Agent [signature] Agt Box 871, Hereford, Texas
(SIGNATURE LANDOWNER OR AGENT) TITLE ADDRESS

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
1. [signature] 2. [signature] 3. [signature]
☒ Placed on County Map ☒ Deposit Received ☐ Refunded
Check No. ____

☑ MAP ☑ IBM ☑ NEW APP. BOOK ☑ ARC FILE ☑ S FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ FINNED ☐ DEPTH PLOTTED 120

Form No. 460 AWP

MAP ID 29

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

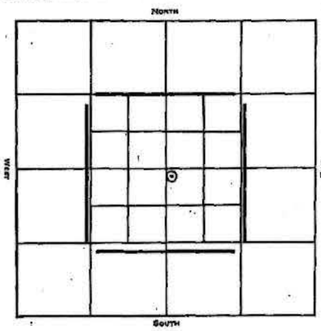
FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 4279
Time of Filing 4:15 P.M.
Date Application Filed 7-9-69
Expiration Date 11-9-69
Date Recommended by County Committee 7-11-69
Size of Pump 4 Maximum Yield 265 GPM

I, Big Tex Cattle & Grain, Inc. (NAME OF LANDOWNER) Box 2058, Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
N200A of E½ NW¼, (NE¼), SW¼, SE¼ Section 174 Block M-8 M-7
MARK OUT ONES THAT DO NOT APPLY
Survey ____ Abstract ____
Township ____ Range ____
Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation)
MARK OUT ONES THAT DO NOT APPLY
Drilling to start about soon 19__
This well will be located 3 miles N S and 5 miles E W of the town of Hereford
MARK OUT ONE THAT DOES NOT APPLY

MARK DOT INSIDE CIRCLE ◉ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest well or authorized well sites within ¼ mile.

NORTH

SOUTH

Location of proposed Well as submitted by applicant is 378 measured yards from (N S) S and 400 measured yards from (E W) property line, quarter section line, or labor line.
MARK OUT ONE THAT DOES NOT APPLY

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:
No. 1 ____ measured yards from proposed well site.
Owned by ____
Address ____
No. 2 ____ measured yards from proposed well site.
Owned by ____
Address ____
No. 3 ____ measured yards from proposed well site.
Owned RECEIVED JUL 28 1969
Address ____

COMMENT
No wells within 440 yds.

1 1/10 ins...440 yds....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds....Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in.......300 yds....Minimum for 6-in. well...yield—300 to 500 G.P.M.
5/8 in.......250 yds....Minimum for 5-in. well...yield—205 to 300 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Silrey L. Aven [signature] Agent Box 2058, Hereford, Texas
(SIGNATURE LANDOWNER OR AGENT) TITLE ADDRESS

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
1. [signature] 2. Billy Wayne [signature] 3. [signature]
☒ Placed on County Map ☒ Deposit Received ☐ Refunded
Check No. ____

SMITH PRINTING CO.

AB

MAP ID 31

FORM No. 445 AWP

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	5179
Time of Filing	10:00 AM
Date Application Filed	5-12-75
Expiration Date	9-12-75
Date Recommended by County Committee	6-6-75
Size of Pump	6
Maximum Yield	560 GPM

I, Noland and Lawrence (NAME OF LANDOWNER), Box 16, Summerfield, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County: Deaf Smith

XXXX NE¼, XXXXXXXX of Section 157 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

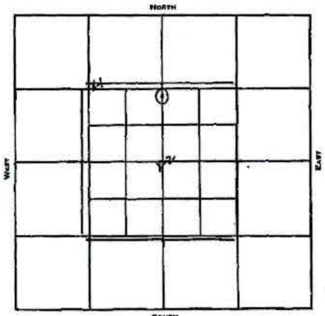
Drilling to start about soon, 19__

This well will be located 3 miles XXXX S and 4 miles XXXX W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH



SOUTH

1 1/10 in...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds.....Minimum for 8-in. well...yield—560 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—390 to 560 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—255 to 390 G.P.M.
1/2 in.......200 yds..Minimum for 3 or 4-in. well...yield—70 to 255 G.P.M.

Location of proposed Well as submitted by applicant is 46 measured yards from (N XX) and 440 measured yards from (E XX) (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 433 measured yards from proposed well site.
Owned by Howard Gault - drilled prior to district
Address Box 113, Hereford, Texas

No. 2 400 ? measured yards from proposed well site.
Owned by applicant - drilled prior to district -- to be
Address abandoned

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address RECEIVED JUN 6 1975

COMMENT

No other wells within 440 yds.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by Joe Don Noland [signature] (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 13, Summerfield, Texas 79085 (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. [signature] 3. [signature]

[X] Pinned on County Map [X] Deposit Received [ ] Refunded Check No.______

SMITH PRINTING CO.

FORM NO. ______

ORIGINAL—DISTRICT OFFICE COPY

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN

Field Well No. 5582
Date Received 7-18-77
Permit Size of Pump 6 in Maximum Yield 560 GPM

1. Land Owner Barrett & Crofoot Address Box 670, Hereford, Texas 79045

2. Well located ____ miles N 3 miles S ____ miles E 5 miles W of the town of Hereford

3. County Deaf Smith Labor ____ League ____ Abstract No. ____

4. XXXX NE¼ XXXXXXXX (MARK OUT THOSE THAT DO NOT APPLY) Section 174 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 26 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	240	245	Brown Clay
3	65	Caliche and Clay	245	272	Sand and Clay
65	126	Sand and Sandrock	272	288	White Sand and Brown Clay
126	153	Sand, Clay, and Sandrock	288	303	Loose Sand and Some Clay
153	177	Sand and Some Sandrock Layers	303	323	Sand and Clay
177	183	Loose Fine Red Sand	323	327	Red Clay, Some Sand
183	202	Sand and Sandrock Layers	327	332	Red Bed
202	203	Rock			
203	225	Sand, Sandrock, Some Honeycomb			
225	240	Fine Sand, Sandrock, Some Clay and Some Honeycomb			RECEIVED JUL 25 1977

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Water Industries, Inc. Address Box 871, Hereford Date Drilled June 18, 1977

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 12-3/4 in. 182.40 243.00 ... 1/8" Total casing length 328 ft. 36 Rows x 72 Slots/Ft.

7. Casing perforations: from 243.00 ft. to 323.00 ft. Size Johnson Irrigator Screen .1000 Openings

8. Pump Column: Size 6 in. Column, shaft length 300 ft. Suction pipe size 6 in. Suction pipe length 4 ft.

9. Pump bowls: Size 10" Number of stages 7 Pump discharge pipe: Size 6 in.

10. Depth to water level 162 ft. Pump yield 350 GPM. Pumping level: 250 ft.

11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower 40

Signature [signature] (LANDOWNER OR AGENT) TITLE ADDRESS

FORM NO. ______

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN

Field Well No. 5179
Date Received 8-22-75
Permit Size of Pump 6 in Maximum Yield 560 GPM

1. Land Owner J.R. Noland Address Box 16, Summerfield, Texas 79085

2. Well located 4½ W xxxxxx 1/2 miles S ____ miles E ____ miles W of the town of Hereford

3. County Deaf Smith Labor ____ League ____ Abstract No. ____

4. NW¼ (NE¼) SW¼ SE¼ (MARK OUT THOSE THAT DO NOT APPLY) Section 157 Block M-7 Survey BSF

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 19" inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	12	Caliche			
12	60	Clay & Stone			
60	120	Sand Stone & Shale			
120	160	Sand - Some Clay			
160	200	Fine Sand			
200	260	Sand & Stone			
260	293	Sand & Layers of Stone & Clay			
293	297	Red Clay (TD)			RECEIVED AUG 28 1975

REMARKS:

NEW WELL - PLAIN

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller BIG T PUMP COMPANY, INC. Address HEREFORD, TEXAS Date Drilled MAY 17, 19 75

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new, used,) gas line, or shop made. Diameter 16" in. Total casing length 297' ft.

7. Casing perforations: from 157' ft. to 297' ft. Size 3/16" Number of rows 20 Row

8. Pump Column: Size 6" in. Column, shaft length 260 ft. Suction pipe size ____ in. Suction pipe length ____ ft.

9. Pump bowls: Size 12" Number of stages (4) Pump discharge pipe: Size 6" in.

10. Depth to water level 164' ft. Pump yield 500 GPM. Pumping level: 240' ft.

11. Power Unit: Electrical (Natural Gas) Butane, Other ____ Horsepower 60HP

Signature BIG T PUMP COMPANY, INC., P.O. BOX 617, HEREFORD, TEXAS 79045 (LANDOWNER OR AGENT) TITLE ADDRESS

C 517

CERTIFICATE OF WATER WELL VALIDATION

DISTRICT OFFICE COPY

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

2930 Ave. Q Lubbock, Texas 79405

This Certificate Of Water Well Validation is issued for the well, as described below, to recognize its validity as governed by the rules and regulations of the High Plains Underground Water Conservation District No. 1. This Certificate does not relieve the owner(s) or operator(s) of this well from the responsibility for compliance with all other rules and regulations of the High Plains Underground Water Conservation District No. 1 regarding the redrilling, deepening, reequipping, and operation of the subject well.

This Certificate is not intended to establish the precise legal ownership of the subject well or that of the land whereupon it is located.

Landowner: Barrett and Crofoot Feedyards (NAME)
Box 670, Hereford, Texas 79045 (ADDRESS)
Description of property: NE¼, Section 174, Blk. M-7
Deaf Smith County, Texas.

The following well has been located and identified by field check.

This well is located 28 yards south of the north section line. The north section line is assumed to be the center of a paved county road running east west on the north side of subject section. This well is also located 564 yards west of the east section line. The east section line is assumed to be a southward extension of a line from the center of a county road running north south between Section 175 and Section 156, Blk. M-7. Section 175 is immediately north of Section 174 and Section 156 is immediately east of Section 175.

This well is equipped with a 5 inch submersible pump, a 5 inch discharge pipe going into a closed system.

These observations were made on January 11, 1983 by Obbie Goolsby, Engineer Technician, High Plains Underground Water Conservation District No. 1. This validation is being issued to correct the location of the well drilled under Application for Water Well Permit 5664.

WITNESS OUR HAND this the 26 th day of January, 1983

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

THE STATE OF TEXAS
COUNTY OF LUBBOCK

By [signature: A. Wayne Wyatt] MANAGER

BEFORE ME, the undersigned authority in and for said County, Texas, on this day personally appeared A. Wayne Wyatt known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose therein expressed and in the capacity therein stated.

(SEAL) GIVEN UNDER MY HAND AND SEAL OF OFFICE this 26th day of January, 19 83

[signature]
Clifford E. Thompson
Notary Public, Lubbock County, Texas
Commission expires July 7, 198_

2-3-83 as

FORM NO. 2148-AW

Original—District Office Copy

District File No. _____ FOR USE OF DISTRICT OFFICE ONLY

FOR USE OF COMMITTEEMEN
Field Well No. 1607
Date Received 8-24-56
Size of Pump 8 Maximum in Yield 100 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

1. Well Owner C. P. Norton Address Route 1 Hereford, Texas
2. Well located ____ miles N, 2 miles S, ____ miles E, 4 miles W of the town of Hereford, Tex.
3. County Deaf Smith Labor ____ League ____ Homestead ____
4. NW¼ NE¼ SW¼ SE¼ (CIRCLE ONE) Section 152 Block M-7 Survey ____
5. ACTUAL LOCATION OF THIS WELL IS { 225 measured yards from N or S line of this tract of land; 10 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Topsoil			
4	30	Caliche			
30	60	Clay			
60	100	Sandy Clay			
100	170	Loose Sand			
170	200	Tight sand			
200	230	Sand and clay beds			
230	272	course sand, Some gravel			
272	275	Red Bed			

RECEIVED AUG 30 1956 LUBBOCK, TEXAS HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller J.H. Fish Address Hereford, Texas Date Drilled 7-19- 1956

DESCRIPTION OF WELL

6. Casing: new, used, gas line, or shop made. Diameter 16" in. Total length ____ ft.
7. Casing perforations: from 112 ft. to 275 ft. Size 1/8th Number per foot 12
8. Pump Column: Size 8" in. Total length ____ ft. Section pipe: Size 6 in. Length 10 ft.
9. Pump bowls: Size #12 Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level 117 ft. Pump discharge 250 GPM. Pumping level: 200 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower 60

Signature C. P. Norton (OWNER OR AGENT) TITLE ADDRESS

Final Completion of Well — Date 7-20 1956

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Notification of abandonment of Irrigation / Industrial well / Municipal — Permit No. 5179 County Deaf Smith

I Joe Don Noland, Agent do hereby certify that I have abandoned and plugged/capped plugged Well No. drilled prior to district

Located in Deaf Smith County, on ~~XXXXXXXX~~NE 1/4, ~~XXXXXX~~ ~~SXXXXX~~ of Section 157 Block M-7,

Survey ____. Reason for abandonment ____

caved in

Date May 12, 1975.

Joe Don Noland, Agent for
Noland and Lawrence
Box 13
Summerfield, Texas

RECEIVED JUN 6 1975

Signature of Owner or Agent

FORM NO. 252 AWP

Original—District Office Copy

☒ Alphabetical Bin ☒ X-File ☐ Pinned ☐ Depth Plotted

MAP ID 35

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 2675
Date of Filing 2:00 P.M.
Date Application Filed 6-21-63
Registration Date 10-21-63
Date Recommended July 1, 1963
County Committee
Size of Pump 8 Maximum Yield 1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

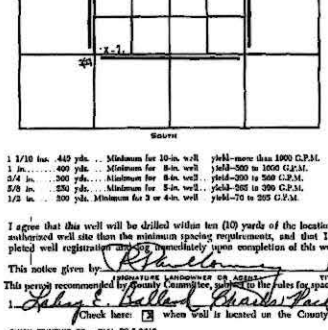
I, Inez Barclay (NAME OF LANDOWNER) Deming, New Mexico (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
~~NW¼~~, ~~NE¼~~, ~~SW¼~~, ~~SE¼~~ of Section 152 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
Survey ____ Abstract ____
Township ____ Range ____
Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
Drilling to start about 2 weeks, 19__
This well will be located { 3 miles N or S and; 3 miles E or W of the (MARK OUT ONE THAT DOES NOT APPLY)
town of Hereford

MARK DOT INSIDE CIRCLE 3 within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 2 closest wells or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 430 measured yards from (N S) and 10 measured yards from (E W) property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 450 measured yards from proposed well site. Owned by Applicant Address ____

No. 2 457 measured yards from proposed well site. Owned by Applicant Address ____

No. 3 ____ measured yards from proposed well site. Owned by ____ Address ____

COMMENT
No other wells within 440 yds.

1 1/10 ins. 440 yds. .. Minimum for 10-in. well — yield—more than 1000 G.P.M.
1 in. 400 yds. .. Minimum for 8-in. well — yield—500 to 1000 G.P.M.
3/4 in. 300 yds. .. Minimum for 6-in. well — yield—250 to 500 G.P.M.
5/8 in. 250 yds. .. Minimum for 5-in. well — yield—125 to 250 G.P.M.
1/2 in. 200 yds. Minimum for 3 or 4-in. well — yield—70 to 125 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: [signature] (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 805, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
1. Lahey E. Ballard 2. Charles Pacheco 3. Billy B. Moore

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. • DIAL PO 2-2910

AB

FORM NO. 252 AWP

Original—District Office Copy

X-FILE BINNED

District File No. 715 FOR USE OF DISTRICT OFFICE ONLY

MAP ID 33

FIELD WELL NO. 1607
DATE APPLICATION FILED BY 7-16-56
DATE APPROVED BY COUNTY COMMITTEE 7/19/56
SIZE OF PUMP 8 MAXIMUM YIELD 1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

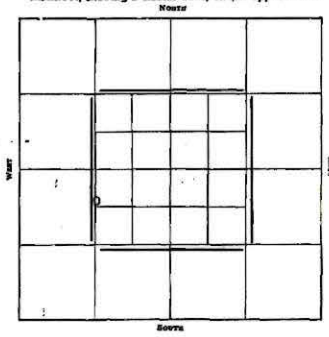
INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for approval. (PLEASE TYPE or PRINT.)

I, C. P. Norton (NAME OF LANDOWNER) Route 1 Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1, for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. ~~NW¼~~, NE¼, SW¼, SE¼ of Section 152 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
Survey ____
3. Labor ____ League ____
4. Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
5. Drilling to start about Soon, 19__
This well will be located: { 2 miles N or S and; 4 miles E or W of the (MARK OUT ONE THAT DOES NOT APPLY) town of Hereford, Texas

Permit good for 120 days only from date of approval.

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest wells, and/or applications.



Please Make Sure Your Measurements Are Correct—They Will Be Checked for Accuracy

Location of Proposed Well as submitted by applicant is 225 measured yards from (N S) and 10 measured yards from (E W) property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number the three adjacent wells, and/or applications, on the plat as 1, 2 and 3, to correspond with the following:

Well 1 ____ measured yards from proposed well. Owned by [illegible] Address ____

Well 2 ____ measured yards from proposed well. Owned by ____ Address ____

Well 3 ____ measured yards from proposed well. Owned by ____ Address ____

SCALE FOR ABOVE PLAT

1 1/10 inches ..... 440 yards ..... Minimum for 10-inch well
1 inch ..... 400 yards ..... Minimum for 8-inch well
3/4 inch ..... 300 yards ..... Minimum for 6-inch well
5/8 inch ..... 250 yards ..... Minimum for 5-inch well
1/2 inch ..... 200 yards ..... Minimum for 3 or 4-inch well

COMMENTS: There no other well within ½ mile of propose well.

Dep. $10.00 PL

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by: C. P. Norton (SIGNATURE OWNER OR AGENT) owner (TITLE) Rt 1 Hereford, Texas (ADDRESS)

This permit approved subject to the rules for spacing from existing wells and/or prior permits.
1. Sherry E. Turrentine 2. [illegible] 3. H. E. Walton

Check here ☒ when well is located on the County map.

SMITH PRINTING CO. • DIAL PO 2-2910 LUBBOCK

AB

FORM NO. 101-L—REVISED 3-53

Duplicate - District Office Copy

District File No. ____ (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

FOR USE OF COMMITTEEMAN
FIELD WELL NO. 108
DATE RECEIVED ____
DATE APPROVED ____

Well Owner S. J. Barclay Address Box 532-Hereford, Texas

Well located approximately ____ miles N, 6 miles SW ____ miles E, ____ miles W of the town of Hereford

County Deaf Smith Section 152 Block M-7 Survey ____

Labor ____ League ____ Homestead ____ Abstract No. ____

ACTUAL LOCATION OF THIS WELL IS 25 Ft. measured yards from (N S) property line and 880 measured yards from (E W) property line (CIRCLE N OR S) (CIRCLE E OR W)

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Surface
3	54	Caliche
54	63	Sand
63	69	Caliche
69	75	Sand - First Water
75	115	Sand & Whiterock - Water bearing - lost circulation at 117 foot
		This well did not prove satisfactory
		and the hole was filled.
		B + F Drilling Co
		By EE Fldpe (a partner)

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller H. O. Bogle, Jr. Address Plainview, Texas Date Feb. 24, 1954

Name of Contractor B. & F. Drilling Co. - Plainview, Texas (WHEN CONTRACTOR IS OTHER THAN DRILLER)

SMITH PRINTING CO., LUBBOCK

FORM NO. ____

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 2675
Date Received 8-8-63
Permit Size of Pump 8 in. Maximum Yield 1000 GPM
12th & Maple

1. Land Owner MRS INEZ BARCLAY Address DEMING, NEW MEXICO

2. Well located ____ 3 miles S, ____ 3 miles W of the town of HEREFORD

3. County DEAF SMITH Labor ____ League ____ Abstract No. ____

NE¼ Section 152 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ Diameter of Well: 19 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	62	Caliche			
62	90	Sand Rock			
90	152	Sand			
152	170	Clay			
170	210	Red Sand			
210	220	Sand			
220	271	Sand + Clay			
271	300	Sand			
300	302	Red Bed			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Waleo Drilling Co Address 5th & Hereford Tex. Date Drilled July 20 1963

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new), used, gas line, or shop made. Diameter 16 in. Total casing length 304 ft.

7. Casing perforations: from 242 (215) ft. to 300 (242) ft. Size 3/16" x 8" Number of rows 8 Row. Ripped 60 ft - 4 pipes/foot

8. Pump Column: Size 8 in. Column, shaft length 220 ft. Suction pipe size 8 in. Suction pipe length 11 ft.

9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8 in.

10. Depth to water level 125 ft. Pump yield 900 GPM. Pumping level: 165 ft.

11. Power Unit: (Electrical), Natural Gas, Butane, Other ____ Horsepower 60

Signature [signature] (LANDOWNER OR AGENT) agent (TITLE) Hereford Texas (ADDRESS)

MAP ID 37

RW

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No. 4277
Time of Filing 11:00 A.M.
Date Application Filed 7-2-69
Expiration Date 11-2-69
Date Recommended By County Committee 7-14-69
Size of Pump 8 Maximum Yield 1000 GPM

I, C. Palmer Norton (NAME OF LANDOWNER) 303 McKinley, Ave. Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NE¼ Section 152 Block M-7

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation)

Drilling to start about drilled 19__

This well will be located 3 miles S and 3 miles W of the town of Hereford

MARK DOT INSIDE CIRCLE within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor).

MARK X, showing 3 closest well or authorized well sites within ¼ mile.

NORTH

Replacement well

WEST / EAST

SOUTH

Location of proposed Well as submitted by applicant is 8 measured yards from (N S) and 793 (880) measured yards from (E W) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 33 measured yards from proposed well site.
Owned by applicant
Address #812 to be abandoned

No. 2 433 measured yards from proposed well site.
Owned by Mr. Sanders
Address ____

No. 3 ____ measured yards from proposed well site.
Owned by ____
Address ____

RECEIVED JUL 16 1969

COMMENT

No other wells within 440 yds.

1 1/10 in....440 yds....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.......400 yds....Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in.......300 yds....Minimum for 8-in. well...yield—330 to 500 G.P.M.
5/8 in.......250 yds....Minimum for 6-in. well...yield—205 to 330 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 205 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: C. Palmer Norton (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) 303 McKinley Ave, Hereford, Texas (ADDRESS)

This permit recommended by County Committee subject to the rules for spacing from existing wells and/or authorized well site.

1. N. L. Davis Jr. 2. Frank D. Zinsels Jr. 3. Billy Wayne Sisson

[X] Pinned on County Map [X] Deposit Received [ ] Refunded Check No. ____

SMITH PRINTING CO. · DIAL PO 5-5419

AB

FORM NO. 1006—REVISED 3-53

PINNED

MAP ID 36

Duplicate - District Office Copy

District File No. 63 (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

FOR USE OF COMMITTEEMAN
FIELD WELL NO. 108
DATE RECEIVED 2-16-54
DATE APPROVED -16-54

I, S. J. Barclay (NAME OF LANDOWNER) Box 532, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. Section 152 Block M-7
Survey ____
3. Labor ____ League ____
4. Homestead ____ Abstract No. ____
5. Circle quarter section or labor in which well is to be located. (NE¼) / NW¼ SE¼ SW¼
6. Proposed use (municipal-industrial-irrigation) 160 acres
7. Well will be pumped about 120 days per year.
8. Casing—new, used, gas line, or shop made—Dia. 16 in.
9. Drilling to start about 2-17-54 195_
10. Driller or Contractor B. & F. Drilling Co.
Address Plainview, Texas
11. Pump Size 8" Expected Gal. per Minute 1000
12. Type of Power—Electrical - Engine - Horsepower 40

MARK DOT INSIDE CIRCLE within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor.)
MARK X, showing 3 closest adjacent wells.

NORTH

#1 #2 Abandoned

SOUTH

This well will be located approximately ____ miles N, 6 miles south-west on Clovis hiway ____ miles E, ____ miles S, ____ miles W, of the town of Hereford, Texas

LOCATION OF PROPOSED WELL as submitted by applicant is 25 ft. measured yards from (N S) property line and 880 measured yards from (E W) property line.

Number the three adjacent wells on the map as 1, 2, and 3, to correspond with the following:

Existing well 1 400 measured yards from proposed well.
Owned by Palmer Norton
Address Hereford, Texas

Existing well 2 550 measured yards from proposed well.
Owned by L. J. Cooper
Address Hereford, Texas

Existing well 3 ____ measured yards from proposed well.
Owned by ____
Address ____

COMMENT: There is an old well about 100 ft west which went dry. The casing is too small to permit him to go deeper.

Filled no rey

$25.00 Deposit Paid J. Harper

FOR FURTHER COMMENT USE BACK OF FORM

I hereby certify that I have read the foregoing statement, and that each and all of the items therein contained are true to the best of my knowledge and belief, and I agree that I must furnish my County Committeeman, as required by law, the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: S. J. Barclay (SIGNATURE OF OWNER OR AGENT) TITLE ADDRESS

APPROVED BY

1. ____ 2. ____ 3. ____

I, the undersigned, do hereby certify that I have furnished to my County Committeeman the completed well registration and log of well as required by Article 7880-3c, Sec. B-5, Texas Revised Civil Statutes.

DEPTH OF WELL ON COUNTY MAP

Received by: ____ APPLICANT

____ COUNTY ____ COUNTY COMMITTEEMAN ____ DATE 19__

SMITH PRINTING CO. - DIAL 3-5419

AB

FORM NO. 1524—REVISED 2-53

Duplicate - District Office Copy District File No. _____ (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

FOR USE OF COMMITTEEMAN	
FIELD WELL NO.	817
DATE RECEIVED	3-3-57
DATE APPROVED	3-5-57

Well Owner S. J. Barclay Address Box 532-Hereford, Texas

Well located approximately ___ miles N, 8 miles S, W miles E, ___ miles W of the town of Hereford

County Deaf Smith Section 152 Block M-7 Survey ___

Labor ___ League ___ Homestead ___ Abstract No. ___

ACTUAL LOCATION OF THIS WELL IS 25 ft. measured yards from (N S) property line and 655 measured yards from (E W) property line. (CIRCLE N OR S) (CIRCLE E OR W)

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Surface
3	54	Caliche
54	63	Sand
63	69	Caliche
69	75	Sand - First Water
75	115	Sand & Whiterock (Water Bearing)
115	148	Sand " "
148	170	Sand & Whiterock " "
170	200	Sand " "

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller H. C. Beale, Jr. Address Plainview, Texas Date Feb. 26, 195 4

Name of Contractor B. & F. Drilling Co. - Plainview, Texas (WHEN CONTRACTOR IS OTHER THAN DRILLER)

SMITH PRINTING CO., LUBBOCK

A-2410

79165

FORM NO. 1524—REVISED 2-53

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No.	4277
Date Received	6-20-69
Permit Size	Maximum of Pump 8 in Yield 1000 GPM

1. Land Owner C.P. Palmer Norton Palmer Norton Address 303 McKinley Ave. Hereford Texas
2. Well located ___ miles N, 3 miles S, ___ miles E, 3 miles W of town of Hereford
3. County Deaf Smith Labor ___ League ___ Abstract No. ___
4. NW¼ (NE) SW¼ SE¼ (MARK OUT LINES THAT DO NOT APPLY) Section 152 Block M-7 Survey ___

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ~~XXX~~ ~~Spudder~~ (MARK OUT LINE THAT DOES NOT APPLY) Diameter of Well 18 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Surface			
3	125	Clay + Caliche			
125	250	Sand (Med) & Caliche Streaks			
250	297	Sandy Clay			
297	298	Red Bed			

RECEIVED JUL 16 1969

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller N E Wolf. (N E Wolf) Address Box 1636 Hereford Date Drilled 3-1 19 69

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, ~~used—gas line—or shop made~~. Diameter 16 in Total casing length 298 ft.
7. Casing perforations: from 198 ft. to 298 ft. Size 16 3/16 Number of rows 10
8. Pump Column: Size 8 in. Column, shaft length 280 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12" Number of stages 5 Pump discharge pipe: Size 8 in.
10. Depth to water level 170 ft. Pump yield 800 GPM. Pumping level: 205 ft.
11. Power Used: Electrical, Natural Gas, Butane, Other ~~Diesel~~ Horsepower 60 HP

Signature ___ (LANDOWNER OR AGENT) ___ (TITLE) ___ (ADDRESS)

FORM NO. 1524—REVISED 2-53

Duplicate - District Office Copy District File No. _____ (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

REGISTRATION OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

FOR USE OF COMMITTEEMAN	
FIELD WELL NO.	817
DATE RECEIVED	3-3-54
DATE APPROVED	3-3-54

1. Well Owner S. J. Barclay Address [illegible]
2. Well located approximately 8 miles N, 5 miles S, ___ miles E, ___ miles W of the town of Hereford
3. County Deaf Smith Section 125 Block M-7 Survey ___
4. Labor ___ League ___ Homestead ___ Abstract No. ___

ACTUAL LOCATION OF THIS WELL IS ___ measured yards from (N S) property line and ___ measured yards from (E W) property line. (CIRCLE N OR S) (CIRCLE E OR W)

5. Lessee or Operator ___ Address ___
6. Driller B. & F. Drilling Co. Address Plainview, Texas
7. Contractor ___ Address ___

DESCRIPTION OF WELL

8. Total depth of hole 200 ft.
9. Casing—New, used, gas line, or shop made. Diameter 8 - 16" in. Length 201 ft. (CIRCLE TYPE USED)
10. Casing perforated from 100 to 200, from ___ to ___
11. Size of perforations 4 row, ¾ in wide Number of perforations per foot 12" slots, 12" space
12. Horizontal perforation X Vertical perforation ___
13. If screen was installed: Type ___ Length ___ ft. Diam ___ in. Slot Size ___
14. Method of Drilling Rotary (ROTARY — CABLE TOOL OR SPUDDER — REVERSE ROTARY)
15. Date Completed February 24, 1954 (MONTH YEAR) Deepened ___ (MONTH YEAR)
16. Depth to water when drilled 69 ft.
17. Present depth to water ___ ft. Date of Measurement ___
18. Describe point from which depth measurements were made, and give sea-level elevation if available ___

DISCHARGE DATA

19. Pump discharge 1000 (GAL. PER MIN. OR CU. FT. PER SEC.)
20. Method of discharge measurement ___ (WEIR - ORIFICE - CURRENT METER - STANDING WATER)
21. Drawdown 50-60 ft No. of days pumped annually 120
22. Purpose of use Irrigation Depth of Setting 150'
23. Number of feet of suction pipe 8"
24. Special interest ___ (DISCHARGE — CLEARING TURBID WATER — ETC.)

SPECIAL DATA

25. Kind of pump Johnson 317 (TURBINE — CENTRIFUGAL — ETC.) Capacity and size of pump 8" - 1000 gpm
26. Pump column size 8 in. Bowl size 12 in.
27. Rated pump discharge 1000 gpm at 150 ft.
28. Kind of power Electric - Turbine - Vertical Air Horsepower rating of motor 40 (ELECTRICAL — NATURAL GAS — ETC.)

FORM NO. 1524—REVISED 2-53 FINNEL MAP ID 38 R-FILE

Duplicate - District Office Copy District File No. _____ (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

FOR USE OF COMMITTEEMAN	
FIELD WELL NO.	812
DATE RECEIVED	2-18-54
DATE APPROVED	3-3-54

I, S. J. Barclay (NAME OF LANDOWNER) Box 532, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. Section 152 Block M-7 Survey ___
3. Labor ___ League ___
4. Homestead ___ Abstract No. ___
5. Circle quarter section or labor in which well is to be located. NEW NW¼ SE¼ SW¼
6. Proposed use (municipal-industrial-irrigation) 160 acres (CIRCLE DESIRED USE)
7. Well will be pumped about 120 days per year.
8. Casing—new, used, gas line, or shop made—Dia. 16 in. (CIRCLE TYPE USED)
9. Drilling to start about 2-23-54 195
10. Driller or Contractor B. & F. Drilling Co. Address Plainview, Texas
11. Pump Size 8" Expected Gal. per Minute 1000
12. Type of Power—Electrical - Engine - Horsepower 40 (CIRCLE CORRECT POWER)

MARK DOT IN ONE CIRCLE @ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor.) MARK X, showing 3 closest adjacent wells.

This well will be located approximately ___ miles N, 6 miles south-west on Clovis Hiway. ___ miles E, ___ miles S, ___ miles W, of the town of

LOCATION OF PROPOSED WELL as submitted by applicant is 25 ft. measured yards from (N S) property line and 760 measured yards from (E W) property line. (CIRCLE N OR S) (CIRCLE E OR W)

Number the three adjacent wells on the map as 1, 2, and 3, to correspond with the following:

Existing well 1 410 measured yards from proposed well.
Owned by Palmer Norton
Address Hereford, Texas

Existing well 2 600 measured yards from proposed well.
Owned by L. J. Cooper
Address Hereford, Texas

Existing well 3 ___ measured yards from proposed well.
Owned by ___
Address ___

NORTH — SOUTH — WEST — EAST

Abandoned 7-2-69

COMMENT: This well is replacing a well that was drilled and did not prove satisfactory. 402' E. of S.E. cor. - Not well drilled.

$25.00 Deposit Paid

(FOR FURTHER COMMENT USE BACK OF FORM)

I hereby certify that I have read the foregoing statement, and that each and all of the items therein contained are true to the best of my knowledge and belief, and I agree that I must furnish my County Committeeman, as required by law, the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: S. J. Barclay (TITLE) (ADDRESS)

APPROVED BY: Pd Committee J. B. Wolf Earl A. Brown

I, the undersigned, do hereby certify that I have furnished to my County Committeeman the completed well registration and log of well as required by Article 7880-3c, Sec. 2-4, Texas Revised Civil Statutes.

Received by: Maurice W. Haynie (COUNTY COMMITTEEMAN) Deaf Smith (COUNTY) S. J. Barclay (OWNER OR AGENT) 3-3- 1954 (DATE)

SMITH PRINTING CO. - OTAL 2-5-53

AB

ORIGINAL - DISTRICT OFFICE

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

County: Deaf Smith
Permit No. 64560
Date Received: 3-17-04
Pump Size: 4 Maximum Yield: 265 GPM

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

357-2595

Land Owner: Kevin Sanders Address: 3331 County Road I, Hereford TX 79045

Well located ___ miles N, 3 miles S, ___ miles E, 3 miles W of the town of Hereford

County: Deaf Smith Labor ___ League ___ Abstract No. ___

NW¼ NE¼ SW¼ (SE¼) Section 152 Block M-7 Survey ___
(Circle One)
Township ___ Range ___

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ✓, Reverse Rotary ___, Air ___, Spudder ___, Other ___, Diameter of Well: 13¾ inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
1	4	Top Soil	333	337	Red Bed
4	15	Chalice			
15	35	Rock ledges			
35	155	Sand & Rock ledges			
155	175	Clay & Rock & Some Sand			
175	200	Shale Clay, Sand with Coarse Sand			
200	242	Sand & clay some rock ledges			
242	268	[illegible] & Coarse Sand			
268	310	Hard Sand [illegible] Clay			
310	338	Coarse Red Sand & Clay [illegible]			

Gravel packed: Yes ✓ No ___ Gravel Size ¼" Quantity in yards 8

Cementing record: filled with cement between casing and wall of well from 12' feet to surface, including pump base.

Casing: Steel ✓, Plastic ___, Other ___ Diameter 8 in. Total casing length including screen or perforated casing 337 ft.

Manufactured well screen from 211 ft. to 337 ft. Size ⅛" Number of rows 36

Casing perforated from ___ ft. to ___ ft. Size ___ Number of rows ___

Latitude Of Well: N ___° ___' ___" Longitude Of Well: W ___° ___' ___"

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller: [signature] (SIGNATURE) Address: Rt 3 Box 73 Date drilled 2-10-2004
Texas License No. 10417 WI

DESCRIPTION OF PERMANENTLY INSTALLED PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

Discharge pipe size 4 in. Pump Column: Size 4 in. Length 320 ft. Suction pipe length ___ ft.

Pump bowls: Size 6" Number of stages 7 Pump yield 185 GPM Estimated ___ Measured ✓

Depth to static water level 237 Ft. Estimated ___ Measured ✓ Pumping level: 310 ft.

Power Unit: (Electrical) ✓ Natural Gas ___ Other ___ Horsepower 20

Type of Pump: Turbine ___ Submersible ✓ Other ___ Well chlorinated after pump installed ✓ (yes/no)

I hereby certify that this well was equipped as stated above.

Pump Installer: [signature] (SIGNATURE) Address: 211 Ave J Hfd TX. Date 2-16-04
Texas License No. 4504I

If this is a replacement well, I certify that the abandoned well is properly capped or filled in accordance with state law and the rules of the district. To the best of my knowledge and belief, all above information is true and accurate.

Landowner: [signature] (SIGNATURE) Date 3-17-04

REV 3/2000-1,000

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1.

Notification of abandonment of Irrigation / Industrial well / Municipal

Permit # 4277
County Deaf Smith

I, C. Palmer Norton do hereby certify that I have abandoned and ~~plugged~~/capped Well No. 812

Located in Deaf Smith County, on ~~XXX~~, NE 1/4, ~~XXXXXXXXXX~~

of Section 152 Block M-7

Survey ___ Reason for abandonment

drilled too shallow

Date July 2, 1969.

RECEIVED JUL 16 1969

C. Palmer Norton
Signature of owner or agent

Form No. 8R AWP

PINNED X-FILE

MAP ID 40

District File No. ___
FOR USE OF DISTRICT OFFICE ONLY

Original—District Office Copy

High Plains Underground Water Conservation District No 1

Application for Water Well Permit

Field Well No. 2345
Date Application Filed 4-16-62
Time of Filing 9:50 AM
Date Recommended By County Committee 4-19-62
Size of Pump 8 Maximum Yield 1000 GPM

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

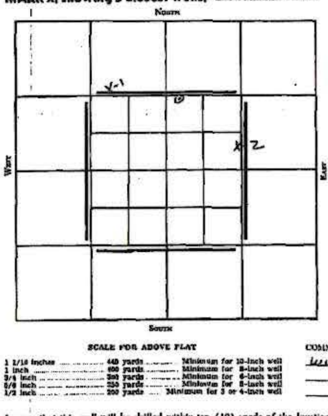
I, James C. Douglas (NAME OF LANDOWNER) Rt. 5 Box 148, Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. ~~NW¼, NE¼, SW¼~~, (SE¼) of Section 152 Block M-7
MARK OUT ONES THAT DO NOT APPLY
Survey ___ Abstract ___
3. Labor ___ League ___
4. Proposed Use ~~(Municipal-Industrial~~ (Irrigation))
MARK OUT ONES THAT DO NOT APPLY
5. Drilling to start about Soon, 19___

This well will be located: 3.5 miles ~~N~~ or (S) and 3 miles ~~E~~ or (W) of the town of Hereford, Texas
MARK OUT ONE THAT DOES NOT APPLY

Permit good for 4 months only from date of filing

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest wells, and/or authorized well site.



Please Make Sure Your Measurements Are Correct —
(They will be checked for accuracy)

Location of proposed Well as submitted by applicant is 12 measured yards from (N) ~~S~~
MARK OUT ONE THAT DOES NOT APPLY
and 367 measured yards from (E) ~~W~~ property line, quarter section line, or labor line.

Number three adjacent wells, and/or authorized well sites, on the plat as 1, 2, and 3, to correspond with the following:

Well 1 400 measured yards from proposed well site.
Owned by S J Barclay
Address ___

Well 2 445 measured yards from proposed well site.
Owned by Kenny George
Address Hereford

Well 3 ___ measured yards from proposed well site
Owned by ___
Address ___

SCALE FOR ABOVE PLAT

1 1/10 inches	440 yards	Minimum for 10-inch well
1 inch	400 yards	Minimum for 8-inch well
3/4 inch	300 yards	Minimum for 6-inch well
5/8 inch	250 yards	Minimum for 5-inch well
1/2 inch	200 yards	Minimum for 3 or 4-inch well

COMMENTS: No other wells within ¼ mile

RECEIVED ... HIGH PLAINS UNDERGROUND WATER CONS. DIST. No. 1

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: James C. Douglas (SIGNATURE (LANDOWNER OR AGENT)) TITLE ADDRESS

This permit recommended subject to the rules for spacing from existing wells and/or authorized well site.
1. Lahay E. Ballard 2. Charles Packard 3. Clinton Jackson

Check here: ☑ when well is located on the County map. ☐ Deposit Received

SMITH PRINTING CO. - DIAL 364-7617

AB

☐ DATE ☐ 321 ☐ NEW APP. BOOK ☑ ABC FILE ☑ X-FILE ☐ WELLS COMPLETED FILE ☐ MASTER SHEET ☐ PINNED ON COUNTY MAP ☐ DEPOSIT REFUNDED ☐ DEPOSIT FORFEITED REFUND CK #

MAP ID 39

ORIGINAL - DISTRICT OFFICE

High Plains Underground Water Conservation District No. 1

Application For Water Well Permit

(PLEASE TYPE OR PRINT)

County: Deaf Smith
Permit No. 64560
Time Of Filing 8:00 a.m.
Date Filed 2-9-04
Expiration Date 10-9-04
Pump Size 4 Max Yield GPM 265

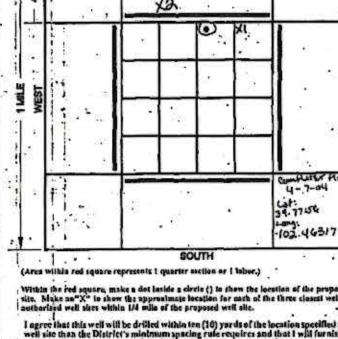
357-2595

I, Kevin Sanders (NAME OF LANDOWNER) 3331 County Road I Hereford TX 79045 (LANDOWNER'S ADDRESS)
hereby make an application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill a water well at the site described below:

County Deaf Smith
NW 1/4 NE 1/4 SW 1/4 (SE 1/4)
Block M-7 Section 152
Survey ___ Abstract No. ___
Township ___ Range ___
Labor ___ League ___
Other ___

WELL TO BE DRILLED
Municipal - Industrial - (Irrigation) - Domestic
Other: ___
Drilling will start on or about ASAP
Tract located ___ N, 3 S, ___ E, 3 W miles, of the town of Hereford

Indicate tract size and shape if less than the 1/4 section shown below.



15 yards N or (S) of quarter section line or labor line and 517 yards (E) or W of quarter section line or labor line.

Distance in yards to wells within 440 yards (1/4 mile) (maximum of 3) of proposed site. Number to correspond with grid.

X1 202 measured yards from proposed well site.
Permit Number ___
Owned By applicant

X2 247 measured yards from proposed well site.
Permit Number 6228
Owned By Scott Hall Cattle

X3 ___ measured yards from proposed well site.
Permit Number ___
Owned By ___

COMMENT/EXPLANATION

(Area within red square represents 1 quarter section or 1 labor.)

Within the red square, make a dot inside a circle () to show the location of the proposed well site. Make an "X" to show the approximate location for each of the three closest wells or authorized well sites within 1/4 mile of the proposed well site.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to any existing well or authorized well site than the District's minimum spacing rule requires and that I will furnish the District the complete well registration and log immediately upon completion of this well and prior to the production of water for the site identified above.

I further agree not to allow irrigation tailwater to escape from land on which this well is used for irrigation nor to convey water from this well in an open, unlined ditch. I understand that if I violate any of this agreement, the Board of Directors of the District may order that I may no longer use the well for any purpose until the problem is permanently resolved.

[signature] (Signature of landowner or agent) 3331 County Road I, Hereford TX 79045 (Address) 357-2595 (Telephone)

This permit is recommended for approval by County Committee subject to Water District rules.
1 [signature] 2 Bill Steele 3 [signature]
(3 of 5 County Committee Member Signatures Required)

Date recommended for approval 2-11-04

REV 3/2001

D-6: BH/RT

FORM NO. [illegible]

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No.	48543
Date Received	4-3-74
Permit Size of Pump	6 in.
Maximum Yield	560 GPM

1. Land Owner TED MC WHORTER Address Rt 5, Hereford, Texas
2. Well located ____ miles N, 7 miles S, ____ miles E, 3 miles W of town of Hereford, Texas
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. NW¼ (NE¼) SW¼ SE¼ Section 152 Block M-7 Survey ____
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ MARK OUT ONE THAT DOES NOT APPLY Diameter of Well: 27 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	5	Top Soil			
5	121	Clay & Caliche			
121	151	Sand & Caliche			
151	186	Med. Sand			
186	205	Med. Sand & Clay			
205	240	Coarse Sand			
240	325	Sand & Sand Rock			
325	348	Med. Sand & Clay			
348	352	Red Bed			
					RECEIVED APR 4 1974

REMARKS:

GRAVEL PACK

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief. Kenny Gearn

Driller Kenny Gearn Machine Address Box 1635, Hereford, Texas Drilled 2-26 19 74
#1185

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length 352 ft.
7. Casing perforations: from 200 ft. to 352 ft. Size 1/8" Number of rows 12
8. Pump Column: Size 6 in. Column, shaft length 280 ft. Suction pipe size 6 in. Suction pipe length 3 ft.
9. Pump bowls: Size 10 Number of stages 7 Pump discharge pipe: Size 6 in.
10. Depth to water level 165 ft. Pump yield 400 GPM. Pumping level: 235 ft.
11. Power Unit: (Electrical), Natural Gas, Butane, Other ____ Horsepower 40

Signature ____ LANDOWNER OR AGENT ____ TITLE ____ ADDRESS

FORM NO. [illegible]

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN	
Field Well No.	2345
Date Received	5-10-62
Permit Size of Pump	8 in.
Maximum Yield	1000 GPM

1. Land Owner JAMES Clifford [redacted] Douglas Address Rt 5 Box 148 Hereford
2. Well located ____ miles N, 3.5 miles S, ____ miles E, 3 miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. NW¼ NE¼ SW¼ (SE¼) Section 152 Block M-7 Survey ____
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ✓ Spudder ____ MARK OUT ONE THAT DOES NOT APPLY Diameter of Well: 20 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	5	Top Soil	263	279	Corse Brown Sand w/Sand Stone
5	20	Caliche	279	293	Fine Brown Sand w/Clay
20	41	Brown Clay	293	356	Med-Corse Tan Sand w/
41	69	Fine Brown Sand			Loose Sand Rock
69	148	" " " w/Rock Streeks	356	358	Red Bed
148	172	Med Corse Sand			
172	183	" " Sand w/ Brown Loose Rock			
183	215	Med Fine Sand w/Rock			
215	235	Good Corse White Sand			
235	263	Med Fine Brown Sand w/Rock Layers			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller L. J. Dicks Address Hereford, Texas Date Drilled 5-5 1962

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, (used, gas line,) or shop made. Diameter 18 in. Total casing length 358 ft.
7. Casing perforations: from 236 ft. to 358 ft. Size 3/16 x 4 Number of rows 6
8. Pump Column: Size 8 in. Column, shaft length 250 ft. Suction pipe size 8 in. Suction pipe length 70 ft.
9. Pump bowls: Size 12 Number of stages 5 Pump discharge pipe: Size 8 in.
10. Depth to water level 120 ft. Pump yield 1000 GPM, Pumping level: 224 ft.
11. Power Unit: Electrical, (Natural Gas) Butane, Other ____ Horsepower 800 MM

Signature ____ LANDOWNER OR AGENT ____ TITLE ____ ADDRESS

MAP ID 42 PINNED Exp 6-19-63 ✓ J

ALP. X-FILE

FORM NO. [illegible]

Original— District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	2550
Date Application Filed	2-19-63
Time of Filing	1:15 PM
Date Recommended By County Committee	Mar 4, 1963
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

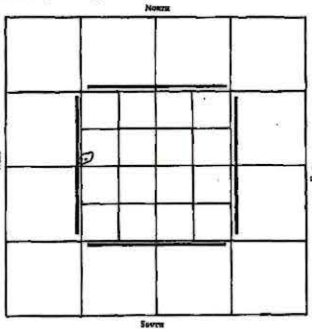
Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Charlie Holt (NAME OF LANDOWNER) Box 21, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. (NW¼) NE¼, SW¼, SE¼ of Section 135 Block M-7 MARK OUT ONES THAT DO NOT APPLY
Survey ____ Abstract ____
3. Labor ____ League ____
Permit good for 4 months only from date of filing
4. Proposed Use (Municipal-Industrial-(Irrigation)) MARK OUT ONES THAT DO NOT APPLY
5. Drilling to start about 30 days 19__
This well will be located: 3 miles N or (S) and 3 miles E or (W) of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest wells, and/or authorized well site.



SCALE FOR ABOVE PLAT

1 1/10 inches	440 yards	Minimum for 10-inch well
1 inch	400 yards	Minimum for 8-inch well
3/4 inch	300 yards	Minimum for 6-inch well
5/8 inch	250 yards	Minimum for 5-inch well
1/2 inch	200 yards	Minimum for 3 or 4-inch well

Please Make Sure Your Measurements Are Correct — (They will be checked for accuracy)

Location of proposed Well as submitted by applicant is 390 measured yards from (N) S and 15 measured yards from E (W) property line, quarter section line, or labor line.

Number three adjacent wells, and/or authorized well sites, on the plat as 1, 2, and 3, to correspond with the following:

Well 1 ____ measured yards from proposed well site. Owned by ____ Address ____

Well 2 ____ measured yards from proposed well site. Owned by ____ Address ____

Well 3 ____ measured yards from proposed well site. Owned by ____ Address ____

COMMENTS: no wells within 440 yds of proposed site

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Chas M. Holt (SIGNATURE (LANDOWNER OR AGENT)) Owner (TITLE) Box 21 Hereford (ADDRESS)

This permit recommended subject to the rules for spacing from existing wells and/or authorized well site.
1. Lahoy E. Ballard 2. J. E. McCutcheon 3. Billy B. [illegible]

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL [illegible]

AB

☑ [illegible] ☑ MA ☑ NEW APP. BOOK ☑ ABC FILE ☑ X FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

MAP ID 41

FORM NO. 446 AWP

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	14829
Time of Filing	8:15 A.M.
Date Application Filed	7-2-73
Expiration Date	11-2-73
Date Recommended By County Committee	7-11-73
Size of Pump	6
Maximum Yield	560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

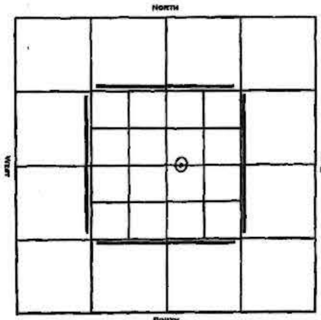
I, Ted McWhorter (NAME OF LANDOWNER) Route #5, Hereford, Texas 79045 (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
32.87A tract out of NE¼ Section 152 Block M-7 MARK OUT ONES THAT DO NOT APPLY
Survey ____ Abstract ____
Township ____ Range ____
Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
Drilling to start about month 19__
This well will be located: 7 miles S and 3 miles W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



1 1/10 in... 440 yds.... Minimum for 10-in. well... yield—more than 1000 G.P.M.
1 in........ 400 yds.... Minimum for 8-in. well... yield—500 to 1000 G.P.M.
3/4 in...... 300 yds.... Minimum for 6-in. well... yield—300 to 500 G.P.M.
5/8 in...... 250 yds.... Minimum for 5-in. well... yield—265 to 300 G.P.M.
1/2 in...... 200 yds. Minimum for 3 or 4-in. well... yield—70 to 265 G.P.M.

Location of proposed Well as submitted by applicant is 440 measured yards from (N XX) and 371 measured yards from (X W) quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ____ measured yards from proposed well site. Owned by ____ Address ____

No. 2 ____ measured yards from proposed well site. Owned by ____ Address ____

No. 3 ____ measured yards from proposed well site. Owned by ____ Address ____

RECEIVED JUL 16 1973

COMMENT

No wells within 440 yds.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

Ted L. McWhorter

This notice given by: Ted L. McWhorter (SIGNATURE LANDOWNER OR AGENT) owner (TITLE) Route #5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
1. James E. Higgins 2. W. L. Davis, Jr. 3. George Ritter

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded Check No. ____

Smith Printing Co.—Lubbock

FORM NO. [illegible]

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 5416
Date Received 10-1-76
Permit Size of Pump 5 Maximum in Yield 390 GPM

1. Land Owner Clayton W. Sanders Address Route #5, Hereford, Texas 79045
2. Well located ___ miles N. 3 miles S. ___ miles E. 3 miles W of the town of Hereford
3. County Deaf Smith Labor ___ League ___ Abstract No. ___
4. XXXXXXXXXXXX SE¼ Section 152 Block M-7 Survey ___
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ___ Spudder ___ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well 16" inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
1	4	Top Soil			
4	55	Chalice + Clay			
55	60	Rock white			
60	185	Clay + sand + sandrock			
185	250	Clay + sandrock			
250	300	Sand + sandrock some clay			
300	350	Sand + sandrock			
350	360	Sand + gravel + clay			
360	364	Clay + Red Bed			

RECEIVED NOV 4 1976

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller [signature] Address Rt 3 Date Drilled 7-9 19 76

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new) used, gas line, or shop made. Diameter 12" in. Total casing length 360 ft.
7. Casing perforations: from 360 ft. to 210 ft. Size [illegible] Number of rows [illegible]
8. Pump Column: Size 6 in. Column, shaft length 320 ft. Suction pipe size 6 in. Suction pipe length 20 ft.
9. Pump bowls: Size 10" Number of stages 5 Pump discharge pipe: Size 5 in.
10. Depth to water level 205 ft. Pump yield 310 GPM. Pumping level 265 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other Nat Gas Horsepower 60

Signature Clayton W. Sanders (LANDOWNER OR AGENT) Owner (TITLE) Hereford Tex (ADDRESS)

FORM NO. [illegible]

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 2550
Date Received 4-11-63
Permit Size of Pump 8 Maximum in Yield 1000 GPM

1. Land Owner Charlie Holt Address Box 21 - Hereford
2. Well located ___ miles N. 3 miles S. ___ miles E. 3 miles W of the town of Hereford
3. County Deaf Smith Labor ___ League ___ Abstract No. ___
4. NW¼ ~~NE¼ SW¼ SE¼~~ Section 135 Block M-7 Survey ___
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary Rotary Spudder ___ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 16 Inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil	350	358	Red Bed
4	60	Caliche			
60	100	Sandy Clay			
100	160	Soft Stone and Sand Strips			
160	185	Sand & Stone, Clay Mixed			
185	200	Soft Fine Sand			
200	240	Med. Course Sand & Stone			
240	270	Sand & Stone			
270	310	Sand & Stone			
310	350	Brown Sandy Clay			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller West Texas Drilling, Inc. Address Box 926 Date Drilled 3/28/63 19 ___

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, XXXXXXXXXXXXXXXX. Diameter 16 in. Total casing length 358 ft.
7. Casing perforations: from 158 ft. to 328 ft. Size 1/8 Number of rows 6
8. Pump Column: Size 8 in. Column, shaft length 200 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12 Number of stages 9 Pump discharge pipe: Size 8 in.
10. Depth to water level 107 ft. Pump yield 1000 GPM. Pumping level: 142 ft.
11. Power Unit: (Electrical) Natural Gas, Butane, Other ___ Horsepower 50

Signature Big T Pump Co., Inc. - Box 827 - Hereford, Tex (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

FORM NO. 1954 AFF.
ORIGINAL – District Office – File
THIS FORM MUST BE FILLED IN WITH TYPEWRITER

SUPPLEMENT TO APPLICATION
Deaf Smith County No. XXX 5416

APPLICATION AND AFFIDAVIT

I, Clayton W. Sanders HEREBY CERTIFY: that upon the granting of a permit by the High Plains Underground Water Conservation District No. 1, to use a 6 -inch column pipe at a distance less than that required by the rules and regulations of said District, I will equip my pump with impellers so that it will not pump more than 390 gallons of water per minute when said pump is operated at a rate of 1750 revolutions per minute and do hereby agree that the maximum output for this pump shall at all times, not exceed 390 gallons per minute, which rate has been set out by the rules and regulations of said District as the ordinary pumping capacity for a 5 -inch pump, for which I qualify under the minimum spacing regulations as set forth by the District and I do hereby agree to furnish said District with a certificate or statement from a reliable pump company or water engineer, certifying that said pump has been equipped as above set forth.

The above mentioned pump is to be placed in a well on property owned by:

Clayton W. Sanders
Route #5, Hereford, Texas 79045
ADDRESS

in Deaf Smith County, Texas in
Section: 152 Block: M-7 Survey: ___
or
Labor: ___ League: ___ Survey: ___
in the southeast quarter of the section or labor
at 6 measured yards from the North, ~~South~~ line of this quarter or labor (CROSS OUT ONE)
and 21 measured yards from the East, ~~West~~ line of this quarter or labor. (CROSS OUT ONE)

x Clayton W Sanders
SIGNATURE (OWNER OR AGENT)
October 13, 1976
DATE

RECEIVED NOV 4 1976

I do solemnly swear or affirm that I have read the above and foregoing statements and the facts contained therein are true and correct and I hereby agree to abide by the foregoing statements.

x Clayton W Sanders
SIGNATURE (OWNER OR AGENT)
October 13, 1976
DATE

THE STATE OF TEXAS } BEFORE ME B. F. CAIN, COUNTY CLERK
COUNTY OF DEAF SMITH } XXXXXXXXXX in and for Deaf Smith County, Texas

on this day personally appeared Clayton W. Sanders known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS 13 day of October, A.D., 19 76

(L.S.)

Wilma Clark Deputy
XXXXXXXXXXXX—Deaf Smith—County, Texas

☑ [illegible] ☑ [illegible] ☑ NEW APP. BOOK ☑ APP. FILE ☑ X FILE ☑ WATER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

MAP ID 43

120
120A

FORM NO. 460 AMP

ORIGINAL—DISTRICT OFFICE COPY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 5416
Time of Filing 2:00 PM
Date Application Filed 5-24-76
Expiration Date 9-24-76
Date Recommended by County Committee 6-2-76
Size of Pump 5 Maximum Yield 390 GPM

I, Clayton W. Sanders (NAME OF LANDOWNER) Route #5, Hereford, Texas 79045 (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

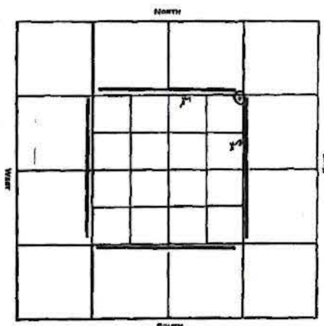
County Deaf Smith
XXXXXXXXXX SE¼ Section 152 Block M-7
MARK OUT ONES THAT DO NOT APPLY
Survey ___ Abstract ___
Township ___ Range ___
Labor ___ League ___

Proposed Use (Municipal-Industrial-Irrigation)
MARK OUT ONES THAT DO NOT APPLY
Drilling to start about week 19 ___
This well will be located { 3 miles ~~N~~ S and 3 miles ~~E~~ W of the (MARK OUT ONE THAT DOES NOT APPLY)
town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 6 measured yards from (N ~~S~~) and 21 measured yards from (E ~~W~~) (MARK OUT ONE THAT DOES NOT APPLY) quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 300 measured yards from proposed well site.
Owned by applicant #2395
Address ___

No. 2 265 measured yards from proposed well site.
Owned by Carlisle #4116
Address ___

No. 3 ___ measured yards from proposed well site.
Owned by ___
Address RECEIVED JUN 3 1976

COMMENT

No other wells within 440 yds.

1 1/10 in...440 yds. Minimum for 10-in. well. yield—more than 1000 G.P.M
1 in.....400 yds. Minimum for 8-in. well. yield—500 to 1000 G.P.M
3/4 in....300 yds. Minimum for 6-in. well. yield—390 to 500 G.P.M.
5/8 in....250 yds. Minimum for 5-in. well. yield—265 to 390 G.P.M.
1/2 in.....200 yds. Minimum for 3 or 4-in. well yield—70 to 265 G.P.M

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

C. W. Sanders
This notice given by: C. W. Sanders (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Route #5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1 W. L. Davis Jr. 2 James E. Higgins 3 [signature]

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded
Check No. ___

Duplicate—File Copy

[redacted]

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No.	
Date Received	
Permit Size	Maximum Yield GPM

1. Land Owner [illegible] Address [illegible]
2. Well located ___ miles N. ___ miles S. ___ miles E. ___ miles W of the town of [illegible]
3. County [illegible] Labor ___ League ___ Abstract No. ___
4. NW¼ WW¼ SW¼ SE¼ (MARK ONE THREE THAT DO NOT APPLY) Section 152 Block M-7 Survey ___

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ___ Spudder ___ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: [illegible] inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
1	[illegible]	Top Soil			
[illegible]	[illegible]	Chalky Clay			
[illegible]	[illegible]	Hard Chalk			
[illegible]	[illegible]	Yellow & Red Sandstone			
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	Red & Yellow Sandstone			
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]			

RECEIVED NOV 4 1976

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller [illegible] Address [illegible] Date Drilled [illegible] 19 ___

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

8. Casing: new, used, gas line, or shop made. Diameter [illegible] in Total casing length ___ ft.
9. Casing perforations: from [illegible] ft. to [illegible] ft. Size ___ Number of rows ___
6. Pump Column: Size [illegible] in. Column, shaft length 320 ft. Suction pipe size ___ in. Suction pipe length [illegible] ft.
9. Pump bowls: Size [illegible] Number of stages [illegible] Pump discharge pipe: Size [illegible] in.
10. Depth to water level [illegible] ft. Pump yield [illegible] GPM. Pumping level: [illegible] ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other [illegible] Horsepower [illegible]

Signature ___ (LANDOWNER OR AGENT) TITLE ___ ADDRESS ___

ATTACHMENT

HT10-13-705

MAP ID 43

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Ogallala Project No. ___ Permit No. 5416 State Well No. 10-13-705 County Deaf Smith

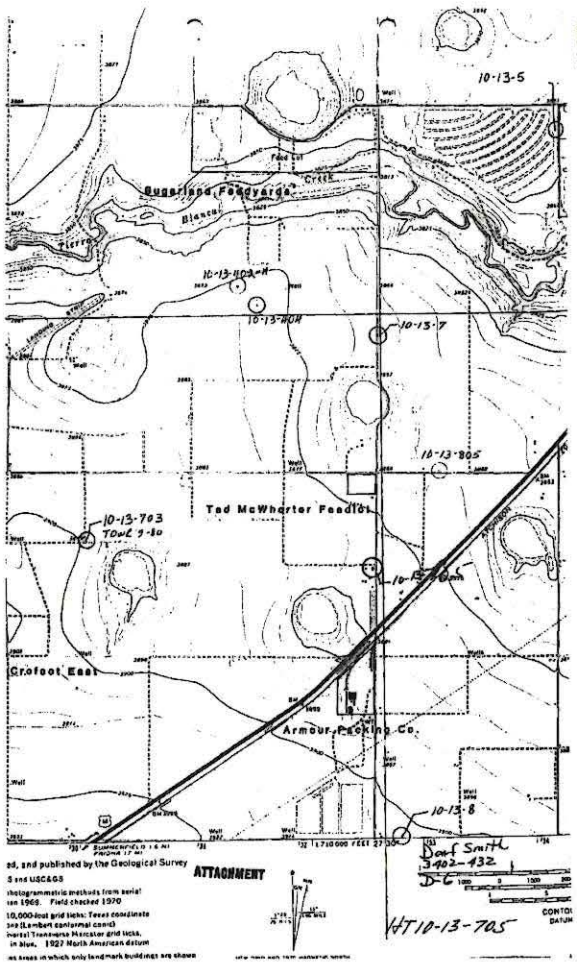
1. Location: NE ¼, SE ¼, Section 152, Block M-7, Survey BS&F, Lat. 34° 46' 18", Long. 102° 37' 33"
2. Owner: Clayton W. Sanders Address: Rt. 5, Hereford, Tx.
   Tenant (other): ___ Address: ___
   Driller: Bob Campbell Address: Rt. 3, Hereford, Tx.
3. Land Surface Elevation: 3870 ft. above msl determined by topo map
4. Drilled: 7-9 19 76; Dug, Cable Tool, Rotary, Air.
5. Depth: Rept. 364 ft. Meas. ___ ft.
6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfr. ___ Type turbine
   No. Stages 5, Bowls Diam. 10 in., Setting 320 ft.
   Column Diam. 6 in., Length Tailpipe 20 ft.
8. Motor: Mfr. ___ Fuel Nat. gas HP. 60
9. Yield: Flow ___ gpm, Pump 310 gpm, Meas., Rept., Est. Date 7-9-76
10. Performance Test: Date ___ Length of Test ___ Made by ___
    Static Level ___ ft. Pumping Level ___ ft. Drawdown ___ ft.
    Production ___ gpm Specific Capacity ___ gpm/ft.
11. Quality: (Remarks on taste, odor, color, etc.) ___
    Analyses
    Date ___ Laboratory ___ TDS ___ Sp Cond ___
    Date ___ Laboratory ___ TDS ___ Sp Cond ___
12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Logs(s) ___
13. Water Level(s): ___ ft. rept. meas. ___ 19 ___ (type) above/below ___ which is ___ ft. above/below Land Surface
    ___ ft. rept. meas. ___ 19 ___ above/below ___ which is ___ ft. above/below Land Surface
14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.)
15. Recorded by: B. Bates Source of data: field + HPWCD files Date: 5-22-81
16. Remarks: ___
17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting (feet) From	to
12	new	0	340
Perforated by 20 rows of ½" slots			
		260	310

RECEIVED AUG 20 1981 CR/TDWR

TDWR-0300

W/L Obs. Well ___ W/L Obs. Well ✓ State Well No. 10-13-705



ed, and published by the Geological Survey
S and USC&GS
photogrammetric methods from aerial
ion 1969. Field checked 1970
10,000-foot grid ticks: Texas coordinate
sys (Lambert conformal conic)
ihertal Transverse Mercator grid ticks,
in blue. 1927 North American datum
as areas in which only landmark buildings are shown

ATTACHMENT

Typewrite (Black ribbon) or Print Plainly (soft pencil or black ink) Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY	
Organization No. ___	Lab No. ___
Work No. ___	

CHEMICAL WATER ANALYSIS REPORT

Send report to:
Data Collection and Evaluation Section
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

RECEIVED NOV 10 1981 CR/TDWR

KEY PUNCHED

County 059 Deaf Smith
State Well No. 10 13 705
Well No. 5416
Date Collected 03 04 81

Location NE¼ SE¼, Sec. 152, Blk. M-7 BS&F Survey Sample No. ___ By HPWCD BB
Source (type of well) Irr. turbine Owner Clayton W. Sanders-Rt. 5, Hereford, Tx
Date Drilled 7-9-76 Depth 364 ft. WBF Ogallala
Producing intervals ___ Water level ___ ft. Sample depth ___ ft.
Sampled after pumping cont. hrs. Yield ___ GPM Temperature ___ °F ___ °C
Point of collection faucet on discharge Appearance ☑ clear ☐ turbid ☐ colored ☐ other
Use Irr. Remarks near feedlot (Ted McWherter) #10

(FOR LABORATORY USE ONLY) CE1-14641 CHEMICAL ANALYSIS JUL 22 '81
Laboratory ___ Date Received JUN 17 1981 Date Reported ___

		MG/L	ME/L
Silica	00055	47	
Calcium	00915	43	2.13
Magnesium	00926	32	2.67
Sodium	00929	35	1.52
	Total		6.32
☐ Potassium	00937		
[2]☐ Manganese	01055		
☐ Boron	01022		
[2]☐ Total Iron	01045		
☐ (other)		MG/L	
Specific Conductance (micromhos/cm³)	00096	526	
Diluted Conductance (micromhos/cm³)		4 x 156 = 624	

%Na ___ SAR ___ RSC ___

** ☐ Items will be analyzed if checked.

		MG/L	ME/L
Carbonate	00445	0	0.+
Bicarbonate	00440	299	4.90
Sulfate	00945	41	0.85
Chloride	00940	18	0.51
Fluoride	00951	2.2	0.12
Nitrate	71650	3.6	0.06
pH	00403	8.3	Total 6.44
[1] Dissolved Solids (residue at 180° C)	70300		366
Phenolphthalein Alkalinity as C aCO₃	00415		0
Total Alkalinity as C aCO₃	00410	490	295
Total Hardness as C aCO₃	00900	480	240
[2] Nitrogen Cycle			
Ammonia - N	00610		.
Nitrite - N	00615		.
Nitrate - N	00820		.
Organic Nitrogen	00605		.

[1] The bicarbonate reported in this analysis can be converted by computation (multiplying by 0.8817) to an equivalent amount of carbonate, and the carbonate figure used in the computation of dissolved solids.
[2] Nitrogen cycle requires separate sample.
[3] Total Iron and Manganese require separate sample.

Analyst ___ Checked By ___

TDWR-0148 (Rev. 1-8-80)

☑ 1-M ☑ 133 ☑ NEW APP. BOOK ☑ ABC FILE ☑ X FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM No. 448 AWP

MAP ID 44

Original—District Office Copy

RW

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	4116
Time of Filing	8-19-68 10:00 A.M.
Date Application Filed	8-19-68
Expiration Date	12-19-68
Date Recommended by County Committee	9-15-68
Size of Pump	6
Maximum Yield	560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, W. A. & Kenny Gearn (NAME OF LANDOWNER) Box 1635, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

XXXXXXXXXXXX SE¼ Section 152 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

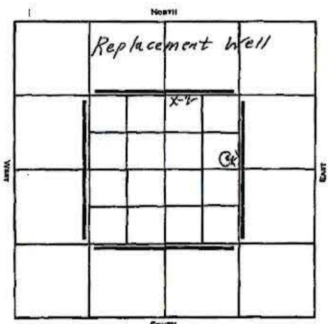
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about Soon, 19__

This well will be located 3½ milesXXXXX S and (MARK OUT ONE THAT DOES NOT APPLY) 3 milesXXXor W of the town of Hereford

MARK DOT INSIDE CIRCLE ● within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 470 measured yards from (N S) S and 60 measured yards from (E W) E (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 50 measured yards from proposed well site.
Owned by Applicant-abandoned # 1785
Address ______

No. 2 435 measured yards from proposed well site.
Owned by C. T. Douglas # 2395
Address RECEIVED

No. 3 LUBBOCK, TEXAS measured yards from proposed well site. SEP 1 0 1968
Owned by HI-PLAINS UNDERGROUND
Address WATER CONS. DIST. NO. 1

COMMENT

No other wells within 440 yds.

Replacement.

1 1/10 ins...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds.....Minimum for 8-in. well...yield—560 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—380 to 560 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—265 to 380 G.P.M.
1/2 in.......200 yds..Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: N.E. Wolfe (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 1635, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. Bill Stockton 3. Bill W. Tissue

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded

Check No. ______

SMITH PRINTING CO. • DIAL PO 3-5515

AB

FORM No. 4000AW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN

Field Well No.	4116
Date Received	9-11-68
Permit Size of Pump	6 in.
Maximum Yield	560 GPM

1. Land Owner W. E. Gearn Address Box 1635 Hereford, Texas

2. Well located ______ miles N, 3½ miles S, ______ miles E, 3 miles W of the town of Hereford

3. County Deaf Smith Labor ______ League ______ Abstract No. ______

4. XXXXXXXXXXXXXXX SE¼ Section 152 Block K-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary XXX Spudder (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well 28 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0-	4	Surface			
4	40	Calichi & Clay			
40	70	Sand & Calichi			
70	140	Sand			
140	180	Calichi clay & sand			
180	245	Med Course sand			RECEIVED
245	325	M. C. sand W/hard calichi shells			LUBBOCK, TEXAS SEP 1 6 1968
325	350	Sandy clay			HI-PLAINS UNDERGROUND
350	355	Red Bed			WATER CONS. DIST. NO. 1

REMARKS:

Gravel packed

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller N. E. Wolfe N.E. Wolfe Address Box 1635 Hereford, Texas Date Drilled 8-22, 19 68

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, XXXXXXXXXXXXXXXX Diameter 16 in. Total casing length 355 ft.

7. Casing perforations from 160 ft. to 348 ft. Size 1/8 Number of rows 10

8. Pump Column: Size 6 in. Column, shaft length 240 ft. Suction pipe size 6 in. Suction pipe length 10 ft.

9. Pump bowls: Size 10 Number of stages 6 Pump discharge pipe: Size 6 in.

10. Depth to water level 163 ft. Pump yield 500 GPM. Pumping level: 192 ft.

11. Power Unit: (Electrical), Natural Gas, Butane, Other ______ Horsepower 30

Signature W. A. Gearn (LANDOWNER OR AGENT) Owner (TITLE) Hereford Tex (ADDRESS)

MAP ID 43

Texas Water Development Board

Texas Water Development Board (TWDB) Groundwater Database (GWDB) Well Information Report for State Well Number 10-13-705

groundwater

GWDB Reports and Downloads | **Well Basic Details** | Scanned Documents

State Well Number	1013705	Well Type	Withdrawal of Water
County	Deaf Smith	Well Use	Irrigation
River Basin	Red	Water Level Observation	None
Groundwater Management Area	2	Water Quality Available	Yes
Regional Water Planning Area	O - Llano Estacado	Pump	Turbine
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.771667	Power Type	Natural Gas Engine
Latitude (degrees minutes seconds)	34° 46' 18" N	Annular Seal Method	
Longitude (decimal degrees)	-102.459723	Surface Completion	
Longitude (degrees minutes seconds)	102° 27' 35" W	Owner	Clayton W. Sanders
Coordinate Source	+/- 1 Second	Driller	Bob Campbell
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	Drillers Log
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3878	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)	364	Groundwater Conservation District Well Number	
Well Depth Source	Driller's Log	Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date	7/9/1976	Previous State Well Number	
Drilling Method		Reporting Agency	Groundwater Conservation District
Borehole Completion		Created Date	3/5/1996
		Last Update Date	3/5/1998

Remarks

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
16	Screen				210	360

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Texas Water Development Board

Texas Water Development Board (TWDB) Groundwater Database (GWDB) Well Information Report for State Well Number 10-13-705

groundwater

Water Quality Analysis

Sample Date: 3/4/1981 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:** Groundwater Conservation District (general)

Sampled Aquifer: Ogallala Formation

Analyzed Lab: Texas Department of Health **Reliability:** Collected from pumped well, but not filtered or preserved

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		245	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		298.98	mg/L	
00910	CALCIUM (MG/L)		43	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		18	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		2.2	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		239	mg/L	
00920	MAGNESIUM (MG/L)		32	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		3.6	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0.12		
00955	SILICA, DISSOLVED (MG/L AS SI02)		47	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		0.98		
00932	SODIUM, CALCULATED, PERCENT		24	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		35	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		624	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		41	mg/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		368	mg/L	

* Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (http://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

High Plains Underground Water Conservation District No. 1.

Notification of abandonment of Irrigation / Industrial well / Municipal — Permit # 4116 — County Deaf Smith

I N. E. Wolfe do hereby certify that I have abandoned and plugged/~~capped~~ irrigation Well No. 1785,

Located in Deaf Smith County, on ~~XXXXXXXXXXXXXXXXXXXXXXXX~~

SE 1/4 of Section 152 Block M-7,

Survey _____ Reason for abandonment _____

Not drilled to red bed and having sand problem.

Date August 19, 19 68.

N. E. Wolfe
Signature of ~~owner~~ or agent

RECEIVED
LUBBOCK, TEXAS
SEP 10 1968
HI-PLAINS UNDERGROUND
WATER CONS. DIST. NO. 1

Form No. 421 AWP — Original—District Office Copy — District File No. _____ (For use of district office only) — MAP ID 45

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No. 1785; Date Application 3-8-57; Time of Filing 11:20 A. M.; Date Recommended by _____; County Committee _____; Size of Pump 6; Maximum Yield 560 GPM

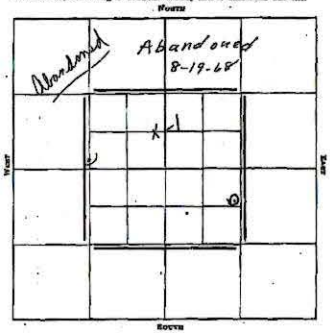
I, W. A. and Kenny Gearn (Name of landowner) Box 563, Hereford, Texas (Landowner's address)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1. for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. NW¼, NE¼, SW¼, SE¼ of Section 152 Block M-7 (mark out ones that do not apply)
Survey _____ Abstract _____
3. Labor _____ League _____
4. Proposed Use (Municipal-Industrial-Irrigation) (mark out ones that do not apply)
5. Drilling to start about _____, 19__
This well will be located: ___ miles N or S and ___ miles E or W of the town of Hereford, Texas

Permit good for 4 months only from date of filing.

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. Red square indicates 1 quarter section or 1 labor.
MARK X, showing 3 closest wells, and/or authorized well site.



Please Make Sure Your Measurements Are Correct— (They will be checked for accuracy)

Location of proposed Well as submitted by applicant is 470 measured yards from (N or S) and 10 measured yards from (E or W) property line, quarter section line, or labor line.

Number three adjacent wells, and/or authorized well sites, on the plat as 1, 2, and 3, to correspond with the following:

Well 1: 300 measured yards from proposed well site. Owned by Barkley. Address Hereford, Texas
Well 2 _____ measured yards from proposed well site. Owned by _____. Address _____
Well 3 _____ measured yards from proposed well site. Owned by _____. Address _____

MAY 9 1957 — HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

SCALE FOR ABOVE PLAT
1 1/10 inches ..... 440 yards..... Minimum for 10-inch well
1 inch ..... 400 yards..... Minimum for 8-inch well
3/4 inch ..... 300 yards..... Minimum for 6-inch well
5/8 inch ..... 250 yards..... Minimum for 5-inch well
1/2 inch ..... 200 yards.... Minimum for 3 or 4-inch well

COMMENTS: There no other well within 300 yards of propose well.

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by: W. A. Gearn (signature landowner or agent) _____ (title) _____ (address)

This permit recommended subject to the rules for spacing from existing wells and/or authorized well site.

Check here ☒ when well is located on the County map. ☐ Deposit Received. $10.00

AB

Form No. 422 AWP — RECEIVED MAR 13 1989 — MAP ID 46

ORIGINAL – DISTRICT OFFICE COPY — (For use of district office only)

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No. 3961; Time of Filing 3 PM; Date Application Filed 3-9-89; Signature Date 7-9-89; Date Recommended by 7-10-89; County Committee _____; Size of Pump 6; Maximum Yield 550 GPM

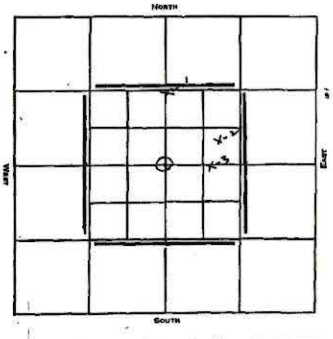
I, Kevin Sanders (Name of landowner) Route 5 Box 147 Hereford, Tx 79045 (Landowner's address)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
~~XXXXXXXXXXXXXXXXXXXXXXXX~~ SW¼ Section 152 Block M 7 (mark out ones that do not apply)
Survey _____ Abstract _____
Township _____ Range _____
Labor _____ League _____

Proposed Use (Municipal-Industrial-Irrigation) (mark out ones that do not apply)
Drilling to start about One Week, 19__
This well will be located: 3 miles N or S and 3 miles E or W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest well or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is ~~440~~ 440 measured yards from (N or S) and 440 measured yards from (E or W) quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 400 measured yards from proposed well site. Owned by Applicant. Address _____
No. 2 400 measured yards from proposed well site. Owned by Applicant. Address _____
No. 3 200 domestic well 70 gal measured yards from proposed well site. Owned by Applicant. Address _____

COMMENT: No other wells within 440 yds

1 1/10 ins.. 440 yds. Minimum for 10-in. well yield–more than 1000 G.P.M
1 in.. 400 yds. Minimum for 8-in. well yield–500 to 1000 G.P.M
3/4 in. 300 yds. Minimum for 6-in. well yield–350 to 500 G.P.M.
5/8 in. 250 yds. Minimum for 5-in. well yield–225 to 350 G.P.M
1/2 in. 200 yds. Minimum for 3 or 4-in. well yield–70 to 225 G.P.M

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Kevin Sanders (signature landowner or agent) Owner (title) Rt 5 Box 147 Hereford Tx (address)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded Check No. _____

DL - RR

Form No. 423 AWP — Original—District Office Copy — District File No. _____ (For use of district office only)

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMAN: Field Well No. 1785; Date Received 6-15-57; Size of Pump 6; Maximum Yield 560 GPM

1. Well Owner W. A. & Kenny Gearn Address Box 563, Hereford, Texas.
2. Well located ___ miles N, ___ miles S, ___ miles E, 4 miles W of the town of Hereford
3. County Deaf Smith Labor _____ League _____ Abstract No. _____
4. NW¼ NE¼ SW¼ SE¼ (circle one) Section 152 Block M-7 Survey _____
5. ACTUAL LOCATION OF THIS WELL IS: 470 measured yards from N or S line of this tract of land; 10 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: _____

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	18	Caliche			
18	60	Clay			
60	120	Sand			
120	122	Soft Sand Rock			
122	136	Sand			
136	146	Clay			
146	218	Sand			

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Nace Drilling Co. Address Hereford Texas Date Drilled April 26 1957

DESCRIPTION OF WELL

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total length 216 ft.
7. Casing perforations: from 183 ft to 218 ft. Size 3/16 Number per foot 6
8. Pump Column: Size 6 in. Total length 160 ft. Suction pipe: Size 6 in. Length 10 ft.
9. Pump bowls: Size 12 Number of stages 5 Pump discharge pipe: Size 6 in.
10. Depth to water level 90 ft. Pump discharge 500 GPM. Pumping level: 140 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other _____ Horsepower 90

Signature W. A. Gearn (owner or agent) Box 563, Hereford (title, address)

Final Completion of Well — Date April 27, 1957, 19__

FORM NO. 464 AWP

Checkboxes: 1/10 · 162 · [X] NEW APP. BOOK · [X] ABC FILE · [X] X FILE · [ ] MASTER SHEET · [X] WELLS COMPLETED BOOK · [X] PINNED · [ ] DEPTH PLOTTED

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	3178
Time of Filing	4:10 P.M.
Date Application Filed	1-4-65
Expiration Date	5-4-65
Date Recommended by County Committee	1-4-65
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, C. W. Sanders (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

~~NW¼/NE¼/SW¼~~, SE¼ of Section 152 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

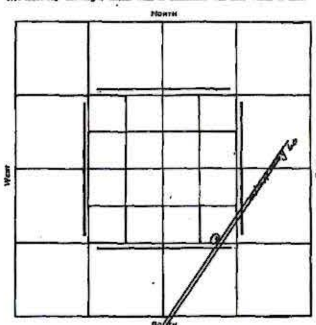
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about 30 days, 19__

This well will be located 3½ miles ~~N~~ or S and 3 miles ~~E~~ or W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ◎ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.



1 1/10 in. . 440 yds. . . . Minimum for 10-in. well . . . yield—more than 1000 G.P.M.
1 in. . . . . . . 400 yds. . . . Minimum for 8-in. well . . . yield—560 to 1000 G.P.M.
3/4 in. . . . . 300 yds. . . . Minimum for 6-in. well . . . yield—390 to 560 G.P.M.
5/8 in. . . . . 250 yds. . . . Minimum for 5-in. well . . . yield—265 to 390 G.P.M.
1/2 in. . . . . 200 yds. . Minimum for 3 or 4-in. well . . . yield—70 to 265 G.P.M.

Location of proposed Well as submitted by applicant is 20 measured yards from (N S) S and 10 measured yards from (E W) E property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ____ measured yards from proposed well site. Owned by ____ Address ____

No. 2 ____ measured yards from proposed well site. Owned by ____ Address ____

No. 3 ____ measured yards from proposed well site. Owned by ____ Address ____

COMMENT

No wells within 440 yds.

RECEIVED LUBBOCK, TEXAS JAN 6 1965 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Mrs C W Sanders (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. J. E. McCracken 2. Billy B. Bonnell 3. Clinton Jackson

Check here: [X] when well is located on the County map. [X] Deposit Received.

SMITH PRINTING CO. - DIAL PO 5-5919

MS. AB

FORM NO. 5561-LW

ORIGINAL – DISTRICT OFFICE COPY

RECEIVED APR 5 1989

FOR USE OF COMMITTEEMEN

Field Well No.	5961
Date Received	4-4-89
Permit Size of Pump	8
Maximum in Yield	560 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

1. Land Owner Kevin Sanders Address Route 5 Box 147 Hereford, Tx 79045
2. Well located ____ miles N. 3 miles S. ____ miles E. 3 miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. XXXXXXXXXXXXXX SE¼ Section 152 Block M 7 Survey ____ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well 19 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top soil			
3	18	Caliche & rock			
18	210	Sand - stone - some clay			
210	240	Med. coarse sand - some stone			
240	285	Med. coarse sand			
285	312	Streaks of sand - some clay beds			
312	315	Red bed			
	316	Total Depth			

REMARKS:

Pump set by Winget Pump.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Big T Pump Company Address Hereford, Texas 79045 Date Drilled 3-23 19 89

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, XXXXXXXXXXXXXXXXXXXXXX. Diameter 16 in. Total casing length 315 ft.
7. Casing perforations: from 223 / 289 ft. to 289 / 311 ft. Size 1/8" millslot / 4" torchcut Number of rows 6
8. Pump Column: Size 6 in. Column, shaft length 280 ft. Suction pipe size 6 in. Suction pipe length 2 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 6 in.
10. Depth to water level 196 ft. Pump yield 450 GPM. Pumping level: 246 ft.
11. Power Unit: Electrical, (Natural Gas), Butane, Other ____ Horsepower ____

Signature C R Winget (LANDOWNER OR AGENT) Agent (TITLE) Hereford, TX (ADDRESS)

FORM NO. 5562-LW

Original—District Office Copy

FOR USE OF COMMITTEEMEN

Field Well No.	3178
Date Received	5-10-65
Permit Size of Pump	8
Maximum in Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

1. Land Owner C. W. Sanders Address Rt. 5, Hereford, Texas
2. Well located ____ miles N. 3½ miles S. ____ miles E. 3 miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. ~~NW¼ NE¼/SW¼~~ SE¼ Section 152 Block M-7 Survey ____ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ____ ~~Spudder~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well 20 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	2	Top soil	258	281	Med. course Lt. Br. sand
2	23	Calichie and clay	281	296	Sand and Br. clay
23	28	Sandy clay	296	300	Red bed
28	38	Calichie rock			
38	51	Sandy calichie and clay			
51	80	Loose fine Br. sand			
80	128	Med. course Br. sand with soft sand rock			
128	219	Med. course Lt. Br. sand			
219	224	Br. sandy clay			
224	258	Med. course sand with little clay and soft sand rock layers			

RECEIVED LUBBOCK, TEXAS MAY 12 1965 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Dirks Drilling Company Address Rt. 2 Hereford, Tex. Date Drilled March 6 1965

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: ~~new~~, used, gas line, or ~~shop-made~~. Diameter 18 in. Total casing length 300 ft.
7. Casing perforations: from 140 ft. to 296 ft. Size 1/8-3/16 Number of rows 16
8. Pump Column: Size 8 in. Column, shaft length 266 ft. Suction pipe size 8 in. Suction pipe length 35 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level 100 ft. Pump yield 900 GPM. Pumping level: ____ ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower 70

Signature ____ (LANDOWNER OR AGENT) ____ (TITLE) ____ (ADDRESS)

Checkboxes: [ ] 1/10 · [ ] 162 · [ ] NEW APP. BOOK · [ ] ABC FILE · [ ] X FILE · [ ] MASTER SHEET · [ ] WELLS COMPLETED BOOK · [ ] PINNED · [ ] DEPTH PLOTTED

FORM No. 488 AWP

MAP ID 47

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	3178-A
Time of Filing	
Date Application Filed	12-18-70
Expiration Date	
Date Recommended By County Committee	
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, C. W. Sanders (NAME OF LANDOWNER) Route #5, Hereford, Texas 79045 (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

XXXXXXXXXX SE¼ Section 152 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

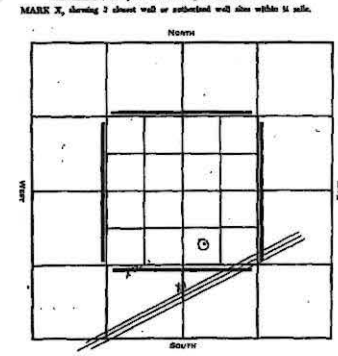
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about drilled, 19__

This well will be located 3½ miles XXXXS and 3 miles XXXX W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ◎ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



1 1/10 ins. . 440 yds. . . . Minimum for 10-in. well . . . yield—more than 1000 G.P.M.
1 in. . . . . . . 400 yds. . . . Minimum for 8-in. well . . . yield—560 to 1000 G.P.M.
3/4 in. . . . . . 300 yds. . . . Minimum for 6-in. well . . . yield—390 to 560 G.P.M.
5/8 in. . . . . . 250 yds. . . . Minimum for 5-in. well . . . yield—265 to 390 G.P.M.
1/2 in. . . . . . 200 yds. . Minimum for 3 or 4-in. well . . . yield—70 to 265 G.P.M.

Location of proposed Well as submitted by applicant is 117 measured yards from (XX S) and 299 measured yards from (E XX) property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 312 measured yards from proposed well site. Owned by Griffin & Brand #3241-A Address ____

No. 2 326 measured yards from proposed well site. Owned by applicant - #3240-A Address ____

No. 3 ____ measured yards from proposed well site. Owned by ____ Address RECEIVED FEB 17 1971

COMMENT

Amended to show location of wells.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: C. W. Sanders (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Route 5, Hereford (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Harry Higgins 2. [illegible] 3. [illegible]

[X] Pinned on County Map [–] Deposit Received [ ] Refunded Check No. ____

SMITH PRINTING CO. - DIAL PO 5-5919

MAP ID 49

STATE OF TEXAS WELL REPORT for Tracking #61785

Owner:	Tejas Industries	Owner Well #:	TH 4-05
Address:	P.O. Box 2257 Hereford, TX 79045	Grid #:	10-13-7
Well Location:	No Data	Latitude:	34° 45' 53" N
Well County:	Deaf Smith	Longitude:	102° 27' 36" W
Elevation:	No Data	GPS Brand Used:	No Data
Type of Work:	New Well	Proposed Use:	Test Well

Drilling Date:	Started: 6/10/2005 Completed: 6/10/2005
Diameter of Hole:	Diameter: 4.5 in From Surface To 1000 ft
Drilling Method:	Mud Rotary
Borehole Completion:	No Data
Annular Seal Data:	1st Interval: No Data 2nd Interval: No Data 3rd Interval: No Data
Surface Completion:	No Data
Water Level:	Static level: No Data Artesian flow: No Data
Packers:	No Data
Plugging Info:	Casing left in well: Cement/Bentonite left in well: From (ft) To (ft) From (ft) To (ft) Cem/Bent Sacks Used 0 - 10 1 bag cement 10 - 340 Natural fill 340 - 1000 60 bags bentonite chips
Type Of Pump:	No Data
Well Tests:	No Data
Water Quality:	Type of Water: No Data Depth of Strata: No Data Chemical Analysis Made: No Did the driller knowingly penetrate any strata which contained undesirable 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 log(s) being returned for completion and resubmittal.
Company Information:	L. T. Drilling Company P.O. Box 784 Sunray, TX 79086
Driller License Number:	1849
Licensed Well Driller Signature:	Lester James Taylor
Registered Driller Apprentice Signature:	Diego Solano
Apprentice Registration Number:	WWDAPP00000621
Comments:	No Data

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 (Tracking #61785) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL	CASING, BLANK PIPE & WELL SCREEN DATA
From (ft) To (ft) Description 0 - 30 Surface top soil brown sandy clay + clay 30 - 40 Caliche w/rock strips 40 - 240 Sand w/minor clay strips 240 - 300 Fine fairly loose sand 300 - 320 Fine fairly loose sand w/sandy clay strips 320 - 340 Red clay + shale 340 - 380 Red & gray clay + shale 380 - 440 Red clay & shale 440 - 460 Red clay 460 - 480 Red clay and shale w/fine tight dirty sand strips w/clay mix 480 - 500 Fine tight dirty sand w/clay mix + clay and shale strips 500 - 520 Fine tight dirty sand w/clay mix + hard shale strips 520 - 540 Blue to red clay and shale 540 - 580 Red and gray clay + shale 580 - 640 Red clay and shale 640 - 660 Red clay and shale w/blue shale strips 660 - 680 Red clay and shale 680 - 820 Red and blue clay + shale 820 - 840 Red and blue shale w/hard shale strips 840 - 860 Red and blue clay + shale w/hard shale strips 860 - 880 Red clay + shale 880 - 900 Red clay + shale w/fine tight dirty sand strips 900 - 920 Fine tight dirty sand w/shale mix 920 - 940 Fine tight dirty sand clay mix w/blue and red shale strips 940 - 960 Fine tight dirty sand w/clay mix + shale strips 960 - 980 Red and blue shale 980 - 1000 Red and blue shale w/very hard rock strips	No Data

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☑ ☑ ☑ NEW APP. BOOK ☑ ABC FILE ☑ 8 FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM No. 488 AWP

MAP ID 48

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	4377
Time of Filing	11:00 A.M.
Date Application Filed	4-30-70
Expiration Date	8-30-70
Date Recommended by County Committee	5-14-70
Size of Pump	6
Maximum Yield	560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, E. C. Reinauer & Sons, Inc. (NAME OF LANDOWNER) Box 1637, Hereford, Texas 79045 (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

XXXXXXX SW¼, XXX Section 135 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

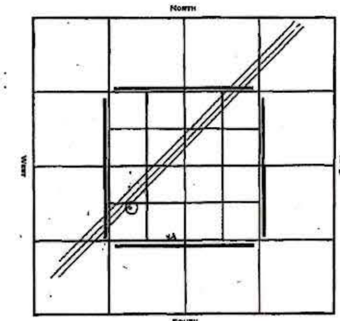
Drilling to start about soon, 19__

This well will be located { 3½ miles XXXX S and / 2 miles XXXX W of the (MARK OUT ONE THAT DOES NOT APPLY)

town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 3 measured yards from (N XX) and 153 measured yards (XXXX) along RR ROW from West line property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 300 measured yards from proposed well site.
Owned by applicant -
Address ______

No. 2 ______ measured yards from proposed well site.
Owned by ______
Address ______

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address ______

RECEIVED MAY 1 8 1970

COMMENT

Not other wells within 440 yds.

1 1/10 ins...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in........400 yds.....Minimum for 8-in. well...yield—560 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—390 to 560 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—205 to 390 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 205 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: [signature] (SIGNATURE LANDOWNER OR AGENT) Geo. T. Jones Agent (TITLE) Box 1637, Hereford, Texas 79045 (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

[signatures]

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded

Check No.______

SMITH PRINTING CO. - DAIL PO BOX

AB

FORM NO. 1000-LP

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No.	4377
Date Received	7-8-70
Permit Size of Pump	6
Maximum to Yield	560 GPM

1. Land Owner E. C. Reinaur & Sons Address Box 1637 Hereford, Texas
2. Well located ______ miles N, 3½ miles S, ______ miles E, 2 miles W of town of Hereford
3. County DEAF SMITH Labor ______ League ______ Abstract No. ______
4. XXXXXXX SW¼ XXX Section 135 Block M-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ______ Spudder ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 19 inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil			
3	60	Caliche			
60	160	Sand, Sandrock, and Clay			
160	240	Sand and Sandrock			
240	345	Sand			
345	350	Red Bed			
					RECEIVED JUL 10 1970

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling, Inc Address 212 E. New York Date Drilled May 11, 1970

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter ______ in. Total casing length 32 ft.
7. Casing perforations: from 351 / 263 ft. to 263 / 175 ft. Size 1/8" / 1/8" Number of rows 8
8. Pump Column: Size 4 in. Column, shaft length 300 ft. Suction pipe size ______ in. Suction pipe length ______ ft.
9. Pump bowls: Size 6 Number of stages 9 Pump discharge pipe: Size 4 in.
10. Depth to water level 120 ft. Pump yield 400 GPM. Pumping level 200 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other Electrical Horsepower 70

Signature E. C. Reinauer & Sons Inc. By E. C. Reinauer - President P.O. Box 1637 Hereford (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

580	640	Red clay and shale
640	660	Red clay and shale w/blue shale strips
660	680	Red clay and shale
680	820	Red and blue clay + shale
820	840	Red and blue shale w/hard shale strips
840	860	Red and blue clay + shale w/hard shale strips
860	880	Red clay + shale
880	900	Red clay + shale w/fine tight dirty sand strips
900	920	Fine tight dirty sand w/shale mix
920	940	Fine tight dirty sand clay mix w/blue and red shale strips
940	960	Fine tight dirty sand w/clay mix + shale strips
960	980	Red and blue shale
980	1000	Red and blue shale w/very hard rock strips

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

MAP ID 49

STATE OF TEXAS WELL REPORT for Tracking #61785

Owner:	Tejas Industries	Owner Well #:	TH 4-05
Address:	P.O. Box 2257 Hereford, TX 79045	Grid #:	10-13-7
Well Location:	No Data	Latitude:	34° 45' 53" N
		Longitude:	102° 27' 36" W
Well County:	Deaf Smith	Elevation:	No Data
Type of Work:	New Well	Proposed Use:	Test Well

Drilling Start Date: 6/10/2005 Drilling End Date: 6/10/2005

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	4.5	0	1000

Drilling Method: Mud (Hydraulic) Rotary

Borehole Completion: Unknown

Annular Seal Data: No Data

Seal Method: Not Applicable

Sealed By: Unknown

Distance to Property Line (ft.): No Data

Distance to Septic Field or other concentrated contamination (ft.): 2560

Distance to Septic Tank (ft.): No Data

Method of Verification: Estimated

Surface Completion: Unknown

Water Level: No Data

Packers: No Data

Type of Pump: No Data

Well Tests: No Test Data Specified

Plug Information:	Description (number of sacks & material)	Top Depth (ft.)	Bottom Depth (ft.)
	0 - 10 1 bag cement		
	10 - 340 Natural fill		
	340 - 1000 60 bags bentonite chips		

FORM NO. 482 AWP — MAP ID 50

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Plat Well No. 4402
Time of Filing 2:30 P.M.
Date Application Filed 8-20-71
Duplicates Date 12-20-71
Date Recommended by County Committee 9-3-71
Perf. 6 Screen Type Yield 560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Griffin and Brand Sales Agency, Inc. (NAME OF LANDOWNER) Box 833, Hereford, Texas 79045 (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

Section 151 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____ town of Hereford

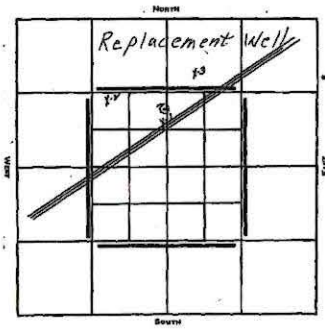
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about 8900, 19__

This well will be located 5 miles N or S and 5 miles W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is 93 measured yards from (N or S) and 453 measured yards from (E or W) quarter section lines, or labor line.

Number these adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, in correspond with the following

*** No. 1 33 measured yards from proposed well site. Owned by applicant - #32419A Address to be abandoned

No. 2 303 measured yards from proposed well site. Owned by applicant - 3240-A Address ____

No. 3 301 1/3 measured yards from proposed well site. Owned by C. W. Sanders, Address Route #4, Hereford, Texas

COMMENT

*** Replacement of well with return system. #3241-A to be abandoned for highway improvement purposes.

1 1/10 in....440 yds....Minimum for 10-in. well...yield--more than 1000 G.P.M.
1 in.....400 yds....Minimum for 8-in. well...yield--500 to 1000 G.P.M.
3/4 in.....300 yds....Minimum for 6-in. well...yield--300 to 500 G.P.M.
5/8 in.....250 yds....Minimum for 5-in. well...yield--125 to 300 G.P.M.
1/2 in.....200 yds. Minimum for 3 or 4-in. well...yield--70 to 125 G.P.M.

RECEIVED SEP 13 1971

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Griffin & Brand Sales Agency, Inc. Office Mgr. Box 833, Hereford, Tex. 79045 (SIGNATURE OF LANDOWNER OR AGENT) (DATE) (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. D. K. Davis Jr. 2. Thos. L. Linnard Jr. 3. [illegible]

☒ Posted on County Map ☒ Deposit Received ☐ Refunded Check No.____

SMITH PRINTING CO. - DALL. PH 2-8073

	Strata Depth (ft.)	Water Type
Water Quality:	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: L. T. Drilling Company
P.O. Box 784
Sunray, TX 79086

Driller Name: Lester James Taylor License Number: 1849

Apprentice Name: Diego Solano Apprentice Number: WWDAPP00000621

Comments: No Data

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	30	Surface top soil brown sandy clay + clay
30	40	Caliche w/rock strips
40	240	Sand w/minor clay strips
240	300	Fine fairly loose sand
300	320	Fine fairly loose sand w/sandy clay strips
320	340	Red clay + shale
340	380	Red & gray clay + shale
380	440	Red clay & shale
440	460	Red clay
460	480	Red clay and shale w/fine tight dirty sand strips w/clay mix
480	500	Fine tight dirty sand w/clay mix + clay and shale strips
500	520	Fine tight dirty sand w/clay mix + hard shale strips
520	540	Blue to red clay and shale
540	580	Red and gray clay + shale

Casing: BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
No Data			

FORM NO. 3509-LW

Duplicate—File Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No.	
Date Received	
Permit Size	Maximum
of Pump ___ in Yield ___ GPM	

1. Land Owner [illegible] Address [illegible]
2. Well located ___ miles N, ___ miles S, ___ miles E, 5 miles W of town of [illegible]
3. County Deaf Smith Labor ___ League ___ Abstract No. ___
4. NW¼ NE¼ SW¼ SE¼ Section 151 Block N-7 Survey ___
   MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary XX Spudder ___ Diameter of Well 19 inches.
MARK OUT ONE THAT DOES NOT APPLY

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	240	270	Sand-Sandrock-Clay Layers
3	30	Caliche	270	277	Redbed
30	60	Caliche			
60	80	Sand - Sandrock - Clay			
80	82	Rock			
82	120	Sand - Sandrock - Clay			
120	150	Sand - Sandrock - Clay			
150	180	Sand-Sandrock-Clay Layers			
180	210	Sand-Some Clay Layers			
210	240	Sand			RECEIVED DEC 23 1971

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller [illegible] Address [illegible] Date Drilled [illegible] 19 71

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in Total casing length 277 ft.
7. Casing perforations: from 120 ft. to 200 / 200 ft. Size 1/8" / 3/16" Number of rows 8 / 8
8. Pump Column: Size 6" in. Column, shaft length 250 ft. Suction pipe size 6x3" in. Suction pipe length [illegible] ft.
9. Pump bowls: Size 10" Number of stages [illegible] Pump discharge pipe: Size [illegible] in.
10. Depth to water level 170 ft. Pump yield 500 GPM. Pumping level: 213 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ___ Horsepower ___

Signature ___
LANDOWNER OR AGENT TITLE ADDRESS

10-13-706

FORM NO. 3509-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No. 4602	
Date Received 12-17-71	
Permit Size	Maximum
of Pump 6 in Yield 560 GPM	

1. Land Owner Griffin & Brand Sales Agency Inc Address Box 833, Hereford, Texas 79045
2. Well located ___ miles N, ___ miles S, ___ miles E, 5 miles W of town of Hereford
3. County Deaf Smith Labor ___ League ___ Abstract No. ___
4. NW¼ NE¼ SW¼ SE¼ Section 151 Block N-7 Survey ___
   MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary XXX Spudder ___ Diameter of Well: 19 inches.
MARK OUT ONE THAT DOES NOT APPLY

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	240	270	Sand-Sandrock-Clay Layers
3	30	Caliche	270	277	Redbed
30	60	Caliche			
60	80	Sand - Sandrock - Clay			
80	82	Rock			
82	120	Sand - Sandrock - Clay			
120	150	Sand - Sandrock - Clay			
150	180	Sand-Sandrock-Clay Layers			
180	210	Sand-Some Clay Layers			
210	240	Sand			RECEIVED DEC 23 1971

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller WATER INDUSTRIES, INC. Address BOX 871, Hereford, Tx. Date Drilled Nov. 10, 19 71

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in Total casing length 277 ft.
7. Casing perforations: from 120 ft. to 200 / 200 ft. Size 1/8" / 3/16" Number of rows 8 / 8
8. Pump Column: Size 6" in. Column, shaft length 250 ft. Suction pipe size 6x8" in. Suction pipe length 5 ft.
9. Pump bowls: Size 10" Number of stages 8 Pump discharge pipe: Size 6" in.
10. Depth to water level 170 ft. Pump yield 500 GPM. Pumping level: 213 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ___ Horsepower ___

Signature ___
LANDOWNER OR AGENT TITLE ADDRESS

[redacted]

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TWDB ONLY	
Organization No. ___	Lab No. ___
Work No. ___	

CHEMICAL WATER ANALYSIS REPORT

Send Reply To:
Water Availability Data and Studies Section
Texas Water Development Board
Stephen F. Austin Building
1700 Congress Ave.
Austin, Texas 78711

Attn: ___ Rm. ___

County 059 Deaf Smith
State Well No. 10-13-706
D-6-1 Well No. 4602
Date Collected 07 09 86
Sample No. ___ By DAN SEALE / HYDROLOGIST
Owner GRIFFIN & BRAND SALES ___ Send copy to owner
Address BOX 833 HEREFORD TX Well Location NE¼ Sec 151, N-7
Date Drilled ___ Depth ___ ft. WBF OGALLALA Source (type of well) DRILLED
Producing Intervals ___ Water level ___ ft. Sample depth ___ ft.
Sampled after pumping JUST hrs. Yield ___ GPM meas. est. Temperature ___ °F ___ °C
Point of collection Faucet on Discharge Pipe Appearance ☒ clear ☐ turbid ☐ colored ☐ other
Use IRR Remarks ___

(FOR LABORATORY USE ONLY)

Laboratory [redacted]

CHEMICAL ANALYSIS
Date Received JUL 31 '86 Date Reported AUG 28 '86

WATER ANALYSIS
Date: 082186

State Well No: 10-13-7 Sample No: EB6-1831

	MG/L	ME/L		MG/L	ME/L
Silica: 00955:	45		Carbonate: 00445:	0	0
Calcium: 00910:	48	2.44	Bicarbonate: 00440:	293	4.80
Magnesium: 00920:	46	3.82	Sulfate: 00945:	66	1.38
Sodium: 00929:	58	2.52	Chloride: 00940:	87	2.45
Potassium: 00937:	5.0	.13	Fluoride: 00951:	2.0	.11
T. Cations		8.91	Nitrate as NO3: 71850:	23.97	.39
Manganese: 01055:			T. Anions		9.12
		%Na ___	pH: 00403:	8.2	
Boron: 01022:		SAR ___			
			180 deg TDS: 70300:	468	
Total Iron: 01045:		RSC ___	P. Alk.: 00415:	0	
Other ___			T. Alk.: 00410:	240	
(Specific Cond.: 00095:		738	T. Hardness: 00900:	313	

Diluted Conductance (micromhos/cm3)
6 x158 =948

__ items will be analyzed if checked.

Ammonia-N: 00610:
Nitrite-N: 00615:
Nitrate-N: 00620:
OrganicNitrogen: 00605:

TWDB-0811 (Rev. 02-27-86)

MAP ID 50

TEXAS WATER DEVELOPMENT BOARD

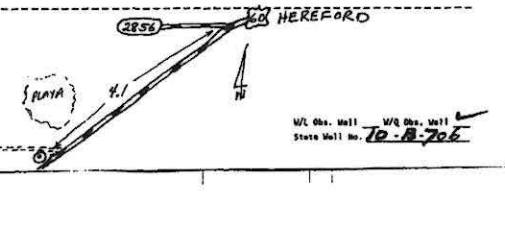
WELL SCHEDULE

Aquifer(s) OGALLALA Project No. ___ State Well No. 10-13-706
Field No. ___ Owner's Well No. 4602 County Deaf Smith

1. Location: NE ¼ NE ¼ Section 151 Block N-7 Survey ___ Lat. 34-45-38 Long. 102-22-47
2. Owner: GRIFFIN & BRAND Address: BOX 833, HEREFORD, TX
   Tenant (other): ___ Address: ___
   Driller: WATER INDUSTRIES INC Address: BOX 871 HEREFORD TX
3. Land Surface Elevation: 3876 ft. above msl determined by TOPO MAP
4. Drilled: 11-10 19 71 ; Dug, Cable Tool, Rotary, Air, ___
5. Depth: Rept. 277 ft. Meas. ___ ft.
6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfr. ___ Type ___
   No. Stages ___ Bowls Diam. ___ in., Setting ___ ft.
   Column Diam. ___ in., Length Tailpipe ___ ft.
8. Motor: Mfr. ___ Fuel ___ HP. ___
9. Yield: Flow ___ gpm, Pump ___ gpm, Meas., Rept., Est. ___ Date ___
10. Performance Test: Date ___ Length of Test ___ Made by ___
    Static Level ___ ft. Pumping Level ___ ft. Drawdown ___ ft.
    Production ___ gpm Specific Capacity ___ gpm/ft.
11. Quality: (Remarks on taste, odor, color, etc.) ___
    Analyses
    Date ___ Laboratory ___ TDS ___ Sp Cond ___
    Date ___ Laboratory ___ TDS ___ Sp Cond ___
12. Other data available (as circled): Pumping Test, Power & Yield Test, Driller Log, Formation Samples, Geophysical Log(s) ___
13. Water Level(s): ___ ft. rept. meas. 19 ___ (type) above below which is ___ ft. above below Land Surface
    ___ ft. rept. meas. 19 ___ above below which is ___ ft. above below Land Surface
14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.) ___
15. Recorded by DAN SEALE Source of data FIELD WORK Date: 8-6-86
16. Remarks: D-6-1

CASING, BLANK PIPE & WELL SCREEN Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting (feet) From	to
16	steel	surface	277
Casing Perforated with			
1/8"	slots	120	200
3/16"	slots	200	277

17. Location or Sketch:



TWDB-0308 (Rev. 12-11-68)

W/L Obs. Well ___ W/Q Obs. Well ✓
State Well No. 10-B-706

☐ 1-10 ☐ 1st ☐ NEW APP. BOOK ☐ APP FILE ☐ X FILE ☐ MASTER SHEET ☐ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM No. 445 AWP

MAP ID 51

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	3241-A
Time of Filing	
Date Application Filed	12-18-70
Expiration Date	
Date Recommended By County Committee	
Size of Pump	6
Maximum Yield	560 GPM

I, Griffin & Brand (NAME OF LANDOWNER) Box 833, Hereford, Texas 79045 (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

XXXX NEW, SXXXXXX Section 151 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about drilled, 19__

This well will be located { ______ miles N or S and / 5 miles XXXX W of the SW } (MARK OUT ONE THAT DOES NOT APPLY)

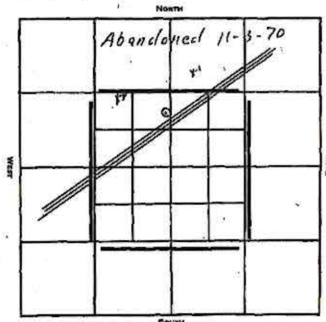
town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.

NORTH

WEST



EAST

SOUTH

Location of proposed Well as submitted by applicant is 126 measured yards from (N XX) and 453 measured yards from (E XX) (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 326 measured yards from proposed well site.
Owned by C. W. Sanders #3178-A
Address ______

No. 2 312 measured yards from proposed well site.
Owned by applicant - #3240-A
Address ______

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address RECEIVED JAN 11 1971

COMMENT

Amended to show location of wells.

1 1/10 in...440 yds....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in........400 yds....Minimum for 8-in. well...yield—580 to 1000 G.P.M.
3/4 in......300 yds....Minimum for 6-in. well...yield—390 to 580 G.P.M.
5/8 in......250 yds....Minimum for 5-in. well...yield—265 to 390 G.P.M.
1/2 in......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: [signature] John Seiver (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 833, Hereford, Texas 79045 (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. [signature] 3. [signature]

☒ Pinned on County Map ☐ Deposit Received ☐ Refunded Check No. ______

PRINTING CO. • DIAL PO 2-5849

MAP ID 50

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 10-13-706

groundwater

GWDB Reports and Downloads | **Well Basic Details** | Scanned Documents

State Well Number	1013706	Well Type	Withdrawal of Water
County	Deaf Smith	Well Use	Irrigation
River Basin	Red	Water Level Observation	None
Groundwater Management Area	2	Water Quality Available	Yes
Regional Water Planning Area	O - Llano Estacado	Pump	Turbine
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.763889	Power Type	Natural Gas Engine
Latitude (degrees minutes seconds)	34° 45' 50" N	Annular Seal Method	
Longitude (decimal degrees)	-102.463612	Surface Completion	
Longitude (degrees minutes seconds)	102° 27' 49" W	Owner	Griffin & Brand
Coordinate Source	+/- 1 Second	Driller	Water Industries, Inc
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	Drillers Log
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3876	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)	277	Groundwater Conservation District Well Number	
Well Depth Source	Driller's Log	Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date	11/10/1971	Previous State Well Number	
Drilling Method	Mud (Hydraulic) Rotary	Reporting Agency	Groundwater Conservation District
Borehole Completion	Perforated or Slotted	Created Date	8/6/1986
		Last Update Date	

Remarks

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
16	Blank	Steel			0	120
16	Screen	Steel			120	200
16	Screen	Steel			200	277

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

FORM No. 267 AWP BB 173

☒ Alphabetical file ☒ X-file ☒ Pinned ☐ Depth Plotted

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	3241
Time of Filing	XXXX XX 3:45 P.M.
Date Application Filed	2-5-65
Expiration Date	6-5-65
Date Recommended By County Committee	Feb. 5 1965
Size of Pump	6
Maximum Yield	560 GPM

X

I, Kendall & Griffin (NAME OF LANDOWNER) Box 306, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NW¼, NE¼, SW¼, SE¼ Section 151 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about 10 days, 19__

This well will be located { ______ miles N or S and / 5 miles E or W of the SW } (MARK OUT ONE THAT DOES NOT APPLY)

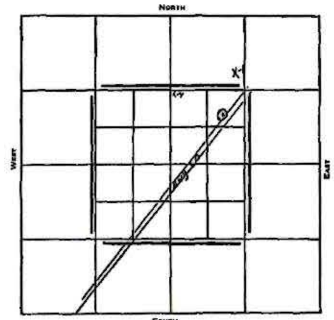
town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH

WEST



EAST

SOUTH

Location of proposed Well as submitted by applicant is 176 measured yards from (N-S) SE and 8 measured yards from (E-W) S (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 300 measured yards from proposed well site.
Owned by C. W. Sanders # 3178
Address ______

No. 2 300 measured yards from proposed well site.
Owned by Applicant # 3240
Address ______

RECEIVED LUBBOCK, TEXAS FEB 9 1965 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address ______

COMMENT

No other wells within 440 yds.
This land lies N of HWY 60 and HWY is south and east boundaries. Not drawn to scale

1 1/10 in. 440 yds. ...Minimum for 10-in. well... yield—more than 1000 G.P.M.
1 in. ......400 yds. ...Minimum for 8-in. well... yield—580 to 1000 G.P.M.
3/4 in......300 yds. ...Minimum for 6-in. well... yield—390 to 580 G.P.M.
5/8 in......250 yds. ...Minimum for 5-in. well... yield—265 to 390 G.P.M.
1/2 in......200 yds. Minimum for 3 or 4-in. well ...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: [signature] (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Box 306, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. [signature] 3. [signature]

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. • DIAL PO 2-9610

M.S. AB

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 10-13-706

groundwater

Water Quality Analysis

Sample Date: 7/9/1986 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:** Groundwater Conservation District (general)

Sampled Aquifer: Ogallala Formation

Analyzed Lab: Texas Department of Health **Reliability:** Collected from pumped well, but not filtered or preserved

Collection Remarks: CONT., FAUCET ON DISCH. PIPE

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		240	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		292.88	mg/L	
00910	CALCIUM (MG/L)		48	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		87	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		2	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		309	mg/L	
00920	MAGNESIUM (MG/L)		46	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		23.97	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		5	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
00955	SILICA, DISSOLVED (MG/L AS SI02)		45	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		1.44		
00932	SODIUM, CALCULATED, PERCENT		28	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		58	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		948	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		66	mg/L	
70301	TOTAL DISSOLVED SOLIDS, SUM OF CONSTITUENTS (MG/L)		524	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork.*

GWDB DISCLAIMER *Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (http://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.*

MAP ID 51

STATE OF TEXAS PLUGGING REPORT for Tracking #23621

Owner:	TEXAS D.O.T.	Owner Well #:	No Data
Address:	HEREFORD HWY CANYON, TX 79015	Grid #:	10-13-7
Well Location:	3.5 MI. W. OF HEREFORD ON HWY 60 HEREFORD, TX 79045	Latitude:	34° 45' 46" N
		Longitude:	102° 27' 51" W
Well County:	Deaf Smith	Elevation:	No Data
Well Type:	Withdrawal of Water		

Drilling Information

Company:	No Data	Date Drilled:	No Data
Driller:	No Data	License Number:	No Data

Borehole: No Data

Plugging Information

Date Plugged: 3/8/2005 Plugger: RANDY TAYLOR

Plug Method: Tremmie pipe cement from bottom to top

Casing Left in Well:

Dia (in.)	Top (ft.)	Bottom (ft.)
	0	0

Plug(s) Placed in Well:

Top (ft.)	Bottom (ft.)	Description (number of sacks & material)
0	55	3 YDS

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: L.T. DRILLING CO.
P.O. BOX 784
SUNRAY, TX 79086

Driller Name: RANDY TAYLOR License Number: 2366

Comments: WLS

FORM NO. 5556-LW

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3241
Date Received 5-12-65
Permit Size Maximum of Pump 6 in Yield 560 GPM

1. Land Owner Kendall & Griffin Hill Rendell Address Box 306, Hereford, Texas
2. Well located ___ miles N, 5 miles S, ___ miles E, ___ miles W of the town of Hereford
3. County Deaf Smith Labor ___ League ___ Abstract No. ___
4. ~~NW/4~~ NEW ~~SW/4~~ ~~SE/4~~ (MARK OUT EITHER THAT DOES NOT APPLY) Section 151 Block M-7 Survey ___

DRILLER'S LOG OF WELL

Method of Drilling: Rotary Spudder (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 19 Inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil			
3	95	Clay + Sand + Rock			
95	195	Sand			
195	150	Clay			
150	180	Sand + Sand Rock			
180	235	Sand Coarse			
235	250	Sand + Sand Rock			
250	260	Sand Coarse			
260	280	Sand			
280	285	Red Red			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Waco Drilling Co Address 519 J. Date Drilled 2/17 19 65

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length 285 ft.
7. Casing perforations: from 195 ft. to 285 ft. Size 3/16 Number of rows 4
8. Pump Column: Size 6 in. Column, shaft length 260 ft. Suction pipe size 6 in. Suction pipe length 2 ft.
9. Pump bowls: Size 10" Number of stages 9 Pump discharge pipe: Size 6" in.
10. Depth to water level 150' ft. Pump yield 550 GPM. Pumping level: 174 ft.
11. Power Unit: Electrical, (Natural Gas) Butane, Other ___ Horsepower 85

Signature ___ (LANDOWNER OR AGENT) TITLE ADDRESS

[redacted]

☐ LOG ☐ LAT ☐ NEW APP. BOOK ☐ APP. FILE ☐ 5 FILE ☐ MASTER SHEET ☐ WELL COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM NO. 669-AWF

MAP ID 52

Original--District Office Copy

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 3240A
Time of Filing ___
Date Application Filed 12-18-70
Extension Date ___
Date Recommended by County Committee ___
Size of Pump 6 Maximum Yield 560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

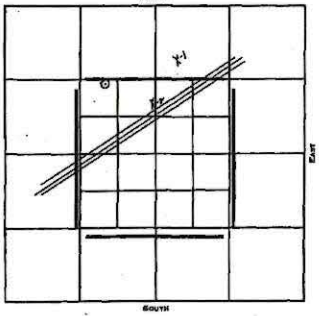
INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Griffin & Brand (NAME OF LANDOWNER) Box 833, Hereford, Texas 79045 (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
~~NW/4~~ NEW, ~~SW/4~~ ~~SE/4~~ Section 151 Block ~~XXX~~ M-7 (MARK OUT ONES THAT DO NOT APPLY)
Survey ___ Abstract ___
Township ___ Range ___
Labor ___ League ___

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)
Drilling to start about drilled 19
This well will be located 5 miles N or S and ~~XXXX~~ miles ~~XXXX~~ W of the SW (MARK OUT ONES THAT DOES NOT APPLY)
town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest well or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is 17 measured yards from (N ~~XX~~ and 720 measured yards from (E ~~XXX~~ (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:
No. 1 531 measured yards from proposed well site.
Owned by C. W. Sanders, Route #5
Address #3179-A
No. 2 312 measured yards from proposed well site.
Owned by applicant - 3241-A
Address ___
No. 3 ___ measured yards from proposed well site.
Owned by ___
Address ___

RECEIVED JAN 11 1971

COMMENT
Amended to show location of wells.

1 1/16 ins. 449 yds. Minimum for 10-in. well yield-more than 1000 G.P.M.
1 in. 400 yds. Minimum for 8-in. well yield-500 to 1000 G.P.M.
3/4 in. 300 yds. Minimum for 6-in. well yield-300 to 500 G.P.M.
5/8 in. 250 yds. Minimum for 5-in. well yield-165 to 300 G.P.M.
1/2 in. 200 yds. Minimum for 3 or 4-in. well yield-75 to 165 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: John Seiver (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 833, Hereford, Texas 79045 (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well sites:
1. ___ 2. ___ 3. ___
☒ Pinned on County Map ☐ Deposit Received ☐ Refunded Check No. ___

[redacted]

High Plains Underground Water Conservation District No. 1.

Notification of abandonment of Irrigation / Industrial well / Municipal Permit # 4425 County Deaf Smith

I John Seiver do hereby certify that I have abandoned

and plugged/capped Well No. 3241

Located in Deaf Smith County, on ~~NW/4~~ NE 1/4, ~~SW/4~~ ~~SE/4~~ of Section 151 Block M-7

Survey ___ Reason for abandonment ___

to be taken in for highway improvements

RECEIVED NOV 12 1970

Date November 3, 19 70

John Seiver, Agent for
Griffin and Brand
Box 833, Hereford, Texas 79045

MAP ID 52

STATE OF TEXAS PLUGGING REPORT for Tracking #48373

Owner:	Caviness Packing Co.	Owner Well #:	No Data
Address:	3255 W. Hwy 60 Herford, TX 79045	Grid #:	10-13-7
		Latitude:	34° 45' 50" N
Well Location:	3 mi. SW on Hwy 60 Herford, TX 79045	Longitude:	102° 27' 50" W
Well County:	Deaf Smith	Elevation:	No Data
Well Type:	Withdrawal of Water		

Drilling Information

Company:	No Data	Date Drilled:	No Data
Driller:	No Data	License Number:	No Data
Borehole:	No Data		

Plugging Information

Date Plugged: 6/13/2008 Plugger: Steve Coneway

Plug Method: Tremmie pipe cement from bottom to top

Casing Left in Well:			Plug(s) Placed in Well:		
Dia (in.)	Top (ft.)	Bottom (ft.)	Top (ft.)	Bottom (ft.)	Description (number of sacks & material)
16	5	240	5	240	18 yds. Cement

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: Water Industries
Po Box 671
Herford, TX 79045

Driller Name: Steve Coneway License Number: 1084

Comments: ^EO

MAP ID 53

STATE OF TEXAS WELL REPORT for Tracking #179445

Owner:	Tejas Industries	Owner Well #:	Irr #2-09
Address:	Po Box 2257 Hereford, TX 79045	Grid #:	10-13-7
		Latitude:	34° 45' 40" N
Well Location:	Sec 151, Blk M-7 Hereford, TX 79045	Longitude:	102° 27' 46" W
Well County:	Deaf Smith	Elevation:	No Data
Type of Work:	New Well	Proposed Use:	Irrigation

Drilling Start Date: 5/16/2009 Drilling End Date: 5/18/2009

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	18	0	37

Drilling Method: Reverse Circulation

Borehole Completion: Filter Packed

	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
Filter Pack Intervals:	45	307	Gravel	80f/20c

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	0	45	40 cement

Seal Method: Truck Mixed
Sealed By: LT Drilling

Distance to Property Line (ft.): No Data
Distance to Septic Field or other concentrated contamination (ft.): 300 ft
Distance to Septic Tank (ft.): No Data
Method of Verification: No Data

Surface Completion: Surface Slab Installed

Water Level: 222 ft. below land surface on 2009-05-16 Measurement Method: Unknown

Packers: No Data

Type of Pump: No Data

Well Tests: No Test Data Specified

FORM NO. 242 AWP 123 BP ☒ Alphabetical File ☒ X-file ☒ Pinned ☐ Depth Plotted

Original--District Office Copy

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 3240
Time of Filing 3:45 P.M.
Date Application Filed 2-5-65
Registration Date 2-5-65
Date Recommended by County Committee 3-26-65 10:15
Size of Pump 6 Maximum Yield 550 GPM

X

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Kendall & Griffin (NAME OF LANDOWNER) Box 306, Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

~~NW¼, NE¼, SW¼, SE¼~~ of Section 151 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey _____ Abstract _____

Township _____ Range _____

Labor _____ League _____

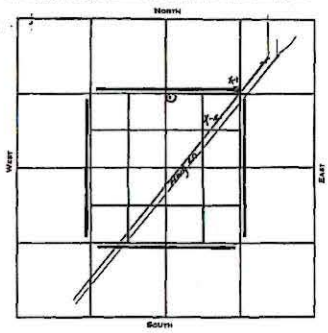
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about 10 days 19__

This well will be located { 5 miles N or S and (MARK OUT ONE THAT DOES NOT APPLY) miles E or W of the SW town of Hereford

MARK DOT INSIDE CIRCLE 3 within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is 10 measured yards from (N S) and 420 measured yards from (E W) property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 300 measured yards from proposed well site.
Owned by Applicant # 3241
Address

No. 2 ~~300~~ 410 measured yards from proposed well site.
Owned by C. W. Sanders # 3178
Address Hereford, Tex

No. 3 measured yards from proposed well site.
Owned by
Address

RECEIVED LUBBOCK, TEXAS FEB 9 1965 HI-PLAINS UNDERGROUND WATER-DIST. NO. 1

COMMENT
No other wells within 440 yds.
Not drawn to scale.

1 1/10 in. ... 440 yds. Minimum for 10-in. well ... yield—more than 1000 G.P.M.
1 in. ... 400 yds. Minimum for 8-in. well ... yield—500 to 1000 G.P.M.
3/4 in. ... 300 yds. Minimum for 6-in. well ... yield—300 to 500 G.P.M.
5/8 in. ... 220 yds. Minimum for 5-in. well ... yield—287 to 300 G.P.M.
1/2 in. ... 200 yds. Minimum for 3 or 4-in. well ... yield—70 to 285 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Kendall & Griffin (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Box 306, Hereford, Texas (ADDRESS)

This permit recommended by County Committee subject to the rules for spacing from existing wells and/or authorized well site.
1. Abby C. Ballard 2. Charles Holland 3. Jim F. McCutcheon

Check here: ☐ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL PO 5-6619

M.S. AB

FORM NO. 250W-LW

Original--District Office Copy

North Well

FOR USE OF COMMITTEEMEN
Field Well No. 3240
Date Received 11-5-65
Permit Size 6 Maximum of Pump 6 In Yield 550 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

1. Land Owner Kendall & Griffin Address Box 306, Hereford, Texas
2. Well located _____ miles N. 5 miles SW miles E. _____ miles W of the town of Hereford
3. County Deaf Smith, Labor _____ League _____ Abstract No. _____
4. NW¼ (NE¼) SW¼ SE¼ Section 151 Block M-7 Survey _____ (MARK OUT ONES THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: (Rotary) Spudder (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well 19 Inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil			
3	45	Caliche + clay			
45	60	Sand Rock + clay			
60	90	Sand + Sand Rock			
90	110	" " " clay			
110	188	Sand + Lime, clay			
188	220	Sandy Clay Sand Rock			
220	235	" " Sand			
235	240	Red Red			

RECEIVED LUBBOCK, TEXAS NOV 1965 HI-PLAINS UNDERGROUND WATER DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Walco Drilling Co Address 519 Dixie Dr Date Drilled 2/19 19 65

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing (new) used, gas line, or shop made. Diameter 16 in. Total casing length 142 ft.
7. Casing perforations: from ~~191~~ 142 ft. to ~~240~~ 191 ft. Size 4 Number of rows 6
8. Pump Column: Size 6 in. Column, shaft length 220 ft. Section pipe size 6 in. Section pipe length 10 ft.
9. Pump bowls: Size 10 Number of stages 8 Pump discharge pipe: Size 6 in.
10. Depth to water level 185 ft. Pump yield 550 GPM. Pumping level: 165 ft.
11. Power Unit: Electrical (Natural Gas) Butane, Other _____ Horsepower _____

Signature _____ (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

STATE OF TEXAS WELL REPORT for Tracking #59187

Owner:	**Tejas Industries**	Owner Well #:	**TH 2-05**
Address:	**P.O. Box 2257 Hereford, TX 79045**	Grid #:	**10-13-7**
Well Location:	**No Data**	Latitude:	**34° 45' 41" N**
		Longitude:	**102° 27' 47" W**
Well County:	**Deaf Smith**	Elevation:	**3882 ft. above sea level**
Type of Work:	**New Well**	Proposed Use:	**Test Well**

Drilling Start Date: **4/27/2005** Drilling End Date: **4/27/2005**

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	**4.75**	**0**	**280**

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

Borehole Completion: **Unknown**

Annular Seal Data: **No Data**

Seal Method: **Not Applicable**

Sealed By: **Unknown**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **2560**

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

Method of Verification: **Estimated**

Surface Completion: **Unknown**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

	Description (number of sacks & material)	Top Depth (ft.)	Bottom Depth (ft.)
Plug Information:	**0 - 10 1 bag cement**		
	10 - 280 Natural fill		

	Strata Depth (ft.)	Water Type
Water Quality:	**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: **LT Drilling Company**
PO Box 784
Sunray, TX 79086

Driller Name: **Randal James Taylor** License Number: **2366**

Apprentice Name: **Kenneth R Bumpas** Apprentice Number: **58150**

Comments: **No Data**

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	surface top soil brown clay
7	35	sand w/sandstone strips
35	42	caliche w/rock strips
42	220	sand w/minor clay strips
220	240	fine to med fairly loose sand
240	280	med fine fairly loose sand
280	300	med fine sand to brown red shale
300	307	brown & red shale

Casing: BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
12	N	.250 steel casing	+1 -207
12	N	.100 mill slot 76 pr ft	207-307

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

	Strata Depth (ft.)	Water Type
Water Quality:	**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: **L. T. Drilling Company**
P.O. Box 784
Sunray, TX 79086

Driller Name: **Lester James Taylor** License Number: **1849**

Apprentice Name: **Diego Solano** Apprentice Number: **WWDAPP00000 621**

Comments: **No Data**

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	4	Surface top soil brown clay
4	42	Caliche w/rock strips
42	220	Sand w/minor clay strips
220	240	Med fine fairly loose sand w/little clay mix
260	280	Red clay + shale

Casing: BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
No Data			

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

☐ PMA ☐ Mailed ☐ Wells Completed ☐ GPS Correction Deposit ☐ Forfeited ☑ Refunded
☐ Plotted ☐ Mastersheet

CANCELLED 7-22-2008

Check # 4202

ORIGINAL - DISTRICT OFFICE

High Plains Underground Water Conservation District No. 1

Application For Water Well Permit

County: Deaf Smith
GIS Permit No. 6605
Time Filed: 11:30
Date Filed: 05-02-08
Expiration Date: 09-02-08
Max Allowed Production: 265 GPM

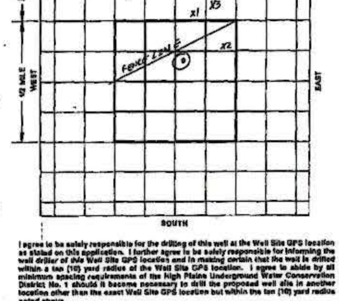
Tejas Industries — NAME OF LANDOWNER

Keith Bridewell / PO Box 9800 Amarillo TX 79105 (806)344-6952 — LANDOWNERS ADDRESS/PHONE NUMBER

hereby make an application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill a water well at the site described below:

County: Deaf Smith
NW ¼ (NE ¼) SW ¼ SE ¼
Block: M-7 Section: 151
Survey: ______ Abstract No. ______
Township: ______ Range: ______
Labor: ______ League: ______
Other: ______

CIRCLE TYPE OF WELL TO BE DRILLED
Municipal - Industrial - Irrigation - Domestic
Other: Feedyard
Drilling will start on or about: ASAP
Tract located ___ N, 5 SW ___ E, ___ W miles, of the town of HEREFORD



DISTRICT USE ONLY

Well Site GPS:
Lat: 34.76115
Long: -102.46333

101 yards N or (S) of accepted property line, which is FENCE LINE
Lat/Long: 34.76173 - 102.46404

360 yards E or (W) of accepted property line, which is CR TIERRA BLANCA RD.
Lat/Long: 34.76115 - 102.45973

Distance in yards to wells within 540 yards (maximum of 3) of proposed well site. Number to correspond with grid.

X-1 327 measured yards from proposed well site.
Permit No. 3602
Lat/Long: 34.76381 - 102.46386

X-2 352 measured yards from proposed well site.
Permit No. 6604
Lat/Long: 34.76300 - 102.46062

X-3 551 measured yards from proposed well site.
Permit No. 3178
Lat/Long: 34.76547 - 102.46166

COMMENT / EXPLANATION

I agree to be solely responsible for the drilling of this well at the Well Site GPS location as stated on this application. I further agree to be solely responsible for informing the well driller of this Well Site GPS location and in making certain that the well is drilled within a ten (10) yard radius of the Well Site GPS location. I agree to abide by all minimum spacing requirements of the High Plains Underground Water Conservation District No. 1 should it become necessary to drill the proposed well site in another location other than the exact Well Site GPS location but within the ten (10) yard radius noted above.

I will furnish the district the complete well registration and log immediately upon completion of this well and prior to the production of water from site identified.

I further agree not to allow irrigation tailwater to escape from land on which this well is used for irrigation nor to convey water from this well in an open, unlined ditch, nor to "waste" the ground water from this well as defined by Section 36.001 of the Texas Water Code. I understand that if I violate any of this agreement, the Board of Directors of the District may order that I may no longer use the well for any purpose until the problem is permanently resolved.

If the General Manager/Designee shall recommend the granting of the application and if there be no contest thereon or conflicting application, the applicant may thereupon proceed at his own risk to drill such well. Should the applicant proceed to drill such well prior to the application having been officially granted by the Board, applicant assumes sole responsibility for potentially losing the well site, all expenses associated with the drilling and equipping of said well, potential expenses of the District associated with any legal proceeding related to said well, and any other risks of any type which might be associated with said well. The application shall not, however, be officially granted until the same shall have been passed upon and granted by the Board of Directors of the High Plains Underground Water Conservation District No. 1.

I have reviewed the information contained within this application, including the Well Site GPS location, and agree to be bound by all terms and conditions of this application and of the rules and regulations of the High Plains Underground Water Conservation District No. 1 and all applicable laws of the State of Texas.

TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL ABOVE INFORMATION IS TRUE AND ACCURATE.

SIGNATURE OF APPLICANT	PRINTED NAME	ADDRESS	TELEPHONE
[signature]	WAYNE WINGET / Dwain Coody	211 Avenue J Hereford TX 79045	(806)344-6857 (806)364-0855

RULE BOOK RECEIVED ____ (manager initials) I do ☐ or do not ☐ receive the Cross Section

Recommended for approval to the Board of Directors of High Plains Underground Water Conservation District No. 1 by the General Manager/Designee: [signature] Date recommended for approval: 05-05-08

DATE BOARD APPROVED: ______ Date Log Mailed: ______ By: ______

☐ PMA ☐ Mailed ☐ Wells Completed ☐ CPS Correction Deposit ☐ Forfeited ✓ Refunded
☐ Plotted Copy ☐ Mastersheet

CANCELLED 7-22-2008

Check # 4221

MAP ID 54

ORIGINAL - DISTRICT OFFICE

High Plains Underground Water Conservation District No. 1

Application For Water Well Permit

County	Deaf Smith
CIS Permit No.	66047
Time Filed	10:30
Date Filed	05-02-08
Expiration Date	09-02-08
Max Allowed Production	265 GPM

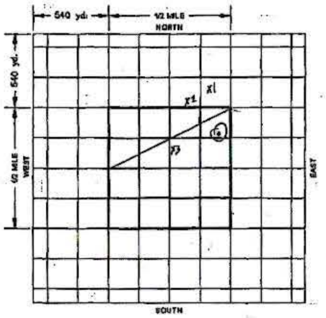
Tejas Industries — NAME OF LANDOWNER

Keith Bridewell # PO Box 9800 Amarillo TX 79105 (806)344-6952 — LANDOWNERS ADDRESS/PHONE NUMBER

hereby make an application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill a water well at the site described below:

County Deaf Smith
NW ¼ (NE ¼) SW ¼ SE ¼
Block M-7 Section 151
Survey ____ Abstract No. ____
Township ____ Range ____
Labor ____ League ____
Other ____

CIRCLE TYPE OF WELL TO BE DRILLED
Municipal - Industrial - Irrigation - Domestic
Other. feedyard
Drilling will start on or about ASAP
Tract located ____ N, 5 SW ____ E, ____ W
miles, of the town of HEREFORD



DISTRICT USE ONLY

Well Site GPS:
Lat. 34.76300
Long. -102.46062

135 yards N or (S) of accepted property line, which is FENCE LINE
Lat/Long: 34.76382 - 102.46154

92 yards E or (W) of accepted property line, which is CR TIERRA BLANCA RD
Lat/Long: 34.76300 - 102.45970

Distance in yards to wells within 540 yards (maximum of 3) of proposed well site. Number to correspond with grid.

X-1 317 measured yards from proposed well site.
Permit No. 3178
Lat/Long: 34.76597 - 102.46166

X-2 339 measured yards from proposed well site.
Permit No. 3602
Lat/Long: 34.76381 - 102.46386

X-3 352 measured yards from proposed well site.
Permit No. 6605
Lat/Long: 34.76115 - 102.46333

COMMENT / EXPLANATION

I agree to be solely responsible for the drilling of this well at the Well Site GPS location as stated on this application. I further agree to be solely responsible for informing the well driller of this Well Site GPS location and in making certain that the well is drilled within a ten (10) yard radius of the Well Site GPS location. I agree to abide by all minimum spacing requirements of the High Plains Underground Water Conservation District No. 1 should it become necessary to drill the proposed well site in another location other than the exact Well Site GPS location but within the ten (10) yard radius noted above.

I will furnish the district the complete well registration and log immediately upon completion of this well and prior to the production of water from site identified.

I further agree not to allow irrigation tailwater to escape from land on which this well is used for irrigation nor to convey water from this well in an open, unlined ditch, nor to "waste" the ground water from this well as defined by Section 36.001 of the Texas Water Code. I understand that if I violate any of this agreement, the Board of Directors of the District may order that I may no longer use the well for any purpose until the problem is permanently resolved.

If the General Manager/Designee shall recommend the granting of the application and if there be no contest thereon or conflicting application, the applicant may thereupon proceed at his own risk to drill such well. Should the applicant proceed to drill such well prior to the application having been officially granted by the Board, applicant assumes sole responsibility for potentially losing the well site, all expenses associated with the drilling and equipping of said well, potential expenses of the District associated with any legal proceeding related to said well, and any other risks of any type which might be associated with said well. The application shall not, however, be officially granted until the same shall have been passed upon and granted by the Board of Directors of the High Plains Underground Water Conservation District No. 1.

I have reviewed the information contained within this application, including the Well Site GPS location, and agree to be bound by all terms and conditions of this application and of the rules and regulations of the High Plains Underground Water Conservation District No. 1 and all applicable laws of the State of Texas.

TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL ABOVE INFORMATION IS TRUE AND ACCURATE.

[signature] WAYNE WINGET Dwain Coody 211 Avenue J Hereford TX 79045 (806)344-6857 (806)364-0855
SIGNATURE OF APPLICANT — PRINTED NAME — ADDRESS — TELEPHONE

RULE BOOK RECEIVED [initials] owner/agent initials I do ☐ or do not ☐ receive the Cross Section

Recommended for approval to the Board of Directors of High Plains Underground Water Conservation District No. 1 by the General Manager/Designee: [signature] Date recommended for approval: 05-05-08

DATE BOARD APPROVED: ____ Date Log Mailed: ____ By: ____

MAP ID 54

STATE OF TEXAS WELL REPORT for Tracking #179441

Owner:	Tejas Industries	Owner Well #:	Irr #1-09
Address:	Po Box 2257 Hereford, TX 79045	Grid #:	10-13-7
Well Location:	Sec 151, Blk M-7 Hereford, TX 79045	Latitude:	34° 45' 47" N
		Longitude:	102° 27' 38" W
Well County:	Deaf Smith	Elevation:	No Data
Type of Work:	New Well	Proposed Use:	Irrigation

Drilling Start Date: 5/15/2009 Drilling End Date: 5/18/2009

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	18	0	310

Drilling Method: Reverse Circulation

Borehole Completion: Filter Packed

	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
Filter Pack Intervals:	30	310	Gravel	80f/20c

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	0	30	20 cement

Seal Method: Truck Mixed

Sealed By: LT Drilling

Distance to Property Line (ft.): No Data

Distance to Septic Field or other concentrated contamination (ft.): 500 ft

Distance to Septic Tank (ft.): No Data

Method of Verification: No Data

Surface Completion: Surface Slab Installed

Water Level: 234 ft. below land surface on 2009-05-16 Measurement Method: Unknown

Packers: No Data

Type of Pump: No Data

Well Tests: No Test Data Specified

MAP ID 54

STATE OF TEXAS WELL REPORT for Tracking #59185

Owner:	Tejas Industries	Owner Well #:	TH 1-05
Address:	P.O. Box 2257 Hereford, TX 79045	Grid #:	10-13-7
Well Location:	No Data	Latitude:	34° 45' 46" N
		Longitude:	102° 27' 38" W
Well County:	Deaf Smith	Elevation:	3824 ft. above sea level
Type of Work:	New Well	Proposed Use:	Test Well

Drilling Start Date: 4/25/2005 Drilling End Date: 4/25/2005

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	4.75	0	320

Drilling Method: Mud (Hydraulic) Rotary

Borehole Completion: Unknown

Annular Seal Data: No Data

Seal Method: Not Applicable

Sealed By: Unknown

Distance to Property Line (ft.): No Data

Distance to Septic Field or other concentrated contamination (ft.): 2560

Distance to Septic Tank (ft.): No Data

Method of Verification: Estimated

Surface Completion: Unknown

Water Level: No Data

Packers: No Data

Type of Pump: No Data

Well Tests: No Test Data Specified

	Description (number of sacks & material)	Top Depth (ft.)	Bottom Depth (ft.)
Plug Information:	0 - 10 1 bag cement		
	10 - 320 Natural fill		

	Strata Depth (ft.)	Water Type
Water Quality:	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: LT Drilling Company
PO Box 784
Sunray, TX 79086

Driller Name: Randal James Taylor — License Number: 2366

Apprentice Name: Kenneth R Bumpas — Apprentice Number: 58150

Comments: No Data

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	1	surface top soil brown clay
1	50	caliche w/rock strips
50	240	sand w/minor clay strips
240	280	med fine fairly loose sand w/sandstone strips
280	300	med fine fairly loose sand to red & green clay & shale
300	310	red & green clay & shale

Casing: BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
12	N	.250 steel casing	+1 -230
12	N	.100 mill slot 76 pr ft	230-290
12	N	.250 steel casing	290-310

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

FORM NO. 334R-LW

Original—District Office Copy

District File No. ____ FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 1712
Date Received 1-14 57
Size of Pump 8 in. Maximum Yield 1000 GPM

1. Well Owner F. L. Alexander Address 700 East 3rd, Hereford, Texas
2. Well located ____ miles N, ____ miles S, ____ miles E, 5 miles W of the town of Hereford, Tex.
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. NW¼ (NE¼) SW¼ SE¼ (CIRCLE ONE) Section 151 Block M-7 Survey ____
5. ACTUAL LOCATION OF THIS WELL IS { 191 measured yards from N or S line of this tract of land. 400 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top soil	160	220	Sand
3	28	Caliche	220	221	Rock Stringer, Soft
28	55	Clay	221	235	Sand
55	56	Rock	235	235½	Rock Stringer
56	85	Sandy Clay	235½	270	Sand
85	90	Sand	270	271	Rock
90	91	Rock	271	290	Sand
91	140	Sandy Clay and Red Sand	290	294	Red Bed
140	141	Rock			
141	160	Clay			

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller L. E. Ware Drilling-Contractor Address Hereford-Texas Date Drilled 1/7 195 7

DESCRIPTION OF WELL

6. Casing: new, used, gas line, or shop made. *Diameter 16 in. Total length 294 ft.
7. Casing perforations: from 119 ft to 154 ft. Size 3/16" Number per foot 5 row. From 154 to 269' 3/16" – 6 row; From 269 to 290' 1/4" – 6 row
8. Pump Column: Size 8 in. Total length 190 ft. Suction pipe: Size 8 in. Length 20 ft.
9. Pump bowls: Size 12" Number of stages 5 Pump discharge pipe: Size 8" in.
10. Depth to water level 129' ft. Pump discharge 900 GPM. Pumping level: 183' ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other natrl. Gas Horsepower 70

Signature F. L. Alexander (OWNER OR AGENT) Owner (TITLE) 700 E 3rd, Hereford Tex (ADDRESS)

Final Completion of Well — Date 1/20, 1957

	Strata Depth (ft.)	Water Type
Water Quality:	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: L. T. Drilling Company
P.O. Box 784
Sunray, TX 79086

Driller Name: Lester James Taylor — License Number: 1849

Apprentice Name: Diego Solano — Apprentice Number: WWDAPP00000621

Comments: No Data

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	1	Surface top soil brown clay
1	50	Caliche w/rock strips
50	240	Sand w/minor clay strips
240	260	Med fine fairly loose sand w/sandstone strips
260	280	Med fine fairly loose sand w/clay mix + sandstone strips
280	300	Brown, green & red clay + shale
300	320	Red & green clay + shale

Casing: BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
No Data			

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

MAP ID 56 — PINNED — X-FILE — Exp. 11-12-62

FORM NO. 355 AWP

Original— District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 2442
Date Application Filed 7-12-62
Time of Filing 11:00 A.M.
Date Recommended by County Committee 7-17-62
Size of Pump 8 Maximum Yield 1000 GPM

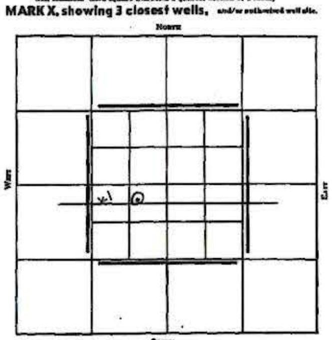
I, J. J. Goodin (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. N. 100 acres of (NW¼) NE¼, SW¼, SE¼ of Section 136 Block M-7 (MARK OUT ONES THAT DO NOT APPLY) Survey ____ Abstract ____
3. Labor ____ League ____
4. Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
5. Drilling to start about Soon 19__

This well will be located: { 5 miles N or S and ____ miles E or W of the town of Hereford

Permit good for 4 months only from date of filing

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Grid square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest wells, and/or authorized well site.



Please Make Sure Your Measurements Are Correct — (They will be checked for accuracy)

Location of proposed Well as submitted by applicant is 10 measured yards from (N S) S and 266 measured yards from (E W) W property line, quarter section line, or labor line.

Number three adjacent wells, and/or authorized well sites, on the plat as 1, 2, and 3, to correspond with the following:

Well 1 216 measured yards from proposed well site. Owned by owner-abandoned Address ____
Well 2 ____ measured yards from proposed well site. Owned by ____ Address ____
Well 3 ____ measured yards from proposed well site. Owned by ____ Address ____

SCALE FOR ABOVE PLAT

1 1/10 inches	440 yards	Minimum for 10-inch well
1 inch	400 yards	Minimum for 8-inch well
3/4 inch	300 yards	Minimum for 6-inch well
5/8 inch	250 yards	Minimum for 5-inch well
1/2 inch	200 yards	Minimum for 3 or 4-inch well

COMMENTS: There are no wells within 440 yards of the proposed well. Certificate of Validation Issued 2-26-73. Clifford Thompson 2-26-73

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: J. J. Goodin (SIGNATURE (LANDOWNER OR AGENT)) Owner (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended subject to the rules for spacing from existing wells and/or authorized well site.

1. Clinton Jackson 2. Charles Packard 3. Leroy E. Ballard

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. • DIAL PO2-9419

AB

MAP ID 55 — PINNED — X-FILE

FORM NO. 355 AWP

Original—District Office Copy

District File No. ____ FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for approval. (PLEASE TYPE or PRINT.)

FIELD WELL NO. "LLL" 1712
DATE APPLICATION FILLED OUT 12-6-56
DATE APPROVED BY COUNTY COMMITTEE 1-7-57
SIZE OF PUMP 8 MAXIMUM YIELD 1000 GPM

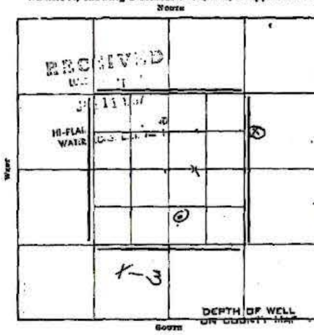
I, F. L. Alexander (NAME OF LANDOWNER) 700 East 3rd, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1. for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. NW¼, (NE¼), SW¼, SE¼ of Section 151 Block M-7 (MARK OUT ONES THAT DO NOT APPLY) Survey ____
3. Labor ____ League ____
4. Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
5. Drilling to start about Soon 19__

This well will be located: { ____ miles N or S and 5 miles E or W of the town of Hereford, Texas

Permit good for 120 days only from date of approval.

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest wells, and/or applications.



Please Make Sure Your Measurements Are Correct— They Will Be Checked for Accuracy

Location of Proposed Well as submitted by applicant is 191 measured yards from (N S) and 400 measured yards from (E W) property line, quarter section line, or labor line.

Number the three adjacent wells, and/or applications, on the plat as 1, 2 and 3, to correspond with the following:

Well 1 456 measured yards from proposed well. Owned by Goodin Address Hereford, Texas
Well 2 550 measured yards from proposed well. Owned by Ben Suddeth Address ____
Well 3 700 measured yards from proposed well. Owned by Applicant Address ____

SCALE FOR ABOVE PLAT

1 1/10 inches	440 yards	Minimum for 10-inch well
1 inch	400 yards	Minimum for 8-inch well
3/4 inch	300 yards	Minimum for 6-inch well
5/8 inch	250 yards	Minimum for 5-inch well
1/2 inch	200 yards	Minimum for 3 or 4-inch well

COMMENTS: There no other well within ½ mile of propose well.

Dep. $10.00 Pl

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by: F. L. Alexander (SIGNATURE (OWNER OR AGENT)) Owner (TITLE) 700 E 3rd Hereford Tex (ADDRESS)

This permit approved subject to the rules for spacing from existing wells and/or prior permits.

1. W. L. Hastings 2. Ed. Dyck 3. Geo. E. Turrentine

Check here ☒ when well is located on the County map.

SMITH PRINTING CO. • DIAL PO5-5610 LUBBOCK

AB

MAP ID 57 120

☑ FILE ☑ 123 ☑ NEW APP. BOOK ☑ ABC FILE ☑ X FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM NO. 465 AWP

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 5096
Time of Filing 1:30 PM
Date Application Filed 11-29-74
Expiration Date 3-29-75
Date Recommended By County Committee 12-9-74
Size of Pump 6 Maximum Yield 560 GPM

I, E. C. Reinauer & Sons, Inc. (NAME OF LANDOWNER) Box 1637, Hereford, Texas 79045 (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NW¼, ~~XXXXXXXX~~ of Section 136 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

Drilling to start about soon, 19__

This well will be located 4 miles ~~XXXX~~ S and 2 miles ~~XXX~~ W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates ¼ quarter section or 1 labor)

MARK X, showing 2 closest wells or authorized well sites within ¼ mile.

NORTH / WEST / EAST / SOUTH

Location of proposed Well as submitted by applicant is ~~XXX~~ 540 measured yards from (N ~~XX~~ MARK OUT ONE THAT DOES NOT APPLY) and 60 ~~XX~~ measured yards from (E ~~XX~~) ~~property line~~, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ~~XXX~~ 350 measured yards from proposed well site.
Owned by C. B. Hagenstoz #856
Address ______

No. 2 ______ measured yards from proposed well site.
Owned by ______
Address ______

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address RECEIVED DEC 13 1974

COMMENT
No other wells within 440 yds.

1 1/10 in.... 440 yds.... Minimum for 10-in. well....yield—more than 1000 G.P.M.
1 in.... 400 yds.... Minimum for 8-in. well....yield—500 to 1000 G.P.M.
3/4 in.... 300 yds.... Minimum for 6-in. well....yield—200 to 500 G.P.M.
5/8 in.... 250 yds.... Minimum for 5-in. well....yield—265 to 300 G.P.M.
1/2 in.... 200 yds. Minimum for 3 or 4-in. well....yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

Bud Snyder
This notice given by [signature] Manager Box 1637, Hereford, Texas 79045
(SIGNATURE LANDOWNER OR AGENT) (TITLE) (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. [signature] 3. James E. Higgins

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded Check No. ______

SMITH PRINTING CO.

[signature]

FORM NO. [illegible]

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 2442
Date Received 12-21-62
Permit Size of Pump 8 in. Maximum Yield 1000 GPM

1. Land Owner J. J. Gondin Address Rt. 5, Hereford, Texas

2. Well located ______ miles N. 5 miles S. ______ miles E. ______ miles W of the town of Hereford

3. County Deaf Smith Labor ______ League ______ Abstract No. ______

4. N 100 A. OF NW¼ ~~NE¼ SE¼ SW¼~~ Section 136 Block M-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ✓ Spudder ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 20 inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	44	Caliche w/Clay			
44	74	Med Brown Sand w/Rock Layers			
74	102	Corse Brown Sand			
102	159	Med Fine Brn Sand			
159	172	White Sand w/3 Ft Rock			
172	191	Med Fine Brn Sand w/Caliche Rock			
191	233	Med Corse-light Brown Sand - loose			
233	324	Corse Sand w/Rock Streaks			
324	326	Red Bed			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller L. J. Dirks Address Hereford, Texas Date Drilled 11/27 1962

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, (used, gas line) or shop made. Diameter 18 in. Total casing length 325 ft.

7. Casing perforations: from 162 ft. to 325 ft. Size 3/16 Number of rows 6

8. Pump Column: Size 8 in. Column, shaft length 220 ft. Suction pipe size 8 in. Suction pipe length 30 ft.

9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8 in.

10. Depth to water level 90 ft. Pump yield 1000 GPM. Pumping level: 148 ft.

11. Power Unit: Electrical, (Natural) Gas, Butane, Other ______ Horsepower ______

Signature ______ (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

FORM NO. [illegible]

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 5096
Date Received 4-1-75
Permit Size of Pump 6 in. Maximum Yield 560 GPM

1. Land Owner E. C. Reinauer & Sons, Inc. Address Box 1637, Hereford, Texas 79045

2. Well located ______ miles N. 4 miles S. ______ miles E. 2 miles W of the town of Hereford

3. County Deaf Smith Labor ______ League ______ Abstract No. ______

4. NW¼ ~~XXXXXXXX~~ Section 136 Block M-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ______ ~~Spudder~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 21 inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil			
3	87	Clay and Caliche			
87	138	Sand & Clay			
138	190	Med. Sand and Sand rock			
190	280	Med. Sand			
280	318	Med. Sand and Sand Rock			
318	339	Med. Sand			
339	343	Red Bed			
Redbed					

RECEIVED APR 8 1975

REMARKS:
Semi Gravel Pack

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Kenny Scarns #1185 Address Box 2635 Date Drilled 1-16- 19 75

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16" in. Total casing length 343 ft.

7. Casing perforations: from 225 ft. to 343 ft. Size 1/8" Number of rows 10

8. Pump Column: Size 6 in. Column, shaft length 325 ft. Suction pipe size 6 in. Suction pipe length 3 ft.

9. Pump bowls: Size 10" Number of stages 8 Pump discharge pipe: Size 6 in.

10. Depth to water level ~~198~~ 198 ft. Pump yield 560 GPM. Pumping level: 260 ft.

11. Power Unit: Electrical, Natural Gas, Butane, Other ______ Horsepower 318 Chrysler

Signature ______ (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

CERTIFICATE OF WATER WELL VALIDATION

DISTRICT OFFICE COPY

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

1628 15th Street Lubbock, Texas 79401

This Certificate Of Water Well Validation is issued for the well, as described below, to recognize its validity as governed by the rules and regulations of the High Plains Underground Water Conservation District No. 1. This Certificate does not relieve the owner(s) or operator(s) of this well from the responsibility for compliance with all other rules and regulations of the High Plains Underground Water Conservation District No. 1 regarding the redrilling, deepening, reequipping, and operation of the subject well.

This Certificate is not intended to establish the precise legal ownership of the subject well or that of the land whereupon it is located.

Landowner: J. J. Gondin (NAME)
Route 5, Hereford, Texas [illegible] (ADDRESS)

Description of property: North 100 acres of Northwest 1/4, Section 136, Block [illegible].
Deaf Smith County, Texas.

The following well has been located and identified by field check.

This well is located 210 yards east of the west section line and 330 yards [illegible] the north section line. The west section line is assumed to be the center [illegible] south paved county road on the west side of the subject property. The north section line is assumed to be the center of an east-west furrow on the north side of the subject property.

This well is equipped with a Johnston Pump Company pump, an [illegible] Gear Company gearhead, and a [illegible]-cylinder Chevrolet engine powered by natural gas [illegible]. The well has an 8-inch discharge pipe going into a closed system.

Deaf Smith County permit number 2442 was applied for on this well on July 1[illegible], [illegible].

These observations were made on February 23, 1975, by Cubie Goodwin and [illegible] Beale, Field Representatives of the High Plains Underground Water Conservation District No. 1.

WITNESS OUR HAND this the [illegible] day of February, 19__.

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

THE STATE OF TEXAS X
COUNTY OF Lubbock X

By [signature] MANAGER

BEFORE ME, the undersigned authority in and for said County, Texas, on this day personally appeared F. A. Wayland known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose therein expressed and in the capacity therein stated.

(SEAL) GIVEN UNDER MY HAND AND SEAL OF OFFICE this [illegible] day of February, 1975.

[signature]
C. L. [illegible]
Notary Public, Lubbock County, Texas

1-10 / 163 / NEW APP. BOOK / ABC FILE / X FILE / MASTER SHEET / WELLS COMPLETED BOOK / PINNED / DEPTH PLOTTED 120

FORM No. 448 AWP

MAP ID 60

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 3615
Time of Filing 10:05 A.M.
Date Application Filed 7-19-66
Expiration Date 11-19-66
Date Recommended By County Committee Aug. 1, 1966
Size of Pump 6 Maximum Yield 560 GPM

I, C. H. Holt (NAME OF LANDOWNER), Box 21, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NW¼, NE¼, SW¼, SE¼ Section 135 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

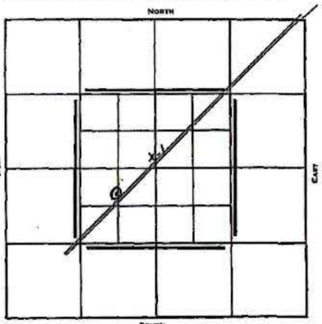
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

Drilling to start about already drilled, 19__

This well will be located 3 miles N or S and 2 miles E or W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is 30 measured yards from (N S) S and 220 measured yards from (E W) W property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 360 measured yards from proposed well site. Owned by Applicant # 3614 Address ______

No. 2 ______ measured yards from proposed well site. Owned by ______ Address ______

RECEIVED LUBBOCK, TEXAS AUG 3 1966 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

No. 3 ______ measured yards from proposed well site. Owned by ______ Address ______

COMMENT

This is for a re-opening of a well abandoned under 3614 drilled prior to the Dist.

1 1/10 in. ..440 yds. ....Minimum for 10-in. well....yield—more than 1000 G.P.M.
1 in. ....400 yds. ....Minimum for 8-in. well....yield—500 to 1000 G.P.M.
3/4 in. .....300 yds. ....Minimum for 6-in. well....yield—300 to 500 G.P.M.
5/8 in. .....250 yds. ....Minimum for 5-in. well....yield—265 to 300 G.P.M.
1/2 in. .....200 yds. Minimum for 2 or 4-in. well....yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: C. H. Holt (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Box21, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Billy Wayne Sisson 2. Bill Gentry 3. E. Mc. Guire Jr.

Pinned on County Map / Deposit Received / Refunded

Check No. ______

SMITH PRINTING CO. - DIAL PO 4-4519

AB

MAP ID 59 PINNED

Exp 1-26-63 J✓

FORM NO. 382 AWP

ALPH. X-FILE

Original-- District Office Copy

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 2562
Date Application Filed 2-26-63
Time of Filing 11:45 A.M.
Date Recommended By County Committee 9-4-63
Size of Pump 8 Maximum Yield 1000 GPM

I, Mrs. W. R. Sheihagen (NAME OF LANDOWNER), 128 Ave. J., Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

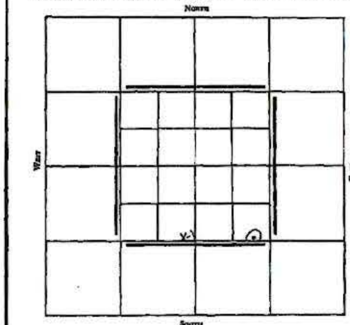
1. County Deaf Smith
2. NW¼, NE¼, SW¼, SE¼ of Section 135 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
Survey ______ Abstract ______
3. Labor ______ League ______
4. Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
5. Drilling to start about 30 days, 19__

This well will be located: 4 SW miles N or S and ______ miles E or W of the town of Hereford

Permit good for 4 months only from date of filing

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells, and/or authorized well site.



Please Make Sure Your Measurements Are Correct — (They will be checked for accuracy)

Location of proposed Well as submitted by applicant is 10 measured yards from (N S) S and 770 measured yards from (E W) W property line, quarter section line, or labor line.

Number three adjacent wells, and/or authorized well sites, on the plat as 1, 2, and 3, to correspond with the following:

Well 1 400 measured yards from proposed well site. Owned by Applicant Address ______

Well 2 ______ measured yards from proposed well site. Owned by ______ Address ______

Well 3 ______ measured yards from proposed well site. Owned by ______ Address ______

SCALE FOR ABOVE PLAT

1 1/10 inches ...... 440 yards ...... Minimum for 10-inch well
1 inch ...... 400 yards ...... Minimum for 8-inch well
3/4 inch ...... 300 yards ...... Minimum for 6-inch well
5/8 inch ...... 250 yards ...... Minimum for 5-inch well
1/2 inch ...... 200 yards ...... Minimum for 4 or 4-inch well

COMMENTS: There are no other wells within 440 yards of the proposed well.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: J. D. Whitaker (SIGNATURE LANDOWNER OR AGENT) Tenant (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended, subject to the rules for spacing from existing wells and/or authorized well site.

1. Laley E. Ballard 2. E. Mc. Guire Jr. 3. Billy B. Moore

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL PO 4-4519

AB

FORM NO. 388-LW

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3615
Date Received 12-9-66
Permit Size of Pump 6 in. Maximum Yield 560 GPM

1. Land Owner C. H. Holt Address Box 21, Hereford, Texas
2. Well located ______ miles N, 3 miles S, ______ miles E, 2 miles W of the town of Hereford
3. County Deaf Smith Labor ______ League ______ Abstract No. ______
4. NW¼ NE¼ SW¼ SE¼ Section 135 Block M-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ______ Spudder ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 19 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
		Drilled prior to District and top log not available.			

RECEIVED LUBBOCK, TEXAS DEC 13 1966 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS: An 8" column was used in this well but it has been equipped so that it will not exceed 560 gpm.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller ______ Address ______ Date Drilled ______ 19__

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length ______ ft.
7. Casing perforations: from ______ ft. to ______ ft. Size ______ Number of rows ______
8. Pump Column: Size 8 in. Column, shaft length 170 ft. Suction pipe size 8 in. Suction pipe length 17 ft.
9. Pump bowls: Size 12" Number of stages 4 Pump discharge pipe: Size 6 in.
10. Depth to water level 141' ft. Pump yield 500 GPM. Pumping level: 170 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ______ Horsepower 35 H.P.

Signature Big T Pump Co. Inc. (LANDOWNER OR AGENT) (TITLE) Hereford, Tex (ADDRESS)

FORM NO. 388-LW

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print)

FOR USE OF COMMITTEEMEN
Field Well No. 2562
Date Received 4-11-63
Permit Size of Pump 8 in. Maximum Yield 1000 GPM

1. Land Owner Mrs. W. R. Scheihagen Address 128 Ave. J. - Hereford, Tex
2. Well located ______ miles N, 4 miles S, W miles E ______ miles W of the town of Hereford
3. County Deaf Smith Labor ______ League ______ Abstract No. ______
4. NW¼ NE¼ SW¼ SE¼ Section 135 Block M-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary Rotary Spudder ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 18 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	35	Caliche			
35	135	Hard Sand & Stone			
135	160	Fine Sand			
160	180	Sand & Stone & Clay Mixed			
180	210	Sand & Stone, Strips of Fine Sand			
210	238	Med. Course Sand & Stone			
238	337	Med. Course Sand & Stone			
337	342	Brown Clay & Red Bed			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller West Texas Drilling, Inc. Address Box 926 Date Drilled 3/27/63 19__

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length 342 ft.
7. Casing perforations: from 116 ft. to 284 ft. Size 1/8 Number of rows 6
8. Pump Column: Size 8 in. Column, shaft length 200 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12 Number of stages 9 Pump discharge pipe: Size 8 in.
10. Depth to water level 109 ft. Pump yield 1000 GPM. Pumping level: 176 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ______ Horsepower ______

Signature Big T Pump Co., Inc. - Box 827 - Hereford, Tex. (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

FORM No. 445 AWP

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	3614
Time of Filing	10:00 A.M.
Date Application Filed	7-19-66
Expiration Date	11-19-66
Date Recommended By County Committee	Aug 1, 1966
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, C. N. Holt (NAME OF LANDOWNER), Box 21, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County: Deaf Smith

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

XXXXXXXX, SW¼, XXXX of Section 135 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about: Soon, 19__

Survey ______ Abstract ______

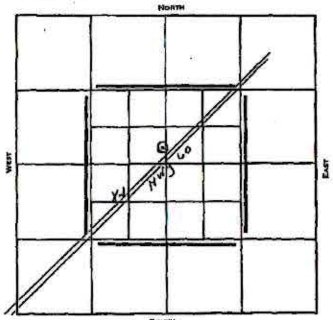
Township ______ Range ______

Labor ______ League ______

This well will be located 3 miles XXX or S and 2 miles XXX or W of the town of Hereford CT (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE @ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 50 measured yards from (N S) S and 430 measured yards from (E W) W property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1: 360 measured yards from proposed well site. Owned by Applicant–abandoned. Address ______

No. 2: ______ measured yards from proposed well site. Owned by ______ Address ______

No. 3: ______ measured yards from proposed well site. Owned by ______ Address ______

RECEIVED
LUBBOCK, TEXAS
AUG 3 1966
HI-PLAINS UNDERGROUND
WATER CONS. DIST. NO. 1

COMMENT

No other wells within 440 yds.

1 1/10 ins. 440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds.....Minimum for 8-in. well...yield—560 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—390 to 560 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—265 to 390 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: C. N. Holt (SIGNATURE LANDOWNER OR AGENT) — Owner (TITLE) — Boxe 21, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Billy Wayne Sisson 2. Bill Gentry 3. E. McCormick

[X] Pinned on County Map [X] Deposit Received [ ] Refunded Check No. ______

SMITH PRINTING CO. - DIAL PO 8-8410

FORM No. 445-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN

Field Well No.	3614
Date Received	8-22-66
Permit Size of Pump	8
Maximum Yield	1000 GPM

1. Land Owner: Charlie Holt Address: 122 Avenue D, Hereford, Texas

2. Well located ______ miles N, 3 miles S, ______ miles E, 2 miles W of the town of Hereford

3. County: Deaf Smith Labor ______ League ______ Abstract No. ______

4. XXXXXXX SW¼ XXXXX Section 135 Block M-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ______ XXXXXX (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 18" inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	80	Caliche			
80	100	Sand and Stone			
100	150	Sand and Some Stone			
150	200	Sand, Stone and Lots of Clay			
200	360 (372 struck out)	Sand, Coarse Sand and Some Stone			
360 (372 struck out)	366 (376 struck out)	Red Bed			

RECEIVED
LUBBOCK, TEXAS
AUG 25 1966
HI-PLAINS UNDERGROUND
WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller: West Texas Drilling, Inc. Address: Box 926, Hereford, Texas Date Drilled: July 26, 1966

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16" in. Total casing length 376 ft. 5 Ft. Blank

7. Casing perforations: from 166 (176 struck out) ft. to 361 (371 struck out) ft. Size 50 Ft., -8Row 1/8" 145 Ft. - 6 Row 3/16 Number of rows ______

8. Pump Column: Size 8 in. Column, shaft length 220 ft. Suction pipe size 8 in. Suction pipe length 10 ft.

9. Pump bowls: Size 12" Number of stages 3 Pump discharge pipe: Size 8 in.

10. Depth to water level 144 Ft ft. Pump yield 1000 GPM. Pumping level: 170 ft.

11. Power Unit: (Electrical), Natural Gas, Butane, Other ______ Horsepower ______

Signature: Big T Pump Co., Inc. (LANDOWNER OR AGENT) - Box 827 - Hereford, Tex. (TITLE) (ADDRESS)

MAP ID 60

STATE OF TEXAS PLUGGING REPORT for Tracking #23622

Owner:	TEXAS D.O.T.	Owner Well #:	No Data
Address:	HEREFORD HWY CANYON, TX 79015	Grid #:	10-13-8
Well Location:	2.75MI. W. OF HEREFORD ON HWY 60 HEREFORD, TX 79045	Latitude:	34° 46' 06" N
		Longitude:	102° 27' 27" W
Well County:	Deaf Smith	Elevation:	No Data
Well Type:	Withdrawal of Water		

Drilling Information

Company:	No Data	Date Drilled:	No Data
Driller:	No Data	License Number:	No Data

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	22		50

Plugging Information

Date Plugged: 2/21/2005 Plugger: RANDY TAYLOR

Plug Method: Tremmie pipe cement from bottom to top

Casing Left in Well: Dia (in.)	Top (ft.)	Bottom (ft.)	Plug(s) Placed in Well: Top (ft.)	Bottom (ft.)	Description (number of sacks & material)
	0	0	0	50	43 YDS

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: L.T. DRILLING CO.
P.O. BOX 784
SUNRAY, TX 79086

Driller Name: RANDY TAYLOR License Number: 2366

Comments: WLS

FORM No. 445 AWP MAP ID 61

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	3614A
Time of Filing	10:00 A.M.
Date Application Filed	9-25-66
Expiration Date	12-25-66
Date Recommended By County Committee	9-20-66
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, C. N. Holt (NAME OF LANDOWNER), Box 21, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County: Deaf Smith

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

XXXXXXX, SW1/4, XXXXX Section 135 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about: already drilled, 19__

Survey ______ Abstract ______

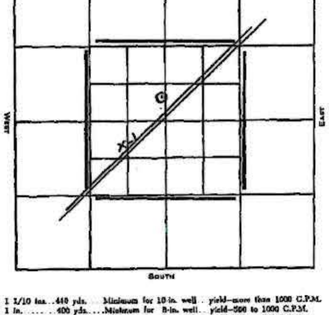
Township ______ Range ______

Labor ______ League ______

This well will be located 3 miles N or S and 2 miles E or W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE @ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 100 measured yards from (N S) S and 430 measured yards from (E W) W property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1: 360 measured yards from proposed well site. Owned by Applicant–abandoned. Drilled prior to Dist. Address ______

No. 2: ______ measured yards from proposed well site. Owned by ______ Address ______

No. 3: ______ measured yards from proposed well site. Owned by ______ Address ______

RECEIVED
LUBBOCK, TEXAS
SEP 21 1966
HI-PLAINS UNDERGROUND
WATER CONS. DIST. NO. 1

COMMENT

Changes location on original permit.

1 1/10 ins...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds.....Minimum for 8-in. well...yield—560 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—390 to 560 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—265 to 390 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: C. N. Holt (SIGNATURE LANDOWNER OR AGENT) — Owner (TITLE) — Box 21, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Billy Wayne Sisson 2. Bill Gentry 3. Charles Packard

[ ] Pinned on County Map [ ] Deposit Received [X] Refunded Check No. ______

SMITH PRINTING CO. - DIAL PO 8-8410

AB

PINNED

MAP ID 63

FORM NO. 1SS-REVISED 3-55

Duplicate - District Office Copy

District File No. X-F/G 5
FOR USE OF DISTRICT OFFICE ONLY

FOR USE OF COMMITTEEMAN
FIELD WELL NO. 856
DATE RECEIVED
DATE APPROVED

High Plains Underground Water Conservation District No. 1

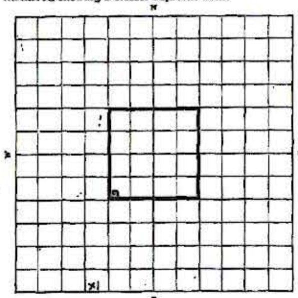
Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

I, C. E. C. E. Haggnstoz (NAME OF LANDOWNER), 306 Lawton St., Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated.

1. County Deaf Smith
2. Section 136 Block M-7
Survey
3. Labor League
4. Homestead Abstract No.
5. Circle quarter section or labor in which well is to be located. NE¼ NW¼ SE¼ SW¼
6. Proposed use (municipal-industrial-irrigation) 160 acres (CIRCLE DESIRED USE)
7. Well will be pumped about ____ days per year.
8. Casing—new/used/gas line, or shop made—Dia. 16 in. (CIRCLE TYPE USED) #1
9. Drilling to start about June 20th, 1953
10. Driller or Contractor Darrel Harkins
Address Hereford, Texas
11. Pump Size 8" Expected Gal. per Minute 1000
12. Type of Power—Electrical—Engine—Horsepower 50 US (CIRCLE CORRECT POWER)

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor.)
MARK X, showing 3 closest adjacent wells.



This well will be located approximately ____ miles N, ____ miles E, 2 miles S, 3 miles W, of the town of Hereford, Texas
LOCATION OF PROPOSED WELL as submitted by applicant is 880 measured yards from (N S) property line and 600 measured yards from (E W) property line.
Number the three adjacent wells on the map as 1, 2, and 3, to correspond with the following:
Existing well 1 440 measured yards from proposed well.
Owned by C. E. Haggnstoz
Address 306 Lawton, Hereford, Texas
Existing well 2 ____ measured yards from proposed well.
Owned by
Address
Existing well 3 ____ measured yards from proposed well.
Owned by
Address

COMMENT: This is a proposed new well. this quarter never has been irrigated.
Present tenant is Sam Vintruolla

FOR FURTHER COMMENT USE BACK OF FORM

I hereby certify that I have read the foregoing statement, and that each and all of the items therein contained are true to the best of my knowledge and belief, and I agree that I must furnish my County Committeeman, as required by law, the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: C.E. Hagenstoz (SIGNATURE (OWNER OR AGENT)) Landowner (TITLE), 306 Lawton, Hereford, Tex. (ADDRESS)

APPROVED BY
1. Pet L Carmichael 2. Gayle Neal 3. Frank J. Byrne

I, the undersigned, do hereby certify that I have furnished to my County Committeeman the completed well registration and log of well as required by Article 7880-3c, Sec. D-5, Texas Revised Civil Statutes.

Received by: ____ COUNTY COMMITTEEMAN ____ APPLICANT
____ DATE ____ 19__

SMITH PRINTING CO. - DIAL

AB

FORM NO. 1SS1—REVISED 3-55

Duplicate - District Office Copy

District File No. ____
FOR USE OF DISTRICT OFFICE ONLY

FOR USE OF COMMITTEEMAN
FIELD WELL NO.
DATE RECEIVED
DATE APPROVED

High Plains Underground Water Conservation District No. 1

LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

Well Owner C.E. HAGANSTOZ Address HEREFORD, TEXAS County DEAF SMITH
Well located approximately ____ miles N, ____ miles S, ____ miles E, 5 miles W of the town of Hereford
Section ____ Block ____ Survey ____
Labor ____ League ____ Homestead ____ Abstract No. ____
Depth to Water from Ground Surface ____

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top soil
4	61	Caliche
61	72	Fine red sand
72	80	Caliche
80	95	Sand water
95	103	Sand rock
103	121	Sand water
121	126	Brown clay
126	178	Sand and sand rock
178	183	Sand and gravel
183	178	Coarse sand
178	206	Caliche rock
206	250	Water sand
		100' of perforation
		Well cased at 250' with new 16"
		gasline casing.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Fred D. Sims Address Dimmitt Hwy Date June 30, 1953

Name of Contractor ____ (WHEN CONTRACTOR IS OTHER THAN DRILLER)

SMITH PRINTING CO., LUBBOCK

☑ 412 ☑ 123 ☑ NEW APP. BOOK ☑ ABC FILE ☑ E FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM No. 445 AWP

MAP ID 62

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	3813
Time of Filing	3:15 P.M.
Date Application Filed	4-25-67
Expiration Date	8-25-67
Date Recommended by County Committee	5-5-67
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

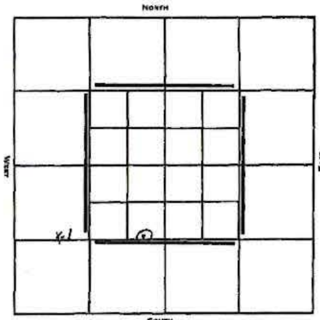
INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Mrs. W. R. Scheibagen (NAME OF LANDOWNER), 128 Ave. J, Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
SE1/4 of Section 135 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
Survey ____ Abstract ____
Township ____ Range ____
Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)
Drilling to start about Soon, 19__
This well will be located 4 miles N or S and ____ miles E or W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest well or authorized well sites within ½ mile.



1 1/10 in...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.......400 yds....Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in......300 yds....Minimum for 6-in. well...yield—300 to 500 G.P.M.
5/8 in......250 yds....Minimum for 5-in. well...yield—205 to 300 G.P.M.
1/2 in......200 yds. Minimum for 3 or 4-in. well...yield—70 to 205 G.P.M.

Location of proposed Well as submitted by applicant is 10 measured yards from (N S) S property line and # 310 measured yards from (E W) W property line, quarter section line, or labor line.
Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:
No. 1 420 measured yards from proposed well site.
Owned by Applicant # 2562
Address
No. 2 ____ measured yards from proposed well site.
Owned by
Address
No. 3 ____ measured yards from proposed well site.
Owned by
Address

RECEIVED
LUBBOCK, TEXAS
MAY 4 1967
HI-PLAINS UNDERGROUND
WATER CONS. DIST. NO. 1

COMMENT
No other wells within 440 yds.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: J.D. Mashburn (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 926, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
1. Frank B. Zinser Jr. 2. Billy Wayne Tison 3. Bill Gentry

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded
Check No. ____

SMITH PRINTING CO., LUBBOCK

AB

FORM NO. ____

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No.	3813
Date Received	5-12-67
Permit Size of Pump	8
Maximum Yield	1000 GPM

1. Land Owner Mrs. W. R. Schelhagen Address 128 Ave. J Hereford, Texas
2. Well located ____ miles N. 4 miles S. ____ miles E. ____ miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. SE¼ Section 135 Block M-7 Survey ____ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 18" inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil	350	374	Sand & some Clay
4	65	Caliche	374	379	Red Bed
65	85	Clay			
85	140	Sand & Stone, some Clay			
140	165	Sand & Stone			
165	200	Clay & Stone			
200	260	Sand, medium course and Stone			
260	290	Sand & Stone			
290	320	Sand & Stone & Clay			
320	350	Sand, Stone, some Clay			

RECEIVED
LUBBOCK, TEXAS
MAY 19 1967
HI-PLAINS UNDERGROUND
WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller West Texas Drilling of Hereford Address Box 926 Date Drilled May 4, 1967

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16" in. Total casing length 379 ft.
7. Casing perforations: from 179' ft. to 374' ft. Size 3/16 Number of rows 6
8. Pump Column: Size 8 in. Column, shaft length 240 ft. Suction pipe size 8 in. Suction pipe length 4 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level 151' ft. Pump yield 1000 GPM. Pumping level: 200 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature ____ LANDOWNER OR AGENT ____ TITLE ____ ADDRESS

FORM NO. [illegible]

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS. Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3186
Date Received 6-10-65
Permit Size of Pump 8 in. Maximum Yield 1000 GPM

1. Land Owner SAM VENTRUELLA Address Rt. 5, Hereford, Texas
2. Well located ____ miles N, 2½ miles S, ____ miles E, 3 miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. S. 123 A. of ~~NW¼ NE¼~~ SW¼ ~~SE¼~~ (MARK OUT THOSE THAT DO NOT APPLY) Section 136 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ROTARY ~~Spudder~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 18 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	270	300	sand-sand rock
3	30	caliche	300	330	sand-clay
30	60	caliche clay	330	333	Red bed
60	90	clay-sand-rock			
90	120	sand-sand rock			
120	150	sand-sand rock-clay			
150	180	sand-sand rock clay			
180	210	sand-sand rock			RECEIVED LUBBOCK, TEXAS JUN 14 1965 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1
210	240	sand-sand rock			
240	270	sand-sand rock-clay			

REMARKS: Casing set on Red bed

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller [signature] Address [illegible] Texas Date Drilled 5-5 1965

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: (new) used, (gas line) or shop made. Diameter 16 in. Total casing length 333 ft.
7. Casing perforations: from 153 ft. to 333 ft. Size ¼-¼ Number of rows 5-8
8. Pump Column: Size 6⅝ in. Column, shaft length 280 ft. Suction pipe size 6¾ in. Suction pipe length 7 ft.
9. Pump bowls: Size 10 Number of stages 6 Pump discharge pipe: Size 8 5/8 in.
10. Depth to water level 153 ft. Pump yield 800 GPM. Pumping level: 203 ft.
11. Power Unit: (Electrical) Natural Gas, Butane, Other ____ Horsepower ____

Signature [signature] (LANDOWNER OR AGENT) Contractor (TITLE) R.R.T. (ADDRESS)

FORM NO. [illegible]

Original—District Office Copy District File No. 195 (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

REGISTRATION OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT)

FOR USE OF COMMITTEEMAN
FIELD WELL NO. 856
DATE RECEIVED
DATE APPROVED

Catterpillar Trail-E. Peoria, Ill

1. Well Owner C. E. Hagenstoz Address 306 Lanton St. Hereford, Texas
2. Well located approximately ____ miles N, 2 miles S, ____ miles E, 3 miles W of the town of Hereford
3. County Deaf Smith Section 136 NE¼ Block M-7 Survey ____
4. Labor ____ League ____ Homestead ____ Abstract No. ____

ACTUAL LOCATION OF THIS WELL IS 3 measured yards from (N S) property line and 5 measured yards from (E W) property line.

5. Lessee or Operator Sam Venturella Address HEREFORD TEXAS
6. Driller ____ Address ____
7. Contractor [illegible] Address HEREFORD TEXAS

DESCRIPTION OF WELL

8. Total depth of hole [illegible] ft.
9. Casing—New, (used), (gas line) or shop made. Diameter 16 in. Length [illegible] ft.
10. Casing perforated from ____ to ____ from ____ to ____
11. Size of perforations ____ Number of perforations per foot ____
12. Horizontal perforation ____ Vertical perforation [illegible]
13. If screen was installed: Type ____ Length ____ ft. Diam. ____ in. Slot Size ____
14. Method of Drilling ROTARY (ROTARY — CABLE TOOL OR SPUDDER — REVERSE ROTARY)
15. Date Completed [illegible] (MONTH) 1953 (YEAR) Deepened ____ (MONTH) ____ (YEAR)
16. Depth to water when drilled ____ ft.
17. Present depth to water ____ ft. Date of Measurement ____
18. Describe point from which depth measurements were made, and give sea-level elevation if available ____

DISCHARGE DATA

19. Pump discharge ____ (GAL. PER MIN. OR CU. FT. PER SEC.)
20. Method of discharge measurement ____ (WEIR - ORIFICE - CURRENT METER - SPARLING METER)
21. Drawdown ____ No. of days pumped annually ____
22. Purpose of use GEN FARM Depth of Setting 170
23. Number of feet of suction pipe 50
24. Special interest ____ (RECHARGE — CATCHING RUNOFF WATER — ETC.)

SPECIAL DATA

25. Kind of pump ____ (TURBINE — CENTRIFUGAL — ETC.) Capacity and size of pump ____
26. Pump column size 9 in. Bowl size 12 in.
27. Rated pump discharge ____ gpm. at ____ ft.
28. Kind of power ELECTRIC (ELECTRICAL — NATURAL GAS — ETC.) Horsepower rating of motor 50

☑ ... ☑ ... ☑ NEW APP. BOOK ☑ ... FILE ☑ X FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM NO. 465 AWP

MAP ID 65

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No.	4330
Time of Filing	11:30 A.M.
Date Application Filed	12/30/69
Expiration Date	4/30/70
Date Recommended By County Committee	1-12-70
Size of Pump	6
Maximum Yield	560 GPM

I, J. H. Dobbs (NAME OF LANDOWNER) Route #2, Hereford, Texas 79045 (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

XXXXXXXXX SW¼, XXXX Section 136 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

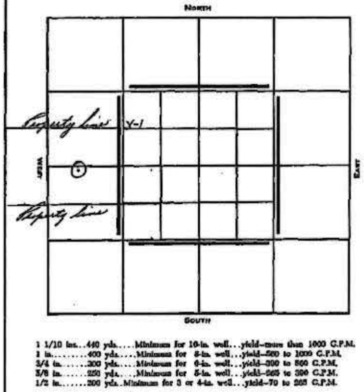
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about XXXXXX soon, 19__

This well will be located 4 miles XXXX S and ____ miles E or W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 880 measured yards from (NS) and 170 measured yards from (E W) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 [illegible] measured yards from proposed well site.
Owned by applicant
Address To abandoned

No. 2 ____ measured yards from proposed well site.
Owned by ____
Address ____

No. 3 ____ measured yards from proposed well site.
Owned by RECEIVED JAN 15 1970
Address ____

COMMENT

To be abandoned as irrigation well and to be used as domestic well.

No other wells within 440 yds.

1 1/10 in....440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds.....Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—300 to 500 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—265 to 300 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: J H Dobbs (SIGNATURE LANDOWNER OR AGENT) (TITLE) (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. [signature] 3. [signature]

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded Check No. ____

SMITH PRINTING CO. - DIAL PO 3-[illegible]

AB

FORM NO. 265 AWP 123 BB. ☒ Alphabetical file ☒ X-file ☒ Pinned ☐ Depth Plotted MAP ID 64

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No.	3186
Time of Filing	11:45 A.M.
Date Application Filed	1-6-65
Expiration Date	5-6-65
Date Recommended by County Committee	1-28-65
Size of Pump	8
Maximum Yield	1000 GPM

I, Sam Venturella (NAME OF LANDOWNER) Rt. 5, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

S 123A of ~~NW¼, NE¼~~ SW¼, ~~SE¼~~ of Section 136 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

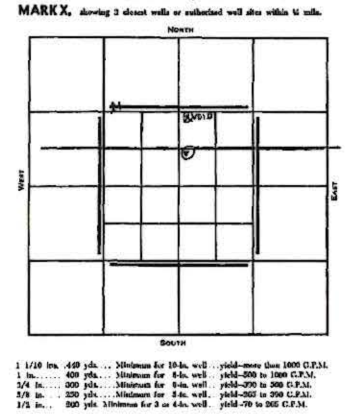
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about 30 days, 19__

This well will be located 2½ miles ~~N~~ or S and 3 miles ~~E~~ or W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 20 measured yards from (N S) N and 475 measured yards from (E W) W property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 418 measured yards from proposed well site.
Owned by Henry Dobbs # 1603
Address Hereford, Texas

No. 2 ____ measured yards from proposed well site.
Owned by RECEIVED
Address LUBBOCK, TEXAS

No. 3 FEB 3 1965 measured yards from proposed well site.
Owned HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1
Address ____

COMMENT

No other wells within 440 yds.

1 1/10 ins. 440 yds.... Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in...... 400 yds.... Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in.... 300 yds.... Minimum for 6-in. well...yield—300 to 500 G.P.M.
5/8 in.... 250 yds.... Minimum for 5-in. well...yield—265 to 300 G.P.M.
1/2 in.... 200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Sam Venturella (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Rt. 5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. Billy Bonau 3. [signature] Ballard

Check here: ☒ when well is located on the County map. ☒ Deposit Received.

SMITH PRINTING CO. - DIAL PO 3-[illegible]

MS

AB

RECEIVED
LUBBOCK, TEXAS
MAY 4 1967
HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

High Plains Underground Water Conservation District No. 1

Notification of abandonment of Irrigation / Industrial well / Municipal — Permit # 1605A — County Deaf Smith

I J. H. & James Dobbs do hereby certify that I have abandoned and plugged/capped irrigation Well No. 1605A.

Located in Deaf Smith County, on SW 1/4, of Section 136 Block M-7.

Survey _____ Reason for abandonment

Not drilled to red bed. This well will probably be used for a domestic well equipped with a 2" pump.

Date April 26, 19 67.

Harry Dobbs
Signature or agent

FORM 1a 8-67FLW
Original--District Office Copy

FOR USE OF COMMITTEEMEN
Field Well No. 4330
Date Received 4-7-70
Permit Size Maximum of Pump 6 in. Yield 560 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

1. Land Owner J.H. Dobbs Address Route 2, Hereford, Texas
2. Well located ____ miles N, 4 miles S, ____ miles E, ____ miles W of town of Hereford
3. County Deaf Smith, Labor ____ League ____ Abstract No. ____
4. NW/4 SW/4 Section 136 Block M-7 Survey ____

MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary — MARK OUT ONE THAT DOES NOT APPLY — Diameter of Well: 18 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	75	Surface & Clay & Calichi			
75	181	Sand & Calichi Shells			
181	185	Sand & Rock			
185	314	Course Sand			
314	316	Red Bed			

RECEIVED APR 22 1970

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller N. E. Wolfe Address Box 1635 Hereford Tx Date Drilled 1-29-70 19

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, MARK OUT ONE THAT DOES NOT APPLY, Diameter 16 in. Total casing length 316 ft.
7. Casing perforations: from 186 ft. to 316 ft. Size 1/8 3/16 Number of rows 8
8. Pump Column: Size 8 in. Column, shaft length 260 ft. Suction pipe size 6 in. Suction pipe length 14 ft.
9. Pump bowls: Size 10 Number of stages 7 Pump discharge pipe Size 6 in.
10. Depth to water level 165 ft. Pump yield 500 GPM. Pumping level: 195 ft.
11. Power Unit: Electric, Natural Gas, Butane, Other ____ Horsepower ____

Signature ____
LANDOWNER OR AGENT — TITLE — ADDRESS

FORM No. 466 AWP
Original--District Office Copy

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 1605 A
Time of Filing 4-26-67 8:45 A.M.
Date Application Filed 4-26-67
Hearing Date 5-21-67
Date Disapproved or Approved 5-3-67
Date of Completion
Pump B Yield 1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

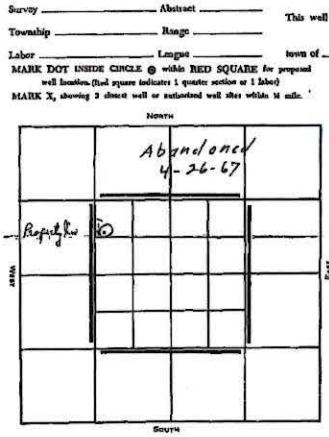
INSTRUCTIONS. Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, J. H. & James Dobbs (NAME OF LANDOWNER) Rt 5, Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith
NW1/4, NE1/4, SW1/4, SE1/4 of Section 136 Block M-7 (MARK OUT ONE THAT DO NOT APPLY)
Survey ____ Abstract ____
Township ____ Range ____
Labor ____ League ____

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONE THAT DO NOT APPLY
Drilling to start about Already Drilled 19
This well will be located 4 miles N or S and ____ miles E or W of the town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location (find square indicate 1 quarter section or 1 labor)
MARK X, showing 2 closest well or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is 215 measured yards from (N S) N and 57 measured yards from (E W) W property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)
Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 15 measured yards from proposed well site. Owned by Applicant - Abandoned
Address ____
No. 2 ____ measured yards from proposed well site. Owned by ____
Address ____
No. 3 ____ measured yards from proposed well site. Owned by ____
Address ____

RECEIVED
LUBBOCK, TEXAS
MAY 4 1967
HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

COMMENT
Replacement Well - No other well within 440 yds -

1- 1/10 in. 440 yds. . . Minimum for 10-in. well . . yield--more than 1000 C.P.M.
1 in. . . . . 400 yds. . . Minimum for 8-in. well . . yield--500 to 1000 C.P.M.
3/4 in. . . . . 300 yds. . . Minimum for 6-in. well . . yield--300 to 500 C.P.M.
5/8 in. . . . . 250 yds. . . Minimum for 5-in. well . . yield--265 to 300 C.P.M.
1/2 in. . . . 200 yds. Minimum for 3 or 4-in. well . . yield--70 to 265 C.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Harry Dobbs (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Rt 5, Hereford (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
Frank B Spencer Jr. Billy Wayne Dixon J. Bell Bentley

☒ Posted on County Map ☒ Deposit Received ☐ Refunded
Check No. ____

SMITH PRINTING CO. - BAIL PO 8-5813

AB

MAP ID 66

High Plains Underground Water Conservation District No. 1.

Notification of abandonment of Irrigation / Industrial well / Municipal — Permit # 4330 — County Deaf Smith

I J. H. Dobbs do hereby certify that I have abandoned and plugged/capped ____ Well No. 1605

Located in Deaf Smith County, on SW 1/4, of Section 136 Block M-7

Survey ____ Reason for abandonment

Abandoned as irrigation well and to be used as domestic well.

Date December 30, 19 69

J. H. Dobbs

RECEIVED JAN 15 1970

AB

FORM No. 485 AWP

SAG / IAS / NEW APP. BOOK / ABC FILE / X FILE / MASTER SHEET / WELLS COMPLETED BOOK / PINNED / DEPTH PLOTTED

MAP ID 67

ORIGINAL—DISTRICT OFFICE COPY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY	
Field Well No.	5521-A
Time of Filing	2:45 PM
Date Application Filed	4-12-77
Expiration Date	6-8-77
Date Recommended by County Committee	4-21-77
Size of Pump	5
Maximum Yield	390 GPM

I, Rose Venturella (NAME OF LANDOWNER) Route #5, Hereford, Texas 79045 (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

S128A of XXXXXXXXSW¼,XXX Section 136 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

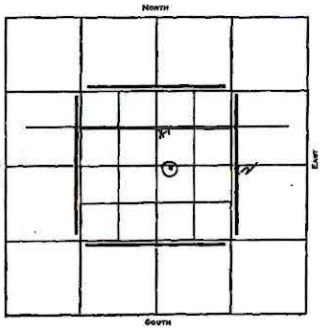
Drilling to start about week, 19__

This well will be located 4 miles XXX S and 2 miles XXX W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 433 measured yards from XX S) and 528 measured yards from XX W) quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 250 ? measured yards from proposed well site.
Owned by applicant #3186
Address ______

No. 2 400 measured yards from proposed well site.
Owned by Hacenstoz ?
Address drilled prior to district

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address RECEIVED APR 25 1977

COMMENT

No other wells within 440 yds.

NOTE:

AMENDED TO CHANGE LOCATION OF WELL SITE.

1 1/10 ins. 440 yds. Minimum for 10-in. well yield—more than 1000 G.P.M
1 in. 400 yds. Minimum for 8-in. well yield—500 to 1000 G.P.M
3/4 in. 300 yds. Minimum for 6-in. well yield—390 to 500 G.P.M.
5/8 in. 250 yds. Minimum for 5-in. well yield—265 to 390 G.P.M.
1/2 in. 200 yds. Minimum for 3 or 4-in. well yield—70 to 265 G.P.M

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Albert Sciumbato (SIGNATURE LANDOWNER OR AGENT) TITLE ADDRESS

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. Bill Pleasingers 3. James E. Higgins

☐ Pinned on County Map ☐ Deposit Received ☑ Refunded Check No. ______

FORM No. 385 AWP

Original—District Office Copy

District File No. 711 (FOR USE OF DISTRICT OFFICE ONLY) X-FILE PINNED

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for approval. (PLEASE TYPE or PRINT.)

FIELD WELL NO.	1605
DATE APPLICATION FILLED OUT	7-14
DATE APPROVED BY COUNTY COMMITTEE	7/19/56
SIZE OF PUMP	8
MAXIMUM YIELD	1000 GPM

I, Mrs. Jane Sudduth (NAME OF LANDOWNER) Route 5 Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1. for a permit to drill the hereinafter described water well at the location indicated:

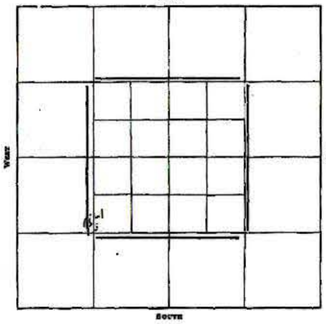
1. County Deaf Smith
2. NW¼, NE¼, SW¼, SE¼ of Section 136 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
   Survey ______
3. Labor ______ League ______
4. Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)
5. Drilling to start about soon, 19__

This well will be located: 4 miles N or S and ______ miles E or W of the town of Hereford, Texas (MARK OUT ONE THAT DOES NOT APPLY)

Permit good for 120 days only from date of approval.

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1-labor)
MARK X, showing 3 closest wells, and/or applications.

NORTH



SOUTH

Please Make Sure Your Measurements Are Correct—They Will Be Checked for Accuracy

Location of Proposed Well as submitted by applicant is 5 measured yards from (N S) and 76 measured yards from (E W) property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number the three adjacent wells, and/or applications, on the plat as 1, 2 and 3, to correspond with the following:

Well 1 15 measured yards from proposed well.
Owned by ______
Address RECEIVED LUBBOCK, TEXAS

Well 2 ______ measured yards from proposed well. JUL 24 1956
Owned by ______
Address HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

Well 3 ______ measured yards from proposed well.
Owned by ______
Address ______

SCALE FOR ABOVE PLAT

1 1/10 inches ...... 440 yards...... Minimum for 10-inch well
1 inch ...... 400 yards...... Minimum for 8-inch well
3/4 inch ...... 300 yards...... Minimum for 6-inch well
5/8 inch ...... 250 yards...... Minimum for 5-inch well
1/2 inch ...... 200 yards...... Minimum for 3 or 4-inch well

COMMENTS: This is a replacement well and will be within 150 of old well. The old well will be abandoned

Dep. $10.00 P1.

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by: [signature] (SIGNATURE LANDOWNER OR AGENT) TITLE ADDRESS

This permit approved subject to the rules for spacing from existing wells and/or prior permits

1. [signature] 2. [signature] 3. F. E. Walton

Check here ☑ when well is located on the County map.

SMITH PRINTING CO. - DIAL PO5-5249 LUBBOCK

FORM No. 485 AWP

SAG / IAS / NEW APP. BOOK / ABC FILE / X FILE / MASTER SHEET / WELLS COMPLETED BOOK / PINNED / DEPTH PLOTTED

ORIGINAL—DISTRICT OFFICE COPY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY	
Field Well No.	5521
Time of Filing	10:50 AM
Date Application Filed	2-8-77
Expiration Date	6-8-77
Date Recommended by County Committee	2-15-77
Size of Pump	5
Maximum Yield	390 GPM

I, Rose Venturella (NAME OF LANDOWNER) Route #5, Hereford, Texas 79045 (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

S128A of XXXXXXX SW¼, XXX Section 136 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

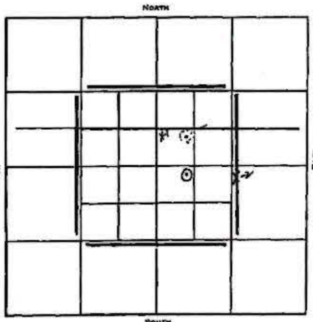
Drilling to start about week, 19__

This well will be located 4 miles XXX S and 2 miles XXX W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.

NORTH



SOUTH

Location of proposed Well as submitted by applicant is 266 measured yards from (N XX) and 266 measured yards from (E XX) quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 273 measured yards from proposed well site.
Owned by applicant #3186
Address ______

No. 2 273 measured yards from proposed well site.
Owned by Hagenstoz ?
Address drilled prior to district

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address RECEIVED FEB 22 1977

COMMENT

No other wells within 440 yds.

1 1/10 ins. 440 yds. Minimum for 10-in. well yield—more than 1000 G.P.M
1 in. 400 yds. Minimum for 8-in. well yield—500 to 1000 G.P.M.
3/4 in. 300 yds. Minimum for 6-in. well yield—390 to 500 G.P.M.
5/8 in. 250 yds. Minimum for 5-in. well yield—265 to 390 G.P.M.
1/2 in. 200 yds. Minimum for 3 or 4-in. well yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

Albert Sciumbato

This notice given by: Albert Sciumbato (SIGNATURE LANDOWNER OR AGENT) Tenant (TITLE) Route #5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. James E. Higgins 3. Frank Oldham

☑ Pinned on County Map ☒ Deposit Received ☐ Refunded Check No. ______

FORM NO. 384B-LW

Original—District Office Copy

District File No. ______ (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN	
Field Well No.	1605
Date Received	8-1-56
Size of Pump	8
Maximum Yield	1000 GPM

1. Well Owner Mrs. Jane Sudduth Address Route 5, Hereford, Texas
2. Well located 4 miles N, 4 miles S, ______ miles E, ______ miles W of the town of Hereford, Tex.
3. County Deaf Smith Labor ______ League ______ Homestead ______
4. (NW¼) NE¼ SW¼ SE¼ (CIRCLE ONE) Section 136 Block M-7 Survey ______
5. ACTUAL LOCATION OF THIS WELL IS 6 measured yards from N or S line of this tract of land. 46 measured yards from W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: ______

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	2	Top Soil	210	271	Sand
2	30	Clatchey		271	Rock
30	37	clatchey Rock			
37	60	clay			
60	63	Rock			
63	80	Sand Layers Rock			
80	158	Sand			
158	160	Sand Rock			
160	194	Sand			
194	210	Layers all sand Rock			

RECEIVED LUBBOCK, TEXAS AUG - 2 1956 HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Carl Nichols Address 305 Bennett Date Drilled 19 7 1956

DESCRIPTION OF WELL

6. Casing: new, used, gas line, or shop made Diameter 16 in. Total length 271 ft.
7. Casing perforations: from 171 ft to 271 ft. Size 1/2 Number per foot 5
8. Pump Column: Size 8 in. Total length 190 ft. Suction pipe: Size 8 in. Length 2 ft.
9. Pump bowls: Size 12 in. Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level 120 ft. Pump discharge 1000 GPM. Pumping level: 160 ft.
11. Power Unit: Electrical, Natural-Gas, Butane, Other ______ Horsepower 130

Signature Mrs Jane Sudduth (OWNER OR AGENT) TITLE Rt. 5. Hereford Texas (ADDRESS)

Final Completion of Well — Date 8-1- 1956

FORM NO. 355 AWP

MAP ID 68 X-FILE SCANNED

Original—District Office Copy

District File No. ______ (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

FIELD WELL NO. 1594
DATE APPLICATION FILLED OUT 6/14/56
DATE APPROVED BY COUNTY COMMITTEE 6-22-56
SIZE OF PUMP 6 MAXIMUM YIELD 560 GPM

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for approval. (PLEASE TYPE or PRINT.)

I, Sam Venturella (NAME OF LANDOWNER) Route 5- Hereford (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1, for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. NW¼, NE¼, SW¼, SE¼ of Section 136 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______

3. Labor ______ League ______

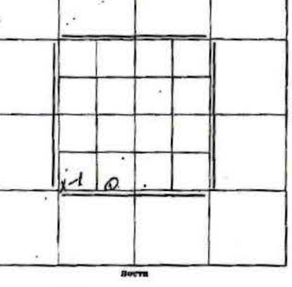
4. Proposed Use (~~Municipal-Industrial-Irrigation~~) Irrigation (MARK OUT ONES THAT DO NOT APPLY)
5. Drilling to start about June 18 1956

This well will be located: 2½ miles ~~N~~ or S and 3 miles ~~E~~ or W of the (MARK OUT ONE THAT DOES NOT APPLY) town of Hereford

Permit good for 120 days only from date of approval.

MARK DOT INSIDE CIRCLE ◉ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells, and/or applications.



Please Make Sure Your Measurements Are Correct—They Will Be Checked for Accuracy

Location of Proposed Well as submitted by applicant is 15 measured yards from (~~N~~ or S) and 315 measured yards from (~~E~~ or W) (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number the three adjacent wells, and/or applications, on the plat as 1, 2 and 3, to correspond with the following:

Well 1 300 measured yards from proposed well. Owned by owner Address Same

Well 2 ______ measured yards from proposed well. Owned by ______ Address Hereford Tex

Well 3 500 measured yards from proposed well. Owned by ______ Address Hereford

SCALE FOR ABOVE PLAT

1 1/10 inches	440 yards	Minimum for 10-inch well
1 inch	400 yards	Minimum for 8-inch well
3/4 inch	300 yards	Minimum for 6-inch well
5/8 inch	250 yards	Minimum for 5-inch well
1/2 inch	200 yards	Minimum for 3 or 4-inch well

COMMENTS: No other wells within proposed new well. Dep. 20.00

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by: x Sam Venturella (SIGNATURE (OWNER OR AGENT)) owner (TITLE) Route 5 Hereford (ADDRESS)

This permit approved subject to the rules for spacing from existing wells and/or prior permits

1. F. E. Walton 2. [signature] 3. [signature]

Check here ☐ when well is located on the County map.

SMITH PRINTING CO - DIAL PO5-8474 LUBBOCK

AB

FORM NO. 325A-AW

ORIGINAL—DISTRICT OFFICE COPY

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 5521
Date Received 4-22-77
Permit Size of Pump 5 in. Maximum Yield 390 GPM

1. Land Owner Rose XXXX Venturella Address Route #5, Hereford, Texas 79045
2. Well located ______ miles N. 4 miles S. ______ miles E. 2 miles W of the town of Hereford
3. County Deaf Smith Labor ______ League ______ Abstract No. ______
4. S128A of XXXXXXXX SW¼ XXXX Section 136 Block M-7 Survey ______ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ______ Spudders ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 18 Inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	270	288	Sand,Sandrock
3	30	Caliche	288	303	Red Bed
30	60	Caliche			
60	80	Sand,Sandrock			
90	120	Sand			
120	150	Sand,Sandrock			
150	180	Sand,Sandrock			
180	210	Loose Sand,Sandrock			
210	240	Sand,Sandrock			
240	270	Sand,Sandrock,Clay			RECEIVED APR 25 1977

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Wall & Son'sDrilling Inc. Address Box 1815 Hereford Date Drilled 4 3-4 19 77

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. 303--293--blank 273--263--screen Total casing length 303 ft.
7. Casing perforations: from 293--283--screen 283--273--3/16 263--233--3/16 Number of rows ______
8. Pump Column: Size 6 in. Column shaft length 280 ft. Suction pipe size 6 in. Suction pipe length 3 ft.
9. Pump bowls: Size 10 Number of stages 7 Pump discharge pipe: Size 6 in.
10. Depth to water level 215 ft. Pump yield 350 GPM. Pumping level: 265 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ______ Horsepower 40

Signature ______ (LANDOWNER OR AGENT) ______ (TITLE) ______ (ADDRESS)

FORM NO. 324A-LW

Original—District Office Copy

District File No. ______ (FOR USE OF DISTRICT OFFICE ONLY)

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 1594
Date Received 10-1-56
Size of Pump 6 in. Maximum Yield 560 GPM

1. Well Owner Sam Venturella Address Route 5, Hereford, Texas
2. Well located ______ miles N, 2½ miles S, ______ miles E, 3 miles W of the town of Hereford, Texas
3. County Deaf Smith Labor ______ League ______ Abstract No. ______
4. NW¼ NE¼ SW¼ SE¼ (CIRCLE ONE) Section 136 Block M-7 Survey ______
5. ACTUAL LOCATION OF THIS WELL IS 15 measured yards from ~~N~~ or S line of this tract of land. 315 measured yards from ~~E~~ or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: ______

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	top soil	230	255	[illegible] sand
3	25	caliche	255	260	clay
25	27	caliche rock			
27	55	sandy clay			
55	57	rock			
57	90	sand			
90	143	sand on layered rock			RECEIVED
143	181	sand			LUBBOCK, TEXAS
181	185	rock			NOV -6 1956
185	230	sand			H. PLAINS UNDERGROUND ... CONS. DIST. No. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Cal Nichols Address 305 [illegible] Date Drilled July 15 1956

DESCRIPTION OF WELL

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total length 260 ft.
7. Casing perforations: from 170 ft to 260 ft. Size 1/4 Number per foot 4
8. Pump Column: Size 6 in. Total length 190 ft. Suction pipe: Size 6 in. Length 10 ft.
9. Pump bowls: Size 10 Number of stages 5 Pump discharge pipe: Size 6 in.
10. Depth to water level 130 ft. Pump discharge 700 GPM. Pumping level: 170 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other 40 Horsepower ______

Signature John J. Gallagher (OWNER OR AGENT) Hereford [illegible] (TITLE) (ADDRESS)

Final Completion of Well — Date July 2nd, 1956

FORM NO. 1234 APP.

ORIGINAL — District Office — File

THIS FORM MUST BE FILLED IN WITH TYPEWRITER

SUPPLEMENT TO APPLICATION

- DEAF SMITH County No. 5521 A

APPLICATION AND AFFIDAVIT

I, Billy F. Wall, Agent, HEREBY CERTIFY, that upon the granting of a permit by the High Plains Underground Water Conservation District No. 1, to use a 6 inch column pipe at a distance less than that required by the rules and regulations of said District, I will equip my pump with impellers so that it will not pump more than 390 gallons of water per minute when said pump is operated at a rate of 1750 revolutions per minute and do hereby agree that the maximum output for this pump shall at all times, not exceed 390 gallons per minute, which rate has been set out by the rules and regulations of said District as the ordinary pumping capacity for a 5 inch pump, for which I qualify under the minimum spacing regulations as set forth by the District and I do hereby agree to furnish said District with a certificate or statement from a reliable pump company or water engineer, certifying that said pump has been equipped as above set forth.

The above mentioned pump is to be placed in a well on property owned by:

Rose Venturella

Route #5, Hereford, Texas 79045 (ADDRESS)

In Deaf Smith County, Texas in

Section: 136 Block: M-7 Survey: ______

or Labor: ______ League: ______ Survey: ______

in the southwest quarter of the section or labor

at 433 measured yards from the ~~North~~ South line of this quarter or labor (CROSS OUT ONE)

and 528 measured yards from the ~~East~~ West line of this quarter or labor. (CROSS OUT ONE)

Billy F. Wall (SIGNATURE (OWNER OR AGENT))

April 22, 1977 (DATE)

RECEIVED APR 25 1977

I do solemnly swear or affirm that I have read the above and foregoing statements and the facts contained therein are true and correct and I hereby agree to abide by the foregoing statements.

Billy F. Wall (SIGNATURE (OWNER OR AGENT))

April 22, 1977 (DATE)

THE STATE OF TEXAS } BEFORE ME B. F. CAIN, COUNTY CLERK

COUNTY OF DEAF SMITH } XXXXXXXX in and for Deaf Smith County, Texas

on this day personally appeared Billy F. Wall known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS 22 day of ~~Dec~~ April A.D. 1977

(L.S.)

B. F. CAIN, COUNTY CLERK
DEAF SMITH COUNTY
HEREFORD, TEXAS 79045

[signature] Deputy

XXXXXXXXXX Deaf Smith County, Texas

MAP ID 68

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Ogallala Project No. _____ State Well No. 10-13-804

~~Field No. (Owner's Well No.)~~ Permit No. 1534 County Deaf Smith

1. Location: SW 1/4, SW 1/4, Section 136, Block M-7, Survey _____ Lat. 34-45-01 Long. 102-27-24

2. Owner: Charles Venturella Address: Rt. 5, Hereford, Texas 79045

Tenant (other): _____ Address: _____

Driller: Carl Nichols Address: 305 Bennett, Hereford Tx. 79045

3. Land Surface Elevation: 3703 ft. above msl determined by Interpretation of USGS Topographic map

4. Drilled: July 15, 1956; Dug, Cable Tool, Rotary, Air

5. Depth: Rept. 260 ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type Submersible

No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Mfr. _____ Fuel Electric HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. _____ Date _____

10. Performance Test: Date _____ Length of Test _____ Made by _____

Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

11. Quality: (Remarks on taste, odor, color, etc.) _____

Analyses

Date _____ Laboratory _____ TDS _____ Sp Cond _____

Date _____ Laboratory _____ TDS _____ Sp Cond _____

12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Logs _____

13. Water Level(s): 130 ft. rept. meas. 7-15 (type) 1956 above/below _____ which is 10.0 ft. above/below Land Surface

_____ ft. rept. meas. _____ 19__ above/below _____ which is _____ ft. above/below Land Surface

14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.) _____

15. Recorded by: DAP Source of data: Owner(?) Firs Date: 8-3-81

16. Remarks: _____

17. Location or Sketch:

CASING, BLANK PIPE & WELL SCREEN Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting (feet) From	To
16	USED BPS Pipe	surface	260
Casing perforated with 1/4" slots		180	260

RECEIVED AUG 20 1981 CR/TDWR

TDWR-0209

W/L Obs. Well ___ W/Q Obs. Well ✓

State Well No. 10-13-804

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Ogallala Field No. 1594 State Well No. 10-13-804

Owner's Well No. _____ County Deaf Smith

5-DL-2-HT

1. Location: SW 1/4, SW 1/4 Sec. 136, Block M-7 Survey _____

2. Owner: Chas. Venturella Address: 21 S. Hereford Tx.

Tenant: _____ Address: _____

Driller: Carl Nichols Address: 305 Bennett, Hereford

3. Elevation of _____ is _____ ft. above msl, determined by _____

4. Drilled: 7-15-56 19__; Dug, Cable Tool, Rotary _____

5. Depth: Rept. 260 ft. Meas. _____ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type _____

No. Stages _____, Bowls Diam. _____ in., Setting _____ ft.

Column Diam. _____ in., Length Tailpipe _____ ft.

8. Motor: Fuel _____ Make & Model _____ HP. _____

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. _____

10. Performance Test: Date _____ Length of Test _____ Made by _____

Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

11. Water Level: _____ ft. rept. meas. _____ 19__ above/below _____ which is _____ ft. above/below surface.

_____ ft. rept. meas. _____ 19__ above/below _____ which is _____ ft. above/below surface.

_____ ft. rept. meas. _____ 19__ above/below _____ which is _____ ft. above/below surface.

_____ ft. rept. meas. _____ 19__ above/below _____ which is _____ ft. above/below surface.

12. Use: Dom., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used _____

13. Quality: (Remarks on taste, odor, color, etc.) _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

Temp. ___ °F, Date sampled for analysis _____ Laboratory _____

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log, Formation Samples, Pumping Test _____

15. Record by: O. Goolsby Date 8-55 19__

Source of Data Field & Owner(?) _____

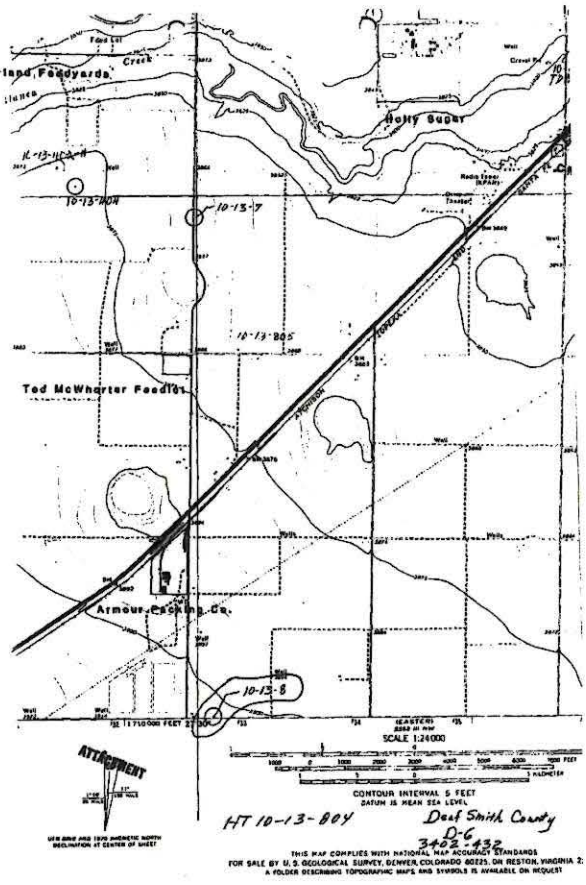
16. Remarks: _____

CASING & BLANK PIPE Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting, ft. From	To
16	Steel	surf	260

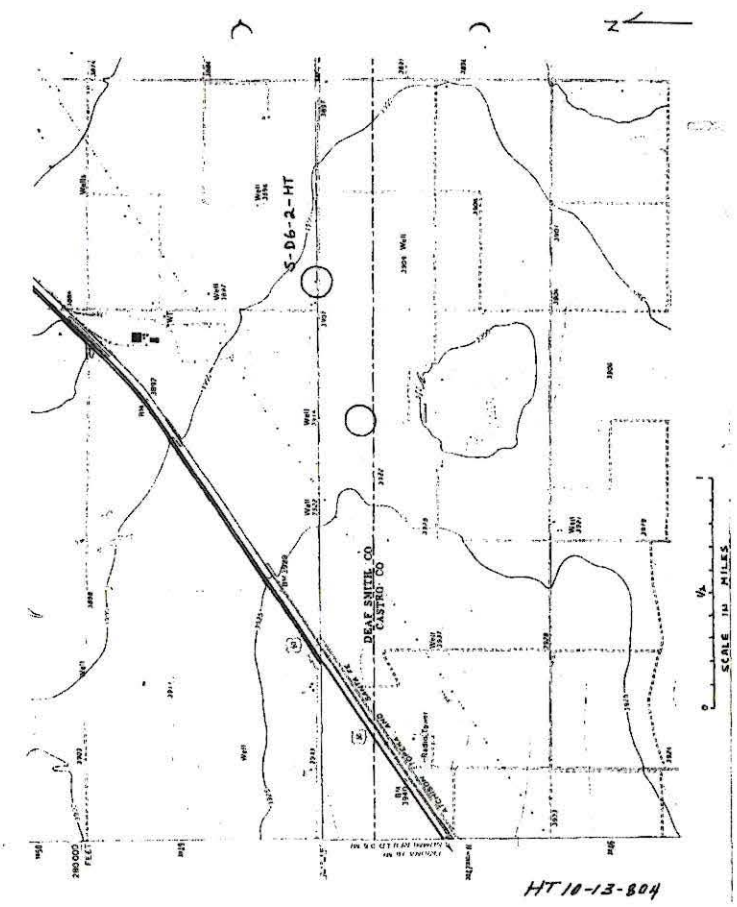
WELL SCREEN Screen Openings			
Diam. (in.)	Type	Setting, ft. From	To
16	Perforated	180	260
casing perforated with 1/4" slots 5 per foot			

RECEIVED NOV 6 1978 Central Records Texas Dept. of Water Resources

TWDBE-WD-2 (Sketch)



[redacted]



Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY
Program No. _____ Lab No. _____
Work No. _____

CHEMICAL WATER ANALYSIS REPORT

County 059 Deaf Smith
State Well No. 10-13-804
Well No. 1594
Date Collected 08-15-78

Send report to:
Ground Water Division
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

Location SW¼ SW¼ Sec. 136, Blk M-7 Sample No. [ ] By HPUWCD#1 Goolsby
Source (type of well) _____ Owner SAM VENTURELLA R#5, HEREFORD TEXAS
Date Drilled 7-15-78 Depth 260 ft. WBF OGALLALA
Producing intervals _____ Water level _____ ft. Sample depth [ ] ft.
Sampled after pumping 15 min. hrs. Yield _____ GPM Temperature [ ] °F [ ] °C
Point of collection faucet at pressure tank Appearance ☐ clear ☐ turbid ☐ colored ☐ other
Use Domestic Remarks _____

(FOR LABORATORY USE ONLY)

CHEMICAL ANALYSIS

Laboratory No. 348721
Date Received AUG 23 1978
Date Reported SEP 20 '78

	MG/L	ME/L
Silica	43	
Calcium	59	2.96
Magnesium	45	3.66
Sodium	61	2.65
Total		9.27
☐ Potassium		
☐ Manganese		
☐ Boron		
2/☐ Total Iron		
☐ (other) _____	MG/L	
Specific Conductance (micromhos/cm³)	802	
Diluted Conductance (micromhos/cm³)	7 x 143 1001	

	MG/L	ME/L
Carbonate	0	
Bicarbonate 12L	256	4.20
Sulfate	75	1.56
Chloride	111	3.14
Fluoride	2.6	.14
Nitrate	21	.34
pH 180°	8.3	Total 9.38
3/ Dissolved Solids (Sum of MG/L)	586	
Phenolphthalein Alkalinity as C aCO₃	0	
Total Alkalinity as C aCO₃ 4.20	210	
Total Hardness as C aCO₃ 6.62	331	
2/ Nitrogen Cycle		
Ammonia - N		
Nitrite - N		
Nitrate - N		
Organic Nitrogen		

%Na _____ SAR _____ RSC _____

"☐" Items will be analyzed if checked.

1/ The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.
2/ Nitrogen cycle requires separate sample.
3/ Total iron requires separate sample.

Analyst _____ Checked By _____

TDWR-0148

Original—District Office Copy

District File No. _____
FOR USE OF DISTRICT OFFICE ONLY

FOR USE OF COMMITTEEMEN
Field Well No. 1594
Date Received 11-1-56
Size of Pump 6 in. Maximum 860 GPM

High Plains Underground Water Conservation District No. 1
REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

1. Well Owner Sam Venturella Address Route 5, Hereford, Texas
2. Well located — miles N, 4½ miles S, _____ miles E, 3 miles W of the town of Hereford, Texas
3. County Deaf Smith Labor _____ League _____ Abstract No. _____
4. NW¼ NE¼ SW¼ SE¼ (circle one) Section 136 Block M-7 Survey _____
5. ACTUAL LOCATION OF THIS WELL IS { 18 measured yards from N or S line of this tract of land; 316 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: _____

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	top soil	230	255	caliche sand
3	25	chalky	255	260	clay
25	27	chalky rock			
27	55	sandy clay			
55	57	rock			
57	90	sand			
90	143	sand and gravel with rock			
143	181	sand			
181	185	rock			
185	230	sand			

RECEIVED LUBBOCK, TEXAS NOV -6 1956 HIGH PLAINS UNDERGROUND WATER CONS. DIST. No. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Cal Nichols Address 305 Kenneth Date Drilled July 15 1956

DESCRIPTION OF WELL

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total length 260 ft.
7. Casing perforations: from 170 ft to 260 ft. Size 16 Number per foot 6
8. Pump Column: Size 6 in. Total length 190 ft. Suction pipe: Size 6 in. Length 10 ft.
9. Pump bowls: Size 10 Number of stages 5 Pump discharge pipe: Size 6 in.
10. Depth to water level 170 ft. Pump discharge 700 GPM. Pumping level: 170 ft.
11. Power Unit: (Electrical, Natural Gas, Butane, Other) 40 Horsepower _____

Signature John J. O'Gallagher (OWNER OR AGENT) Hereford (TITLE) TX (ADDRESS)

Final Completion of Well — Date July 2nd 19 56

HT 10-13-804

MAP ID 68

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-13-804

groundwater

GWDB Reports and Downloads | Well Basic Details | Scanned Documents

State Well Number	1013804	Well Type	Withdrawal of Water
County	Deaf Smith	Well Use	Domestic
River Basin	Red	Water Level Observation	None
Groundwater Management Area	2	Water Quality Available	Yes
Regional Water Planning Area	O - Llano Estacado	Pump	Submersible
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.750278	Power Type	Electric Motor
Latitude (degrees minutes seconds)	34° 45' 01" N	Annular Seal Method	
Longitude (decimal degrees)	-102.457223	Surface Completion	
Longitude (degrees minutes seconds)	102° 27' 26" W	Owner	Sam Venturella
Coordinate Source	+/- 1 Second	Driller	
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3903	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)	260	Groundwater Conservation District Well Number	
Well Depth Source	Driller's Log	Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date	7/15/1956	Previous State Well Number	
Drilling Method		Reporting Agency	Groundwater Conservation District
Borehole Completion		Created Date	3/5/1996
		Last Update Date	3/5/1996

Remarks

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
16	Screen				180	260

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data *Plugged Back - No Data*

Filter Pack - No Data *Packers - No Data*

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY
Organization No. _____ Lab No. _____
Work No. _____

TDWR-HPUWCD#1 Special

CHEMICAL WATER ANALYSIS REPORT

County 059 Deaf Smith
State Well No. 10-13-804
Well No. 1594
Date Collected 07-15-81 HPUWCD#1

Send report to:
Data Collection and Evaluation Section
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

RECEIVED MAR 31 1982 CH/ILWH

Location SW¼ of SW¼ Section 136, Blk. M-7 Sample No. [ ] By Obie Goolsby
Source (type of well) Submersible Owner Charles Venturella, Route 5, Hereford, Texas
Date Drilled _____ Depth _____ ft. WBF Ogallala
Producing intervals _____ Water level _____ ft. Sample depth [ ] ft.
Sampled after pumping Cont. hrs. Yield _____ GPM Temperature [ ] °F [ ] °C
Point of collection Faucet on discharge pipe Appearance ☑ clear ☐ turbid ☐ colored ☐ other
Use Domestic Remarks well in small about metal shed, faucet inside shed

(FOR LABORATORY USE ONLY)

CHEMICAL ANALYSIS

Laboratory No CE1-17228
Date Received JUL 29 1981
KEY PUNCHED
Date Reported 8-31-81

	MG/L	ME/L
Silica 00955	41	
Calcium 00915	65	3.26
Magnesium 00925	42	3.46
Sodium 00929	78	3.39
Total		
☐ Potassium 00937	6.0	0.15
☐ Manganese 01055		10.24
☐ Boron 01022		
☐ Total Iron 01045		
☐ (other) _____	MG/L	
Specific Conductance (micromhos/cm³) 00095	866	
Diluted Conductance (micromhos/cm³)	7 x 142 1134	

%Na _____ SAR _____ RSC _____

"☐" Items will be analyzed if checked.

	MG/L	ME/L
Carbonate 00445	0	
Bicarbonate 00440 120	244	4.00
Sulfate 00945	75	1.56
Chloride 00940	137	3.86
Fluoride 00951	2.4	.13
Nitrate 71850	35.4	.57
pH 00403	8.0	Total 10.12
[1] Dissolved Solids (residue at 180°C) 70300	(0)	592
Phenolphthalein Alkalinity as C aCO₃ 00415	(4.08)	0
Total Alkalinity as C aCO₃ 00410	(670)	200
Total Hardness as C aCO₃ 00900		326
[2] Nitrogen Cycle		
Ammonia - N 00610		
Nitrite - N 00615		
Nitrate - N 00620		
Organic Nitrogen 00605		

[1] The bicarbonate reported in this analysis can be converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure used in the computation of dissolved solids.
[2] Nitrogen cycle requires separate sample.
[3] Total iron and Manganese require separate sample

FORM NO. 1054—REVISED 8-49

PINNED X-FILE

MAP ID 71

Original—District Office Copy

District File No. 40X

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

FOR USE OF COMMITTEEMAN
FIELD WELL NO. 1200
DATE RECEIVED 1-6-55
DATE APPROVED 1-10-55

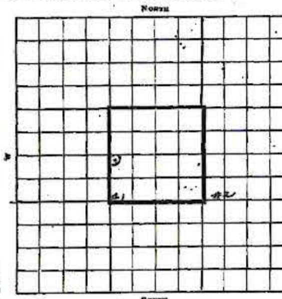
1. F L Alexander (NAME OF LANDOWNER) 700 East Third Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County deaf Smith
2. Section E 200 Ac 151 Block M97
Survey
3. Labor League
4. Homestead Abstract No.
5. Circle quarter section or labor in which well is to be located. NE¼ NW¼ (SE¼) SW¼
6. Proposed use (municipal-industrial-irrigation) acres (CIRCLE DESIRED USE)
7. Well will be pumped about 120 days per year.
8. Casing—new (used), gas line, or shop made—Dia. 16 in. (CIRCLE TYPE USED)
9. Drilling to start about Within two weeks
10. Driller or Contractor
Address
11. Pump Size 6 Expected Gal. per Minute 550
12. Type of Power—Electrical - Engine - Horsepower Nat Gas (CIRCLE CORRECT POWER)

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor.) MARK X, showing 3 closest adjacent wells.

NORTH



SOUTH

This well will be located approximately ___ miles N, 5 Miles SW of Hereford, Texas ___ miles E, ___ miles S, ___ miles W, of the town of Hereford, Texas

LOCATION OF PROPOSED WELL as submitted by applicant is 334 measured yards from (N S) property line and 641 measured yards from (E W) property line.

Number the three adjacent wells on the map as 1, 2, and 3, to correspond with the following:

Existing well 1 334 measured yards from proposed well.
Owned by Applicant
Address

Existing well 2 670 measured yards from proposed well.
Owned by Sam Venventrulla
Address Hereford, Texas

Existing well 3 ___ measured yards from proposed well.
Owned by
Address

COMMENT: There are no other wells within one half mile of the proposed location

DEPTH OF WELL ON COUNTY MAP

2, 1955 Dep $25.00 NH

FOR FURTHER COMMENT USE BACK OF FORM

I hereby certify that I have read the foregoing statement, and that each and all of the items therein contained are true to the best of my knowledge and belief, and I agree that I must furnish my County Committeeman, as required by law, the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: F L Alexander (SIGNATURE (OWNER OR AGENT)) Owner (TITLE) - 700 E 3rd Hereford Texas (ADDRESS)

APPROVED BY

1. P L Carmichael 2. H. E. Walton 3. Frank J. Bryner

I, the undersigned, do hereby certify that I have furnished to my County Committeeman the completed well registration and log of well as required by Article 7880-3c, Sec. B-5, Texas Revised Civil Statutes.

Received by: P L Carmichael, Deaf Smith (COUNTY) COUNTY COMMITTEEMAN

APPLICANT

DATE 19

AB

SMITH PRINTING CO. – DIAL 5-4412

FORM NO. 354R-LW

Original—District Office Copy

District File No.

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 1200
Date Received 5-3-55
Size of Well 6 in. Maximum Yield 560 GPM

1. Well Owner F L Alexander Address 700 East Third, Hereford, Tex.
2. Well located 5 miles SW of Hereford ___ miles N, ___ miles S, ___ miles E, ___ miles W of the town of
3. County Deaf Smith Labor League Homestead
4. NW¼ NE¼ SW¼ (SE¼) (CIRCLE ONE) Section E 200 ac 151 Block M-7 Survey
5. ACTUAL LOCATION OF THIS WELL IS 334 measured yards from N or S line of this tract of land. 641 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary drill

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	5	Top soil			LUBBOCK, TEXAS
5	70	Caliche and Caliche rock with some clay			MAY 19 1955
70	110	Fine water sand			HI-PLAINS UNDERGROUND
110	170	Fine sand with heavy sandstone,			WATER CONS. DIST. No. 1
170	200	Fine sand with heavy sandstone & Particles of rock			
200	230	Fine sand with large sandstone			
230	243	Fine sand and clay			

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Ware Drilling Co. Address Hereford, Texas. Date Drilled March 23 1955

DESCRIPTION OF WELL

6. Casing: new, (used, gas line) or shop made. Diameter 16 in. Total length 243 ft.
7. Casing perforations: from 183 ft to 240 ft. Size ⅛ x ⅛ x 13/16 Number per foot 6 rows
8. Pump Column: Size 6 in. Total length 200 ft. Suction pipe: Size 6 in. Length 19 ft.
9. Pump bowls: Size 12" Number of stages 4 Pump discharge pipe: Size 6 in.
10. Depth to water level 130 ft. Pump discharge 400 GPM. Pumping level: 185 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other Natural Gas Horsepower 65

Signature KENNY GEARN MACHINE WORKS Kenny Gearn (OWNER OR AGENT) Owner (TITLE) Hereford, Texas. (ADDRESS)

Final Completion of Well — Date May 2nd, 1955 19

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-13-804

groundwater

Water Quality Analysis

Sample Date: 8/15/1978 Sample Time: 0000 Sample Number: 1 Collection Entity: Groundwater Conservation District (general)

Sampled Aquifer: Ogallala Formation

Analyzed Lab: Texas Department of Health Reliability: Collected from pumped well, but not filtered or preserved

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		210	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		256.27	mg/L	
00910	CALCIUM (MG/L)		59	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		111	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		2.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		332	mg/L	
00920	MAGNESIUM (MG/L)		45	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		21	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.3	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
00955	SILICA, DISSOLVED (MG/L AS SI02)		43	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		1.46		
00932	SODIUM, CALCULATED, PERCENT		28	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		61	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1001	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		75	mg/L	
70301	TOTAL DISSOLVED SOLIDS, SUM OF CONSTITUENTS (MG/L)		543	mg/L	

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-13-804

groundwater

Water Quality Analysis

Sample Date: 7/15/1981 Sample Time: 0000 Sample Number: 1 Collection Entity: Groundwater Conservation District (general)

Sampled Aquifer: Ogallala Formation

Analyzed Lab: Texas Department of Health Reliability: Collected from pumped well, but not filtered or preserved

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		200	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		244.07	mg/L	
00910	CALCIUM (MG/L)		65	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		137	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		2.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		334	mg/L	
00920	MAGNESIUM (MG/L)		42	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		35.4	mg/L	
00400	PH (STANDARD UNITS), FIELD		8	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		6	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
00955	SILICA, DISSOLVED (MG/L AS SI02)		41	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		1.85		
00932	SODIUM, CALCULATED, PERCENT		33	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		78	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1134	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		75	mg/L	
70301	TOTAL DISSOLVED SOLIDS, SUM OF CONSTITUENTS (MG/L)		601	mg/L	

* Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork.

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (http://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

MAP ID 73

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Ogallala   Field No. ________   State Well No. 10-21-101
Owner's Well No. ________   County Deaf Smith
S-E6-1-HT

1. Location: NW 1/4, NE 1/4 Sec. 150, Block M-7 Survey ________

2. Owner: Pitman Grain Address: ________
Tenant: ________ Address: ________
Driller: ________ Address: ________

3. Elevation of ________ is ________ ft. above msl, determined by ________

4. Drilled: ________ 19__ ; Dug, Cable Tool, Rotary, ________

5. Depth: Rept. ____ ft. Meas. ____ ft.

6. Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed ________

7. Pump: Mfgr. ________ Type ________
No. Stages ____, Bowls Diam. ____ in., Setting ____ ft.
Column Diam. ____ in., Length Tailpipe ____ ft.

8. Motor: Fuel ________ Make & Model ________ HP. ____

9. Yield: Flow ____ gpm, Pump ____ gpm, Meas., Rept., Est. ________

10. Performance Test: Date ____ Length of Test ____ Made by ________
Static Level ____ ft. Pumping Level ____ ft. Drawdown ____ ft.
Production ____ gpm Specific Capacity ____ gpm/ft.

CASING & BLANK PIPE			
Cemented From ____ ft. to ____ ft.			
Diam. (in.)	Type	Setting, ft. From	to

11. Water Level: ____ ft. rept./meas. ____ 19__ above/below ________ which is ____ ft. above/below surface.
____ ft. rept./meas. ____ 19__ above/below ________ which is ____ ft. above/below surface.
____ ft. rept./meas. ____ 19__ above/below ________ which is ____ ft. above/below surface.
____ ft. rept./meas. ____ 19__ above/below ________ which is ____ ft. above/below surface.

12. Use: Dom., Stock, Public Supply, Ind. (Irr), Waterflooding, Observation, Not Used.

13. Quality: (Remarks on taste, odor, color, etc.) ________
Temp. ____ °F, Date sampled for analysis ________ Laboratory ________
Temp. ____ °F, Date sampled for analysis ________ Laboratory ________
Temp. ____ °F, Date sampled for analysis ________ Laboratory ________

WELL SCREEN			
Screen Openings			
Diam. (in.)	Type	Setting, ft. From	to

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
Formation Samples, Pumping Test, ________

15. Record by: D. Goolsby Date 8-15 1978
Source of Data Field & Pitman #1 records

16. Remarks: ________

RECEIVED
NOV 6 1978
Central Records
Texas Dept. of Water Resources

TWDB-WD-2   (Sketch)

MAP ID 72 · PINNED
X-FILE
OK'd Elp 2-17-63

FORM NO. SEE AWP

Original— District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	2474
Date Application Filed	10-17-62
Time of Filing	1:45 P.M.
Date Recommended by County Committee	10-23-62
Size of Pump	6
Maximum Yield	560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Jorde Potato Company (NAME OF LANDOWNER) Box 328, Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. SW 201 Acres of NW¼, NE¼, SW¼, SE¼ of Section 151 Block M-7 (MARK OUT ONES THAT DO NOT APPLY) s. of RR
Survey ________ Abstract ________
3. Labor ________ League ________

Permit good for 4 months only from date of filing

4. Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY
5. Drilling to start about 30 days, 19__

This well will be located: 2 miles N or S and 5 miles E or W of the (MARK OUT ONE THAT DOES NOT APPLY) town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest wells, and/or authorized well site.

North / West / East / South

X-1

SCALE FOR ABOVE PLAT

1 1/10 inches — 440 yards — Minimum for 10-inch well
1 inch — 400 yards — Minimum for 8-inch well
3/4 inch — 300 yards — Minimum for 6-inch well
1/2 inch — 250 yards — Minimum for 5-inch well
1/3 inch — 200 yards — Minimum for 3 or 4-inch well

Please Make Sure Your Measurements Are Correct — (They will be checked for accuracy)

Location of proposed Well as submitted by applicant is 10 measured yards from (N or) S and 300 measured yards from (E W) E (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, and/or authorized well sites, on the plat as 1, 2, and 3, to correspond with the following:

Well 1 310 measured yards from proposed well site.
Owned by R. H. Putty
Address ________

Well 2 400 measured yards from proposed well site.
Owned by Owner
Address ________

Well 3 ________ measured yards from proposed well site.
Owned by ________
Address ________ 1952

COMMENTS: There are no other wells within 440 yards of the proposed well other than ones listed.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

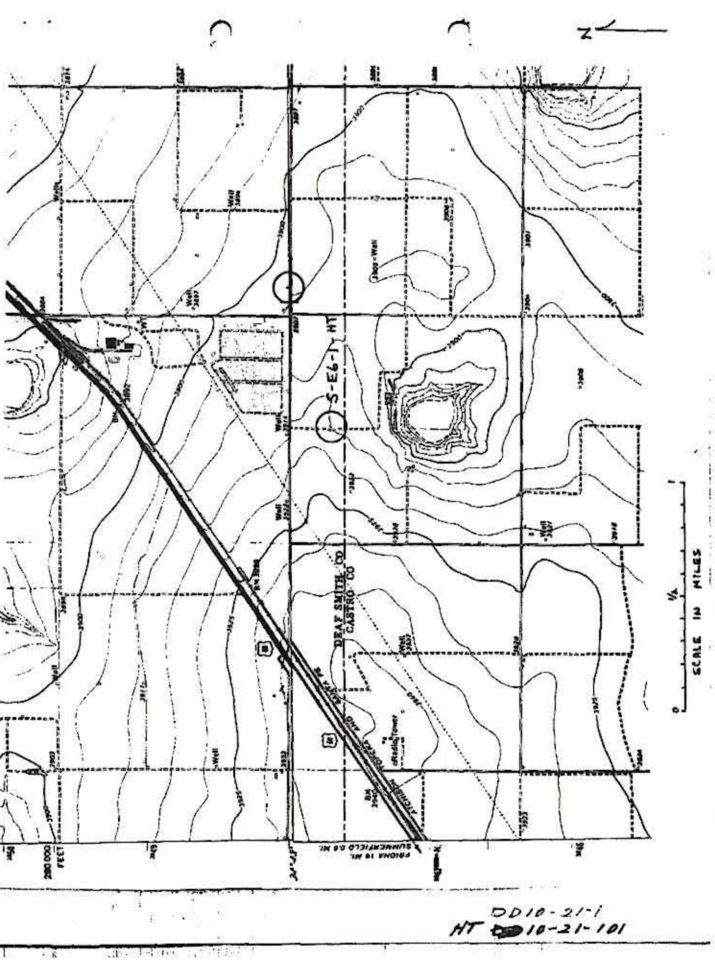
This notice given by: Otto Olson (SIGNATURE LANDOWNER OR AGENT) Mgr. (TITLE) Box 26 Hereford, Texas (ADDRESS)

This permit recommended subject to the rules for spacing from existing wells and/or authorized well site.
1. Charles Packard 2. Leroy E. Ballard 3. Clinton Jackson

Check here: ☒ when well is located on the County map. ☐ Deposit Received.

SMITH PRINTING CO. • DIAL PE3-5544

AB



DD10-21-1
HT 10-21-101

FORM NO. SEE AWP

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN

Field Well No.	2478 (2474)
Date Received	2-27-63
Permit Size of Pump	6 In.
Maximum Yield	560 GPM

1. Land Owner Jorde Potato Co. Address Box 328, Hereford, Texas
2. Well located ____ miles N, 2 miles S, ____ miles E, 5 miles W of the town of Hereford
3. County Deaf Smith Labor ________ League ________ Abstract No. ________
4. SW 201 acres of NW¼ NE¼ SW¼ SE¼ (MARK OUT THOSE THAT DO NOT APPLY) Section 151 Block M-7 south of RR Survey ________

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ✓ Spudder ________ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 20 Inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	top Soil	184	262	Med Brn Sand w/ Soft
4	28	Caliche & Clay			Sand rock streaks
28	66	Red Sand w/ Clay	262	264	Red Bed
66	118	Fine Sand w/ Rock layers			
118	126	Med fine Sand			
126	129	Hard Caliche Rock			
129	147	Med fine Sand w/			
		Rock Streaks (Soft)			
147	161	Hard Caliche Rock			
161	184	Med Coarse Sand & Sandstone & Caliche			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller [signature] Address Hereford Tex Date Drilled 11/62 1963

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new (used, gas line) or shop made. Diameter 18 in. Total casing length 264 ft.
7. Casing perforations: from 163 ft. to 264 ft. Size 4 1/2 x 3/8 Number of rows ________
8. Pump Column: Size 8 in. Column, shaft length 250 ft. Suction pipe size 8 in. Suction pipe length 2 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 6 in.
10. Depth to water level 118 ft. Pump yield 375 GPM. Pumping level: 250 ft.
11. Power Unit: Electrical, (Natural Gas), Butane, Other ________ Horsepower ________

Signature ________ (LANDOWNER OR AGENT) TITLE ADDRESS

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-21-101

groundwater

Water Quality Analysis

Sample Date: 8/15/1978 Sample Time: 0000 Sample Number: 1 Collection Entity: Groundwater Conservation District (general)

Sampled Aquifer: Ogallala Formation

Analyzed Lab: Texas Department of Health Reliability: Collected from pumped well, but not filtered or preserved

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		177	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		216	mg/L	
00910	CALCIUM (MG/L)		73	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		155	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		2.6	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		425	mg/L	
00920	MAGNESIUM (MG/L)		59	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		32	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.1	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
00955	SILICA, DISSOLVED (MG/L AS SIO2)		46	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		0.93		
00932	SODIUM, CALCULATED, PERCENT		18	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		44	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1184	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		101	mg/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		618	mg/L	

* Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (http://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

Typewrite (Black ribbon) or Print Plainly (soft pencil or black ink) Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY
Program No. _____ Lab No. _____
Work No. _____

CHEMICAL WATER ANALYSIS REPORT

Send report to:
Ground Water Division
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

County 059 Deaf Smith
State Well No. 10-21-101
5-SE-1-NT Well No. _____
Date Collected 08-15-78

Location NW¼ NE¼ Sec. 150, Blk M-7 Sample No. _____ By HPWCD #1 Gatsby
Source (type of well) _____ Owner Pitman Grain
Date Drilled _____ Depth _____ ft. WBF Ogallala
Producing intervals _____ Water level _____ ft. Sample depth _____ ft.
Sampled after pumping Cont hrs. Yield _____ GPM Temperature _____ °F _____ °C
Point of collection Faucet on Discharge line Appearance ☐ clear ☐ turbid ☐ colored ☐ other
Use Irrigation Remarks _____

(FOR LABORATORY USE ONLY)

CHEMICAL ANALYSIS

Laboratory No. 348719 Date Received AUG 23 1978 Date Reported SEP 20 78

	MG/L	ME/L
Silica	46	
Calcium	73	3.67
Magnesium	59	4.87
Sodium	44	1.90
Total		10.44
☐ Potassium	a	
☐ Manganese	a	
☐ Boron	a	
☐ Total Iron	a	
☐ (other)	MG/L	

%Na _____
SAR _____
RSC _____

Specific Conductance (micromhos/cm³) 930
Diluted Conductance (micromhos/cm³) 8 x 148 = 1184

" ☐ " Items will be analyzed if checked.

	MG/L	ME/L
Carbonate	0	
Bicarbonate 106	216	3.54
Sulfate	101	2.10
Chloride	155	4.37
Fluoride	2.6	.14
Nitrate	32	.51
pH 180	8.1	Total 10.67
Dissolved Solids (sum of constituents)		672
Phenolphthalein Alkalinity as C CO_3		0
Total Alkalinity as C CO_3 3.54		177
Total Hardness as C CO_3 8.54		427
Nitrogen Cycle		
Ammonia - N		
Nitrite - N		
Nitrate - N		
Organic Nitrogen		

Analyst _____ Checked by _____

The bicarbonate reported in this analysis is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.
Nitrogen cycle requires separate sample.
Total iron requires separate sample.

TDWR-0148

MAP ID 74

Castro COUNTY WELL NO. 1520

WELL LOCATION INFORMATION

Note: Circle applicable designator(s).

As result of field survey 6 (month), 72 (year) Well Number 1520

was determined to be located 7 miles N or S and

4 miles E or W of

the town of Easter

NW 1/4, NE 1/4, SW 1/4, SE 1/4 Section or Tract 150 Block M-7

Survey _____ Abstract _____

Township _____ Range _____

Labor _____ League _____

Location of well as determined from 7.5-minute Topographic Map Number 3402-423

440 Yards from N S

410 Yards from E W

section line, quarter section line, or labor line

Remarks: (OK — acceptable on permit; ND — not determined)

By CDM

High Plains Underground Water Conservation District No. 1

Date 8-22-72

MAP ID 73

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-21-101

groundwater

GWDB Reports and Downloads | Well Basic Details | Scanned Documents

State Well Number	1021101	Well Type	Withdrawal of Water
County	Deaf Smith	Well Use	Irrigation
River Basin	Red	Water Level Observation	None
Groundwater Management Area	2	Water Quality Available	Yes
Regional Water Planning Area	O - Llano Estacado	Pump	
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.7475	Power Type	
Latitude (degrees minutes seconds)	34° 44' 51" N	Annular Seal Method	
Longitude (decimal degrees)	-102.468333	Surface Completion	
Longitude (degrees minutes seconds)	102° 28' 06" W	Owner	Pitman Grain
Coordinate Source	+/- 1 Second	Driller	
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3915	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)		Groundwater Conservation District Well Number	
Well Depth Source		Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date		Previous State Well Number	
Drilling Method		Reporting Agency	Groundwater Conservation District
Borehole Completion		Created Date	8/15/1978
		Last Update Date	

Remarks

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data *Plugged Back - No Data*

Filter Pack - No Data *Packers - No Data*

FORM NO. 7-34 WO

WORK ORDER

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT No. 1
1628-B THIRTEENTH STREET LUBBOCK, TEXAS TELEPHONE 2-6088

Requested by: Jean Lancaster Date: 9-19-60

Address: Phone:

Location of Project: NE¼, NW¼, SE¼, SW¼ (CIRCLE ONE)

Section: 150 Block: M-7

Labor NW ¼ League

Survey

Township Abstract No.

Mileage 14 N E S 9½ W of Dimmitt

County Castro Field Well No. 1520

Thomas A. Boyd
NAME OF LANDOWNER

1403 Turner Street, Borger
ADDRESS

NAME OF TENANT

ADDRESS

Nature of Project: Permit has expired. No log and registration has been received in this office. Check to see if well has been drilled. Secure necessary information to close file.

Report of Project:

Recommendations:

From: Work Done by:

To: Date Completed:

Form No. 7007 AWP

Original—District Office Copy

District File No. PINNED X-FILE
FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

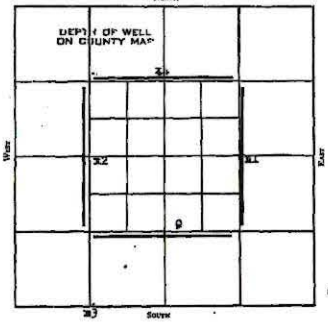
Field Well No.	1520
Date Application Filed	4-25-60
Time of Filing	4:30 p.m.
Date Recommended by County Committee	4-30-60
Size of Pump 8	Maximum Yield 1000 GPM

I, Thomas A. Boyd (NAME OF LANDOWNER) 1403 Turner St. Borger Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Castro
2. NW¼, ~~NE¼, SW¼, SE¼~~ of Section 150 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)
Survey Abstract
3. Labor N W ¼ League
Permit good for 4 months only from date of filing
4. Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)
5. Drilling to start about 10
This well will be located: 14 miles N or S and 9½ miles E or W of the town of Dimmitt, Texas

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)
MARK X, showing 3 closest wells, and/or authorized well site.



SCALE FOR ABOVE PLAT

1 1/16 inches	440 yards	Minimum for 10-inch well
1 inch	400 yards	Minimum for 8-inch well
3/4 inch	300 yards	Minimum for 6-inch well
5/8 inch	250 yards	Minimum for 5-inch well
1/2 inch	200 yards	Minimum for 3 or 4-inch well

Please Make Sure Your Measurements Are Correct — (They will be checked for accuracy)

Location of proposed Well as submitted by applicant is 30' 10' measured yards from (N or S) and 1400' measured yards from (E W) property line, quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number these adjacent wells, and/or authorized well sites, on the plat as 1, 2, and 3, to correspond with the following:

Well 1 445 1/3 measured yards from proposed well site. Barkey
Owned by Knnis
Address

Well 2 462 measured yards from proposed well site. Self
Owned by
Address

Well 3 577 measured yards from proposed well site. Danforth
Owned by
#4 497 yds north U. E. Buford
Address

COMMENTS: No other wells within 440 yds of this location.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by Thomas A. Boyd (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Borger, Texas (ADDRESS)

This permit recommended subject to the rules for spacing from existing wells and/or authorized well site.
1. 2. 3.
Check here ☐ when well is located on the County map. ☐ Deposit Received.

SMITH PRINTING CO. - DIAL PO2-7019

163

Form No. 7532—Revised 3-55

Original—District Office Copy

District File No. X-FILE & PINNED 17D
FOR USE OF DISTRICT OFFICE ONLY

MAP ID 75

FOR USE OF COMMITTEEMAN	
FIELD WELL NO.	1035
DATE RECEIVED	4-21-54
DATE APPROVED	

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

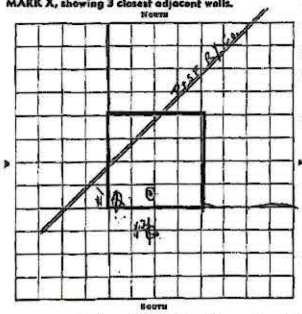
INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

I, C.E. Beauford, (NAME OF LANDOWNER) 200 Lawton St Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith County
2. Section 151 Block M-7
Survey
3. Labor League
4. Homestead Abstract No.
5. Circle quarter section or labor in which well is to be located. NE¼ NW¼ SE¼ (SW¼) (CIRCLE SUBDIVISION USE)
6. Proposed use (municipal-industrial-irrigation) acres (CIRCLE SUBDIVISION USE)
7. Well will be pumped about 120 days per year.
8. Casing—(new) used, gas line, or shop made—Dia. 16 in. (CIRCLE TYPE USED)
9. Drilling to start about With in two weeks (DATE)
10. Driller or Contractor Not decided
Address
11. Pump Size 6 Expected Gal. per Minute 500
12. Type of Power—Electrical - Engine - Horsepower (CIRCLE CONVENIENT POWER) Nat Gas

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor.)
MARK X, showing 3 closest adjacent wells.



This well will be located approximately miles N, miles E, 2½ miles S, 2¼ miles W, of the town of Hereford, Texas

LOCATION OF PROPOSED WELL as submitted by applicant is 3 measured yards from (N S) property line and 400 measured yards from (E W) property line. (CIRCLE N OR S) (CIRCLE E OR W)

Number the three adjacent wells on the map as 1, 2, and 3, to correspond with the following:

Existing well 1 300 measured yards from proposed well.
Owned by C. E. Beauford
Address 200 Lawton St
Existing well 2 300 measured yards from proposed well.
Owned by Bill and Laurence Bendell
Address Hereford, Texas
Existing well 3 measured yards from proposed well.
Owned by
Address

COMMENT: No 1 and No 2 Existing wells will be 300 yds or more from proposed well location.

$25.00 N. H.

FOR FURTHER GUARANTEE SEE BACK OF FORM

I hereby certify that I have read the foregoing statement, and that each and all of the items therein contained are true to the best of my knowledge and belief, and I agree that I must furnish my County Committeeman, as required by law, the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: C.E. Beauford (SIGNATURE OWNER OR AGENT) TITLE ADDRESS

APPROVED BY Frank J. Bryan Paul B. Stout L. L. Carmichael

I, the undersigned, do hereby certify that I have furnished to my County Committeeman the completed well registration and log of well as required by Article 7880-3c, Sec. B-3, Texas Revised Civil Statutes.

Received by: COUNTY COUNTY COMMITTEEMAN APPLICANT

SMITH PRINTING CO. - DIAL 2-6019 DATE 19

AB

Form No. 3932-LW

Original—District Office Copy

High Plains Underground Water Conservation District No 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN	
Field Well No.	1520
Date Received	10-18-60
Permit Size of Pump	6
Maximum Yield	560 GPM

1. Land Owner T. A. Boyd Address 1403 Turner Borger Tex
2. Well located 14 miles N. miles S. miles E. 9½ miles W of the town of Dimmitt
3. County Castro Labor NW¼ League Abstract No.
4. NW¼ ~~NE¼ SW¼ SE¼~~ (MARK OUT ONES THAT DO NOT APPLY) Section 150 Block M-7 Survey

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X ~~Percussion~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well 21 Inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil			
3	42	Caliche & Clay			
42	150	Sand			
150	195	Clay & Rock			
195	284	Sand, Sand Rock			
		Clay & Gravel			
284	286	Red Bed			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein given to the best of my knowledge and belief. S G Ave

Driller Wheeler Drilling Co Address Hereford Tex Date Drilled July 26 1960

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 18 in. Total casing length 287 ft.
7. Casing perforations: from 214 ft. to 274 ft. Size 1/8 x 1/16 Number of rows 8
from 274 ft. to 286 ft. Size 3/8
8. Pump Column: Size 6 in. Column, shaft length 260 ft. Suction pipe size 6 in. Suction pipe length 7 ft.
9. Pump bowls: Size 10 Number of stages 6 Pump discharge pipe: Size 6 in.
10. Depth to water level 167 ft. Pump yield 560 GPM. Pumping level: ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other Western Gas Engine

Signature Thomas A. Boyd (LANDOWNER OR AGENT) Owner (TITLE) Borger Tex (ADDRESS)

MAP ID 76

STATE OF TEXAS WELL REPORT for Tracking #59304

Owner:	Bar G Feeders - Johnny Trotter	Owner Well #:	TH 10-05
Address:	P.O. Box 1797 Hereford, TX 79045	Grid #:	10-21-1
Well Location:	No Data	Latitude:	34° 44' 59" N
Well County:	Castro	Longitude:	102° 28' 40" W
Elevation:	3916 ft.	GPS Brand Used:	No Data
Type of Work:	New Well	Proposed Use:	Test Well

Drilling Date:	Started: 5/18/2005 Completed: 5/18/2005
Diameter of Hole:	Diameter: 4.75 in From Surface To 1000 ft
Drilling Method:	Mud Rotary
Borehole Completion:	No Data
Annular Seal Data:	1st Interval: No Data 2nd Interval: No Data 3rd Interval: No Data
Surface Completion:	No Data
Water Level:	Static level: No Data Artesian flow: No Data
Packers:	No Data
Plugging Info:	Casing left in well: Cement/Bentonite left in well: From (ft) To (ft) From (ft) To (ft) Cem/Bent Sacks Used 0 - 10 1 bag cement 10 - 380 Natural fill 380 - 1000 78 bags Bentonite chips
Type Of Pump:	No Data
Well Tests:	No Data
Water Quality:	Type of Water: No Data Depth of Strata: No Data Chemical Analysis Made: No Did the driller knowingly penetrate any strata which contained undesirable 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 log(s) being returned for completion and resubmittal.
Company Information:	L. T. Drilling Company P.O. Box 784 Sunray, TX 79086
Driller License Number:	1849

Licensed Well Driller Signature:	Lester James Taylor
Registered Driller Apprentice Signature:	Diego Solano
Apprentice Registration Number:	WWDAPP00000621
Comments:	No Data

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 (Tracking #59304) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0 - 16 Surface top soil brown clay
16 - 60 Caliche w/rock & sand strips
60 - 200 Sand w/minor clay strips
200 - 260 Fine fairly loose sand w/little clay mix
260 - 280 Brown to red clay & shale
280 - 320 Red clay & shale
320 - 360 Red & green clay + shale
360 - 480 Red clay & shale
480 - 500 Green & red clay + shale
500 - 520 Red clay & shale
520 - 540 Red & blue sandy clay w/shale strips
540 - 580 Gray & red clay + shale w/rock strips
580 - 600 Red clay & shale
600 - 640 Red & gray clay + shale
640 - 720 Red clay & shale
720 - 760 Red & blue clay + shale
760 - 800 Red clay & shale
800 - 840 Red & blue clay + shale w/fine tight dirty sand strips
840 - 860 Fine tight dirty sand w/blue & red shale strips

860 - 900 Fine tight dirty sand w/hard shale strips
900 - 920 Red & blue clay + shale
920 - 980 Red clay & shale
980 - 1000 Red & blue clay + shale

CASING, BLANK PIPE & WELL SCREEN DATA

No Data

Original - District Office Copy — District File No. ____ (FOR USE OF DISTRICT OFFICE ONLY)

FOR USE OF COMMITTEEMAN — FIELD WELL NO. 1053 — DATE RECEIVED ____ — DATE APPROVED ____

High Plains Underground Water Conservation District No. 1

REGISTRATION OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

1. Well Owner C. E. Beauford Address Hereford, Texas
2. Well located approximately ____ miles N, 2½ miles S, ____ miles E, 2½ miles W of the town of Hereford
3. County Deaf Smith Section 151 Block M7 Survey ____
4. Labor ____ League ____ Homestead ____ Abstract No. ____

ACTUAL LOCATION OF THIS WELL IS 330 measured yards from (N S) property line and ____ measured yards from (E W) property line.

5. Lessee or Operator C. E. Beauford Address Hereford, Texas
6. Driller Fred Simms Address Hereford, Texas
7. Contractor Darrel Harkins Address Hereford, Texas

DESCRIPTION OF WELL

8. Total depth of hole 255 ft.
9. Casing—New, (used) gas line, or (shop) made. Diameter 3/16 in. Length 255 ft.
10. Casing perforated from 185 to 255, from ____ to ____
11. Size of perforations 3/8" to ½ Number of perforations per foot ____
12. Horizontal perforation ____ Vertical perforation Vertical
13. If screen was installed: Type ____ Length ____ ft. Diam. ____ in. Slot Size ____
14. Method of Drilling Rotary
15. Date Completed 5-3-54 Deepened ____
16. Depth to water when drilled 155 ft.
17. Present depth to water 177 ft. Date of Measurement 5-15-54
18. Describe point from which depth measurements were made, and give sea-level elevation if available. 3890

DISCHARGE DATA

19. Pump discharge 700 GAL. PER MIN. OR CU. FT. PER SEC.
20. Method of discharge measurement ____
21. Drawdown 177 No. of days pumped annually 120
22. Purpose of use Irrigation Depth of Setting 205
23. Number of feet of suction pipe None
24. Special interest ____

SPECIAL DATA

25. Kind of pump Turbine Capacity and size of pump 650
26. Pump column size 6 in. Bowl size 10 in.
27. Rated pump discharge 750 rpm. at ____ ft.
28. Kind of power Natural gas Horsepower rating of motor V8 Chrysler

---

Duplicate - District Office Copy — District File No. ____ (FOR USE OF DISTRICT OFFICE ONLY)

FOR USE OF COMMITTEEMAN — FIELD WELL NO. 1053 — DATE RECEIVED ____ — DATE APPROVED ____

High Plains Underground Water Conservation District No. 1

LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

Well Owner C. E. Beauford Address Hereford, Tex. County Deaf Smith

Well located approximately ____ miles N, 2½ miles S, ____ miles E, ____ miles W of the town of Hereford

Section 155 Block M7 Survey ____

Labor ____ League ____ Homestead ____ Abstract No. ____

Depth to Water from Ground Surface 155'

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil
3	18	Caliche
18	70	Dry Sand
70	93	Caliche Rock
93	145	Sand & Clay
145	155	Rock
155	188	Good Water Sand
188	194	Rock
194	255	Good Water Sand
255	260	Hard Rock
260		Red Red
		Well Cased 255' with 3/16' wall 16' shop made casing. 25' 3/8 to 1/2" slots of perforation.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Fred O. Simms Address Hereford, Tex. Date 5-3 19 54

Name of Contractor Darrel Harkins (WHEN CONTRACTOR IS OTHER THAN DRILLER)

SMITH PRINTING CO., LUBBOCK

720	760	Red & blue clay + shale
760	800	Red clay & shale
800	840	Red & blue clay + shale w/fine tight dirty sand strips
840	860	Fine tight dirty sand w/blue & red shale strips
860	900	Fine tight dirty sand w/hard shale strips
900	920	Red & blue clay + shale
920	980	Red clay & shale
980	1000	Red & blue clay + shale

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

MAP ID 76

STATE OF TEXAS WELL REPORT for Tracking #59304

Owner:	Bar G Feeders - Johnny Trottar	Owner Well #:	TH 10-05
Address	P.O. Box 1797 Hereford, TX 79045	Grid #:	10-21-1
Well Location:	No Data	Latitude:	34° 44' 59" N
		Longitude:	102° 28' 40" W
Well County:	Castro	Elevation:	3916 ft. above sea level
Type of Work:	New Well	Proposed Use:	Test Well

Drilling Start Date: 5/18/2005 Drilling End Date: 5/18/2005

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	4.75	0	1000

Drilling Method: Mud (Hydraulic) Rotary

Borehole Completion: Unknown

Annular Seal Data: No Data

Seal Method: Not Applicable

Sealed By: Unknown

Distance to Property Line (ft.): No Data

Distance to Septic Field or other concentrated contamination (ft.): 2560

Distance to Septic Tank (ft.): No Data

Method of Verification: Estimated

Surface Completion: Unknown

Water Level: No Data

Packers: No Data

Type of Pump: No Data

Well Tests: No Test Data Specified

	Description (number of sacks & material)	Top Depth (ft.)	Bottom Depth (ft.)
Plug Information:	0 - 10 1 bag cement		
	10 - 380 Natural fill		
	380 - 1000 78 bags Bentonite chips		

	Strata Depth (ft.)	Water Type
Water Quality:	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: L. T. Drilling Company
P.O. Box 784
Sunray, TX 79086

Driller Name: Lester James Taylor License Number: 1849

Apprentice Name: Diego Solano Apprentice Number: WWDAPP00000621

Comments: No Data

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

Casing: BLANK PIPE & WELL SCREEN DATA

Top (ft.)	Bottom (ft.)	Description	Dia. (in.)	New/Used	Type	Setting From/To (ft.)
0	16	Surface top soil brown clay	No Data			
16	60	Caliche w/rock & sand strips				
60	200	Sand w/minor clay strips				
200	260	Fine fairly loose sand w/little clay mix				
260	280	Brown to red clay & shale				
280	320	Red clay & shale				
320	360	Red & green clay + shale				
360	480	Red clay & shale				
480	500	Green & red clay + shale				
500	520	Red clay & shale				
520	540	Red & blue sandy clay w/shale strips				
540	580	Gray & red clay + shale w/rock strips				
580	600	Red clay & shale				
600	640	Red clay + shale				
640	720	Red clay & shale				

PINNED X-FILE

Duplicate - District Office Copy

District File No. 1/3

FOR USE OF DISTRICT OFFICE ONLY

FOR USE OF COMMITTEEMAN
FIELD WELL NO. 935
DATE RECEIVED 2-8-54
DATE APPROVED
MAP ID 77

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

I, L. L. Kendall (NAME OF LANDOWNER) 120 Ave. J., Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

1. County Deaf Smith
2. Section 150 Block M7
Survey
3. Labor League
4. Homested Abstract No.
5. Circle quarter section or labor in which well is to be located. NE¼ / NW¼ / SE¼ SW¼
6. Proposed use (municipal-industrial-irrigation) 100 acres
7. Well will be pumped about 120 days per year.
8. Casing—new, used, gas line, or shop made—Dia. 16 in.
9. Drilling to start about 2-10-54 195
10. Driller or Contractor Dub Jones
Address Hereford, Texas
11. Pump Size 8" Expected Gal. per Minute 800
12. Type of Power—Electrical - Engine - Horsepower 80

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 2 quarter section or 1 labor.
MARK X, showing 3 closest adjacent wells.

This well will be located approximately ____ miles N, ____ miles E, ____ miles S, 6 miles W, of the town of Hereford, Texas

LOCATION OF PROPOSED WELL as submitted by applicant is 300 ft. measured yards from (N) (S) property line and 150 ft. measured yards from (E) (W) property line.

Number the three adjacent wells on the map as 1, 2, and 3, to correspond with the following:

Existing well 1 380 measured yards from proposed well.
Owned by Clarence Beauford
Address Hereford, Texas

Existing well 2 800 measured yards from proposed well.
Owned by Harry Danforth
Address Box 306 Hereford, Texas

Existing well 3 880 measured yards from proposed well.
Owned by John D. Aiken
Address Hereford, Texas

COMMENT: There is an old well (about 15 years old) about 150 ft. from this location, but water has played out and can not lowered on account of leaking casing. May put a windmill here.

'25 Deep Point J. Harper

I hereby certify that I have read the foregoing statement, and that each and all of the items therein contained are true to the best of my knowledge and belief, and I agree that I must furnish my County Committeeman, as required by law, the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: L. L. Kendall (SIGNATURE OWNER OR AGENT) TITLE ADDRESS

APPROVED BY
1. Frank J. Bergner 2. H. E. Walton 3. J. M. Fish

I, the undersigned do hereby certify that I have furnished to my County Committeeman the completed well registration and log of well as required by Article 7880-3c, Sec. B-3, Texas Revised Civil Statutes.

Received by: L. L. Kendall (APPLICANT)
COUNTY COUNTY COMMITTEEMAN
DATE 19 AB

SMITH PRINTING CO - DIAL 2-2015

MAP ID 79

High Plains Underground Water Conservation District No. 1
Record of Destroyed Well

District Number: 91004

County: Castro

Date the well site was field checked: 31 October, 2016 Field Technician: Andres Villarreal

☐ NW/4 ☐ SW/4 ☐ NE/4 ☒ SE/4

Block:	M-7	Section:	159	Other:	
Survey:	B S & F	CSL:		Latitude:	34.742726
Labor:		League:		Longitude:	-102.485668
Township:		Range:			

FORM NO. 1530—REVISED 2-53

Duplicate - District Office Copy District File No. 2

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

REGISTRATION OF WELL

FOR USE OF COMMITTEEMAN
FIELD WELL NO. 935
DATE RECEIVED
DATE APPROVED

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

1. Well Owner Bill Kendall Address Summerfield Texas County Deaf Smith
2. Well located approximately ___ miles N, 1/2 miles S, 1 miles E, ___ miles W of the town of Summerfield
3. Section 150 Block M7 Survey ___
4. Labor ___ League ___ Homestead ___ Abstract No. ___

ACTUAL LOCATION OF THIS WELL IS ___ measured yards from (N S) property line and ___ measured yards from (E W) property line. (CIRCLE N OR S) (CIRCLE E OR W)

5. Lessee or Operator Bill Kendall Address Hereford, Texas
6. Driller W. D. Jones Address Route 3, Hereford, Texas
7. Contractor Kirkland, Pump Co. J.D.Kirkland Address Box 926, Hereford, Texas

DESCRIPTION OF WELL

8. Total depth of hole 331' ft.
9. Casing—New, used, gas line, or shop made. (CIRCLE ONE ONLY) Diameter 16" in. Length 40' ft.
10. Casing perforated from 82 in. 202, from ___ to ___
11. Size of perforations 3/4" Number of perforations per foot 8
12. Horizontal perforation ___ Vertical perforation yes
13. If screen was installed: Type ___ Length ___ ft. Diam ___ in. Slot Size ___
14. Method of Drilling Rotary (ROTARY — CABLE TOOL OR SPUDDER — REVERSE ROTARY)
15. Date Completed Feb. 25, 1954 (MONTH YEAR) Deepened ___ (DAY MONTH YEAR)
16. Depth to water when drilled 320', 310' ft.
17. Present depth to water 120', 110' ft. Date of Measurement Feb. 25, 1954
18. Describe point from which depth measurements were made, and give sea-level elevation if available. ___

DISCHARGE DATA

19. Pump discharge 1000 gal. per min. 700 gal. per min. (GAL. PER MIN. OR CU. FT. PER SEC.)
20. Method of discharge measurement Orifice (WEIR - ORIFICE - CURRENT METER - APPROVED METER)
21. Drawdown 90 No. of days pumped annually 100
22. Purpose of use Irrigation Depth of Setting 230'
23. Number of feet of suction pipe 36'
24. Special interest Irrigation (RECHARGE — CATCHING RUNOFF WATER — ETC.)

SPECIAL DATA

25. Kind of pump Deep (TURBINE — CENTRIFUGE — ETC.) Capacity and size of pump 8" 1000 gal.
26. Pump column size 8" in. Bowl size 12" in.
27. Rated pump discharge 1000 G.P.M. r.p.m. at 200' ft.
28. Kind of power Natural gas (ELECTRICAL — NATURAL GAS — ETC.) Horsepower rating of motor ___

FORM NO. 1530 — REVISED 2-53

Duplicate - District Office Copy District File No. ___

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

LOG OF WELL

FOR USE OF COMMITTEEMAN
FIELD WELL NO. 935
DATE RECEIVED
DATE APPROVED

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for approval. (PLEASE TYPE or PRINT.)

Well Owner Bill Lawrence Kendall Address Summerfield, Texas

Well located approximately ___ miles N, 1/2 miles S, 1 miles E, ___ miles W of the town of Summerfield

County Deaf Smith Section 150 Block ___ Survey ___

Labor ___ League ___ Homestead ___ Abstract No. ___

ACTUAL LOCATION OF THIS WELL IS ___ measured yards from (N S) property line and ___ measured yards from (E W) property line. (CIRCLE N OR S) (CIRCLE E OR W)

FROM (FEET)	TO (FEET)		DESCRIPTION OF FORMATION MATERIAL
0	1	Soil	
1	12	Caliche	
12	60	Sandy Sandy Clay	
60	110	Fine sand white	
110	125	Medium red sand	
125	200	Fine red sand	
200	225	Coarse red sand	
225	230	Hard caliche and red stone	
230	331	Red Bed	

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller W.D. Jones Address Route 3, 1954 Date Feb. 25 1954

Name of Contractor ___

WHEN EXPLANATION IS MORE THAN SMALLER

SMITH PRINTING CO. - LUBBOCK

FORM NO. 1530 REVISED 2-53 | 1530 | 1530-A | NEW APP. FORM | FILE | X FILE | MASTER SHEET | WELLS COMPLETED MAP | PLANED | DEPTH PLOTTED

Original--District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

Field Well No. 2654
Date of Filing 10-1-66
Date Approved 10-27-66
Expiration Date 2-27-67
Date Recommended by County Committee 10-29-66
Size of Pump 6 Motor Size 60 HP

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Hubert Edwards (NAME OF LANDOWNER) Rt 2 - Hereford, Tex (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated.

County Castro

NW¼, NE¼, SW¼, SE¼ of Section 159 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

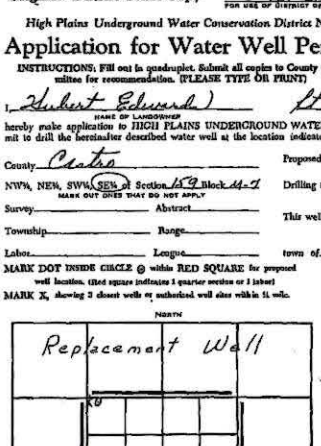
Drilling to start about 2 weeks, 1966

This well will be located ___ miles N or S and 1 miles E or W of the town of Summerfield Texas (MARK OUT ONES THAT DO NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH



1 1/10 in. . 440 yds. . . . Minimum for 10-in. well . . yield—more than 1000 G.P.M.
1 in. . . . . 400 yds. . . Minimum for 8-in. well . yield—500 to 1000 G.P.M.
3/4 in. . . . 300 yds. . . Minimum for 6-in. well . yield—300 to 500 G.P.M.
5/8 in. . . . 250 yds. . . Minimum for 5-in. well . . yield—200 to 300 G.P.M.
1/2 in. . . . 200 yds. Minimum for 3 or 4-in. well . . yield—70 to 200 G.P.M.

Location of proposed Well as submitted by applicant is 5 measured yards from (N S) N and 55 measured yards from (E W) (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 50 measured yards from proposed well site.
Owned by Owned-to be
Address Abandoned

No. 2 ___ measured yards from proposed well site.
Owned by ___
Address ___

No. 3 ___ yards from proposed well site.
Owned by ___
Address ___

RECEIVED
LUBBOCK, TEXAS
NOV 1 5 1966
HIGH PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

COMMENT
Another well located within 440 yds of this location.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of the well and prior to the production of water.

This notice given by: Hubert Edwards (SIGNATURE LANDOWNER OR AGENT)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

Morgan Manning (TITLE) Gilbert Petty (TITLE) Bruce L. Thee (ADDRESS)

☐ Posted on County Map ☒ Deposit Received ☐ Refunded

Check No. ___

SMITH PRINTING CO. - DIAL PO 5-6512

FORM NO. 334R-LW

Original—District Office Copy

District File No. ______ FOR USE OF DISTRICT OFFICE ONLY

FOR USE OF COMMITTEEMEN	
Field Well No.	1064
Date Received	3-21-57
Size of Pump	6
Maximum Yield	560 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

1. Well Owner Melvin Walters Address Star Rt, Kress, Texas
2. Well located ___ miles N, ___ miles S, 2½ miles E, ½ miles W of the town of Summerfield
3. County Castro Labor ___ League ___ Abstract No. ___
4. NW¼ NE¼ SW¼ (SE¼) (circle one) Section 159 Block M-7 Survey ___
5. ACTUAL LOCATION OF THIS WELL IS { 5 measured yards from N line of this tract of land. 5 measured yards from W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	5	Soil			
5	30	Cleache			
30	90	Red Sand			RECEIVED
90	140	Sand-Clay			LUBBOCK, TEXAS
140	180	Sand - Rock			MAR 25 1957
180	240	Sand			HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1
240	275	Coarse Sand			
275	288	Rock			
288	296	Red Bed			

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Robertson Drilling Co Address Plainview, Texas Date Drilled 12-17 1956

DESCRIPTION OF WELL

6. Casing: (new) used, spiral made. Diameter 14 in. Total length 296 ft.
7. Casing perforations: from 140 ft to 296 ft. Size 3/8 Number per foot 4
8. Pump Column: Size 6 in. Total length 250 ft. Suction pipe: Size 8 in. Length 10 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 6 in.
10. Depth to water level 150 ft. Pump discharge 500 GPM. Pumping level: 210 ft.
11. Power Unit: Electrical, Natural Gas, (Butane) Other ___ Horsepower Chrysler V-8

Signature Melvin F. Walters (Owner or Agent) ___ (Title) Star Rt, Kress, Texas (Address)

Final Completion of Well — Date 1-2-57, 19__

FORM NO. 322-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN.	
Field Well No.	2654
Date Received	1-3-67
Permit Size of Pump	6
Maximum Yield	560 GPM

1. Land Owner Hubert Edwards Address Rt. 2, Hereford, Texas
2. Well located ___ miles N, ___ miles S, 1 miles E, ___ miles W of the town of Dimmitt
3. County Castro Labor ___ League ___ Abstract No. ___
4. NW¼ NE¼ SW¼ (SE¼) (mark out those that do not apply) Section 159 Block M-7 Survey ___

DRILLER'S LOG OF WELL

Method of Drilling: (Rotary) (Spudder) (mark out one that does not apply) Diameter of Well: ___ inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	2	Top soil			
2	70	Caliche & clay			
70	85	Dry sand			
85	170	Sand rock & clay & little sand			
170	220	Sand, sandrock & clay			RECEIVED
220	230	Sand			LUBBOCK, TEXAS
230	260	Clay & sand			JAN 9 1967
260	280	Clay & rock			HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1
280	289	Red bed			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Malco Drilling, Inc. Address 212 east New York Date Drilled Dec 2 19 66

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas-line, or shop-made. Diameter 14 in. Total casing length 291 ft.
7. Casing perforations: from 195 ft. to 289 ft. Size 3/16 3/8 Number of rows 8
8. Pump Column: Size 6 in. Column, shaft length 270 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12" Number of stages 4 Pump discharge pipe: Size 6 in.
10. Depth to water level 195 ft. Pump yield 500 GPM. Pumping level: 243 ft.
11. Power Unit: Electrical, (Natural Gas) Butane, Other ___ Horsepower 292 Chev.

Signature ___ (Landowner or Agent) ___ (Title) ___ (Address)

☑ 1-10 ☑ Yes ☑ New App. Book ☑ App. File ☑ R File ☑ Master Sheet ☑ Wells Completed Book ☐ Pinned ☐ Depth Plotted

FORM No. 460 AWP

MAP ID 81

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	2914
Time of Filing	3:50
Date Application Filed	2-5-68
Expiration Date	6-5-68
Date Recommended By County Committee	2-24-68
Size of Pump	6
Maximum Yield	560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Hubert Edwards (Name of Landowner) Route 2 - Box 90 - Hereford, Tex (Landowner's Address)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Castro

NW1/4, NE1/4, (SW1/4) SE1/4 of Section 159 Block M-7 (mark out ones that do not apply)

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

Proposed Use (Municipal-Industrial-(Irrigation)) (mark out ones that do not apply)

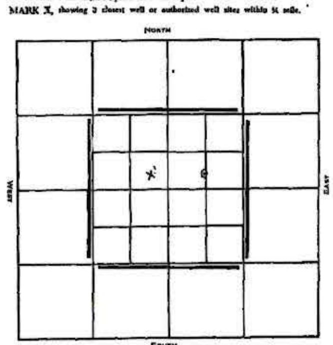
Drilling to start about Soon 1968

This well will be located { ___ miles N or S and 1 miles (E) or W of the (mark out one that does not apply)

town of Summerfield, Tex

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



1 1/10 ins... 440 yds..... Minimum for 10-in. well.. yield—more than 1000 G.P.M.
1 in..... ....400 yds..... Minimum for 8-in. well.. yield—500 to 1000 G.P.M.
3/4 in...... 300 yds.... Minimum for 6-in. well...yield—300 to 500 G.P.M.
5/8 in...... 250 yds..... Minimum for 5-in. well.. yield—265 to 300 G.P.M.
1/2 in...... 200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

Location of proposed Well as submitted by applicant is 514 measured yards from (N)(S) S and 627 measured yards from (E)(W) W (mark out one that does not apply) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 301 measured yards from proposed well site. Owned by owner Address ___

No. 2 ___ measured yards from proposed well site Owned by ___ Address ___

RECEIVED LUBBOCK, TEXAS FEB 2 9 1968 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

No. 3 ___ measured yards from proposed well site. Owned by ___ Address ___

COMMENT

No other wells located within 440 yds of this location!

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by Hubert Edwards (Signature Landowner or Agent) ___ (Title) ___ (Address)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Galvan Kelly 2. Morgan Dennis 3. Donald J. Wright

☑ Pinned on County Map ☑ Deposit Received ☐ Refunded Check No. ___

SMITH PRINTING CO. - DIAL PO 5-4615

DEPTH OF WELL ON COUNTY MAP PINNED

MAP ID 80

FORM NO. 358 AWP

Original—District Office Copy

District File No. X-FILE FOR USE OF DISTRICT OFFICE ONLY

FIELD WELL NO.	1064
DATE APPLICATION FILLED OUT	11-30-56
DATE APPROVED BY COUNTY COMMITTEE	12-2-56
SIZE OF PUMP	6
MAXIMUM YIELD	560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for approval. (PLEASE TYPE or PRINT.)

I, Melvin F. Walter (Name of Landowner) Star Rt Kress, Texas (Landowner's Address)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1, for a permit to drill the hereinafter described water well at the location indicated:

1. County Castro
2. NW¼, NE¼, SW¼, SE¼ of Section 159 Block M-7 (mark out ones that do not apply)

Survey ___

3. Labor ___ League ___

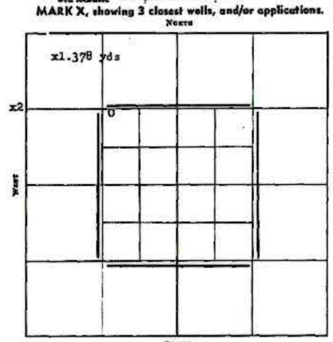
4. Proposed Use (Municipal-Industrial-Irrigation) (mark out ones that do not apply)
5. Drilling to start about 12-1-56, 19__

This well will be located: { ___ miles N or S and 1 miles E or W of the (mark out one that does not apply)

Permit good for 120 days only from date of approval. town of Summerfield, Texas

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells, and/or applications.



SCALE FOR ABOVE PLAT

1 1/10 inches .... 440 yards...... Minimum for 10-inch well
1 inch .... 400 yards...... Minimum for 8-inch well
3/4 inch .... 300 yards...... Minimum for 6-inch well
5/8 inch .... 250 yards...... Minimum for 5-inch well
1/2 inch .... 200 yards.... Minimum for 3 or 4-inch well

Please Make Sure Your Measurements Are Correct—They Will Be Checked for Accuracy

Location of Proposed Well as submitted by applicant is 5 measured yards from (N S) and 5 measured yards from (E W) (mark out one that does not apply) property line, quarter section line, or labor line.

Number the three adjacent wells, and/or applications, on the plat as 1, 2 and 3, to correspond with the following:

Well 1 378 measured yards from proposed well. Owned by Self Address ___

Well 2 466 measured yards from proposed well. Owned by self Address ___

Well 3 ___ measured yards from proposed well. Owned by ___ Address ___

COMMENTS: There are no other wells within 440 yds of this location.

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by: Melvin F. Walter (Signature (Owner or Agent)) owner (Title) Star Rt. Kress, Texas (Address)

This permit approved subject to the rules for spacing from existing wells and/or prior permits

1. Sid Sheffy 2. L.A. Gladden 3. Frank Ammon

Check here ☐ when well is located on the County map.

SMITH PRINTING CO. - DIAL PO 5-4615 LUBBOCK

FORM NO. 484 AMP

Original--District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 2276
Date of Filing 2-30
Date Application Approved 10-14-64
Expiration Date 2-14-68
Date Recommended by County Committee 10-11-64
Size of Pump 8 Maximum Yield 1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR FRINT)

I, Hubert Edwards (HAME OF LANDOWNER) Rt 2 - Hereford, Texas (LANDOWNER'S ADDRESS)
hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Castro

(NW¼) NE¼, SW¼, SE¼ of Section 159 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey _____ Abstract _____

Township _____ Range _____

Labor _____ League _____

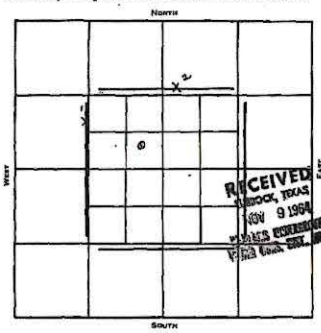
Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

Drilling to start about 30 days 1964

This well will be located 1 miles N or S and 1 miles E or W of the town of Summerfield (MARK OUT ONES THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 2 closest wells or authorized well sites within ¼ mile



1 1/10 in. ..610 yds. ....Minimum for 10-in. well ..yield--over than 1000 G.P.M.
1 in. ..... 400 yds. ....Minimum for 8-in. well ..yield--500 to 1000 G.P.M.
3/4 in. ..... 300 yds. ....Minimum for 6-in. well ..yield--300 to 500 G.P.M.
5/8 in. ..... 250 yds. ....Minimum for 5-in. well ..yield--200 to 300 G.P.M.
1/2 in. ..... 200 yds. Minimum for 3 or 4-in. well ..yield--70 to 200 G.P.M.

Location of proposed Well as submitted by applicant is 717 measured yards from (N) (S) (MARK OUT ONE THAT DOES NOT APPLY) and 307 measured yards from (E) (W) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 410 measured yards from proposed well site.
Owned by O'Barby Nelson
Address Summerfield, Texas

No. 2 400 measured yards from proposed well site.
Owned by Owner
Address _____

No. 3 _____ measured yards from proposed well site.
Owned by _____
Address _____

COMMENT
Another well located within the yards of this location

RECEIVED LUBBOCK, TEXAS NOV 9 1964 HIGH PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Hubert Edwards owner Rt 2 - Hereford Texas
(SIGNATURE LANDOWNER OR AGENT) (TITLE) (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.
1. Lesters Dowell 2. Roy Haley 3. J. T. Henley

Check here: ☐ when well is located on the County map. ☐ Deposit Received.

SMITH PRINTING CO. - DIAL PO 8-6618

MS

FORM NO. 3000AM

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR FRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 2914
Date Received 3-26-68
Permit Size Maximum of Pump 6 in Yield 560 GPM

1. Land Owner Hubert Edwards Address Rt-2-Box 90- Hereford Tx
2. Well located _____ miles N, _____ miles S, 1 miles E, _____ miles W of the town of Summerfield
3. County Castro Labor _____ League _____ Abstract No. _____
4. NW¼ NE¼ SW¼ SE¼ (MARK OUT THOSE THAT DO NOT APPLY) Section 159 Block M-7 Survey _____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary V Spudder _____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well 18 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil			
3	48	Caliche			
48	72	Clay			
72	101	Fine Sand			
101	196	Clay			
196	260	Sandy Clay			
260	268	Course Sand			
268	272	Brown Clay			
272	280	Red Bed			

REMARKS:

RECEIVED LUBBOCK, TEXAS APR 3 1968 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Paul Rennison Address 1006 Austin Date Drilled 3-5 1968

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or chep made. Diameter 14 in. Total casing length 282 ft.
7. Casing perforations: from 180 ft. to 282 ft. Size ¼ to ½ Number of rows 6
8. Pump Column: Size 6" in. Column, shaft length 270' ft. Suction pipe size 6" in. Suction pipe length 5' ft.
9. Pump bowls: Size 12" Number of stages 3 Pump discharge pipe: Size 6" in.
10. Depth to water level 180' ft. Pump yield 300 GPM. Pumping level: 260' ft.
11. Power Unit: Electric, Natural Gas, Butane, Other Chev Horsepower 292

Signature Hubert Edwards (LANDOWNER OR AGENT) (TITLE) Rt 2 Hereford Tex (ADDRESS)

FORM NO. 3000AM

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR FRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 2276
Date Received 11-4-64
Permit Size Maximum of Pump 8 in Yield 1000 GPM

1. Land Owner HUBERT EDWARDS Address Rt. 2 Hereford, Texas
2. Well located _____ miles N, _____ miles S, 1 miles E, _____ miles W of the town of Summerfield
3. County Castro Labor _____ League _____ Abstract No. _____
4. NW¼ ~~NE¼ SE¼ SW¼~~ (MARK OUT THOSE THAT DO NOT APPLY) Section 159 Block M-7 Survey _____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ~~Spudder~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well 8 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Surface	243	246	Rock
4	12	Caliche	246	268	Clay
12	92	Clay	2688	278	Red Bed
92	104	Sandy Clay			
104	156	Clay			
156	168	Sand Clay			
168	185	Clay			
185	215	Sandy Clay			
215	232	Sand			
232	243	Sand Gravel			

REMARKS:

RECEIVED LUBBOCK, TEXAS NOV 7 1964 HIGH PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller A. W. Rish Address Plainview, Texas Date Drilled Nov. 7 19 64

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, ~~used~~ gas line, or ~~chep made~~ Diameter 16 in. Total casing length 278 ft.
7. Casing perforations: from 192 ft. to 278 ft. Size 3/16 Number of rows 8
8. Pump Column: Size 8 in. Column, shaft length 240 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level ~~[illegible]~~ 185 ft. Pump yield 800 GPM. Pumping level: ~~[illegible]~~ 225 ft.
11. Power Unit: ~~Electric~~, Natural Gas, ~~Butane~~, Other _____ Horsepower 150

Signature L M Runkwuarter (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

MAP ID 82

Castro COUNTY WELL NO. 2276

WELL LOCATION INFORMATION

Note: Circle applicable designator(s).

As result of field survey 6 (month), 72 (year) Well Number 2276

was determined to be located _____ miles N or S and 1 miles E or W of the town of Summerfield

NW1/4 NE1/4, SW1/4, SE1/4 Section or Tract 159 Block M-7

Survey _____ Abstract _____

Township _____ Range _____

Labor _____ League _____

Location of well as determined from 7.5-minute Topographic Map Number 3402-423

25 Yards from N S

450 Yards from E W

section line, quarter section line, or labor line

Remarks: (OK — acceptable on permit; ND — not determined)

By CDM

High Plains Underground Water Conservation District No. 1

Date 8-22-72

Texas Water Development Board
Well Schedule

MAP ID 86

State Well No. 10 21 102 Previous Well No. _____ County CASTRO 069

River Basin BRAZOS 12 Zone 1 Region _____ Lat. 34 44 44 Long. 102 59 33 Basin Code 1

Owner's Well No. _____ Location SW 1/4 NW 1/4, Section 159, Block M-7, Survey B.S+F

Permit # 3246

Owner DEE AWNE + JOANNY TROTTER

Driller A. W. FESH

Address HARRISON HWY. HEREFORD, TX Tenant/Oper. JOHNNY TROTTER

Date Drilled 03 30 1971 Depth 301 Source of Depth Datum D Altitude 3940 Source of Alt. Datum M

Aquifer OGALLALA 121 0662 Well Type W User

Well Construction Const. Method ROTARY R Casing Material STEEL S

Completion PERFORATED P Screen Material STEEL S

Lift Data Pump Mfr. _____ Type SUBMERSIBLE S No. Stages _____

Bowls Diam. _____ in. Setting _____ ft. Column Diam. _____ in.

Motor Mfr. _____ Fuel or Power ELECTRIC E Horsepower _____

Yield Flow _____ GPM Pump _____ GPM Meas., Rept., Est. _____ Date _____

Performance Test Date _____ Length of Test _____ Production _____ GPM

Static Level _____ ft. Pumping Level _____ ft. Drawdown _____ ft. Sp.Cap. _____ GPM/ft.

Quality (Remarks _____

Water Use Primary UNUSED U Secondary _____ Tertiary _____

Other Data Available Water Level C Water Quality _____ Logs _____ Other Data _____

Water Levels Date 02 15 1994 Meas. 241 + 16 BELOW LSD

Date _____ Meas. _____

Date _____ Meas. _____

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) Open Hole (O) Cemented from _____ to _____ Setting (feet)

	Diam. (in.)	From	To
1	C 13	0	201
2	S 13	201	301
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Recorded By TERRY BRIDGES Date Record Collected or Updated 07 20 1994 (20 max) Reporting Agency DS

Remarks ID PLATE - FACE UP ON WEST SIDE OF CONCRETE BASE

MP - BETWEEN STEEL PLATE + CONCRETE BASE NORTH SIDE = 4 1.00 FT

Aquifer OGALLALA

Well No. 10-21-102

FORM NO. 495 AWP

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

MAP ID 86

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No. 3246
Time of Filing 3:00
Date Application Filed 1-28-71
Expiration Date 5-28-71
Date Recommended By _____
County Committee _____
Permit No. 6 Maximum Yield 560 GPM

I, Hubert Edwards (NAME OF LANDOWNER) RTA - Box 90 - Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County CASTRO

NW¼ NE¼, SW¼, SE¼ Section 159 Block M-7 (MARK OUT ONE THAT DOES NOT APPLY)

Survey _____ Abstract _____

Township _____ Range _____

Labor _____ League _____

MARK DOT INSIDE CIRCLE ● within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONE THAT DOES NOT APPLY)

Drilling to start about Soon, 1971

This well will be located _____ miles N or S and _____ miles E or W of the town of AT SUMMERFIELD

Location of proposed Well as submitted by applicant is 154 measured yards from N or S and 262 measured yards from E or W property line, quarter section line, or labor line. Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 200 measured yards from proposed well site. Owned by Geo Miller Address Fort Worth, Texas

No. 2 300 measured yards from proposed well site. Owned by Owner Address _____

No. 3 _____ measured yards from proposed well site. Owned by _____ Address _____

RECEIVED FEB 8 1971

COMMENT

No other wells located within 440 yds of this location

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by Hubert Edwards (SIGNATURE LANDOWNER OR AGENT) Box 90 Hereford Tex (TITLE ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well sites.

1. Marvin Stevens 2. [illegible] 3. Anthony Pahl

☐ Posted on County Map ☑ Deposit Received ☐ Refunded Check No. _____

D.M.

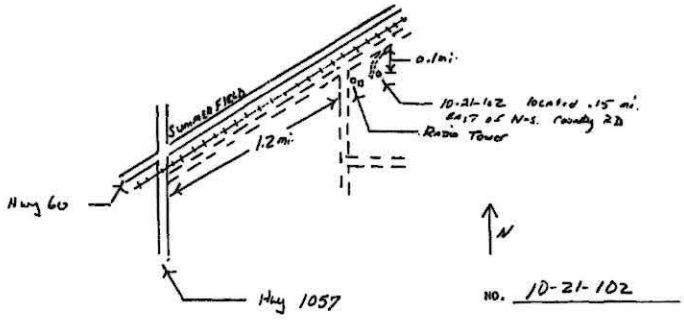
COUNTY CASTRO
NO. 10-21-102

LOCATION SKETCH
BY DAN SEALE
DATE 4-12-79

PHOTOGRAPHS
BY DAN SEALE
DATE 5-14-87

MP VIEW LOOKING S.

LOCATION VIEW LOOKING S.W.



NO. 10-21-102

FORM NO. 494-L/W

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3246
Date Received 5-4-71
Permit Size Maximum of Pump 6 in. Yield 560 GPM

1. Land Owner Hubert Edwards Address RTA - Box 90 - Hereford, Tex
2. Well located _____ miles N, _____ miles S, _____ miles E, _____ miles W of town of AT Summerfield
3. County Castro Labor _____ League _____ Abstract No. _____
4. NW¼ NE¼ SW¼ SE¼ Section 159 Block M-7 Survey _____ (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ✓ ~~Cable Tool~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 15" inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Surface	292	301	Red Bed
4	12	Caliche			
12	72	Clay			
72	98	Sandy Clay			
98	134	Clay			
134	156	Caliche			
156	192	Sandy Clay			
192	246	Broken Sand-Clay			
246	258	Sand			
258	292	Sand - Gravel			

RECEIVED MAY 14 1971

REMARKS.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller A. W. Fesh Address Plainview, Texas Date Drilled 3-30- 1971

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: ~~pump-work~~, gas line, or ~~drop-pipe~~. Diameter 13 3/4" in. Total casing length 301 ft.
7. Casing perforations from 201 ft. to 301 ft. Size 3/8" Number of rows 4
8. Pump Column: Size 6" in. Column, shaft length 230' ft. Suction pipe size 6" in. Suction pipe length 6' ft.
9. Pump bowls Size 12" Number of stages 4 Pump discharge pipe: Size 6" in.
10. Depth to water level 180' ft. Pump yield 560 GPM GPM. Pumping level 220' ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other _____ Horsepower _____

Signature Hubert Edwards (LANDOWNER OR AGENT) RTA Hereford Tex (TITLE ADDRESS)

District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3246
Date Received 5-1-71
Permit Size Maximum of Pump 6 in Yield 560 GPM

1. Land Owner Hubert Edwards Address Rt 2 Box 39 Hereford, Tex
2. Well located ___ miles N, ___ miles S, ___ miles E, ___ miles W of town of Nt Summerfield
3. County Castro Labor ___ League ___ Abstract No. ___
(NW¼) NE¼ SW¼ SE¼ Section 159 Block M-7 Survey ___
MARK OUT WORDS THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ✓ ~~Spudding~~ Diameter of Well: 15" inches.
MARK OUT ONE THAT DOES NOT APPLY

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Surface	292	301	Red Bed
4	12	Caliche			
12	73	Clay			
73	97	Sandy Clay			
97	131	Clay			
131	156	Caliche			
156	192	Sandy Clay			
192	246	Broken Sand Clay			
246	257	Sand			
257	292	Sand - Gravel			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller A.W. Fish Address Plainview, Tex Date Drilled 3-30- 1971

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: ~~temporary~~, gas line, or ~~drive pipe~~. Diameter 12¾" in Total casing length 301 ft.
7. Casing perforations: from 201 ft. to 301 ft. Size ¾" Number of rows 4
8. Pump Column: Size 6" in. Column, shaft length 280' ft. Suction pipe size 6" in. Suction pipe length 6' ft.
9. Pump bowls: Size 12" Number of stages 4 Pump discharge pipe: Size 6" in.
10. Depth to water level 180' ft. Pump yield 560 GPM. GPM. Pumping level: 225' ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ___ Horsepower ___

Signature Hubert Edwards (LANDOWNER OR AGENT) Rt 2 Hereford Tex (TITLE) (ADDRESS)

10-21-102

[redacted]

TEXAS DEPARTMENT OF WATER RESOURCES

WELL SCHEDULE

Aquifer(s) Ogallala Project No. ___ State Well No. 10-21-102
Field No./Owner's Well No. 3246 County CASTRO

1. Location: SW¼, NW¼, Section 159, Block M-7, Survey BS & F, Lat. 34-44-41, Long. 102-29-33
2. Owner: Hubert EDWARDS Address: Rt 2, Box 39, Hereford TX
Tenant (Other): Lt Ray EDWARDS Address: Box 2X, Summerfield TX
Driller: A.W. Fish Address: Plainview TX
3. Land Surface Elevation: 3940 ft. above msl determined by Topo MAP
4. Drilled: March 30 1971; Dug, Cable Tool, Rotary, Air, ___
5. Depth: Rept. 301 ft. Meas. ___ ft.
6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed
7. Pump: Mfr. ___ Type Submersible
No. Stages ___, Bowls Diam. ___ in., Setting ___ ft.
Column Diam. ___ in., Length Tailpipe ___ ft.
8. Motor: Mfr. Submersible Fuel Electric HP ___
9. Yield: Flow ___ gpm, Pump 560 gpm, Meas., Rept., Est. 3-30-71 Date
10. Performance Test: Date ___ Length of Test ___ Made by ___
Static Level ___ ft. Pumping Level ___ ft. Drawdown ___ ft.
Production ___ gpm Specific Capacity ___ gpm/ft.
11. Quality: (Remarks on taste, odor, color, etc.) ___
Analyses
Date ___ Laboratory ___ TDS ___ Sp Cond ___
Date ___ Laboratory ___ TDS ___ Sp Cond ___
12. Other data available (as circled): Pumping Test, Power & Yield Test, Drillers Log, Formation Samples, Geophysical Logs (type)

CASING, BLANK PIPE & WELL SCREEN Cemented From ___ ft. to ___ ft.			
Diam. (in.)	Type	Setting (feet) From	to
12¾	Casing	Surf	201
CASING Perforated with ¾" slots		201	301

13. Water Level(s): 237.02 ft. upper meas. 1-5 19 84 above/below Sea Me which is 2160 ft. above/below Land Surface
273.89 ft. rept. 4-13 19 79 above/below ___ which is ___ ft. above/below Land Surface
14. Use: Dom., Stock, Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.) ___
15. Recorded by DAN SEALE Source of data: HPWD. Fhs & Fch Date: 2-21-84
16. Remarks: TD PLK. Wheat on S. Side. SW Corner of Square Steel plate.
17. Location or Sketch: MP - where Conduct enters well = + 1.0 ft

TDWR-0300

W/L Obs. Well ✓ W/Q Obs. Well ___
State Well No. 10-21-102

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-21-102

MAP ID 86

groundwater

GWDB Reports and Downloads | Well Basic Details | Scanned Documents

State Well Number	1021102	Well Type	Withdrawal of Water
County	Castro	Well Use	Unused
River Basin	Red	Water Level Observation	Historical Observation Well
Groundwater Management Area	2	Water Quality Available	No
Regional Water Planning Area	O - Llano Estacado	Pump	Submersible
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.744722	Power Type	Electric Motor
Latitude (degrees minutes seconds)	34° 44' 41" N	Annular Seal Method	
Longitude (decimal degrees)	-102.491945	Surface Completion	
Longitude (degrees minutes seconds)	102° 29' 31" W	Owner	Dee Anne & Johnny Trotter
Coordinate Source	+/- 1 Second	Driller	A.W. Fish
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	Drillers Log
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3940	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)	301	Groundwater Conservation District Well Number	
Well Depth Source	Driller's Log	Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date	3/30/1971	Previous State Well Number	
Drilling Method	Mud (Hydraulic) Rotary	Reporting Agency	Groundwater Conservation District
Borehole Completion	Perforated or Slotted	Created Date	6/20/1995
		Last Update Date	9/6/1994

Remarks Reported yield 560 gpm in 1971.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
12	Blank	Steel			0	201
12	Screen	Steel			201	301

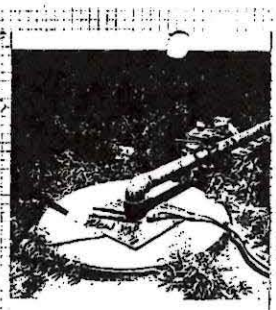
Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

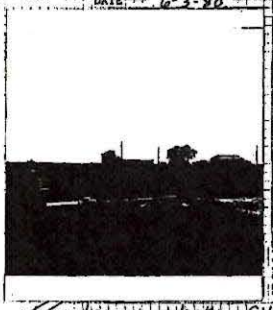
Borehole - No Data **Plugged Back - No Data**

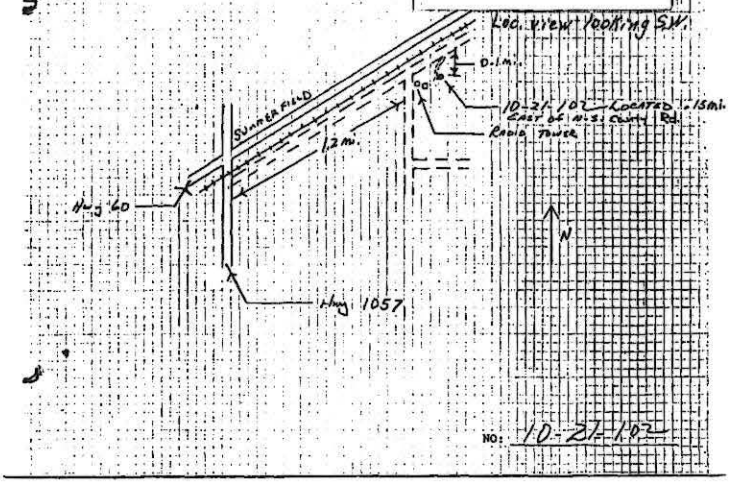
Filter Pack - No Data **Packers - No Data**



MP view looking NE

COUNTY: CASTRO
10-21-102
LOCATION SKETCH
BY DAN SEALE
DATE 4-12-79
PHOTOGRAPHS
BY DAN SEALE
DATE 6-3-80





NO: 10-21-102

FORM NO. 255 AWP

DEPTH OF WELL ON COUNTY MAP

X-FILE PINNED

MAP 10187

Original—District Office Copy

District File No. _____ FOR USE OF DISTRICT OFFICE ONLY

FIELD WELL NO. 1211

DATE APPLICATION FILED OUT 4-26-57

DATE APPROVED BY COUNTY COMMITTEE 4-29-57

SIZE OF PUMP 8 MAXIMUM YIELD 1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for approval. (PLEASE TYPE or PRINT.)

I, J. C. McCracken and B. M. Wiltshire (NAME OF LANDOWNER) Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1. for a permit to drill the hereinafter described water well at the location indicated:

1. County Castro
2. ~~NE/4 NE/4 NE/4~~ (MARK OUT ONE THAT DO NOT APPLY) of Section 172 Block M-7
   Survey _____
3. Labor _____ League _____
4. Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)
5. Drilling to start about _____, 19__

9 E 172.9 acres of the following

This well will be located: ____ miles N or S and ____ miles E or W of the

Adjoing the town of

town of Summerfield, Texas

Permit good for 120 days only from date of approval.

MARK DOT INSIDE CIRCLE ⊙ with Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor

MARK X, showing 3 closest wells, and/or applications.

North

West

East

South

Please Make Sure

Your Measurements Are Correct—

They Will Be Checked for Accuracy

Location of Proposed Well as submitted by applicant is 747 measured yards from (X) S (MARK OUT ONE THAT DOES NOT APPLY) and 16 measured yards from (X) W property line, quarter section line, or labor line.

Number the three adjacent wells, and/or applications, on the plat as 1, 2 and 3, to correspond with the following:

Well 1 _____ measured yards from proposed well.
Owned by _____
Address _____

Well 2 _____ measured yards from proposed well.
Owned by _____
Address _____

Well 3 _____ measured yards from proposed well.
Owned by _____
Address _____

RECEIVED HEREFORD, TEXAS APR 29 1957 HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

SCALE FOR ABOVE PLAT

1 1/10 inches ..... 440 yards..... Minimum for 10-inch well
1 inch ..... 400 yards..... Minimum for 8-inch well
3/4 inch ..... 300 yards..... Minimum for 6-inch well
5/8 inch ..... 250 yards..... Minimum for 5-inch well
1/2 inch ..... 200 yards..... Minimum for 3 or 4-inch well

COMMENTS: No wells within 440 yds of this location.

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by: B M Wiltshire (SIGNATURE OWNER OR AGENT) Owner (TITLE) Hereford, Tex (ADDRESS)

This permit approved subject to the rules for spacing from existing wells and/or prior permits

By Sid Shaffy 2. Truett Anson 3. L. A. Blackburn

Check here ☐ when well is located on the County map.

SMITH PRINTING CO - BILL FOR-2016 LUBBOCK

FORM NO. 324R-LW

Original—District Office Copy

District File No. _____ FOR USE OF DISTRICT OFFICE ONLY

FOR USE OF COMMITTEEMEN

Field Well No. 1211

Date Received 5-20-57

Size of Pump 8 Maximum in Yield 1000GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

1. Well Owner J.C.McCracken & B.M.Wiltshire Here ord, Texas
2. Well located Adjoins the town section of Summerfield, Texas miles N, ____ miles S, ____ miles E, ____ miles W of the town of _____
3. County Castro Labor _____ League _____ Abstract No. _____
4. ~~NE/4 NE/4 NE/4~~ (CIRCLE ONE) SE¼ Section 172 Block M-7 Survey _____
5. ACTUAL LOCATION OF THIS WELL IS { 747 measured yards from ~~N~~ or S line of this tract of land. 16 measured yards from E or ~~W~~ line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	120	Surface	243	257	Coarse red sand thin streaks sand rock and clay
120	139	Med. coarse sand caliche and sand rock	257	272	Coarse red sand clean and last 3' soft loose red sandy clay
139	154	Clay caliche and sand rock, last 2' loose clay & sand	272	286	Fairly soft red sand clay
154	169	Med red sand some clay	286	290	Fairly soft red sandy clay
169	177	Clean red medium sand	290		Red clay
177	185	Med red sand lots of clay and sand rock			
185	200	Med red sand lots of clay and sand rock			
200	214	Med red sand lots of clay and sand rock streaks sand			
214	229	Med red sand lots of clay and sand rock streaks sand			
229	243	Coarse red sand, thin streaks sunfruck and clay			

RECEIVED LUBBOCK, TEXAS MAY 23 1957 HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller H.A. Jones Drilling Co. Address Box 817 Date Drilled 5-6- 19 57

DESCRIPTION OF WELL

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total length 296.45 ft.
7. Casing perforations: from 170 ft to 230 ft. Size ½ Number per foot 8
   290 240 ⅞ 10
8. Pump Column: Size 8 in Total length 260 ft. Suction pipe: Size 8 in. Length 10 ft.
9. Pump bowls: Size 12 Number of stages 5 Pump discharge pipe: Size 8 in.
10. Depth to water level 159 ft. Pump discharge 1000 GPM. Pumping level: 198 ft.
11. Power Unit: ~~Electric~~ Natural Gas, ~~Butane~~ Fuel Horsepower 110 HW motor

Signature B M Wiltshire (OWNER OR AGENT) Owner (TITLE) Here ord, Texas (ADDRESS)

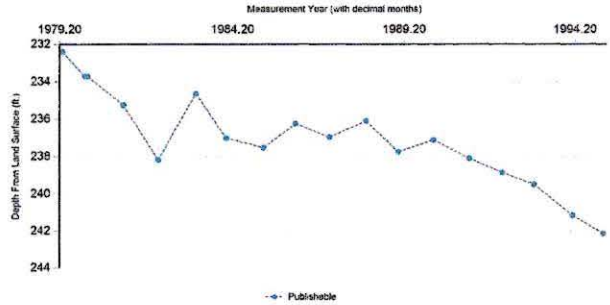
Final Completion of Well — Date 5-20 19 57

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-21-102

groundwater

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in () indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	4/12/1979		232.39		3707.61	1	Groundwater Conservation District	Steel Tape		
P	12/6/1979		233.7	1.31	3706.3	1	Groundwater Conservation District	Steel Tape		
P	1/1/1980		233.7	0.00	3706.3	1	Groundwater Conservation District	Steel Tape		
P	1/15/1981		235.26	1.56	3704.74	1	Groundwater Conservation District	Steel Tape		
P	1/19/1982		238.17	2.91	3701.83	1	Groundwater Conservation District	Steel Tape		
P	2/22/1983		234.84	(3.33)	3705.36	1	Groundwater Conservation District	Steel Tape		
P	1/5/1984		237.02	2.18	3702.98	1	Groundwater Conservation District	Steel Tape		
P	2/6/1985		237.52	0.50	3702.48	1	Groundwater Conservation District	Steel Tape		
P	1/8/1986		236.25	(1.27)	3703.75	1	Groundwater Conservation District	Steel Tape		
P	1/6/1987		236.97	0.72	3703.03	1	Groundwater Conservation District	Steel Tape		
P	2/1/1988		235.1	(0.87)	3703.9	1	Groundwater Conservation District	Steel Tape		
P	1/8/1989		237.74	1.64	3702.26	1	Groundwater Conservation District	Steel Tape		
P	1/15/1990		237.12	(0.62)	3702.88	1	Groundwater Conservation District	Steel Tape		
P	2/6/1991		238.09	0.97	3701.91	1	Groundwater Conservation District	Steel Tape		

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-21-102

groundwater

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in () indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/29/1992		238.85	0.76	3701.15	1	Groundwater Conservation District	Steel Tape		
P	1/6/1993		239.49	0.64	3700.51	1	Groundwater Conservation District	Steel Tape		
P	2/15/1994		241.16	1.67	3698.84	1	Groundwater Conservation District	Steel Tape		
P	1/11/1995		242.15	0.99	3697.85	1	Groundwater Conservation District	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

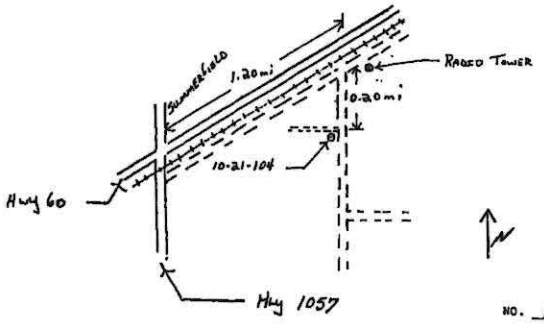
COUNTY CASTRO
NO. 10-21-104

LOCATION SKETCH
BY TERRY BRIDGES
DATE 06-05-95

PHOTOGRAPHS
BY TERRY BRIDGES
DATE 06-03-95

MP VIEW LOOKING S.

LOCATION VIEW LOOKING N.



NO. 10-21-104

High Plains Underground Water Conservation District No. 1
930 Avenue Q Lubbock, Texas 7940
(806)762-0181
Observation Well Schedule

MAP ID 87

State Well No. 10-21-104 Permit - Assigned No. 1 1 2 1 1 1 County CASTRO 01619
River Basin RED RIVER 012 Zone 1 1 Region 1 Lat. 34-44-31 Long. 101 22-19-42 Source of Coord. 1 1
Owner's Well No. ____ Location NE ¼ of SE ¼, Section 172, Block M-7, Survey ____

Owner EUGENE FANGMAN Tenant/Oper. KENNETH FANGMAN
Address BOX 292 VEGA, TX Address ____
Driller W. D. JONES DRILLING CO. Address ____
Date Drilled 015-016-1957 Depth 1219 10 Source of Depth Datum D Altitude 3191410 Source of Alt. Datum M
Aquifer OGALLALA 1 2 1 1 0 1 6 1 4 1 6 1 Well Type W User ____
Well Const. Method ROTARY R Casing Material STEEL S
Completion PERFORATED P Screen Material STEEL S
Pump Mfr. ____ Type SUBMERSIBLE S G.H. ____
Bowls Diam. ____ in. Setting ____ ft. Column Diam. ____ in.
Motor Mfr. ____ Fuel or Power ELECTRIC E Horsepower ____
Water Use Primary IRR I Secondary ____ Tertiary ____
Other Data Available Water Level ____ Water Quality ____ Logs ____ Other Data ____
Pump Yield ____ GPM Meas.,Rept.,Est. (circle source)

Casing or Blank Pipe (C)
Well Screen or Slotted Zone (S)
Open Hole (O)
Cemented from ____ to ____

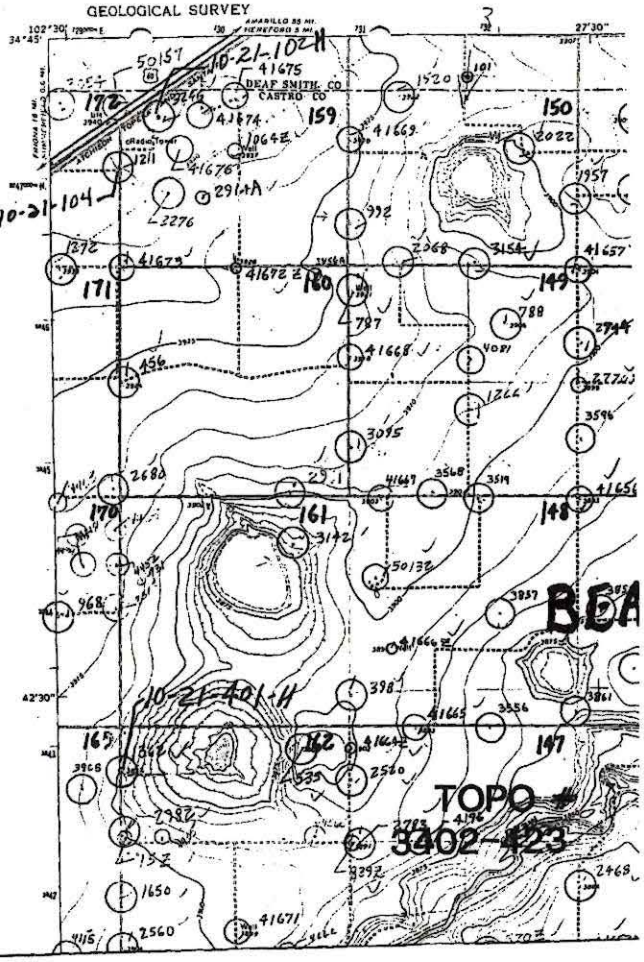
Diam. (in.)	From	To
6 1/6	0	170
3 1/6	170	290

Performance Test Date ____ Length of Test ____ Static Level ____ ft. Pumping Level ____ ft. Production ____
Water Levels Date 012-212-119915 Meas. 12 9 15 . 5 10 Below LSD
Date ____ Meas. ____
Date ____ Meas. ____

Recorded By TERRY BRIDGES Date Record Collected or Updated 016-015-119915
Remarks:

MP. HOLE IN PLATE NORTHSIDE REMOVE BOLT = +1.00 FT.

No. 10-21-104



High Plains Underground Water Conservation District No. 1
Water-Level Observation Well Measurements
State Well Number 10-21-104

Date of Measurement Mo.	Day	Yr.	Depth-To-Water From Land Surface	M.P. In Feet	Meas. Number	Meas. Method	Water Use	Remarks	Working Faucet	Field Observ.
02	22	95	245.50	+1.00	1	1	I		YES	

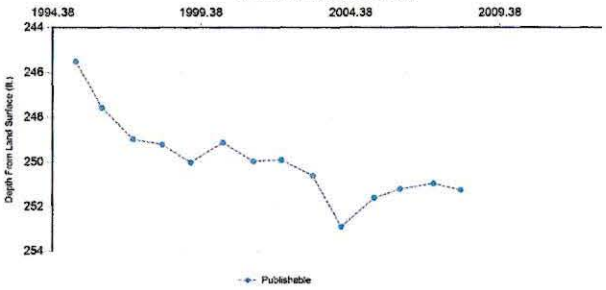
County CASTRO
State Well Number 10-21-104

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-21-104

groundwater

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in () indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/22/1995		245.5		3694.5	1	Groundwater Conservation District	Steel Tape		
P	1/11/1996		247.57	2.07	3692.43	1	Groundwater Conservation District	Steel Tape		
P	1/29/1997		248.96	1.39	3691.04	1	Groundwater Conservation District	Steel Tape		
P	1/23/1998		249.19	0.23	3690.81	1	Groundwater Conservation District	Steel Tape		
P	1/11/1999		250	0.81	3690	1	Groundwater Conservation District	Steel Tape		
P	2/10/2000		249.11	(0.89)	3690.89	1	Groundwater Conservation District	Steel Tape		
P	2/14/2001		249.95	0.84	3690.05	1	Groundwater Conservation District	Steel Tape		
P	1/18/2002		249.89	(0.06)	3690.11	1	Groundwater Conservation District	Steel Tape		
P	2/4/2003		250.6	0.71	3689.4	1	Groundwater Conservation District	Steel Tape		
P	1/19/2004		252.89	2.29	3687.11	1	Groundwater Conservation District	Steel Tape		
P	3/1/2005		251.6	(1.29)	3688.4	1	Groundwater Conservation District	Steel Tape		
P	1/11/2006		251.2	(0.40)	3688.8	1	Groundwater Conservation District	Steel Tape		
P	2/20/2007		250.95	(0.25)	3689.05	1	Groundwater Conservation District	Steel Tape		
P	1/21/2008		251.24	0.29	3688.76	1	Groundwater Conservation District	Steel Tape		

FORM NO. 3148 LW

Original—District Office Copy

District File No. _____ (FOR USE OF DISTRICT ONLY)

FOR USE OF CONSULTANT
Field Well No. 1211
Date Received 5-20-57
Size of Pump 8 Maximum in Yield 1000GPM

High Plains Underground Water Conservation District No. 1
REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Commissioner for registration. (Please type or print.)

1. Well Owner J.C.McCracken & B.W.Wiltshire Hereford, Texas
2. Well located Adjoins the town section of Summerfield, Texas miles N, miles S, miles E, miles W of the town of
3. County Castro Labor League Abstract No.
4. ~~NE¼ NW¼~~ (CIRCLE ONE) SE¼ Section 172 Block ~~M-7~~ Survey
5. ACTUAL LOCATION OF THIS WELL IS 747 measured yards from N or S line of this tract of land. 16 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	120	Surface	243	257	Coarse red sand thin streaks sand rock and clay
120	139	Med. coarse sand caliche and hard rock	257	272	Coarse red sand clean and last 3' soft loose red sandy clay
139	154	Clay caliche and sand rock, last 2' loose clay & sand	272	286	Fairly soft red sand clay
154	169	Med red sand some clay	286	290	Fairly soft red sandy clay
169	177	Clean red medium sand	290		Red clay
177	185	Med red sand lots of clay and sand rock			
185	200	Med red sand lots of clay and sand rock			
200	214	Med red sand lots of clay and sand rock streaks sand			
214	229	Med red sand lots of clay and sand rock streaks sand			
229	243	Coarse red sand, thin streaks shamrock and clay			

RECEIVED LUBBOCK, TEXAS MAY 23 1957 HIGHLAND UNDERGROUND WATER CONS. DIST. No. 1

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller W.D. Jones Drilling Co. Address Box 817 Date Drilled 5-6- 1957

DESCRIPTION OF WELL

6. Casing: new ~~used~~, gas line, or shop made. Diameter 16 in. Total length 286.45 ft.
7. Casing perforations: from 170 ft to 230 ft. Size ½ Number per foot 8
   230 290 ½ 10
8. Pump Column: Size 8 in. Total length 260 ft. Section pipe: Size 8 in. Length 10 ft.
9. Pump bowls: Size 12 Number of stages 5 Pump discharge pipe: Size 8 in.
10. Depth to water level 159 ft. Pump discharge 1000 GPM. Pumping level: 198 ft.
11. Power Unit: ~~Electric~~ Natural Gas, ~~Gasoline~~ Other Horsepower 110 HI motor

Signature J. M. Wiltshire (OWNER OR AGENT) owner (TITLE) Hereford, Texas (ADDRESS)

Final Completion of Well — Date 5-6-57

10-21-104

MAP ID 87

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-21-104

groundwater

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in () indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
X	2/24/2009					1	Groundwater Conservation District		19	
X	12/4/2009					1	Groundwater Conservation District		19	
X	12/20/2010					1	Groundwater Conservation District		19	
X	1/16/2012					1	Groundwater Conservation District		19	

Code Descriptions

Status Code	Status Description	Remark ID	Remark Description
P	Publishable	19	Well pumping
X	No Measurement		

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-21-104

groundwater

GWDB Reports and Downloads | **Well Basic Details** | Scanned Documents

State Well Number	1021104	Well Type	Withdrawal of Water
County	Castro	Well Use	Irrigation
River Basin	Red	Water Level Observation	Historical Observation Well
Groundwater Management Area	2	Water Quality Available	No
Regional Water Planning Area	O - Llano Estacado	Pump	Submersible
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.741945	Power Type	Electric Motor
Latitude (degrees minutes seconds)	34° 44' 31" N	Annular Seal Method	
Longitude (decimal degrees)	-102.495556	Surface Completion	
Longitude (degrees minutes seconds)	102° 29' 44" W	Owner	Eugene Fangman
Coordinate Source	+/- 1 Second	Driller	W D Jones Drilling Co
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	Drillers Log
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3940	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)	290	Groundwater Conservation District Well Number	
Well Depth Source	Driller's Log	Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date	5/6/1957	Previous State Well Number	
Drilling Method	Mud (Hydraulic) Rotary	Reporting Agency	Groundwater Conservation District
Borehole Completion	Perforated or Slotted	Created Date	6/5/1995
		Last Update Date	11/22/2013

Remarks 1000 gpm with 39ft drawdown

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
16	Blank	Steel			0	170
16	Screen	Steel			170	290

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data ***Plugged Back - No Data***

Filter Pack - No Data ***Packers - No Data***

FORM NO. 2588-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3054
Date Received 3-11-69
Permit Size 8 Maximum of Pump ___ in Yield 100 GPM

1. Land Owner George B. Miller Address 701 N. Main Ft Worth Tex 76106
2. Well located ___ miles N, ___ miles S, 4½ miles E, ___ miles W of town of Summerfield
3. County Castro Labor ___ League ___ Abstract No. ___
4. NW¼ (NE¼) SW¼ SE¼ Section 172 Block M-7 Survey ___
MARK OUT THOSE THAT DO NOT APPLY

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ~~XXX~~ ~~XXXXXX~~ Diameter of Well 18 inches.
MARK OUT ONE THAT DOES NOT APPLY

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Surface			
4	19	Caliche			
19	182	Dry Sand & Clay			
182	223	Fine Sand & Clay			
223	260	Sand & Clay			
260	320	Sand, Gravel & Clay			
320	329	Sandy Clay			
329	335	Red Bed			

RECEIVED LUBBOCK, TEXAS APR 4 1969 H-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller [signature] Address Plainview, Texas Date Drilled Mar 1 19 69

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, ~~XXXX~~, gas line, ~~XXXXXXXXXX~~ Diameter 16 in Total casing length 335 ft.
7. Casing perforations from 215 ft. to 335 ft. Size 10 x 20 x 3/8 Number of rows 6
8. Pump Column: Size 8 in. Column, shaft length 310 ft. Suction pipe size 8 in. Suction pipe length 16 ft.
9. Pump bowls: Size 14 Number of stages 3 Pump discharge pipe: Size 8 in.
10. Depth to water level 190 ft. Pump yield 1000 GPM. Pumping level: 224 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ___ Horsepower 100

Signature a H Rabon (LANDOWNER OR AGENT) Box 730 Plainview (TITLE) (ADDRESS)

MAP ID 89

Castro COUNTY WELL NO. 3054

WELL LOCATION INFORMATION

Note: Circle applicable designator(s).

As result of field survey 6 (month), 70 (year) Well Number 3054

was determined to be located ___ miles N or S and

In ___ miles E or W of

the town of Summerfield

NW 1/4, (NE 1/4), SW 1/4, SE 1/4 Section or Tract 172 Block M-7

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

Location of well as determined from 7.5-minute Topographic Map Number 3402-314

610 Yards from (N) S

450 Yards from (E) W

(section line) quarter section line, or labor line

Remarks: (OK — acceptable on permit; ND — not determined)

By COM

High Plains Underground Water Conservation District No. 1

Date 10-16-72

FORM NO. 460 AWP

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 3120
Time of Filing 9:30
Date Application Filed 12-5-69
Expiration Date 2-5-70
Date Recommended By 12-15-69
County Committee
Size of Pump 6 Maximum Yield 510 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, George Lowther (NAME OF LANDOWNER) Ft Worth Tex (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO 1 for a permit to drill the hereinafter described water well at the location indicated:

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

County Castro

NW¼ (NE¼) SW¼, SE¼ Section 172 Block M-7 MARK OUT ONES THAT DO NOT APPLY

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

Drilling to start about June 1969

This well will be located ___ miles N or S and ___ miles E or W of the town of Summerfield, Tex

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.

NORTH / WEST / EAST / SOUTH

Location of proposed Well as submitted by applicant is 310 measured yards from (N) S and 460 measured yards from (E) W property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 460 measured yards from proposed well site. Owned by Re-abandoned

Address ___

No. 2 1132 measured yards from proposed well site. Owned by Reserved

Address ___

No. 3 ___ measured yards from proposed well site. Owned by ___

Address ___

RECEIVED FEB 4 1970

COMMENT

No other wells located within 460 yds of this location

1 1/10 in. ... 440 yds. ... Minimum for 10-in. well ... yield—more than 1000 G.P.M.
1 in. ... 400 yds. ... Minimum for 8-in. well ... yield—500 to 1000 G.P.M.
3/4 in. ... 300 yds. ... Minimum for 6-in. well ... yield—350 to 500 G.P.M.
5/8 in. ... 250 yds. ... Minimum for 5-in. well ... yield—265 to 350 G.P.M.
1/2 in. ... 200 yds. Minimum for 3 or 4-in. well ... yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by [signature] (SIGNATURE LANDOWNER OR AGENT) (TITLE) (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well sites:
1. Walt Mydell 2. Morgan Dennis 3. David D. Wright

☒ Pinned on County Map ☐ Deposit Received ☐ Refunded Check No. ___

SMITH PRINTING CO. - DALL. PO 5-8418

FORM NO. 460 AWP

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 3054
Time of Filing 11:25 A.M.
Date Application Filed 1-11-69
Expiration Date 2-11-69
Date Recommended By 1-22-69
County Committee
Size of Pump 8 Maximum Yield 1010 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, George B. Miller (NAME OF LANDOWNER) 701 N Main Ft Worth, Tex 76106 (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

County Castro

NW¼ (NE¼) SW¼, SE¼ Section 172 Block M-7 MARK OUT ONES THAT DO NOT APPLY

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

Drilling to start about June 19___

This well will be located ___ miles N or S and ½ miles E, or W of the town of Summerfield, Tex.

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.

NORTH / WEST / EAST / SOUTH

Location of proposed Well as submitted by applicant is 300 measured yards from (N) S and 400 measured yards from (E) W property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 400 measured yards from proposed well site. Owned by Cowden

Address ___

No. 2 ___ measured yards from proposed well site. Owned by ___

Address ___

No. 3 ___ measured yards from proposed well site. Owned by ___

Address ___

RECEIVED LUBBOCK, TEXAS MAR 11 1969 H-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

COMMENT

No other wells within 400 yds of this location

1 1/10 in. ... 440 yds. ... Minimum for 10-in. well ... yield—more than 1000 G.P.M.
1 in. ... 400 yds. ... Minimum for 8-in. well ... yield—500 to 1000 G.P.M.
3/4 in. ... 300 yds. ... Minimum for 6-in. well ... yield—350 to 500 G.P.M.
5/8 in. ... 250 yds. ... Minimum for 5-in. well ... yield—265 to 350 G.P.M.
1/2 in. ... 200 yds. Minimum for 3 or 4-in. well ... yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by [signature] (SIGNATURE LANDOWNER OR AGENT) Geo. Bennett (TITLE) Fort Worth Tex (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well sites:
1. [signature] 2. Morgan Dennis 3. John H. Wheatley

☒ Pinned on County Map ☐ Deposit Received ☐ Refunded Check No. ___

SMITH PRINTING CO. - DALL. PO 5-8418

Water Quality Sampling Run

Sample No. 748
Date: 3-27-1996
By: John ASENSIO

Name: SUMMERFIELD
Address:

SWN: 10-20-304
County: CASTRO
Aquifer(s): DL OGLL

Bottle 1	Bottle 2	Bottle 3	Bottle 4	Bottle 5	Bottle 6	Bottle 7	Total SUB-Samples
1 Sealed liter Anions	1 liter Cations	1 liter Radioactivity	250 500 ml Nitrate	1 Oz(glass) (TOC)Organics			

Preserve with: 2 ml HNO_3 (Nitrate); 2 ml HNO_3 (Nitrite); 2 ml H_2SO_4 (Sulfate); All filtered unless otherwise stipulated. All on ice.

Time in: 100
Time out: 200
Weather: clear
Outside Temp: cool
Sampling point: faucet on well

Starting pH 7.35
10.6 ml. of 0.02N to 50 ml. of Sample
Ending pH 4.50

	Bottle 1	Bottle 2	Bottle 3	Bottle 4	Bottle 5	Bottle 6	Bottle 7	Total SUB-Samples
Time:	1310				1320			
pH:	7.23				7.23			
Temp:	18.1				18.0			
Eh:					+215.7			
Cond.	278				268			
other notes:								

	ml.	pH	ml.	pH	ml.	pH
	1330					
1	7.20	6.68	10.6	4.50		
2	17.9	6.50				
3		6.25				
4	265	6.06				
5		5.87				
6		5.78				
7		5.60				
8		5.39				
9		5.19				
10		4.91				

Water Level 177' LSD
Temperature (00010) Remark c 17.9
Specific Conductance (00094) 265 umhos/cm
pH (00400) 7.20
Eh (00090) +215.7 mv.
Phenol ALK (82244) 0 mg/l
Total ALK (39086) 212.0 mg/l
Carbonate (00452) 0 mg/l
Bicarbonate (00453) 4.24 mg/l
Total Cations(+) 259.7 mg/l
Total Anions (-) 175 / 345
Total Hardness (49570)
Dissolved Solids(70301)

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 5120
Date Received 1-4-70
Permit Size Maximum of Pump 6 in Yield 500 GPM

1. Land Owner Henry S. Miller Address Star Rt. Plainview Tex. Test Well
2. Well located ____ miles N, ____ miles S, ____ miles E, ____ miles W of town of Summerfield
3. County Castro Labor ____ League ____ Abstract No. ____
4. NW¼ (NE¼) SW¼ SE¼ Section 172 Block A-7 Survey ____
(MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ____ Spudder ____ Diameter of Well: ____ inches.
(MARK OUT ONE THAT DOES NOT APPLY)

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Surface			
4	19	Caliche			
19	40	Fine Sand Clay			
40	56	Fine Sand Clay			
56	86	Sand & Clay			
86	350	Red Bed			

RECEIVED FEB 4 1970

REMARKS: Replacement well

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Jackie Address Plainview Date Drilled 12-12 19 69

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT
(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16" in. Total casing length 350' ft.
7. Casing perforations: from 350 ft. to 350 ft. Size 4½" Number of rows 10
8. Pump Column: Size 6" in. Column shaft length 350 ft. Suction pipe size 6" in. Suction pipe length 6' ft.
9. Pump bowls: Size 12" Number of stages 8 Pump discharge pipe: Size 6" in.
10. Depth to water level 170 ft. Pump yield 600 GPM. Pumping level 230 ft.
11. Power Unit: Electric, Natural Gas, Butane, Other ____ Horsepower ____

Signature Jackie Address Box 31 Plainview
(LANDOWNER OR AGENT) (TITLE) (ADDRESS)
Test Well Dry
7610

LCRA
THE POWER TO MAKE A DIFFERENCE.

ENVIRONMENTAL LABORATORY SERVICES
FINAL ANALYSIS REPORT

LAB ID: 9607476 SAMPLE DESCRIPTION: Groundwater
FACILITY: TWDB SAMPLE DATE: 03/27/96
ACCT NO: TWDB-PHIL NORDSTROM SAMPLE TIME: 1330

DATE RECEIVED: 03/29/96
ORIGINAL DATE REPORTED: 04/18/96

LOCATION ID: 10-20-304

PARAMETER	RESULTS	UNITS	STORET #	PQL in WATER	DATE ANALYZED
Alkalinity, Phenol.	<1	mg/L	00415	1	04/10/96
Alkalinity, Total	232	mg/L	00410	1	04/10/96
Bromide	0.08	mg/L	71870	0.05	03/29/96
Chloride	14.6	mg/L	00941	0.5	03/29/96
Fluoride	2.51	mg/L	00950	0.05	03/29/96
Nit.,Nitrate/Nitrite	1.829	mg/L	00630	0.005	03/29/96
Nitrogen, Kjeldahl	0.236	mg/L	00623	0.010	04/11/96
Nitrogen, ammonia	<0.010	mg/L	00608	0.010	04/08/96
Silica	41.88	mg/L	00955	0.01	04/15/96
Sulfate	23.1	mg/L	00946	0.5	03/29/96
Aluminum, Dis. ICPMS	5.8	ug/L	01106	1.0	04/11/96
Antimony, Dis. ICPMS	<1.0	ug/L	01095	1.0	04/11/96
Arsenic, Diss. ICPMS	6.0	ug/L	01000	1.0	04/11/96
Barium, Diss. ICPMS	103.1	ug/L	01005	1.0	04/11/96
Beryllium, Dis ICPMS	<1.0	ug/L	01010	1.0	04/11/96
Boron, Diss. ICPMS	144.5	ug/L	01020	1.0	04/11/96
Calcium, Dissolved	29.32	mg/L	00915	0.02	04/01/96
Cobalt, Diss. ICPMS	<1.0	ug/L	01035	1.0	04/11/96
Copper, Diss. ICPMS	3.2	ug/L	01040	1.0	04/11/96
Iron, Diss. ICPMS	<5.0	ug/L	01046	4.0	04/01/96
Lead, Diss. ICPMS	<1.0	ug/L	01049	1.0	04/11/96
Lithium, Diss. ICPMS	72.8	ug/L	01130	1.0	04/11/96
Magnesium, Dissolved	24.66	mg/L	00925	0.05	04/01/96
Manganese, Dis ICPMS	<1.0	ug/L	01056	1.0	04/11/96
Molybdenum Dis ICPMS	2.5	ug/L	01060	1.0	04/11/96
Nickel, Diss. ICPMS	11.2	ug/L	01065	1.0	04/11/96
Potassium, Dissolved	4.35	mg/L	00935	1.00	04/01/96
Selenium, Dis. ICPMS	<5.0	ug/L	01145	4.0	04/11/96
Sodium, Dissolved	53.91	mg/L	00930	0.10	04/01/96
Strontium, Dis ICPMS	944.0	ug/L	01080	1.0	04/01/96
Thallium, Diss ICPMS	<1.0	ug/L	01057	1.0	04/11/96
Vanadium, Diss ICPMS	28.3	ug/L	01085	1.0	04/11/96

BUCK HENDERSON
LABORATORY MANAGER

This report shall not be reproduced, except in full, without the written approval of the laboratory management. The results in this report relate only to the items tested.

The mission of the Lower Colorado River Authority (LCRA) is to provide reliable, low-cost utility and public services in partnership with our customers and communities and to use our leadership role and environmental authority to ensure the protection and constructive use of the area's natural resources. The LCRA is a Texas conservation and reclamation district operating with no taxing authority.

P.O. BOX 220 AUSTIN, TX 78767-0220 (512) 473-3200 (512) 473-3298 FAX

MAP ID 90

TEXAS WATER DEVELOPMENT BOARD
WELL SCHEDULE

State Well Number - 10 20 304 Previous Well Number - County - Castro 069
River Basin - Red River - 02 Zone - 1 Latitude - 34 44 45 Longitude - 102 30 08 Source of Coords - 1

Owners Well No. ____ Location ____ 1/4, ____ 1/4, Section ____, Block ____, Survey ____

Owner - Near Summerfield Driller -

Address ____ Tenant/Oper. ____
Date Drilled - / / Depth - 350 ft. Source of Depth - R Altitude - 3,935 ft. Source of Alt. - H
Aquifer - 121OGLL OGALLALA FORMATION Well Type - W User -

WELL CONSTRUCTION Const. Method - ____ Casing Material - STEEL
Completion - ____ Screen Material - ____

LIFT DATA - Pump Mfr. ____ Type - TURBINE PUMP No. Stages ____

Bowls Diam. - ____ in. Setting - ____ ft. Column Diam. - ____ in.

Motor Mfr. - ____ Fuel or Power - NATURAL-GAS ENGINE Horsepower -

YIELD Flow- ____ GPM Pump- ____ GPM Meas.,Rept.,Est- ____ Date- ____

PERFORMANCE TEST Date- ____ Length of Test- ____ Production- ____ GPM

Static Level- ____ft. Pumping Level- ____ft. Drawdown- ____ft. Sp.Cap.- ____GPM/ft

QUALITY (Remarks- ____

WATER USE Primary- IRRIGATION Secondary- ____ Tertiary- ____

OTHER DATA AVAILAIBLE Water Levels- N Quality- Y Logs- Other Data-

WATER LEVELS Date- / / Measurement-
Date- / / Measurement-

Recorded By ____ Date Record Collected or Updated- 03/27/1996

Reporting Agency - TEXAS WATER DEVELOPMENT BOARD
REMARKS -

Casing or Blank Pipe (C)		
Well Screen or Slotted Zone (		
Open Hole (O)		
Cemented from ____ to ____		
Diam. (in.)	Setting(feet) From	To
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		

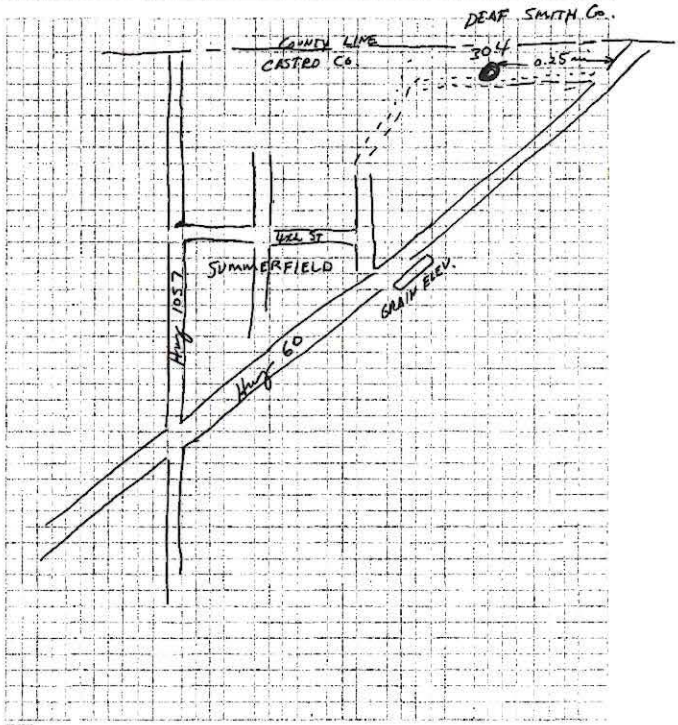
Aquifer - 121OGLL
Well No. - 10 20 304

Texas Water Development Board

By John ASENSIO Date _____ Division _____

Chkd. _____ Date _____ Well Number 10-20-304

County CASTRO



10-20-304
Well Number

New well

Texas Water Development Board
Well Schedule

State Well No. 10 20 304 Previous Well No. _____ County CASTRO 069

River Basin Red RIVER 02 Zone I Lat. 34 44 45 Long. 102 30 08 Quad. I

Owner's Well No. _____ Location ___ 1/4, ___ L.4. Section ___, Block ___, Survey ___

Owner SUMMERFIELD Driller _____

Address _____ Tenant/Oper. _____

Date Drilled _____ Depth 350 Source of Depth Datum R Altitude 3935 Source of Alt. Datum m

Aquifer 121 OGLL 121 OGLL Well Type W User _____

Well Construction Const. Method _____ Casing Material STEEL S

Completion _____ Screen Material _____

Lift Data Pump Mfr. _____ Type TURBINE T No. Stages _____

Bowls Diam. _____ in. Setting _____ ft. Column Diam. _____ in.

Motor Mfr. _____ Fuel or Power NAT GAS N Horsepower _____

Yield Flow ___ GPM Pump ___ GPM Meas., Rept., Est. ___ Date ___

Performance Test Date ___ Length of Test ___ Production ___ GPM

Static Level ___ ft. Pumping Level ___ ft. Drawdown ___ ft. Sp.Cap. ___ GPM/ft.

Quality (Remarks _____

Water Use Primary IRRIG I Secondary _____ Tertiary _____

Other Data Available Water Level N Water Quality Y Logs _____ Other Data _____

Water Levels Date _____ Meas. _____ Date _____ Meas. _____ Date _____ Meas. _____

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) Open Hole (O) Cemented from ___ to ___ Setting (feet)

	Diam. (in.)	From	To
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Recorded By John ASENSIO Date Record Collected or Updated 03 27 1996 (20 max) Reporting Agency 01

Remarks
1 _____
2 _____
3 _____
4 _____
5 _____
6 _____

Aquifer 121 OGLL
Well No. 10 20 304

TWDB Water Quality Field Data Sheet

New Well: State Well Number: 10-20-304
County: CASTRO
Aquifer Code: 121 OGLL
Aquifer Id: 21

Send Results To: Owner's Name: NEAR SUMMERFIELD
Lessee's Name: _____
Attention: _____
Mailing Address: _____

Well Number: 1 (Sm Tap) SO0-cl (glass) Acidify; 2 (Lrg Tap) 500ml (glass) Colors; 3 (Lrg Tap) 250ml (glass) Metals (Preserve w/ 1:1 HNO3); 4 (Lrg Tap) 40 ml VOA Atrazine

Water Level from LSD: VFW ft
Pump Code: 41
Temperature (Field): 17.0 C
Specific Conductance: 553 micromhos
pH: 7.47 units
Phenol Alkalinity (Field): 0 mg/L
Total Alkalinity (Field): 226.0 mg/L
Carbonate: 0 mg/L
Bicarbonate: 4.52 mg/L
Carbonate: 0 mg/L
Bicarbonate: 275.79 mg/L
Total Hardness: 180 mg/L
TDS: 360 mg/L
Sulfate: 141

Time In: 08:00
Time Out: 09:00
Pumping Since: On Average
Weather: Overcast
Outside Temperature: Cool
Sampling Point: Faucet on wellhead
Sample Time: 08:45
Well Use: IRRIGATION
LIF: Submersible Turbine
Power: ELEC
Latitude: 34 44 45
Longitude: 102 30 08
Elevation: 3935

Type of Sample: LC RA + TN ACC
Sample Number: 86
Date: 5-25-2000
Sampler(s): John ASENSIO

Thermistor: 7.47 Sample pH; 7.52 Meter pH

SD mL Sample
11.3 mL Acid added for Total
0 mL Acid added for Phenol

Daily Meter Calibration

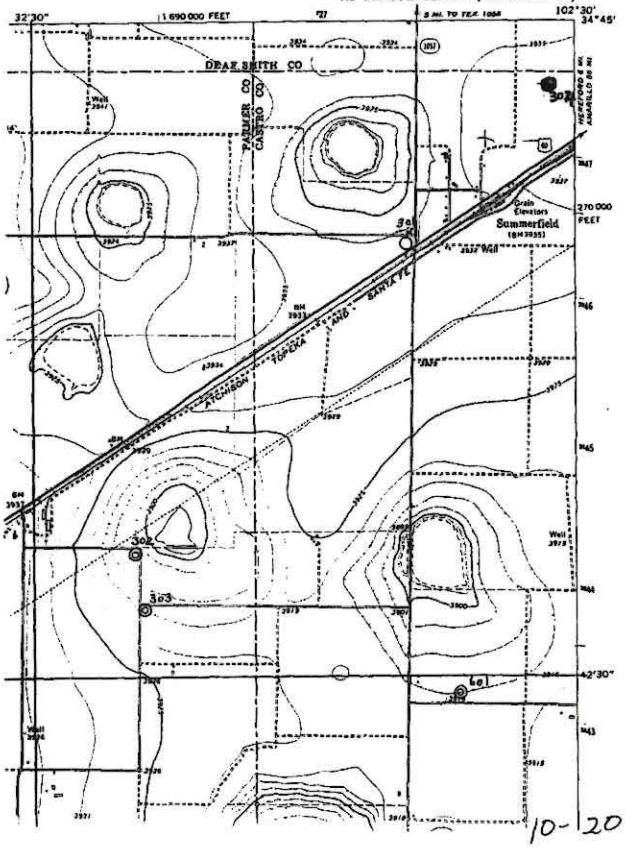
	Reading
pH 7	7.04
pH 4 or 10	10.05
Conductivity (mS/cm, micromhos) 500	505
1000	
2000	
5000	

Other notes: _____

	Temp	pH	Temperature	Conductivity
1	7.47	7.47	17.0	553
2	7.47	7.47	17.0	553
3	17.0	17.0	553	553
4	17.0	17.0	553	553

Hand-pump Started
Attempted Purge
Entered Review

SUMMERFIELD QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)



10-20-304

MAP ID 90

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-20-304

groundwater

GWDB Reports and Downloads | **Well Basic Details** | Scanned Documents

State Well Number	1020304	Well Type	Withdrawal of Water
County	Castro	Well Use	Irrigation
River Basin	Red	Water Level Observation	None
Groundwater Management Area	2	Water Quality Available	Yes
Regional Water Planning Area	O - Llano Estacado	Pump	Turbine
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.745834	Power Type	Electric Motor
Latitude (degrees minutes seconds)	34° 44' 45" N	Annular Seal Method	
Longitude (decimal degrees)	-102.502778	Surface Completion	
Longitude (degrees minutes seconds)	102° 30' 10" W	Owner	Near Summerfield
Coordinate Source	+/- 1 Second	Driller	
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3935	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)	350	Groundwater Conservation District Well Number	
Well Depth Source	Person Other than Owner	Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date		Previous State Well Number	
Drilling Method		Reporting Agency	Texas Water Development Board
Borehole Completion		Created Date	5/25/2000
		Last Update Date	5/31/2000

Remarks

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data ***Plugged Back - No Data***

Filter Pack - No Data ***Packers - No Data***

LCRA Environmental Laboratory Services Date: *30-Jun-00*

CLIENT: Texas Water Development Board — **Client Sample ID:** 10-20-304
Lab Order: 0005194 **COC ID:** 13532
Project: TWDB 9/99 thru 8/00 — **Collection Date:** 05/25/2000 8:45:00 AM
Lab ID: 0005194-11 — **Matrix:** GROUNDWATER

Analyses	Storet	Result	PQL	Qual	Units	DF	QC Batch	Date Analyzed
ICP METALS, DISSOLVED			E200.7					Analyst: BL
Calcium	00915	29.8	0.200		mg/L	1	R4471	06/06/2000
Magnesium	00925	24.5	0.200		mg/L	1	R4471	06/06/2000
Potassium	00935	4.46	0.200		mg/L	1	R4471	06/06/2000
Sodium	00930	53.0	0.700		mg/L	1	R4471	06/06/2000
ICP METALS, DISSOLVED			E200.7					Analyst: BL
Boron	01020	150	50.0		µg/L	1	R4472	06/06/2000
Iron	01046	ND	50.0		µg/L	1	R4472	06/06/2000
Strontium	01080	917	20.0		µg/L	1	R4472	06/06/2000
ICPMS METALS, DISSOLVED			E200.8					Analyst: PJM
Aluminum	01105	10.4	4.00		µg/L	1	R4581	06/15/2000
Antimony	01095	ND	1.00		µg/L	1	R4553	06/14/2000
Arsenic	01000	4.85	2.00		µg/L	1	R4553	06/14/2000
Barium	01005	97.5	1.00		µg/L	1	R4553	06/14/2000
Beryllium	01010	ND	1.00		µg/L	1	R4553	06/14/2000
Cadmium	01025	ND	1.00		µg/L	1	R4553	06/14/2000
Chromium	01030	4.51	1.00		µg/L	1	R4553	06/14/2000
Cobalt	01035	ND	1.00		µg/L	1	R4553	06/14/2000
Copper	01040	2.47	2.00	B	µg/L	1	R4553	06/14/2000
Lead	01049	ND	1.00		µg/L	1	R4553	06/14/2000
Lithium	01130	76.5	2.00		µg/L	1	R4553	06/14/2000
Manganese	01056	1.91	1.00		µg/L	1	R4553	06/14/2000
Molybdenum	01060	2.27	1.00		µg/L	1	R4553	06/14/2000
Nickel	01065	ND	1.00		µg/L	1	R4553	06/14/2000
Selenium	01145	ND	4.00		µg/L	1	R4553	06/14/2000
Thallium	01057	ND	1.00		µg/L	1	R4553	06/14/2000
Vanadium	01085	35.1	1.00		µg/L	1	R4553	06/14/2000
Zinc	01090	ND	4.00		µg/L	1	R4553	06/14/2000
ANIONS BY ION CHROMATOGRAPHY			E300					Analyst: AMJ
Bromide	71870	0.0600	0.0200		mg/L	1	R4403A	06/02/2000
Chloride	00941	17.4	1.50		mg/L	1	R4403A	06/02/2000
Fluoride	00950	2.27	0.0100		mg/L	1	R4403A	06/01/2000
Sulfate	00945	24.9	1.50		mg/L	1	R4403A	06/02/2000
ALKALINITY			M2320 B					Analyst: WR

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; B - Analyte detected in the associated Method Blank; * - Value exceeds Maximum Contaminant Level; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; E - Value above quantitation range

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-20-304

groundwater

Water Quality Analysis

Sample Date: 3/27/1996 **Sample Time:** 1330 **Sample Number:** 1 **Collection Entity:** Texas Water Development Board
Sampled Aquifer: Ogallala Formation
Analyzed Lab: LCRA - Lower Colorado River Authority **Reliability:** Sampled using TWDB protocols
Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39086	ALKALINITY FIELD DISSOLVED AS CACO3		212	mg/L	
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		232	mg/L	
01106	ALUMINUM, DISSOLVED (UG/L AS AL)		5.8	ug/L	
01095	ANTIMONY, DISSOLVED (UG/L AS SB)	<	1	ug/L	
01000	ARSENIC, DISSOLVED (UG/L AS AS)		6	ug/L	
01005	BARIUM, DISSOLVED (UG/L AS BA)		103.1	ug/L	
01010	BERYLLIUM, DISSOLVED (UG/L AS BE)	<	1	ug/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		283.12	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		144.5	ug/L	
71870	BROMIDE, DISSOLVED, (MG/L AS BR)		0.08	mg/L	
00915	CALCIUM, DISSOLVED (MG/L AS CA)		29.32	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		14.6	mg/L	
01035	COBALT, DISSOLVED (UG/L AS CO)	<	1	ug/L	
01040	COPPER, DISSOLVED (UG/L AS CU)		3.2	ug/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		2.51	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		175	mg/L	
01046	IRON, DISSOLVED (UG/L AS FE)	<	5	ug/L	
01049	LEAD, DISSOLVED (UG/L AS PB)	<	1	ug/L	
01130	LITHIUM, DISSOLVED (UG/L AS LI)		72.8	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		24.66	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)	<	1	ug/L	
01060	MOLYBDENUM, DISSOLVED (UG/L AS MO)		2.5	ug/L	
01065	NICKEL, DISSOLVED (UG/L AS NI)		11.2	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		8.1	mg/L	
00631	NITRITE PLUS NITRATE, DISSOLVED (MG/L AS N)		1.829	mg/L	
00608	NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)	<	0.01	mg/L	
00623	NITROGEN, KJELDAHL, DISSOLVED (MG/L AS N)		0.236	mg/L	
00090	OXIDATION REDUCTION POTENTIAL (ORP), MILLIVOLTS		215.7	MV	
00400	PH (STANDARD UNITS), FIELD		7.2	SU	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		4.35	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		1.15		
01145	SELENIUM, DISSOLVED (UG/L AS SE)	<	5	ug/L	
00955	SILICA, DISSOLVED (MG/L AS SIO2)		41.88	mg/L	

LCRA Environmental Laboratory Services Date: *30-Jun-00*

CLIENT: Texas Water Development Board — **Client Sample ID:** 10-20-304
Lab Order: 0005194 **COC ID:** 13532
Project: TWDB 9/99 thru 8/00 — **Collection Date:** 05/25/2000 8:45:00 AM
Lab ID: 0005194-11 — **Matrix:** GROUNDWATER

Analyses	Storet	Result	PQL	Qual	Units	DF	QC Batch	Date Analyzed
Alkalinity, Phenolphthalein	00415	ND	0		mg/L CaCO3	1	R4376	06/01/2000
Alkalinity, Total (As CaCO3)	00410	224	2.00		mg/L CaCO3	1	R4376	06/01/2000
CATION/ANION BALANCE			CALCULATION					Analyst: AMJ
Cation/Anion Balance	00000	Balanced	0		Date	1	R4499	06/13/2000
NITRATE AND NITRITE			E353.2					Analyst: CL
Nitrogen, Nitrate & Nitrite	00631	2.13	0.0250		mg/L	1	R4455B	06/07/2000
SILICA			E370.1					Analyst: CL
Silica, Dissolved (as SiO2)	00955	45.1	0.500		mg/L	1	R4400B	06/06/2000

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; B - Analyte detected in the associated Method Blank; * - Value exceeds Maximum Contaminant Level; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; E - Value above quantitation range

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00930	SODIUM, DISSOLVED (MG/L AS NA)		53	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		558	MICR	
01080	STRONTIUM, DISSOLVED (UG/L AS SR)		917	ug/L	
00946	SULFATE, DISSOLVED (MG/L AS SO4)		24	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		17	C	
01057	THALLIUM, DISSOLVED (UG/L AS TL)	<	1	ug/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		345	mg/L	
01085	VANADIUM, DISSOLVED (UG/L AS V)		25.1	ug/L	
01090	ZINC, DISSOLVED (UG/L AS ZN)	<	4	ug/L	

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		1.77		
00932	SODIUM, CALCULATED, PERCENT		40	PCT	
00930	SODIUM, DISSOLVED (MG/L AS NA)		53.91	mg/L	
01080	STRONTIUM, DISSOLVED (UG/L AS SR)		944	ug/L	
00946	SULFATE, DISSOLVED (MG/L AS SO4)		23.1	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		17.9	C	
01057	THALLIUM, DISSOLVED (UG/L AS TL)	<	1	ug/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		342	mg/L	
01085	VANADIUM, DISSOLVED (UG/L AS V)		28.3	ug/L	
01090	ZINC, DISSOLVED (UG/L AS ZN)		4	ug/L	

Water Quality Analysis

Sample Date: 5/25/2000 **Sample Time:** **Sample Number:** 1 **Collection Entity:** Texas Commission on Environmental Quality

Sampled Aquifer: Ogallala Formation

Analyzed Lab: Immunoassay at TCEQ **Reliability:** Sampled using TWDB protocols, but NOT filtered

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39033	ATRAZINE, TOTAL, UG/L		0.08	ug/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork.*

GWDB DISCLAIMER: Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (http://www.twdb.texas.gov/groundwater/data/gwdbrpt.asp) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rolls or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at GroundwaterData@twdb.texas.gov.

Water Quality Analysis

Sample Date: 5/25/2000 **Sample Time:** 0845 **Sample Number:** 1 **Collection Entity:** Texas Water Development Board

Sampled Aquifer: Ogallala Formation

Analyzed Lab: LCRA - Lower Colorado River Authority **Reliability:** Sampled using TWDB protocols

Collection Remarks: No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39086	ALKALINITY FIELD DISSOLVED AS CACO3		226	mg/L	
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		224	mg/L	
01106	ALUMINUM, DISSOLVED (UG/L AS AL)		10.4	ug/L	
01095	ANTIMONY, DISSOLVED (UG/L AS SB)	<	1	ug/L	
01000	ARSENIC, DISSOLVED (UG/L AS AS)		4.65	ug/L	
01005	BARIUM, DISSOLVED (UG/L AS BA)		97.5	ug/L	
01010	BERYLLIUM, DISSOLVED (UG/L AS BE)	<	1	ug/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		273.36	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		180	ug/L	
71870	BROMIDE, DISSOLVED, (MG/L AS BR)		0.06	mg/L	
01025	CADMIUM, DISSOLVED (UG/L AS CD)	<	1	ug/L	
00915	CALCIUM, DISSOLVED (MG/L AS CA)		29.6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		17.4	mg/L	
01030	CHROMIUM, DISSOLVED (UG/L AS CR)		4.51	ug/L	
01035	COBALT, DISSOLVED (UG/L AS CO)	<	1	ug/L	
01040	COPPER, DISSOLVED (UG/L AS CU)		2.47	ug/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		2.27	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		175	mg/L	
01046	IRON, DISSOLVED (UG/L AS FE)	<	50	ug/L	
01049	LEAD, DISSOLVED (UG/L AS PB)	<	1	ug/L	
01130	LITHIUM, DISSOLVED (UG/L AS LI)		76.5	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		24.5	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)		1.01	ug/L	
01060	MOLYBDENUM, DISSOLVED (UG/L AS MO)		2.27	ug/L	
01065	NICKEL, DISSOLVED (UG/L AS NI)	<	1	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		9.43	mg/L	
00631	NITRITE PLUS NITRATE, DISSOLVED (MG/L AS N)		2.13	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.47	SU	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		4.46	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0.99		
01145	SELENIUM, DISSOLVED (UG/L AS SE)	<	4	ug/L	
00955	SILICA, DISSOLVED (MG/L AS SIO2)		45.1	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		1.74		
00932	SODIUM, CALCULATED, PERCENT		39	PCT	

3

Deposit Check Form 2163.

FORM NO. 2009-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No.	2871
Date Received	2-20-68
Permit Size	Maximum of Pump ___ in. Yield ___ GPM

1. Land Owner George B. Miller Address 701 N. Main Fort Worth Texas
2. Well located ___ miles N, ___ miles S, ___ miles E, ___ miles W of the town of ___
3. County Castro Labor ___ League ___ Abstract No. ___
4. (NW¼) NE¼ SW¼ SE¼ (MARK OUT ONE THAT DO NOT APPLY) Section 172 Block M-7 Survey ___

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ___ Spudder (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 26 Inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Surface			
4	19	Caliche			
19	186	Dry Sand & Clay			
186	245	Tight Sand & Clay			
245	359	Sand & Clay			
359	368	Red Bed			

RECEIVED LUBBOCK, TEXAS FEB 29 1968 WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Bud Williams Address Box 177 Plainview Date Drilled 12-8-67

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new used gas line, or shop made. Diameter 16 in. Total casing length 368 ft.
7. Casing perforations from 198 ft. to 368 ft. Size 1/8 Number of rows 12
8. Pump Column: Size 8 in. Column, shaft length 340 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12 Number of stages 5 Pump discharge pipe: Size 8 in.
10. Depth to water level 166 ft. Pump yield 750 GPM. Pumping level 300 ft.
11. Power Unit: Electric, Natural Gas, Butane, Other ___ Horsepower ___

Signature George B. Miller (LANDOWNER OR AGENT) Owner (TITLE) 701 N. Main St. Fort Worth Tex 76106 (ADDRESS)

MAP ID 91

Castro COUNTY WELL NO. 2871

WELL LOCATION INFORMATION

Note: Circle applicable designator(s).

As result of field survey 6 (month), 72 (year) Well Number 2871

was determined to be located ___ miles N or S and

Adjoining ___ miles E or W of

the town of Summerfield on North

(NW 1/4) NE 1/4, SW 1/4, SE 1/4 Section or Tract 172 Block M-7

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

Location of well as determined from 7.5-minute Topographic Map Number 3402-314

535 Yards from (N) S

735 Yards from E (N)

(Section line), quarter section line, or labor line

Remarks: (OK — acceptable on permit; ND — not determined)

By CDM

High Plains Underground Water Conservation District No. 1

Date 10-16-72

FORM NO. 400 AWP

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

MAP ID 92

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No.	3126
Time of Filing	9:00 A.M.
Date Application Filed	10-6-69
Expiration Date	3-6-70
Date Recommended By County Committee	10-21-69
Size of Pump	6 in. Yield 360 GPM

I, George B. Miller (NAME OF LANDOWNER) 701 N. Main St. Fort Worth Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Castro

(NW¼) NE¼, SW¼, SE¼ Section 172 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

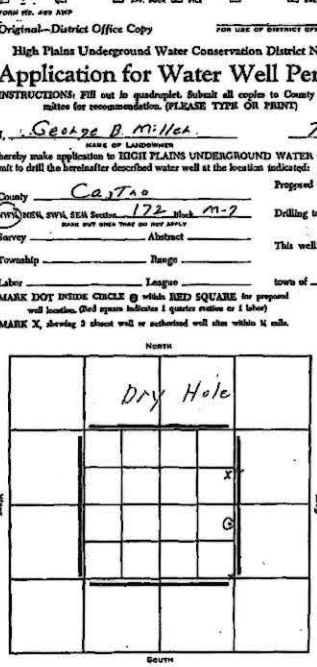
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about 3 weeks, 19___

This well will be located ___ miles N or S and ___ miles E or W of the town of IN Summerfield Tex (MARK OUT ONES THAT DO NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is 310 (MARK OUT ONE THAT DOES NOT APPLY) measured yards from (N) S and On Line (MARK OUT ONE THAT DOES NOT APPLY) measured yards from (W) E property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 310 measured yards from proposed well site. Owned by Owner Address ___

No. 2 310 measured yards from proposed well site. Owned by Owner Address ___

No. 3 ___ measured yards from proposed well site. Owned by ___ Address ___

RECEIVED NOV 6 1969

COMMENT

No other wells within 440 yds of this location

1 1/10 ins. ... 440 yds. ... Minimum for 10-in. well ... yield—more than 1000 G.P.M.
1 in. ... 400 yds. ... Minimum for 8-in. well ... yield—500 to 1000 G.P.M.
3/4 in. ... 300 yds. ... Minimum for 6-in. well ... yield—300 to 500 G.P.M.
5/8 in. ... 250 yds. ... Minimum for 5-in. well ... yield—225 to 300 G.P.M.
1/2 in. ... 200 yds. ... Minimum for 3 or 4-in. well ... yield—70 to 225 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by George B. Miller (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) 701 N. Main St. Fort Worth Tex (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Morgan Dinning 2. Dale Maxwell 3. Frank E. Hines

☒ Posted on County Map ☒ Deposit Received ☐ Refunded Check No. ___

AB AB

FORM NO. 400 AWP

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

Field Well No.	2871
Time of Filing	2:30
Date Application Filed	11-3-69
Expiration Date	3-30-70
Date Recommended By County Committee	11-21-69
Size of Pump	8 in. Yield 1000 GPM

I, George B. Miller (NAME OF LANDOWNER) 701 N. Main St. Fort Worth Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Castro

(NW¼), NE¼, SW¼, SE¼ of Section 172 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ___ Abstract ___

Township ___ Range ___

Labor ___ League ___

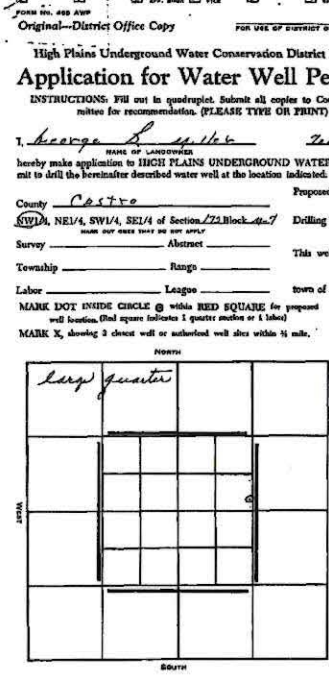
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about Soon, 19 67

This well will be located ___ miles N or S and ___ miles E or W of the town of Adjoining Summerfield, Tex (MARK OUT ONES THAT DO NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is 366 (MARK OUT ONE THAT DOES NOT APPLY) measured yards from (N) S and Off Line (MARK OUT ONE THAT DOES NOT APPLY) measured yards from (W) E property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ___ measured yards from proposed well site. Owned by ___ Address ___

No. 2 ___ measured yards from proposed well site. Owned by ___ Address ___

No. 3 ___ measured yards from proposed well site. Owned by ___ Address ___

RECEIVED LUBBOCK, TEXAS DEC 11 1967 WATER CONS. DIST. NO. 1

COMMENT

No other wells located within 440 yds of this location

1 1/10 ins. ... 440 yds. ... Minimum for 10-in. well ... yield—more than 1000 G.P.M.
1 in. ... 400 yds. ... Minimum for 8-in. well ... yield—500 to 1000 G.P.M.
3/4 in. ... 300 yds. ... Minimum for 6-in. well ... yield—300 to 500 G.P.M.
5/8 in. ... 250 yds. ... Minimum for 5-in. well ... yield—225 to 300 G.P.M.
1/2 in. ... 200 yds. ... Minimum for 3 or 4-in. well ... yield—70 to 225 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by George B. Miller (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) 701 N. Main St. Fort Worth Tex (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Morgan Dinning 2. Calvin Pitts 3. Dale Maxwell

☐ Posted on County Map ☐ Deposit Received ☐ Refunded Check No. ___

AB

Castro COUNTY WELL NO. 3130

WELL LOCATION INFORMATION

Note: Circle applicable designator(s).

As result of field survey 6 (month), 72 (year) Well Number 3130

was determined to be located ____ miles N or S and ____ miles E or W of the town of Summer field

In

NW 1/4, NE 1/4, SW 1/4, SE 1/4 Section 172 Block M-7 or Tract

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

Location of well as determined from 7.5-minute Topographic Map Number 3402-314

710 Yards from (N) S

1050 Yards from E (W)

(section line), quarter section line, or labor line

Remarks: (OK — acceptable on permit; ND — not determined)

By CDM

High Plains Underground Water Conservation District No. 1

Date 10-16-72

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3124
Date Received 12-5-69
Permit Size ____ Maximum of Pump 6 in. Yield 560 GPM

1. Land Owner George Miller Address 701 N. Main Fort Worth Texas

2. Well located ____ miles N, ____ miles S, ____ miles E, ____ miles W of town of Ex Summerfield

3. County Castro Labor ____ League ____ Abstract No. ____

4. (NW¼) NE¼ SW¼ SE¼ Section 172 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ____ Spudder ____ Diameter of Well: 18 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Surface			
4	19	Caliches			
19	200	Red Sand & Clay			
200	264	Red Sand & Clay			
264	338	Sand & Clay			
338	351	Red & Blue Clay			

RECEIVED DEC 12 1969

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Bud Williams Address Plainview Tex Date Drilled 10-17 1969

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT
(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, old line, or shop made. Diameter 16 in. Total casing length 351 ft.

7. Casing perforations from 221 ft. to 351 ft. Size 1/4 Number of rows 10

8. Pump Column size ____ in. Column shaft length ____ ft. Suction pipe size ____ in. Suction pipe length ____ ft.

9. Pump bowls Size ____ Number of stages ____ Pump discharge pipe: Size ____ in.

10. Depth to water level ____ ft. Pump yield ____ GPM. Pumping level: ____ ft.

11. Power Units: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature A. H. Rabon (Landowner or Agent) Agent (Title) Plainview Texas (Address)

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 3130
Time of Filing 9:30
Date Application Filed 12-5-69
Expiration Date 4-5-70
Date Recommended by 12-15-69
County Committee
Size of Pump 6 Maximum Yield 560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, George Miller (Name of Landowner) 701 West Fort Worth Tex (Landowner's Address)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Castro

(NW¼) (NE¼) SW¼, SE¼ Section 172 Block M-7

Survey ____ Abstract ____

Township ____ Range ____

Labor ____ League ____

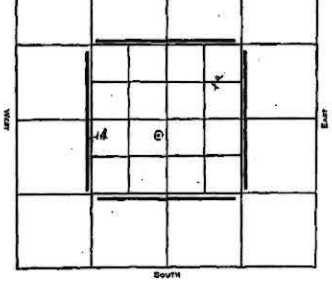
Proposed Use (Municipal-Industrial-Irrigation)

Drilling to start about Soon, 1969

This well will be located ____ miles N or S and ____ miles E or W of the town of Summer Field, Tex

MARK DOT INSIDE CIRCLE ⊕ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 310 measured yards from (N) S and 460 measured yards from (E) W property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following

No. 1 460 measured yards from proposed well site. Owned by Tom Abandoned Address ____

No. 2 432 measured yards from proposed well site. Owned by Clower Address ____

No. 3 ____ measured yards from proposed well site. Owned by ____ Address ____

RECEIVED FEB 4 1970

COMMENT

No other wells located within wide yds of this location!

1 1/16 in. 440 yds. Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in. 400 yds. Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in. 300 yds. Minimum for 6-in. well...yield—200 to 500 G.P.M.
5/8 in. 250 yds. Minimum for 5-in. well...yield—125 to 200 G.P.M.
1/2 in. 200 yds. Minimum for 3 or 4-in. well...yield—70 to 125 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by George Miller (Signature Landowner or Agent) (Title) (Address)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well sites.

1. Robert Maxwell 2. Margaret Dennis 3. Donald D. Wright

☐ Pinned on County Map ☐ Deposit Received ☐ Refunded Check No. ____

AB AB

High Plains Underground Water Conservation District No. 1.

Notification of abandonment of (Irrigation) Industrial well Municipal Permit # 3130 County Castro

I George L Miller do hereby certify that I have abandoned and plugged/capped ____ Well No. 3124.

Located in Castro County, on NW 1/4, NE 1/4, SW 1/4, SE 1/4 of Section 172 Block M-7.

Survey ____, Reason for abandonment Crooked Hole

Date 12-5, 1969.

RECEIVED FEB 4 1970

Signature of owner or agent

FORM NO. M-DEC-LW #1

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 2845
Date Received 2-20-68
Permit Size ____ Maximum of Pump 8 in. Yield 600 GPM

1. Land Owner George Miller Address 701 N Main Ft Worth, Texas
2. Well located ____ miles N, ____ miles S, ____ miles E, ____ miles W of the town of ____
3. County Castro Labor ____ League ____ Abstract No. ____
4. NW¼ NE¼ SW¼ SE¼ (MARK OUT THOSE THAT DO NOT APPLY) Section 172 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ____ Spudder ____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 16 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Surface			
4	19	Caliche			
19	186	Dry Sand + Clay			
186	246	Light Sand + Clay			
246	335	Fine Sand + Clay			
335	348	Sandy Clay			
348	362	Red Bed			

RECEIVED LUBBOCK, TEXAS FEB 20 1968 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Bud Gilkens Address Box 1972 Plainview Date Drilled 9-25 1967

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length 362 ft.
7. Casing perforations: from 202 ft. to 362 ft. Size 12 Number of rows 12
8. Pump Column: Size 6 in. Column, shaft length 340 ft. Section pipe size 6 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12 Number of stages 6 Pump discharge pipe: Size 8 in.
10. Depth to water level 170 ft. Pump yield 600 GPM. Pumping levels 220 ft.
11. Power Unit: Electric, Natural Gas, Butane, Other ____ Horsepower ____

Signature Geo. B. Miller (LANDOWNER OR AGENT) Owner (TITLE) 701 N. Main (ADDRESS) Ft Worth Tex 76106

[redacted]

FORM NO. M-DEC-LW

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 3120
Date Received 1-9-70
Permit Size ____ Maximum of Pump 6 in. Yield 500 GPM

1. Land Owner George B. Miller Address 701 N. Main Fort Worth, Texas
2. Well located ____ miles N, ____ miles S, ____ miles E, ____ miles W of town of Summerfield
3. County Castro Labor ____ League ____ Abstract No. ____
4. NW¼ NE¼ SW¼ SE¼ (MARK OUT THOSE THAT DO NOT APPLY) Section 172 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ____ Spudder ____ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: ____ inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Surface			
4	19	Caliche			
19	248	Dry Sand. Clay			
248	296	Fine Sand Clay			
296	356	Sand & Clay			
356	550	Red Bed			

RECEIVED FEB 4 1970

REMARKS: Replacement well

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Bud Gilkens Address Plainview Date Drilled 1/9/70 19 69

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16" in. Total casing length 350' ft.
7. Casing perforations: from 256 ft. to 350 ft. Size 1/8" Number of rows 10
8. Pump Column: Size 6" in. Column, shaft length 340' ft. Section pipe size 6" in. Suction pipe length 10' ft.
9. Pump bowls: Size 12" Number of stages 5 Pump discharge pipe: Size 6" in.
10. Depth to water level 180 ft. Pump yield 600 GPM. Pumping level 230 ft.
11. Power Unit: Electric, Natural Gas, Butane, Other ____ Horsepower ____

Signature Geo. B. Miller (LANDOWNER OR AGENT) Owner (TITLE) 701 N. Main (ADDRESS) Ft Worth Tex. 76106

[redacted]

MAP ID 93

Texas Water Development Board
Well Schedule

State Well Number: 10-20-305 Previous Well Number: County: Castro 69

Latitude (dms): 344432 Longitude (dms): 1023024 Coordinate Accuracy: Global Positioning System - GPS

River Basin: Red River GMA: 2 RWPA: O GCD: High Plains UWCD #1

Owner: Summerfield Mobile Manor (Norman Brown) Driller: Aquifer ID: Ogallala Aquifer Code: 121OGLL OGALLALA FORMATION

Depth (ft): 362 Elevation (ft): 3939

Source of Depth: Another Government Agency Source of Elevation: Digital Elevation Model -DEM

Date Drilled: 09/25/1967 Well Type: Withdrawal of Water

CASING INTERVALS: Casing/Blank Pipe (C) Well Screen/Slotted Zone (S) Open Hole (O)

Dia (in.)	Top (ft.)	Bottom (ft.)

Type of Lift: Power: Horsepower:

Construction: Completion:

Casing Material: Screen Material:

WATER USE

Primary: Unused Secondary: Tertiary:

Water Levels: None Water Quality: N

Other Data: Logs:

REMARKS: Owners well #1. PWS ID #0350006A. Formerly used as PS well.

Reporting Agency: TWC/TNRCC/TCEQ

Date Collected or Reported: 12/09/2010

Recorded by: D.R. Jones

Thursday, December 09, 2010 State Well Number: 10-20-305 New

FORM NO. M-DEC-LW

MAP ID 93

Original--District Office Copy

FOR USE OF DISTRICT OFFICE ONLY
Field Well No. 2845
Date & Time Application Filed 4:16 8-9-67
Date Recommended by County Committee 8-18-67
Permission Date 1-18-68
Size of Pump 8 Maximum Yield 1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, George B. Miller (NAME OF LANDOWNER) 701 N. Main - Ft Worth, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Castro Proposed Use (Municipal-Industrial-Irrigation)

NW¼ NE¼, SW¼ SE¼ of Section 172 Block M-7 (MARK OUT ONES THAT DO NOT APPLY) Drilling to start about Soon 1967

Survey ____ Abstract ____ This well will be located ____ miles N or S and ____ miles E or W of the

Township ____ Range ____

Labor ____ League ____ town of Adjoining Town of Summerfield

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ½ mile.

Location of proposed Well as submitted by applicant is as follows measured yards from (N or S) and as follows measured yards from (E or W) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ____ measured yards from proposed well site. Owned by ____ Address ____

No. 2 ____ measured yards from proposed well site. Owned by ____ Address ____

No. 3 ____ yards from proposed well site. Owned by ____ Address ____

RECEIVED LUBBOCK, TEXAS OCT 1 3 1967 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

COMMENT: In other words located within 1 Hole of this location!

1 1/10 ins. 440 yds. ....Minimum for 10-in. well ..yield--more than 1000 G.P.M.
1 in. ..... 400 yds. ....Minimum for 8-in. well ..yield--500 to 1000 G.P.M.
3/4 in. ..... 300 yds. ....Minimum for 6-in. well ..yield--300 to 500 G.P.M.
5/8 in. ..... 250 yds. ....Minimum for 5-in. well ..yield--185 to 300 G.P.M.
1/2 in. ..... 200 yds. Minimum for 3 or 4-in. well ..yield--70 to 185 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration immediately upon completion of this well and prior to the production of water.

This notice given by George B. Miller (SIGNATURE LANDOWNER OR AGENT) (TITLE) (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well sites.

1. Calvin Tilley 2. Frank L. Hess 3. Dale Moxley

☐ Plotted on County Map ☐ Deposit Received ☐ Refunded Check No. ____

SMITH PRINTING CO. - DIAL PO 3-8610

[redacted]

PUI-FI :

☒ 1-10 ☒ 133 ☒ NEW APP. BOOK ☒ ARC FILE ☒ R FILE ☐ MASTER SHEET ☐ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM NO 484 AWP

Original--District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	2298
Time of Filing	10:30
Date Application Filed	11-19-64
Expiration Date	3-19-~~64~~ 65
Date Recommended by County Committee	11-28-64
Size of Pump	6
Maximum Yield	560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Charlie Noland (NAME OF LANDOWNER) 204 N Texas Ave. Hereford Tex. (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Castro

Proposed Use (Municipal-Industrial-(Irrigation)) MARK OUT ONES THAT DO NOT APPLY

NW¼, NE¼, SW¼, (SE¼) of Section 172 Block M-7 MARK OUT ONES THAT DO NOT APPLY

Drilling to start about ASAP 1964

Survey ____ Abstract ____

This well will be located { ____ miles N or S and MARK OUT ONE THAT DOES NOT APPLY ½ miles E or (W) of the W.

Township ____ Range ____

Labor ____ League ____ town of Summerfield

MARK DOT INSIDE CIRCLE ◎ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH / WEST / EAST / SOUTH

Location of proposed Well as submitted by applicant is 200 measured yards from (N) S) N MARK OUT ONE THAT DOES NOT APPLY and 440 measured yards from (E) W) E property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ____ measured yards from proposed well site.

Owned by ____

Address ____

No. 2 ____ measured yards from proposed well site.

Owned by ____

Address ____

RECEIVED LUBBOCK, TEXAS DEC 1 0 1964 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

No. 3 ____ measured yards from proposed well site.

Owned by ____

Address ____

COMMENT

No other wells located within 440 yds of this location

1 1/10 in....440 yds.....Minimum for 10-in. well...yield--more than 1000 G.P.M.
1 in.......400 yds.....Minimum for 8-in. well...yield--500 to 1000 G.P.M.
3/4 in.....300 yds.....Minimum for 6-in. well...yield--300 to 500 G.P.M.
5/8 in.....250 yds.....Minimum for 5-in. well...yield--265 to 300 G.P.M.
1/2 in.....200 yds. Minimum for 3 or 4-in. well...yield--70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Charlie Noland (SIGNATURE LANDOWNER OR AGENT) TITLE ADDRESS

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Lester Dowell 2. Frank S. Wise 3. L. A. Maddox

Check here: ☑ when well is located on the County map. ☑ Deposit Received.

SMITH PRINTING CO. . DIAL PO 2-3616

FORM NO. 3000-AW

Original--District Office Copy

FOR USE OF COMMITTEEMEN	
Field Well No.	2298
Date Received	1-13-65
Permit Size of Pump	6
Maximum Yield	560 GPM

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

1. Land Owner Charlie Noland Address 204 N. Texas, Hereford
2. Well located ____ miles N, ____ miles S, ____ miles E, ½ miles W of the town of Summerfield Tx
3. County Castro Labor ____ League ____ Abstract No. ____
4. NW¼ NE¼ SW¼ (SE¼) MARK OUT THOSE THAT DO NOT APPLY Section 172 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ____ ~~Cable~~ MARK OUT ONE THAT DOES NOT APPLY Diameter of Well: 18 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	80	Caliche			
80	110	Clay & Sand			
110	170	Sand & Stone & Clay			
170	203	Medium Coarse Sand & Stone			
203	234	Sand & Stone			RECEIVED
234	295	Sand & Stone			LUBBOCK, TEXAS
295	320	Coarse Sand & Some Stone			FEB 5 1965
320	327	Red Bed			HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller West Texas Drilling, Inc. Address Box 926, Hereford, Tex. Date Drilled Jan. 9 19 65

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, ~~[struck through]~~ Diameter 16 in. Total casing length 327 ft. 100' 6 row 3/16; 50' 8 row 3/16; 4' Plank;
7. Casing perforations: from 173 ft. to 323 ft. Size ____ Number of rows ____
8. Pump Column: Size 8 in. Column, shaft length 280 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12" Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level 175 ft. Pump yield 1000 GPM. Pumping level: 207 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature BIGT Pump Co, Inc - Box 827 - HEREFORD, TEX. (LANDOWNER OR AGENT) TITLE ADDRESS

MAP ID 93

Texas Water Development Board

Texas Water Development Board (TWDB) Groundwater Database (GWDB) Well Information Report for State Well Number 10-20-305

groundwater

GWDB Reports and Downloads | **Well Basic Details** | Scanned Documents

State Well Number	1020305	Well Type	Withdrawal of Water
County	Castro	Well Use	Unused
River Basin	Red	Water Level Observation	None
Groundwater Management Area	2	Water Quality Available	No
Regional Water Planning Area	O - Llano Estacado	Pump	
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.742222	Power Type	
Latitude (degrees minutes seconds)	34° 44' 32" N	Annular Seal Method	
Longitude (decimal degrees)	-102.506667	Surface Completion	
Longitude (degrees minutes seconds)	102° 30' 24" W	Owner	Summerfield Mobile Manor (Norman Brown)
Coordinate Source	Global Positioning System - GPS	Driller	
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3939	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Digital Elevation Model -DEM	Texas Commission on Environmental Quality Source Id	G0350006A
Well Depth (feet below land surface)	362	Groundwater Conservation District Well Number	
Well Depth Source	Another Government Agency	Owner Well Number	1
Drilling Start Date		Other Well Number	
Drilling End Date	9/25/1967	Previous State Well Number	
Drilling Method		Reporting Agency	Texas Commission on Environmental Quality
Borehole Completion		Created Date	12/9/2010
		Last Update Date	12/9/2010

Remarks Owners well #1. PWS ID #0350006A. Formerly used as PS well

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data *Plugged Back - No Data*

Filter Pack - No Data *Packers - No Data*

[redacted] ☑ 133 ☑ NEW APP. BOOK ☑ ARC FILE ☑ R FILE ☒ MASTER SHEET ☒ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM NO. 448 AWP

MAP ID 94

Original--District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	2298A
Time of Filing Date Application Filed	9-22-65
Expiration Date	3-19-~~64~~
Date Recommended by County Committee	
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, CHARLIE NOLAND (NAME OF LANDOWNER) 204 N. TEXAS AVE., HEREFORD, TEXAS (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County CASTRO

Proposed Use (~~Municipal-Industrial~~-Irrigation) MARK OUT ONES THAT DO NOT APPLY

NW¼, NE¼, SW¼, SE¼ of Section 172 Block M-7 MARK OUT ONES THAT DO NOT APPLY

Drilling to start about ALREADY DRILLED 19 65

Survey ____ Abstract ____

This well will be located { ____ miles N or S and MARK OUT ONE THAT DOES NOT APPLY ½ miles ~~E~~ or W of the

Township ____ Range ____

Labor ____ League ____ town of SUMMERFIELD

MARK DOT INSIDE CIRCLE ◎ within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ¼ mile.

NORTH / WEST / EAST / SOUTH

Location of proposed Well as submitted by applicant is 200 measured yards from (N ~~S~~) MARK OUT ONE THAT DOES NOT APPLY and 440 measured yards from (E ~~W~~) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ____ measured yards from proposed well site.

Owned by ____

Address ____

No. 2 ____ measured yards from proposed well site.

Owned by ____

Address ____

RECEIVED LUBBOCK, TEXAS MAR 9 1966 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

No. 3 ____ measured yards from proposed well site.

Owned by ____

Address ____

COMMENT

NO OTHER WELLS WITHIN 440 YDS.

RECEIVED ~~LUBBOCK, TEXAS~~ SEP 27 1965 HI-PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

1 1/10 in....440 yds.....Minimum for 10-in. well...yield--more than 1000 G.P.M.
1 in.......400 yds.....Minimum for 8-in. well...yield--500 to 1000 G.P.M.
3/4 in.....300 yds.....Minimum for 6-in. well...yield--300 to 500 G.P.M.
5/8 in.....250 yds.....Minimum for 5-in. well...yield--265 to 300 G.P.M.
1/2 in.....200 yds. Minimum for 3 or 4-in. well...yield--70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Charlie Noland (SIGNATURE LANDOWNER OR AGENT) TITLE ADDRESS

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. Ray Riley 2. Donald J. Wright 3. Morgan Dennis

☑ Pinned on County Map ☑ Deposit Received ☐ Refunded Check No. ____

SMITH PRINTING CO. . DIAL PO 2-3616

RB MS. WB

February 18, 1966

Mr. Charlie Noland
204 N. Texas Ave.
Hereford, Texas

Dear Mr. Noland:

Please refer to our letter of September 22, 1965 sending you well permit No. 2298A for your signature and to have it approved by your county committee.

We need this amended permit to close our files and would appreciate your cooperation and immediate attention to this matter.

Sincerely,

Clifford Thompson
District Secretary

COPY

March 9, 1965

Mr. Charlie Noland
204 W. Texas Avenue
Hereford, Texas

Dear Mr. Noland:

Congratulations on the fine new irrigation well you recently completed on:

The SE/4 of Section 172,
Block M-7, Castro County,
Texas.

Your permit was issued for a 6-inch well and your log information states that you installed an 8-inch pump.

Your permit states that there are no wells within 440 yards of this well.

Would you please go by the Castro County office and amend your permit to an 8-inch in order that we might offer you the proper protection and benefits of the District?

Thanking you, I am,

Yours sincerely,

A. WAYNE WYATT,
Office Manager

AWW/gb

cc: Mr. E. B. Noble
City Hall
Dimmitt, Texas

MAP ID 96

FORM NO. 483 AWP

ORIGINAL—DISTRICT OFFICE COPY

High-Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 5545-A
Time of Filing 3:15 PM
Date Approved 3-20-78
Field
Exploration Date drilled
Date Recommended by County Committee 3-30-78
Pipe # 6 Minimum Yield 560 GPM

I, Ted McWhorter (NAME OF LANDOWNER) Route #5, Hereford, Texas 79045 (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NOW NEW ~~EXISTING~~ Section 152 Block M-7 (MARK BOTH ONES THAT DO NOT APPLY)

Survey _____ Abstract _____

Township _____ Range _____

Labor _____ League _____

Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

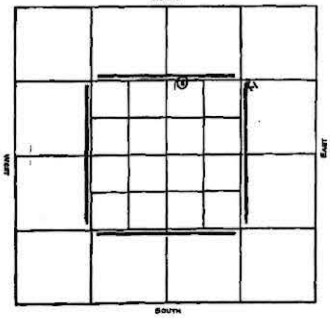
Drilling to start about drilled, 19__

This well will be located 3 miles ~~NORTH~~ S and 3 miles ~~EAST~~ W of the (MARK OUT ONE THAT DOES NOT APPLY)

town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ½ mile.



Location of proposed Well as submitted by applicant is 26 measured yards from (~~NORTH~~ SOUTH) and 343 measured yards from (~~E~~ W) quarter section line, or labor line. (MARK OUT ONE THAT DOES NOT APPLY)

Number three adjacent wells, or authorized well sites within ½ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 374 measured yards from proposed well site.
Owned by Chas. Holt #5452
Address Hereford, Texas

No. 2 _____ measured yards from proposed well site.
Owned by _____
Address _____

No. 3 _____ measured yards from proposed well site.
Owned by _____
Address _____

RECEIVED APR 3 1978

COMMENT

No other wells within 440 yds.
Amended to correct location of well.

1 1/2 in.	440 yds.	Minimum for 10-in. well	yield—more than 1000 G.P.M
1 in.	400 yds.	Minimum for 8-in. well	yield—560 to 1000 G.P.M.
3/4 in.	300 yds.	Minimum for 6-in. well	yield—350 to 560 G.P.M.
5/8 in.	250 yds.	Minimum for 5-in. well	yield—315 to 350 G.P.M.
1/2 in.	200 yds.	Minimum for 3 or 4-in. well	yield—70 to 315 G.P.M

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

Ted McWhorter
This notice given by: Ted McWhorter (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Route #5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

Paul E. Coleman — Samuel E. Higgins — Noland Coleman

☒ Placed on County Map ☒ Deposit Received ☐ Refunded
Check No. _____

September 22, 1965

Mr. Charlie Noland
204 N. Texas Ave.
Hereford, Texas

Dear Mr. Noland:

Enclosed please find an amended permit on a well which you have already drilled.

Since you applied for only a 6-inch well and installed an 8-inch pump in it, we therefore need you to sign this amended permit and return it to your Castro County (Dimmitt) Office for the signatures of your County Committeemen. Your well will then be legal for an 8-inch pump.

Your cooperation will be greatly appreciated, and your immediate attention to this matter.

Sincerely,

Jayne Cobb,
District Secretary

JCimw

COPY

FORM NO. 1234 AFF.
ORIGINAL – District Office – File
THIS FORM MUST BE FILLED IN WITH TYPEWRITER

SUPPLEMENT TO APPLICATION
DEAF SMITH County No. 5545

APPLICATION AND AFFIDAVIT

I, Billy F. Wall, Agent, HEREBY CERTIFY: that upon the granting of a permit by the High Plains Underground Water Conservation District No. 1, to use a 8-inch column pipe at a distance less than that required by the rules and regulations of said District, I will equip my pump with impellers so that it will not pump more than 560 gallons of water per minute when said pump is operated at a rate of 1750 revolutions per minute and do hereby agree that the maximum output for this pump shall at all times, not exceed 560 gallons per minute, which rate has been set out by the rules and regulations of said District as the ordinary pumping capacity for a 6-inch pump, for which I qualify under the minimum spacing regulations as set forth by the District and I do hereby agree to furnish said District with a certificate or statement from a reliable pump company or water engineer, certifying that said pump has been equipped as above set forth.

The above mentioned pump is to be placed in a well on property owned by:

Ted McWhorter
Route #5, Hereford, Texas 79045
ADDRESS

in Deaf Smith County, Texas in

Section: 152 Block: M-7 Survey:
or
Labor: League: Survey:

in the northeast quarter of the section or labor

at 20 measured yards from the North, line of this quarter or labor (CROSS OUT ONE)

and 288 measured yards from the East, line of this quarter or labor. (CROSS OUT ONE)

Billy F Wall
SIGNATURE (AGENT)
October 24, 1977
DATE

RECEIVED NOV 2 1977

I do solemnly swear or affirm that I have read the above and foregoing statements and the facts contained therein are true and correct and I hereby agree to abide by the foregoing statements.

Billy F Wall
SIGNATURE (AGENT)
October 24, 1977
DATE

THE STATE OF TEXAS } BEFORE ME B. F. CAIN, COUNTY CLERK
COUNTY OF DEAF SMITH } in and for Deaf Smith County, Texas

on this day personally appeared Billy F. Wall
known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THIS 24th day of October A.D., 19 77

(L.S.)

B. F. CAIN, COUNTY CLERK
DEAF SMITH COUNTY
HEREFORD, TEXAS 79045

Deputy
Deaf Smith COUNTY, TEXAS

FORM NO. 600 AMP

ORIGINAL—DISTRICT OFFICE COPY

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 5545
Time of Plug E 1:45 PM
Date Completed 3-8-77
Plug
Registration Date 7-8-77
Date Recommended by County Committee 8-16-77
Size of Pump 6 Maximum Yield 560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Ted McWhorter (NAME OF LANDOWNER) Route #5, Hereford, Texas 79045 (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

NE/4, NW/4, SW/4 (Section) 152 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey Abstract

Township Range

Labor League

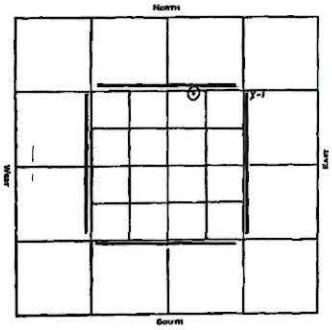
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about week 19

This well will be located 3 miles N/S and 3 miles E/W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 20 measured yards from (N S) (MARK OUT ONE THAT DOES NOT APPLY) and 288 measured yards from (E W) quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 NSR 305 measured yards from proposed well site.
Owned by Chas. N. Holt # 5452
Address Box 21, Hereford, Texas

No. 2 measured yards from proposed well site.
Owned by
Address

No. 3 measured yards from proposed well site.
Owned by
Address

RECEIVED MAR 23 1977

COMMENT

No other wells within 440 yds.

1 1/10 in.	440 yds.	Minimum for 10-in. well	yield—more than 1000 G.P.M
1 in.	400 yds.	Minimum for 8-in. well	yield—500 to 1000 G.P.M
3/4 in.	300 yds.	Minimum for 6-in. well	yield—350 to 500 G.P.M.
5/8 in.	250 yds.	Minimum for 5-in. well	yield—250 to 350 G.P.M.
1/2 in.	200 yds.	Minimum for 3 or 4-in. well	yield—70 to 255 G.P.M

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

Ted McWhorter
This notice given by: (SIGNATURE LANDOWNER OR AGENT) Owner (TITLE) Route #5, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

[X] Plotted on County Map [X] Deposit Received [ ] Refunded Check No.

HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1

Notification of abandonment of Irrigation / Industrial well / Municipal

New Application Number 6228
County DSCO

I Scott Hall Cattle do hereby certify that I have abandoned and plugged/capped Well No. 5545A.

Located in DSCO County, on NW 1/4, NE 1/4, SW 1/4, SE 1/4 of Section 152 Block M-7.

Survey . Reason for abandonment

no water

Date 2-5-97, 19.

Scott Hall
Signature of Owner or Agent

FORM NO. 600AW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN
Field Well No. 5545
Date Received 10-24-77
Permit Size Maximum of Pump 6 in. Yield 560 GPM

1. Land Owner Ted McWhorter Address Rt. 5 Hereford, Texas
2. Well located miles N, 3 miles S, miles E, 3 miles W of town of Hereford
3. County Deaf Smith Labor League Abstract No.
4. NE/4 NW/4 SW/4 Section 152 Block M-7 Survey (MARK OUT THOSE THAT DO NOT APPLY)

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 20 Inches.

From (Feet)	To (Feet)	Description of Formation Material	From (Feet)	To (Feet)	Description of Formation Material
0	3	Top Soil	270	300	Sand, Sandrock & Clay
3	30	Caliche	300	330	Sandrock & Clay
30	60	Caliche	330	336	Red Bed
60	90	Sand, Sandrock & Clay			
90	120	Sand & Sandrock			
120	150	Sand, Sandrock & Clay			
150	180	Sand & Sandrock			
180	210	Sand, Sandrock & Clay			
210	240	Sand, Sandrock & Clay			
240	270	Sand, Sandrock & Clay			

RECEIVED NOV 2 1977

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Wall & Scott Drilling Inc. Address P.O. Box 1815 Date Drilled 10-24 19 77

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length 338 ft.
7. Casing perforations: from 161 ft. to 328 ft. Size 1/8 Millslot & Johnson Screen Number of rows
8. Pump Column: Size 8 in. Column, shaft length 300 ft. Suction pipe size 6 in. Suction pipe length 2 ft.
9. Pump bowls: Size 12 Number of stages 5 Pump discharge pipe: Size 6 in.
10. Depth to water level 174 ft. Pump yield 550 GPM. Pumping level: ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other Horsepower 50

Signature (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

☑ ☑ ☑ NEW APP. BOOK ☑ ABC FILE ☑ X FILE ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ PINNED ☐ DEPTH PLOTTED

FORM No. 483 AWP

MAP ID 98

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	4264
Time of Filing	10:25 A.M.
Date Application Filed	5-1-69
Expiration Date	9-1-69
Date Recommended by County Committee	5/7/69
Size of Pump	6
Maximum Yield	560 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Hilrey Aven (NAME OF LANDOWNER) Box 827, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

N200A of E½

NW¼, NE¼, SW¼, SE¼ Section 174 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

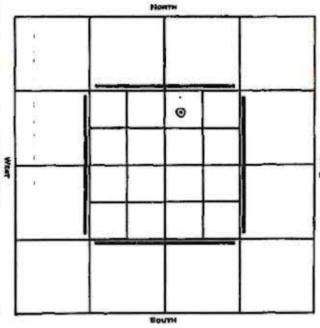
Proposed Use (Municipal-Industrial-Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about soon, 19__

This well will be located 3 miles N S and 5 miles E W of the town of Hereford (MARK OUT ONE THAT DOES NOT APPLY)

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 120 measured yards from (N)(S) and 343 measured yards from (E)(W) (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line. Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 ______ measured yards from proposed well site.
Owned by ______
Address ______

No. 2 ______ measured yards from proposed well site.
Owned by ______
Address ______ RECEIVED LUBBOCK, TEXAS MAY 9 1969 HIGH PLAINS UNDERGROUND WATER CONS. DIST. NO. 1

No. 3 ______ measured yards from proposed well site.
Owned by ______
Address ______

COMMENT

No wells within 440 yds.

1 1/10 ins...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds.....Minimum for 8-in. well...yield—500 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—300 to 500 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—265 to 300 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: Hilrey L. Aven (SIGNATURE LANDOWNER OR AGENT) Hilrey Aven Agent (TITLE) Box 827, Hereford, Texas (ADDRESS)

This permit recommended by County Committee subject to the rules for spacing from existing wells and/or authorized well site.

1. [signature] 2. Frank Zinser Jr. 3. [signature]

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded

Check No. ______

SMITH PRINTING CO. - DAIL PO 8-4319

AB

FORM NO. 8838-LW

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN

Field Well No.	4264
Date Received	7-9-69
Permit Size of Pump	6 in.
Maximum Yield	560 GPM

1. Land Owner Big Tex Cattle & Grain, Inc. ~~[struck out]~~ Address Box 2058
2. Well located x3 miles N, 3 miles S, 3/4 miles E, 5 miles W of town of Hereford ~~[struck out]~~
3. County Deaf Smith Labor ______ League ______ Abstract No. ______
4. NW¼ NE¼ SW¼ SE¼ (MARK OUT THOSE THAT DO NOT APPLY) N200A of E½ Section 174 Block M-7 Survey ______

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X Spudder ______ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 24 inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil			
4	38	Caliche & Rock			
38	90	Brown Sand & Clay			
90	120	Loose Sand			
120	150	Sand & Some Shale	Perforations:		
150	180	" & Clay	171'	322'	32 Row - 1/8" Mill Slot
180	270	Fine White Sand	322'	334'	Blank
270	290	Sand			
290	300	Clay & Fine Sand			RECEIVED JUL 11 1969
300	350	Red Bed			

REMARKS:

Reamed to 334' - Gravel Pack Well

(Sum. Pump)

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Big T - Drill Div. Address Hereford, Texas Date Drilled May 27, 1969

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, ~~used~~, gas line, ~~[struck out]~~. Diameter 16 in. Total casing length 334 ft.
7. Casing perforations: from As Noted ft. to ______ ft. Size ______ Number of rows ______
8. Pump Column: Size 4 in. Column, shaft length 210 ft. Suction pipe size -- in. Suction pipe length -- ft.
9. Pump bowls: Size 7" Number of stages 3 Pump discharge pipe: Size 4 in.
10. Depth to water level 136 ft. Pump yield 200 GPM. Pumping level: 156 ft.
11. Power Unit: Electrical, ~~Natural~~ Gas, ~~Butane~~, Other ______ Horsepower 20 H.P.

Signature Big T Pump Company, Inc. -- Box 827 -- Hereford, Texas 79045 (agent) (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

☑ DATE ☑ 123 ☑ NEW APP BOOK ☑ ABC FILE ☐ X-FILE ☑ WELLS COMPLETED FILE ☐ MASTER SHEET ☐ PINNED ON COUNTY MAP ☐ DEPOSIT REFUNDED ☐ DEPOSIT FORFEITED CK # ______

MAP ID 97

County	DSCO
Permit No.	6228
Time Of Filing	230 PM
Date Application Filed	2-5-97
Expiration Date	6-5-97
Size Of Pump	4
Maximum Yield	265 GPM

ORIGINAL - DISTRICT OFFICE

High Plains Underground Water Conservation District No. 1

Application For Water Well Permit

(PLEASE TYPE OR PRINT)

I, Scott Hall Cattle (NAME OF LANDOWNER) xxxx 1900 Plains Hereford 79045 (LANDOWNER'S ADDRESS)

hereby make an application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill a water well at the site described below:

County Deaf Smith

~~NW 1/4~~ NE 1/4 ~~SW 1/4~~ ~~SE 1/4~~

Block M 7 Section 152

Survey ______ Abstract ______

Township ______ Range ______

Labor ______ League ______

Other ______

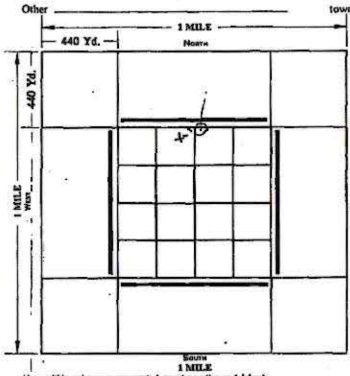
WELL TO BE DRILLED

Municipal - Industrial - Irrigation- Domestic

Other: ______

Drilling will start on or about One Week

Tract located ______ N, 3 S, ______ E, 3 W miles, of the town of Hereford



26 yards ~~N~~ or S of quarter section line or labor line and 403 yards ~~E~~ or W of quarter section line or labor line.

Distance in yards to wells within 440 yards (1/4 mile) (maximum of 3) of proposed site. Number to correspond with grid.

X1 60 measured yards from proposed well site. Permit Number 5545A to be abandon Owned By Applicant

X2 ______ measured yards from proposed well site. Permit Number ______ Owned By ______

X3 ______ measured yards from proposed well site. Permit Number ______ Owned By ______

COMMENT/EXPLANATION

No other wells 400 yds

(Area within red square represents 1 quarter section or 1 labor.)

Within the red square, make a dot inside a circle ⊙ to show the location of the proposed well site. Make an "X" to show the approximate location for each of the three closest wells or authorized well sites within 1/4 mile of the proposed well site.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site other than the minimum spacing requirements and that I will furnish the District the complete well registration and log immediately upon completion of this well and prior to the production of water for the site identified above.

I further agree not to allow irrigation tailwater to escape from land on which this well is used for irrigation nor to convey water from this well in an open, unlined ditch. *I understand that if I violate any of this agreement, the Board of Directors of the District may order that I may no longer use the well for any purpose until the problem is permanently resolved.*

This notice is given by: Scott Hall (SIGNATURE OF LANDOWNER OR AGENT) 1900 Plains Hereford 79045 (ADDRESS) (TELEPHONE)

This permit is recommended for approval by County Committee, subject to Water District rules.

1 Harvey Milton 2 T. J. Clark 3 Tommy [signature]

Date recommended for approval 2-6-97

REV 3/96 2,000

D-6

ORIGINAL - DISTRICT OFFICE

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

County	DSCO
Permit No.	6228
Date Received	4-15-97
Pump Size	4
Maximum Yield	265 GPM

Land Owner ~~Beef Too~~ Hall Co Scott Hall Address 1900 Plains

Well located 3 miles N, ___ miles S, ___ miles E, 3 miles W of the town of Hereford

County Deaf Smith Labor ______ League ______ Abstract No. ______

~~NW¼~~ NE¼ ~~SW¼ SE¼~~ (Circle One) Section 152 Block M 7 Survey ______

Township ______ Range ______

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ✓, Reverse Rotary ___, Air ___, Spudder ___, Other ___, Diameter of Well 12¼ inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
1	4	Top Soil			
4	45	Chaliche + Clay			
45	50	Chalice Rock			
50	130	Dry Sand Rock Ledges			
130	200	Rock Ledges + Sand			
200	240	Sand + Clay			
240	260	Clay + Rock Ledges + Sand			
260	310	sand + sandrock ledges + clay strips			
310	320	Clay + Sand			
320	335	Clay + Red Bed			

Gravel packed: Yes ✓ No ___ Gravel Size ¼" Quantity in yards [illegible]

Cementing record: filled with cement between casing and wall of well from 16 ft feet to surface, including pump base.

Casing: Steel ✓, Plastic ___, Other ___ Diameter ___ in. Total casing length including screen or perforated casing 340 ft.

Manufactured well screen from 240 ft. to 340 ft. Size ⅛" Number of rows 36 Per ft

Casing perforated from ______ ft. to ______ ft. Size ______ Number of rows ______

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller Robert Lee Connally (SIGNATURE) Address Rt 3 Box 236 Date drilled 2-11-1997

Texas License No. 1047 WI

DESCRIPTION OF PERMANENTLY INSTALLED PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

Discharge pipe size 3 in. Pump Column: Size 3 in. Length 328 ft. Suction pipe length None ft.

Pump bowls: Size 6 Number of stages 7 Pump yield 180 GPM Estimated ___ Measured X

Depth to static water level 243 Ft. Estimated ______ Measured X Pumping level: 320 ft.

Power Unit: Electrical X Natural Gas ______ Other ______ Horsepower 20

Type of Pump: Turbine ___ Submersible X Other ______ Well chlorinated after pump installed NO (yes/no)

I hereby certify that this well was equipped as stated above.

Pump Installer Wayne Weigel (SIGNATURE) Address 211 Ave J Hereford Date 4-14-97

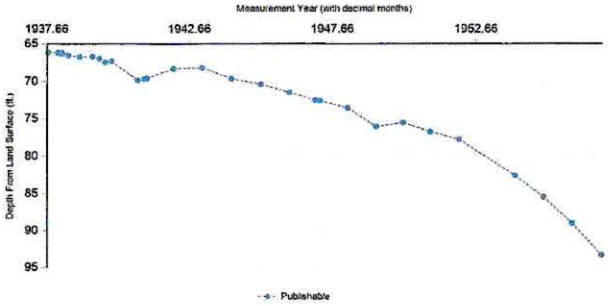
If this is a replacement well, I certify that the abandoned well is properly capped or filled in accordance with state law and the rules of the district.

To the best of my knowledge and belief, all above information is true and accurate.

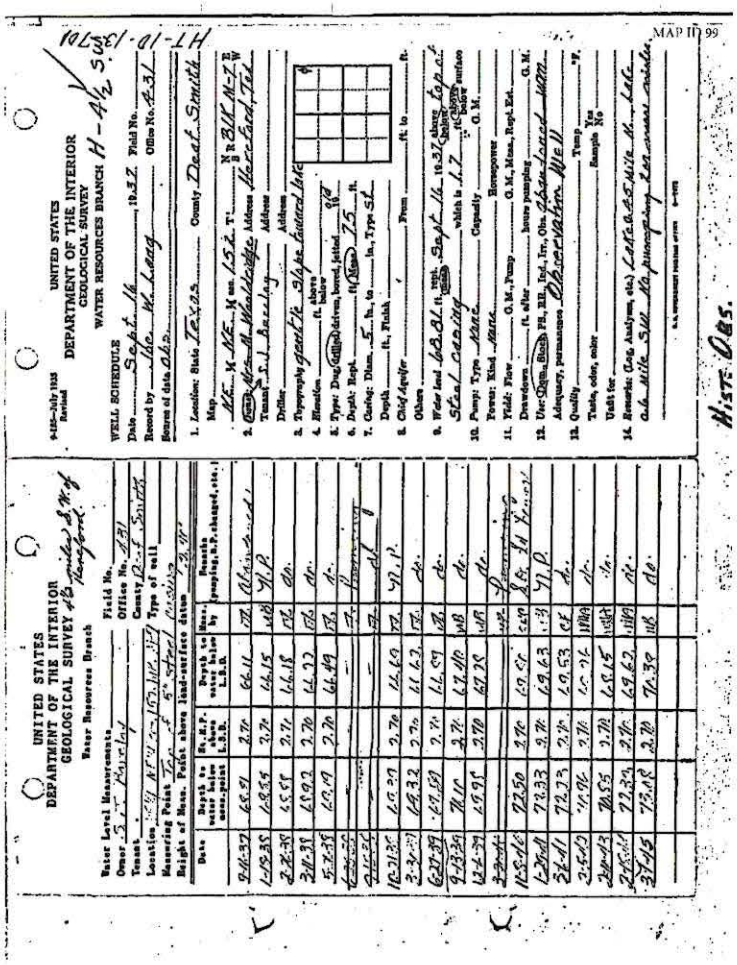
Landowner Scott Hall - Hall Co (SIGNATURE) Date 3/25/97

REV 3/96/1,000

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in () indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/16/1937		66.11		3805.89	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/18/1938		66.15	0.04	3805.85	1	Other or Source of Measurement Unknown	Unknown	1	
P	2/26/1938		66.18	0.03	3805.82	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/11/1938		66.22	0.04	3805.78	1	Other or Source of Measurement Unknown	Unknown	1	
P	5/26/1938		66.49	0.27	3805.51	1	Other or Source of Measurement Unknown	Unknown	1	
P	10/21/1938		66.69	0.20	3805.31	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/30/1939		66.62	(0.07)	3805.38	1	Other or Source of Measurement Unknown	Unknown	1	
P	6/27/1939		66.89	0.27	3805.11	1	Other or Source of Measurement Unknown	Unknown	1	
P	9/13/1939		67.4	0.51	3804.6	1	Other or Source of Measurement Unknown	Unknown	1	
P	12/6/1939		67.28	(0.12)	3804.72	1	Other or Source of Measurement Unknown	Unknown	1	
P	11/8/1940		69.8	2.52	3802.2	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/28/1941		69.63	(0.17)	3802.37	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/6/1941		69.53	(0.10)	3802.47	1	Other or Source of Measurement Unknown	Unknown	1	
P	2/5/1942		68.26	(1.27)	3803.74	1	Other or Source of Measurement Unknown	Unknown	1	



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in () indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	2/10/1943		68.15	(0.11)	3803.85	1	Other or Source of Measurement Unknown	Unknown	1	
P	2/18/1944		69.62	1.47	3802.38	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/1/1945		70.38	0.76	3801.62	1	Other or Source of Measurement Unknown	Unknown	1	
P	2/26/1946		71.45	1.07	3800.55	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/17/1947		72.54	1.09	3799.46	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/19/1947		72.6	0.06	3799.4	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/9/1948		73.58	0.98	3798.42	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/10/1949		76.07	2.49	3795.93	1	Other or Source of Measurement Unknown	Unknown	1	
P	2/15/1950		75.53	(0.54)	3796.47	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/25/1951		76.78	1.25	3795.22	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/23/1952		77.75	0.97	3794.25	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/6/1954		82.59	4.84	3789.41	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/3/1955		85.5	2.91	3786.5	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/4/1956		89.01	3.51	3782.99	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/17/1957		93.34	4.33	3778.66	1	Other or Source of Measurement Unknown	Unknown	1	

Code Descriptions

Status Code	Status Description	Remark ID	Remark Description
P	Publishable	1	Accurately reflect water-level conditions

GWDB Reports and Downloads | **Well Basic Details** | Scanned Documents

State Well Number	10-13-701	Well Type	Withdrawal of Water
County	Deaf Smith	Well Use	Unused
River Basin	Red	Water Level Observation	Historical Observation Well
Groundwater Management Area	2	Water Quality Available	No
Regional Water Planning Area	O - Llano Estacado	Pump	None
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.777222	Power Type	
Latitude (degrees minutes seconds)	34° 46' 36" N	Annular Seal Method	
Longitude (decimal degrees)	-102.483334	Surface Completion	
Longitude (degrees minutes seconds)	102° 27' 48" W	Owner	S. J. Barclay
Coordinate Source	+/- 5 Seconds	Driller	
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3872	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)		Groundwater Conservation District Well Number	
Well Depth Source		Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date		Previous State Well Number	
Drilling Method		Reporting Agency	Groundwater Conservation District
Borehole Completion		Created Date	3/5/1996
		Last Update Date	3/5/1996

Remarks

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
5	Blank					

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data | **Plugged Back - No Data**

Filter Pack - No Data | **Packers - No Data**

MAP ID 101

STATE OF TEXAS WELL REPORT for Tracking #59189

Owner:	Tejas Industries	Owner Well #:	TH 3-05
Address:	P.O. Box 2257 Hereford, TX 79045	Grid #:	10-13-7
Well Location:	No Data	Latitude:	34° 45' 27" N
		Longitude:	102° 27' 43" W
Well County:	Deaf Smith	Elevation:	3882 ft. above sea level
Type of Work:	New Well	Proposed Use:	Test Well

Drilling Start Date: 4/28/2005 Drilling End Date: 4/28/2005

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	4.75	0	300

Drilling Method: Mud (Hydraulic) Rotary

Borehole Completion: Unknown

Annular Seal Data: No Data

Seal Method: Not Applicable

Sealed By: Unknown

Distance to Property Line (ft.): No Data

Distance to Septic Field or other concentrated contamination (ft.): 2560

Distance to Septic Tank (ft.): No Data

Method of Verification: Estimated

Surface Completion: Unknown

Water Level: No Data

Packers: No Data

Type of Pump: No Data

Well Tests: No Test Data Specified

Plug Information:	Description (number of sacks & material)	Top Depth (ft.)	Bottom Depth (ft.)
	0 - 10 1 bag cement		
	10 - 280 Natural fill		

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: L. T. Drilling Company
P.O. Box 784
Sunray, TX 79086

Driller Name: Lester James Taylor License Number: 1849

Apprentice Name: Diego Solano Apprentice Number: WWDAPP00000621

Comments: No Data

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	7	Surface top soil brown clay
7	35	Sand w/sandstone strips
35	42	Caliche w/rock strips
42	220	Sand w/minor clay strips
220	240	Fine to med fairly loose sand
240	280	Med fine fairly loose sand
280	300	Brown & red shale

Casing: BLANK PIPE & WELL SCREEN DATA

Dia (in.)	New/Used	Type	Setting From/To (ft.)
No Data			

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

MAP ID 100

STATE OF TEXAS WELL REPORT for Tracking #143127

Owner:	Kevin Sonders	Owner Well #:	No Data
Address:	Rt. 2 Hereford, TX 79045	Grid #:	10-13-7
Well Location:	West Highway 60 Hereford, TX 79045	Latitude:	34° 46' 29" N
		Longitude:	102° 27' 44" W
Well County:	Deaf Smith	Elevation:	No Data
Type of Work:	New Well	Proposed Use:	Domestic

Drilling Start Date: 7/12/2004 Drilling End Date: 7/13/2004

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	10	0	355

Drilling Method: Mud (Hydraulic) Rotary

Borehole Completion: Filter Packed

Filter Pack Intervals:	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
	20	355	Gravel	1/4"

Annular Seal Data:	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
	0	20	1 yd

Seal Method: Poured

Sealed By: Driller

Distance to Property Line (ft.): 50+

Distance to Septic Field or other concentrated contamination (ft.): 150+

Distance to Septic Tank (ft.): No Data

Method of Verification: Tape

Surface Completion: Pitless Adapter Used

Water Level: 241 ft. below land surface on 2004-07-14 Measurement Method: Unknown

Packers: No Data

Type of Pump: Submersible Pump Depth (ft.): 330

Well Tests: Pump Yield: 17 GPM

Water Quality:	Strata Depth (ft.)	Water Type
	106	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: Campbell Drilling
Rt. 3, Box 736
Hereford, TX 79045

Driller Name: Robert Lee Campbell License Number: 1047

Comments: $dfs

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
1	4	Top Soil
4	25	Caliche
25	30	Rock
30	40	Clay and Rock
40	250	Dry Sand,Cay, and Rock Ledges
250	330	Yellow Sand and Sand Rock
330	353	Clay Sand and Gravel
353	355	Red Bed

Casing: BLANK PIPE & WELL SCREEN DATA

Dia (in.)	New/Used	Type	Setting From/To (ft.)
5	New	Plastic	1 355 200
5	New	Perforated	.035,.050 290 355 200

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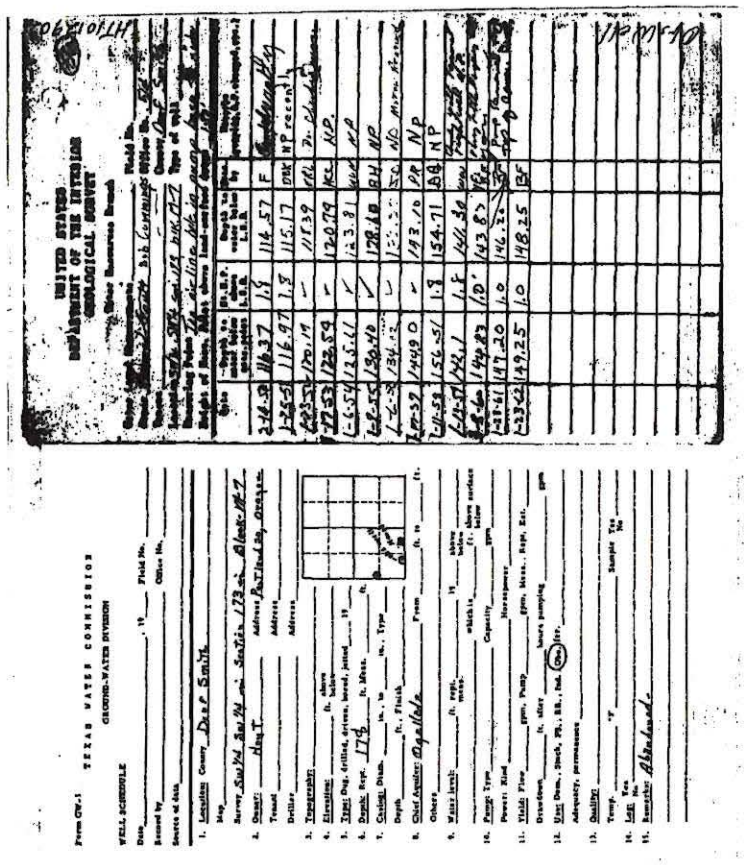
Please include the report's Tracking Number on your written request.

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



MAP ID 103

MAP ID 102

STATE OF TEXAS WELL REPORT for Tracking #273297

Owner:	Tejas Industries	Owner Well #:	MW-3
Address:	3261 Tierra Blanca Road Hereford, TX 79045	Grid #:	10-13-7
Well Location:	3261 Tierra Blanca Road Hereford, TX 79045	Latitude:	34° 45' 06" N
		Longitude:	102° 28' 12" W
Well County:	Deaf Smith	Elevation:	3942 ft. above sea level
Type of Work:	New Well	Proposed Use:	Monitor

Drilling Start Date: **11/29/2011** Drilling End Date: **12/1/2011**

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	8.5	0	263

Drilling Method: **Air Rotary**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
	195	263	Gravel	20/40

Annular Seal Data:	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
	0	2	1 Cement
	2	195	15 Bentonite

Seal Method: **Postive Placement**

Sealed By: **Charles Johnson**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

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

Method of Verification: **No Data**

Surface Completion: **Surface Sleeve Installed**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

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

Chemical Analysis Made: **Unknown**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **Unknown**

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: **Peterson Drilling & Testing, Inc.**
P.O. Box 30699
Amarillo, TX 79120

Driller Name: **Roy Wedell** License Number: **54243**

Apprentice Name: **Charles Johnson** Apprentice Number: **57653**

Comments: **No Data**

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL

From (ft)	To (ft)	Description
0	30	Brown Sandy Clay
30	40	Caliche with Rock Strips
40	240	Sand with Minor Clay Strip
240	263	Fine Fairly Loose Sand

Casing: BLANK PIPE & WELL SCREEN DATA

Dia. (in.)	New/Used	Type	Setting From/To (ft.)
4"	New	PVC Casing	+3-200.5 (Sch 40)
4"	New	PVC Screen	200.5-250.5 (Sch 40 0.020)
4"	New	PVC Casing	250.5-255.5 (Sch 40)

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

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

WATER-LEVEL MEASUREMENTS
AS OF 08-31-66

OWNER— LOCATION—

MEASURING POINT DESCRIPTION—

STATE WELL NUMBER HT-10-12-902 LAND SURFACE DATUM ELEVATION
DEPTH OF WELL 178 COMPLETION INTERVAL
MA--MEASURING AGENCY MM--METHOD OF MEASUREMENT R--REMARKS

CURRENT DATE MO-D-YR	CURRENT MEAS.	PREV DATE MO-DY-YR	PREV. MEAS.	RISE OR DECLINE	MM AM	RUSE	REMARKS
09-16-37	104.55				99	01	
03-29-38	103.62	09-16-37	104.55	•000.93	99	01	
06-10-38	105.99	03-29-38	103.62	002.37	99	01	
06-25-38	105.08	06-10-38	105.99	•000.91	99	01	
09-15-38	104.77	06-25-38	105.08	•000.31	99	01	
03-30-39	104.02	09-15-38	104.77	•000.75	99	01	
06-27-39	104.32	03-30-39	104.02	000.30	99	01	
01-29-41	106.15	06-27-39	104.32	001.83	99	01	
03-07-41	105.89	01-29-41	106.15	•000.26	99	01	
02-10-43	105.20	03-07-41	105.89	•000.69	99	01	
02-18-44	105.78	02-10-43	105.20	000.58	99	01	
03-01-45	106.00	02-18-44	105.78	000.22	99	01	
02-26-46	106.30	03-01-45	106.00	000.30	99	01	
03-19-47	108.04	02-26-46	106.30	001.74	99	01	
03-09-48	109.04	03-19-47	108.04	001.00	99	01	
03-10-49	111.28	03-09-48	109.04	002.24	99	01	
02-14-50	114.57	03-10-49	111.28	003.29	99	01	
01-25-51	115.17	02-14-50	114.57	000.60	99	01	

CARD 2 YR REC BEGINS 37 LEAVE BLANK AQUIFER 136 COUNTY 59 WATERSHED 02

OLD WELL NUMBER 514 COUNTY--DEAF SMITH CURRENT 10-12-902

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-12-902

groundwater

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in () indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	3/9/1948		109.04	1.00	3822.96	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/10/1949		111.28	2.24	3820.72	1	Other or Source of Measurement Unknown	Unknown	1	
P	2/14/1950		114.57	3.29	3817.43	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/25/1951		115.17	0.60	3816.83	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/23/1952		118.39	3.22	3813.61	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/17/1953		120.74	2.35	3811.26	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/6/1954		123.81	3.07	3808.19	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/8/1955		128.6	4.79	3803.4	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/6/1956		132.22	3.62	3799.78	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/17/1957		143.1	10.88	3788.9	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/11/1958		154.71	11.61	3777.29	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/13/1959		141.3	(13.41)	3790.7	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/8/1960		143.83	2.53	3788.17	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/23/1961		146.2	2.37	3785.8	1	Groundwater Conservation District	Steel Tape		
P	1/23/1962		148.25	2.05	3783.75	1	Groundwater Conservation District	Steel Tape		
P	1/5/1963		152.18	3.93	3779.82	1	Groundwater Conservation District	Steel Tape		
P	1/15/1964		154.3	2.12	3777.7	1	Groundwater Conservation District	Steel Tape		
P	1/15/1965		158.15	3.85	3773.85	1	Groundwater Conservation District	Steel Tape		
P	1/6/1966		162.98	4.83	3769.02	1	Groundwater Conservation District	Steel Tape		
P	1/9/1967		165.45	2.47	3766.55	1	Groundwater Conservation District	Steel Tape		
X	1/9/1968					1	Groundwater Conservation District	Steel Tape	24	
X	1/10/1969					1	Groundwater Conservation District	Steel Tape	24	

Code Descriptions

Status Code	Status Description	Remark ID	Remark Description
P	Publishable	1	Accurately reflect water-level conditions
X	No Measurement	24	Well apparently dry, well depth reached without water level

MAP ID 103

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-12-902

groundwater

GWDB Reports and Downloads | **Well Basic Details** | Scanned Documents

State Well Number	1012902	Well Type	Withdrawal of Water
County	Deaf Smith	Well Use	
River Basin	Red	Water Level Observation	Historical Observation Well
Groundwater Management Area	2	Water Quality Available	No
Regional Water Planning Area	O - Llano Estacado	Pump	
Groundwater Conservation District	High Plains UWCD #1	Pump Depth (feet below land surface)	
Latitude (decimal degrees)	34.752778	Power Type	
Latitude (degrees minutes seconds)	34° 45' 10" N	Annular Seal Method	
Longitude (decimal degrees)	-102.510556	Surface Completion	
Longitude (degrees minutes seconds)	102° 30' 38" W	Owner	Bob Cummings
Coordinate Source	+/- 5 Seconds	Driller	
Aquifer Code	121OGLL - Ogallala Formation	Other Data Available	
Aquifer	Ogallala	Well Report Tracking Number	
Aquifer Pick Method		Plugging Report Tracking Number	
Land Surface Elevation (feet above sea level)	3932	U.S. Geological Survey Site Number	
Land Surface Elevation Method	Interpolated From Topo Map	Texas Commission on Environmental Quality Source Id	
Well Depth (feet below land surface)	178	Groundwater Conservation District Well Number	
Well Depth Source	Another Government Agency	Owner Well Number	
Drilling Start Date		Other Well Number	
Drilling End Date		Previous State Well Number	
Drilling Method		Reporting Agency	Groundwater Conservation District
Borehole Completion		Created Date	3/5/1996
		Last Update Date	3/5/1996

Remarks

Casing - No Data

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

☑ ☑ ☑ NEW APP. BOOK ☑ ARC FILE ☑ ☑ MASTER SHEET ☑ WELLS COMPLETED BOOK ☐ FINISHED ☐ DEPTH PLOTTED

FORM No. 448 AWP

WELL 108

Original—District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No.	4061
Time of Filing	9:30 A.M.
Date Application Filed	4-17-68
Expiration Date	8-17-68
Date Recommended by County Committee	4-17-68
Size of Pump	8
Maximum Yield	1000 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Dr. Harry Alban (NAME OF LANDOWNER) Rt. 4, Hereford, Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County Deaf Smith

Proposed Use (Municipal-Industrial-Irrigation) MARK OUT ONES THAT DO NOT APPLY

NW¼, NE¼, SW¼, SE¼ Section 174 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Drilling to start about Soon, 19

Survey ______ Abstract ______

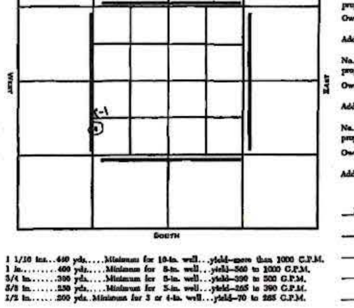
This well will be located { 1½ mile(s) N or S and (MARK OUT ONE THAT DOES NOT APPLY) 6 miles E or W of the

Township ______ Range ______

Labor ______ League ______ town of Hereford

MARK DOT INSIDE CIRCLE ⊙ within RED SQUARE for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest well or authorized well sites within ¼ mile.



Location of proposed Well as submitted by applicant is 720 measured yards from (N S) N and 10 measured yards from (E W) W (MARK OUT ONE THAT DOES NOT APPLY) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ¼ mile on the plat as 1, 2, and 3, to correspond with the following:

No. 1 93 measured yards from proposed well site. Owned by #1020-abandoned Address ______

No. 2 ______ measured yards from proposed well site. Owned by ______ Address ______

No. 3 ______ measured yards from proposed well site. Owned by ______ Address ______

RECEIVED
LUBBOCK TEXAS
APR 24 1968
HI-PLAINS UND. GROUND WATER CONS. DIST. NO. 1

COMMENT

No wells within 440 yds.

1 1/10 in...440 yds.....Minimum for 10-in. well...yield—more than 1000 G.P.M.
1 in.........400 yds.....Minimum for 8-in. well...yield—560 to 1000 G.P.M.
3/4 in.......300 yds.....Minimum for 6-in. well...yield—390 to 560 G.P.M.
5/8 in.......250 yds.....Minimum for 5-in. well...yield—265 to 390 G.P.M.
1/2 in.......200 yds. Minimum for 3 or 4-in. well...yield—70 to 265 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water.

This notice given by: [signature] Hodges (SIGNATURE LANDOWNER OR AGENT) Agent (TITLE) Box 272, Hereford, Texas (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site.

1. [signatures] Bill [signature] Frank [signature] Jr.

☒ Pinned on County Map ☒ Deposit Received ☐ Refunded Check No. ______

SMITH PRINTING CO., - DALLAS

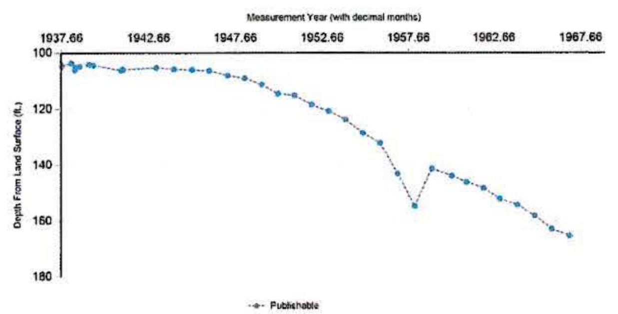
AB

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number
10-12-902

groundwater

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in () indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	9/16/1937		104.55		3827.45	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/29/1938		103.62	(0.93)	3828.38	1	Other or Source of Measurement Unknown	Unknown	1	
P	6/10/1938		105.99	2.37	3826.01	1	Other or Source of Measurement Unknown	Unknown	1	
P	6/25/1938		105.08	(0.91)	3826.92	1	Other or Source of Measurement Unknown	Unknown	1	
P	9/15/1938		104.77	(0.31)	3827.23	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/30/1939		104.02	(0.75)	3827.98	1	Other or Source of Measurement Unknown	Unknown	1	
P	6/27/1939		104.32	0.30	3827.68	1	Other or Source of Measurement Unknown	Unknown	1	
P	1/29/1941		106.15	1.83	3825.85	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/7/1941		105.89	(0.26)	3826.11	1	Other or Source of Measurement Unknown	Unknown	1	
P	2/10/1943		105.2	(0.69)	3826.8	1	Other or Source of Measurement Unknown	Unknown	1	
P	2/18/1944		105.78	0.58	3826.22	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/1/1945		106	0.22	3826	1	Other or Source of Measurement Unknown	Unknown	1	
P	2/26/1946		106.3	0.30	3825.7	1	Other or Source of Measurement Unknown	Unknown	1	
P	3/19/1947		108.04	1.74	3823.96	1	Other or Source of Measurement Unknown	Unknown	1	

FORM ...

Original—District Office Copy District File No. ______

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG OF WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN	
Field Well No.	992
Date Received	11-30-56
Size of Pump	8
Maximum Yield	1000 GPM

1. Well Owner H. E. Danforth Address Box 306 Hereford, Texas
2. Well located ____ miles N, ____ miles S, 2 miles E, ____ miles W of the town of Summerfield
3. County Castro Labor SW League ____ Homestead ____
4. NW¼ NE¼ SW¼ SE¼ (circle one) Section 150 Block K-7 Survey ____
5. ACTUAL LOCATION OF THIS WELL IS { 433 measured yards from N or S line of this tract of land. 5 measured yards from E or W line of this tract of land.

DRILLER'S LOG OF WELL

Method of Drilling: Rotary

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Sail			
3	35	Cleachie			
35	72	Soft SAND Rock			
72	80	SAND			
80	97	SANd Rock			
97	295	SANd + LAyeR Rock			
295	307	Red Bed			

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller M. L. Wanget Address 448 E Mabk St Date Drilled 8-4- 1956

DESCRIPTION OF WELL

6. Casing: new, used, gas line, or shop made. Diameter 16" in. Total length 295 ft.
7. Casing perforations: from 145 ft to 295 ft. Size 1/4 Number per foot 6
8. Pump Column: Size 8 in. Total length 250 ft. Suction pipe: Size 8 in. Length 18 ft.
9. Pump bowls: Size 12 Number of stages 4 Pump discharge pipe: Size 8 in.
10. Depth to water level 125 ft. Pump discharge 1000 GPM. Pumping level: 170 ft.
11. Power Unit: Electrical, Natural Gas, Butane. Other U S Pump Horsepower 80 Chrysler motor

Signature H E Danforth (OWNER OR AGENT) TITLE ADDRESS

Final Completion of Well — Date 8-10 1956

FORM NO. ...

Original—District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

FOR USE OF COMMITTEEMEN	
Field Well No.	4061
Date Received	4-30-68
Permit Size of Pump	8
Maximum Yield	1000 GPM

1. Land Owner Dr. Alban ~~Bros.~~ ELB Farms Joel Hodges Address 120 Centre Hereford, Texas
2. Well located ____ miles N, 3½ miles S, ____ miles E, 6 miles W of the town of Hereford
3. County Deaf Smith Labor ____ League ____ Abstract No. ____
4. ~~NW¼~~ ~~NE¼~~ SW¼ ~~SE¼~~ (MARK OUT THOSE THAT DO NOT APPLY) Section 174 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary ~~Cable tool~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 26 Inches.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3	Top Soil	320	345	Sand & some clay
3	40	Caliche	345	354	Sand & lots clay
40	110	Sand & clay & stone	354	364	Red Bed
110	140	Sand lots clay			
140	170	Sand some stone			
170	200	Sand, medium coarse			
200	230	Sand, fine			RECEIVED LUBBOCK, TEXAS
230	260	Sand some clay			MAY 2 1968
260	290	Fine sand			HIGH PLAINS UNDERGROUND
290	320	Sand & some stone			WATER CONS. DIST. NO. 1

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller J. D. Kirkland Address Box 926 Hereford Date Drilled April 19 1968

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, ~~used, gas line~~ or ~~shop made~~ Diameter 16 in. Total casing length 364 ft.
7. Casing perforations: from 134 ft. to 354 ft. Size 1/8 Number of rows 16
8. Pump Column: Size 8 in. Column, shaft length 220 ft. Suction pipe size 8 in. Suction pipe length 10 ft.
9. Pump bowls: Size 12" Number of stages 3 Pump discharge pipe: Size 8 in.
10. Depth to water level 137 ft. Pump yield 900 GPM. Pumping level: 178 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature ____ LANDOWNER OR AGENT TITLE ADDRESS

WFS 120

HPWD

☐ Abandoned ☒ Field Checked ☐ Cancelled ☐ Exception ☐ Replacement

High Plains Underground Water Conservation District No. 1

Application For Water Well Permit

District Number:	92823
Aquifer:	Ogallala
County:	Deaf Smith
Date:	14-Dec-2017
Expiration Date:	10-Aug-2018
Max Allowed Production:	165 GPM
Field Technician:	ray.eads

Name of Landowner: 2 BR Land, LP - Barrett & Crofoot- Jonathan Schenk Phone No. ____ Mobile No ____

Address: P O Box 670 City: Hereford State: Texas Zip Code: 79045

Email ____

Name of Operator or Agent: Wayne Wanget - Wanget Pump Phone No. ____ Mobile No. ____

Address: 3971 E US Hwy 60 City: Hereford State: Texas Zip Code: 79045

Email ____

I hereby make an application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a well permit at the site described below

Legal Information

Block: M-7 Other: SW 1/4

Section: 174

Survey: ____ CSL: ____

Labor: ____ League: ____

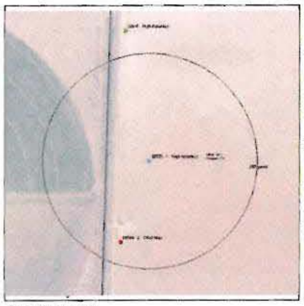
Township: ____ Range: ____

Type of Well to be Drilled

Primary: Industrial

Secondary: ____

Tract located ____ N, 1.25 S, ____ E, 6 W miles, of town: Hereford



Well Site GPS*

Latitude 34.768224

Longitude -102.51166

387 Yards ☑ N or ☐ S of accepted property line, which is Fence Line

Latitude 34.768029

Longitude -102.511661

80 Yards ☑ E or ☐ W of accepted property line, which is Paved Road

Latitude 34.766228

Longitude -102.512462

Distance in yards to nearest valid well

District No 20668 is 245 yards from proposed well site.

Latitude 34.770207

Longitude -102.512163

Comment/Explanation

Field checked Pay Fees ... OK

The Applicant Agrees:

- I will furnish the District a well log and log of pump installed immediately upon completion.
- I will use the water beneficially.
- I will not allow water to escape my property nor convey water in an open, unlined ditch.
- I will drill only within a 10 yard radius of the approved site.
- I will abide by the spacing rules of HPWD should it be necessary to drill at another location.
- I am solely responsible for ensuring the well is drilled at the approved site.
- HPWD may use this site as an observation well.
- I am drilling at my own risk until the HPWD board grants this application.
- If I violate the terms of this agreement, the HPWD Board may order the well no longer be used until the problem is permanently resolved.

TO THE BEST OF MY KNOWLEDGE AND BELIEF, I HEREBY CERTIFY ALL ABOVE INFORMATION IS TRUE AND ACCURATE.

jonathan schenk Date: 14-Dec-2017

Signature or Printed Name of Applicant

Rule Book Received. js owner/agent initials

Recommended for approval to the Board of Directors of High Plains Underground Water Conservation District No. 1 by the

General Manager/Designee: Jason Coleman Date: 15-Dec-2017

Date Board Approved ____ Date Log Mailed/Emailed 15-Dec-2018 By: juan.pena

REV 1/2017

[redacted]

DEPTH OF WELL ON COUNTY MAP

Well 111

FORM NO. ...

Original—District Office Copy District File No. 423 PINNED X-FILE

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplet. Submit all copies to County Committee for approval. (PLEASE TYPE or PRINT.)

FIELD WELL NO.	992
DATE APPLICATION FILLED OUT	9-28-56
DATE APPROVED BY COUNTY COMMITTEE	2-29-57
SIZE OF PUMP	8
MAXIMUM YIELD	1000

I, H. E. Danforth (NAME OF LANDOWNER) Box 306 Hereford, Texas (LANDOWNER'S ADDRESS) hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1, for a permit to drill the hereinafter described water well at the location indicated:

1. County Castro
2. ~~NW¼~~, ~~NE¼~~, SW¼, ~~SE¼~~ of Section 150 Block K-7 (MARK OUT THOSE THAT DO NOT APPLY)

Survey ____

3. Labor ____ League ____

4. Proposed Use (~~Municipal, Industrial~~, Irrigation) (MARK OUT ONES THAT DO NOT APPLY)
5. Drilling to start about 9-30-56 19__

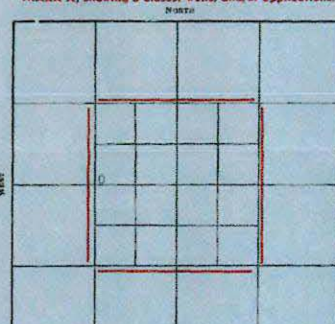
This well will be located: { -- miles N or S and 2 miles E or W of the

Permit good for 120 days only from date of approval. town of Summerfield, Texas

MARK DOT INSIDE CIRCLE within **Red Square** for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells, and/or applications.

NORTH



SOUTH

Please Make Sure Your Measurements Are Correct— They Will Be Checked for Accuracy

Location of Proposed Well as submitted by applicant is 433 measured yards from (N) S and 5 measured yards from (E) W property line, quarter section line, or labor line.

Number the three adjacent wells, and/or applications, on the plat as 1, 2 and 3, to correspond with the following:

Well 1 ____ measured yards from proposed well.

Owned by ____

Address ____

Well 2 ____ measured yards from proposed well.

Owned by ____ RECEIVED

Address ____ LUBBOCK, TEXAS

Well 3 ____ measured yards from proposed well. NOV 1 1956

Owned by ____ HIGH PLAINS UNDERGROUND

Address ____ WATER CONS. DIST. No. 1

SCALE FOR ABOVE PLAT

1 1/10 inches	440 yards	Minimum for 10-inch well
1 inch	400 yards	Minimum for 8-inch well
3/4 inch	300 yards	Minimum for 6-inch well
5/8 inch	250 yards	Minimum for 5-inch well
1/2 inch	200 yards	Minimum for 3 or 4-inch well

COMMENTS: There are no wells within 440 yds of this location

I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish my County Committee the completed well registration and log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by H E Danforth (SIGNATURE (OWNER OR AGENT)) Owner (TITLE) Box 306 Hereford, Texas (ADDRESS)

This permit approved subject to the rules for spacing from existing wells and/or prior permits

1. Frank Ammons 2. J R Davis 3. L A Gladden

Check here ☐ when well is located on the County map.

SMITH PRINTING CO. ... LUBBOCK

FORM NO. 255 REV

☑ Alphabetical ☒ X-ref. ☒ Plotted ☐ Depth Plotted

Original--District Office Copy

FOR USE OF DISTRICT OFFICE ONLY

Field Well No. 2067
Date of Plot 11-20
Date Application Rec'd 12-26-61
Expiration Date 2-20-62
Date Recommended 12-27-61
County Committee
Size of Pump 5 Maximum Yield 165 GPM

High Plains Underground Water Conservation District No. 1

Application for Water Well Permit

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committee for recommendation. (PLEASE TYPE OR PRINT)

I, Mrs. Terry Blanforth (NAME OF LANDOWNER) Box 306 - Dimmitt Texas (LANDOWNER'S ADDRESS)

hereby make application to HIGH PLAINS UNDERGROUND WATER CONSERVATION DISTRICT NO. 1 for a permit to drill the hereinafter described water well at the location indicated:

County: Castro

NW¼, NE¼, (SW¼) SE¼ of Section 150 Block M-7 (MARK OUT ONES THAT DO NOT APPLY)

Survey: _____ Abstract: _____

Township: _____ Range: _____

Labor: _____ League: _____

Proposed Use: (Municipal) Industrial (Irrigation) (MARK OUT ONES THAT DO NOT APPLY)

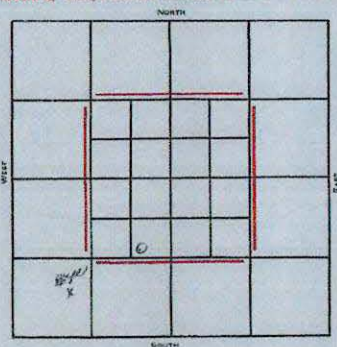
Drilling to start about: Aug 1964

This well will be located { 2 miles N or S and (MARK OUT ONE THAT DOES NOT APPLY) miles E or W of the E

Town of: Summerfield

MARK DOT INSIDE CIRCLE ⊙ within Red Square for proposed well location. (Red square indicates 1 quarter section or 1 labor)

MARK X, showing 3 closest wells or authorized well sites within ½ mile.



Location of proposed Well as obtained by application is 40 measured yards from (S) (MARK OUT ONE THAT DOES NOT APPLY) and 259 measured yards from (W) property line, quarter section line, or labor line.

Number three adjacent wells, or authorized well sites within ½ mile on the plot as 1, 2, and 3, to correspond with the following: (See)

No. 1 410 measured yards from proposed well site. Owned by J. A. Peterson Est. Address Hereford Texas

No. 2 ____ measured yards from proposed well site. Owned by _____ Address _____

No. 3 ____ measured yards from proposed well site. Owned by _____ Address _____

RECEIVED FEB 15 1962 HI-PLAINS UNDERGROUND WATER CONS. DIST. No. 1

COMMENT: Another well located within 440 yds & then located

1 1/10 in. 440 yds. Maximum for 10-in. well yield-more than 1000 G.P.M.
1 in. 400 yds. Maximum for 8-in. well yield-500 to 1000 G.P.M.
3/4 in. 300 yds. Maximum for 6-in. well yield-300 to 500 G.P.M.
5/8 in. 250 yds. Maximum for 5-in. well yield-200 to 300 G.P.M.
1/2 in. 200 yds. Maximum for 3 or 4-in. well yield-70 to 200 G.P.M.

I agree that this well will be drilled within ten (10) yards of the location specified and not closer to an existing well or authorized well site than the minimum spacing requirements, and that I will furnish my County Committee the completed well registration and log immediately upon completion of the well and prior to the production of water.

This notice given by: Terry Blanforth Box 306 Dimmitt Texas (SIGNATURE LANDOWNER OR AGENT) (TITLE) (ADDRESS)

This permit recommended by County Committee, subject to the rules for spacing from existing wells and/or authorized well site

Lester Newell

Check here: ☑ when well is located on the County map. ☑ Deposit Received

SMITH PRINTING CO. DIAL PO 5-9619

M-8.

FORM NO. 255-R-1W

Original--District Office Copy

High Plains Underground Water Conservation District No. 1

REGISTRATION and LOG of WELL

INSTRUCTIONS: Fill out in quadruplicate. Submit all copies to County Committeeman for registration. (Please type or print.)

FOR USE OF COMMITTEEMEN
Field Well No. 2068
Date Received 6-25-64
Permit Size of Pump 5 Maximum Yield 165 GPM

1. Land Owner: Mrs. Cora Danforth Address: 110 E. Gracy
2. Well located ____ miles N. ____ miles S. 2 miles E. ____ miles W of the town of Summerfield
3. County: Castro Labor: ____ League: ____ Abstract No. ____
4. NW¼ NE¼ (SW¼) SE¼ (MARK OUT THOSE THAT DO NOT APPLY) Section 150 Block M-7 Survey ____

DRILLER'S LOG OF WELL

Method of Drilling: Rotary X ~~Spade~~ (MARK OUT ONE THAT DOES NOT APPLY) Diameter of Well: 19 inches

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL	FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top soil			
4	60	Clay & caliche			
60	110	Sand & Clay			
110	200	Clay, sand, sand rock			
200	210	Coarse sand			
210	230	Clay, sand rock			
230	235	Sand			
235	300	Coarse sand, sand rock, some clay			
300	303	Red bed			

REMARKS:

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Driller: Salco Drilling Company Address: Hereford, Texas Date Drilled: March 11, 1964

DESCRIPTION OF WELL AND PRODUCTION EQUIPMENT

(This Does Not Mean Testing or Development Pump)

6. Casing: new, used, gas line, or shop made. Diameter 16 in. Total casing length 306 ft.
7. Casing perforations: from 202 ft. to 303 ft. Size 1/4 Number of rows 6
8. Pump Column: Size 8 in. Column, shaft length 240 ft. Suction pipe size 8 in. Suction pipe length 5 ft.
9. Pump bowls: Size 14" Number of stages 3 Pump discharge pipe: Size 8 in.
10. Depth to water level 166 ft. Pump yield 1,000 GPM. Pumping level: 194 ft.
11. Power Unit: Electrical, Natural Gas, Butane, Other ____ Horsepower ____

Signature ____ (LANDOWNER OR AGENT) (TITLE) (ADDRESS)

Send check to Box 306 Dimmitt

High Plains Underground Water Conservation District No. 1
Registration and Log of Well

To be Completed by HPWD
District Number: 92823
County: Deaf Smith
Received Date: 21-Feb-2018
Expiration Date: 10-Aug-2018
Maximum in Yield: 165 GPM

Name of Landowner: 2 BR Land, LP - Barrett & Crofoot Phone No: ____ Mobile No. ____
Address: P O Box 670 City: Hereford State: Texas Zip Code: 79045
Email: ____

Well located ____ miles N. 1.25 miles S. ____ miles E. 6 miles W of the town of: Hereford

Block: M-7 Section: 174 Other: SW 1/4
Survey: ____ CSL: ____ Latitude: 34.768224
Labor: ____ League: ____ Longitude: -102.51166
Township: ____ Range: ____

State Tracking Number: ____

Driller's Log of Well

From (feet)	To (feet)	Description of Formation Material	From (feet)	To (feet)	Description of Formation Material
0	3	Top Soil			
3	25	Sandy Clay, Caliche			
25	100	Sand, Sandstone, Sandy Clay			
100	230	Sand, Sandstone			
230	275	Loose Sand, Sandstone			
275	300	Sand, Streaks of Loose Sand			
300	351	Sand, Sandy Clay, Streaks of Clay			
351	361	Red Bed			

Method of Drilling: Mud Rotary Diameter of Well: 18 inches Gravel packed Yes ☑ No ☐ Gravel Size: #5 Quantity in yards: 10

Cementing record: filled with cement between casing and wall of well from 10 feet to surface, including pump base.

Casing: Steel Diameter in inches: 12.75 Total casing length including screen or perforated casing 363 ft.

Manufactured well screen from: ____ ft. to: ____ ft. Size: ____ Number of rows: ____

Casing perforated from: 256 ft. to: 361 ft. Size: 100 Number of rows: 72 SPF

Latitude of well: 34° 46' 05.5" Longitude of well: 102° 30' 42.0"

Date Drilled: 12/26/2017

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein are true to the best of my knowledge and belief.

Name of Driller: Stanley Wilson Phone No: ____ Mobile No: ____ Date: 02/19/2018
Signature
Address: P O Box 405 City: Muleshoe State: Texas Zip Code: 79347
Email: ____ Texas License No.: 2628

If this is a replacement well, I certify that the abandoned well is properly capped or filled in accordance with state law and the rules of the district. To the best of my knowledge and belief, all above information is true and accurate.

Name of Landowner: ____ Date: ____
Signature of Applicant

REV 3/2017

High Plains Underground Water Conservation District No. 1
Registration of Well Pump

To be Completed by HPWD
District Number: 92823
County: Deaf Smith
Received Date: 18-Mar-2018
Expiration Date: 10-Aug-2018
Maximum in Yield: 165 GPM

Name of Landowner: 2 BR Land, LP - Barrett & Crofoot Phone No: ____ Mobile No: ____
Address: P O Box 670 City: Hereford State: Texas Zip Code: 79045
Email: ____

Well located ____ miles N. 1.25 miles S. ____ miles E. 6 miles W of the town of: Hereford

Block: M-7 Section: 174 Other: SW 1/4
Survey: ____ CSL: ____ Latitude: 34.768224
Labor: ____ League: ____ Longitude: -102.51166
Township: ____ Range: ____

Description of Permanently Installed Production Equipment (This Does Not Mean Testing or Development Pump)

Discharge pipe size: 4 in. Pump Column: Size: 4 in. Length 350 ft. Suction pipe length: 0 ft.

Pump Bowls: Size: 6 Number of stages: 7 Pump yield: 160 GPM Estimated: ____ Measured: X

Depth to static water level: 248 Ft. Estimated: X Measured: ____ Pumping level: 340 ft.

Power Unit: Electric Horsepower: 25 Type of Pump: Submersible Well chlorinated after pump installed: ☐

I hereby certify that this well was equipped as stated above.

Name of Pump Installer: Wayne Winget Phone No: ____ Mobile No: ____ Date: 3/10/2018
Signature
Address: 3971 US Hwy 60 City: Hereford State: Texas Zip Code: 79045
Email: ____ Texas License No.: 44701

REV 3/2017

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: **DRILL PRO WATER WELL DRILLING**
PO BOX 1281
SEMINOLE, TX 79360

Driller Name: **Johny Loewen** License Number: **59027**

Apprentice Name: **Johan Wieler** Apprentice Number: **57881**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	4	Topsoil
4	70	Sand - Sandstone
70	90	Sand
90	215	Sand - Sandstone
215	230	Sandstone
230	315	Sand - Sandstone
315	324	Sand - Gravel
324	334	Red Bed

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
10	Blank	New Steel	219	0	254
10	Perforated or Slotted	New Steel	219	254	334

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

HPWD
High Plains Underground Water Conservation District

Water Well Permit Application

District Number	99708
Aquifer	Ogallala
County	Deaf Smith
Date	30-May-2023
Expiration Date	25-Jan-2024
Max Allowed Production	165 gpm
Contiguous Acres	71.80
Annual Allowable Production	107.70 ac-ft
Field Technician	ray.eads
Fee Paid Date	31-May-2023

Applicant Wayne Winget
Address 3971 US HWY 60
City Hereford
State Texas
Zip Code 79045
Email
Phone No.
Cell No.

Groundwater Rights Owner R&R Trailer Washout LLC
Address 3250 Tierra Blanca Road
City Hereford
State Texas
Zip Code 79045
Email
Phone No.
Cell No.

Legal Description of the Property Block: M-7 Section 136 NW 1/4
Proposed Use of Groundwater Other Desired Rate of Withdrawal 140
Property is located 4.6 S and 3.3 W of Hereford

Well Site GPS			
Latitude		34.758379	
Longitude		-102.456362	
From S	Property Line	277	
Fence Line	Lat 34.756091	Long	-102.456362
From W	Property Line	135	
Fence Line	Lat 34.758370	Long	-102.457717
Nearest Valid Well		16867	
Distance to nearest valid well		215	

Comments/Field Notes
Check # 17498, Driller - Drill Pro
Final check re 9/25/2023

ww I affirm that I have the legal authority to submit this Permit Application and to drill for groundwater at the Proposed Well Site.

ww I understand that this Permit Application is not a Permit to produce groundwater, and only at such time that the HPWD Board of Directors acts to grant or deny this Permit Application, will it be a valid right to produce groundwater.

ww I understand that for this Permit Application to be administratively complete, I must drill and complete the well at the Proposed Well Site within 240 days of submitting a completed Permit Application, pay all fees associated with this Permit Application, and return to the District a completed State of Texas Well Report.

ww I understand that in submitting the Permit Application that I am responsible for installing, equipping, operating, and maintaining the well in a manner that complies with District Rules and State Law. This includes the responsibility of informing the water well driller of the Proposed Well Site and drilling the proposed well no more than ten (10) yards from the Proposed Well Site. I further understand that if the well must be plugged, closed, or capped that it is my responsibility to do so in accordance with State Law.

ww I understand that in submitting this Permit Application I am subject to the Rules of the District, that I will read the Rules of The District, and I understand that any violations of the Rules is enforceable by the District Board of Directors in a manner as described under Rule 2.11.

ww I understand that by submitting this Permit Application, I am granting the District the right to use this site as an observation well.

TO THE BEST OF MY KNOWLEDGE AND BELIEF, I HEREBY CERTIFY ALL INFORMATION IN THIS PERMIT APPLICATION IS TRUE AND ACCURATE AND WILL INFORM THE DISTRICT OF ANY SUBSEQUENT CHANGES.

Signature of Applicant	wayne winget
Date	31-May-2023

I have reviewed the submitted Permit Application for accuracy and compliance with District Rules:

General Manager/Designee	Jason Coleman
Date	01-Jun-2023

STATE OF TEXAS WELL REPORT for Tracking #647296

Owner:	**R&R Trailer Washout LLC**	Owner Well #:	**99708**
Address:	**3250 Tierra Blanca Road Hereford, TX 79045**	Grid #:	**10-13-8**
Well Location:	**Blk M-7 Sec 136 Hereford, TX 79045**	Latitude:	**34° 45' 30.16" N**
		Longitude:	**102° 27' 22.9" W**
Well County:	**Deaf Smith**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Irrigation**

Drilling Start Date: **7/18/2023** Drilling End Date: **7/20/2023**

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	**18**	**0**	**334**

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

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
Filter Pack Intervals:	**26**	**334**	**Gravel**	**#1 Fine**

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	**0**	**26**	**Cement 2 Yards**

Seal Method: **Poured**

Sealed By: **Driller**

Distance to Property Line (ft.): **S-277 W-135**

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

Distance to Septic Tank (ft.): **NA**

Method of Verification: **Measurements taken off permit.**

Surface Completion: **Surface Slab Installed** **Surface Completion by Driller**

Water Level: **No Data**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Attachment 5

Surface Irrigation Engineering Design Report

ENGINEERING REPORT
SURFACE IRRIGATION

Caviness Beef Packers Sanitary Wastewater Irrigation

Deaf Smith County

Prepared For:

Caviness Development, Ltd.

PO Box 790

Hereford, TX 79045

Revised June 13, 2024

Prepared by:

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

3404 Airway Boulevard ♦ Amarillo, Texas 79118 ♦ Tel 806/353-6123 ♦ Fax 806/353-4132

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1.0 INTRODUCTION

1.1 Purpose

This report is prepared as part of the application of Caviness Development, Ltd., for the renewal to Texas Land Application Permit (TLAP) No. WQ0015744001 to authorize land application of treated domestic wastewater to 100 acres of improved bermudagrass and winter small grain forage crops, located west of Hereford in Deaf Smith County, Texas. Water balance models and nutrient balances have been developed in conformance with 30 TAC Chapter 309 to determine the hydraulic and nutrient demands of the planned crops. All irrigated areas will be located on property owned by the permittee, restricted from public access.

1.2 Background

A package treatment plant designed to treat an average of 16,500 gallons per day from employee restrooms, breakrooms and locker rooms was commissioned in January 2021. Treated effluent is stored in an earthen, clay-lined irrigation storage pond, denoted Pond 15, located west of the treatment plant building. Pond 15 was designed with adequate storage for times when conditions are not favorable for irrigation. Table 1 is a summary of as-built data for Pond 15. The capacity certification is attached.

Table 1.0: Storage Pond Summary

Criteria	Value
As-Built Capacity at Maximum Water Level:	6.93 ac-ft
Maximum Liquid Depth:	10 ft
Design Freeboard:	2 ft
Water Surface Area at Maximum Water Level:	1.15 ac
Surface Area at Top of Berm:	1.38 ac
25-year, 24-hour Design Volume:	0.55 ac-ft
Minimum Operating Volume:	1.00 ac-ft
Design Storage Period:	~105 days

2.0 DESIGN CALCULATIONS

2.1 Water Balance Model

A Water Balance Model for irrigation and evaporation was developed to illustrate the hydraulic crop demands of the permanent grass. The cropping plan consists of 100 acres of improved bermudagrass overseeded with small grains in the winter, to be harvested for hay. Based on average flow, the Water Balance Model is based on the water use requirements of 25 acres of the planned crop at any one time.

The Water Balance Model presented in Table 2 considers treated effluent inflow and direct rainfall on the surface of Pond 15, crop water demand, leaching requirements for salinity management, evaporation from the pond surface and estimated effluent withdrawal for irrigation based on normal operating conditions. Alterations have been made to the calculation methods specified in 30 TAC §309, as discussed below. Example calculations are shown below. The model compares well with and results in a more conservative storage pond size than the 30 TAC §309 water balance method (presented in Table 3).

2.1.1 Monthly Reclaimed Water Inflow

Rather than using a straight monthly average inflow, the design flow of 16,500 gallons per day (GPD) was multiplied by the number of days in each month and then converted to acre-feet using the following conversion:

January: 16,500 GPD * 31 days / (325851 gal/ac-ft) = 1.57 ac-ft

2.1.2 Average Runoff

The runoff calculated in the water balance represents the average runoff from the entire month's rainfall, rather than the runoff from a single rainfall event. The Curve Numbers obtained from the SCS method reference tables are 24-hour CNs intended for use with a single runoff event, rather than an average. Hence, the Curve Number used in the water balance to calculate the average runoff from the irrigated area was adjusted from 24 hours to 30 days using the following equation (USDA, AWM Version 2.2.01):

CN30 = CN1 – (CN1 – ((CN1^2.365)/631.79) – 15) * log(30)

Meadow, HSG C, CN1 = 71

CN30 = 71 – (71 – ((71^2.365)/631.79) – 15) * log (30) = 44

2.1.3 Net Crop Water Demand

The net crop water demand in acre-feet for the entire acreage, accounting for rainfall and irrigation efficiency, is calculated using the following basic equation:

(Total Water Needed – Effective Rainfall) * Total Crop Acreage / 12 in/ft / Irrig Efficiency

January: (1.88 – 0.62) in * 25 ac / 12 in/ft / 85% = 3.09 ac-ft

Total Water Needed is calculated using FAO Equation 7 from Ayers and Westcott:

Crop ET/(1 – LF)

January: 1.82 / (1 – 0.03) = 1.88 in

The Leaching Fraction (LF) is calculated using FAO Equation 9 from Ayers and Westcott:

LF = Ce / ((5 * Cl) – Ce)

Where Ce = Effluent EC

Cl = Maximum allowable Crop EC

Native Grass: LF = 1.00 / ((5 * 7.00) – 1.00) = 0.03

2.1.4 Net Pond Evaporation

Net pond evaporation in acre-feet is calculated using an effective pond surface area estimated at 85% of the maximum pond surface area. This accounts for the fact that during normal operation, the pond may not be full all the time, so the actual surface area subjected to evaporation will actually be less than the surface area of a full pond. The calculation also accounts for periods of high evaporation or drought by setting the net evaporation equal to the total inflow for the month if that month's evaporation is greater than the total inflow of the pond (i.e., can't evaporate more water than enters the pond). The evaporation from the pond surface is not related to the acreage available for irrigation. The basic equation is:

Monthly Gross Evaporation * Effective Water Surface Area / 12 = Net Evaporation ac-ft

January: (2.31 in * 1.15 ac) / 12 in/ft = 0.22 ac-ft

2.1.5 Average Monthly Withdrawal

The average monthly crop withdrawal is a mass balance of pond inflows and outflows, considering normal pond storage and crop water demand. The withdrawal amount should not exceed the crop water demand, or the minimum operating level, and cannot exceed the accumulated pond storage (i.e., can't pump more water than is present). In general, the withdrawal is calculated:

Total Inflow – Net Evaporation – Min Operating Level + Accumulated Volume

January: 1.64 – 0.22 – 1.00 + 1.00 = 1.42 ac-ft withdrawal

2.1.6 Monthly Pond Operating Volume

The normal monthly storage volume represents the expected volume in the pond under normal operating conditions, considering pond inflows and outflows, including withdrawal. Additional storage is included in the minimum required pond design capacity to account for "abnormal" conditions, such as chronic rainfall, equipment or crop failure or freezing weather. Under normal conditions, the expected volume in the pond is:

Accumulated volume + Total Inflow – Net Evaporation – Crop Withdrawal

January: 1.00 + 1.64 – 0.22 – 1.42 = 1.00 ac-ft

Table 2. WATER BALANCE MODEL IRRIGATION AND EVAPORATION
ENVIRO-AG ENGINEERING, INC.

NAME:	Caviness Development	HYDROLOGIC CHARACTERISTICS		
LOCATION:	Hereford, Texas	Pen Area (acres):	0.00	
DATE:	February-22	Adjacent Areas (acres):	0.00	
		Roof Area (acres):	0.00	
		Total Pond Surface Area (acres):	1.38	
		Total Irrigated Area (acres):		25.0
		Cropping scheme:		Bermuda/Winter SG
		Allowable Crop Conductivity, Ci:		7.00
		Leaching Fraction:		0.03
		Effective Evaporation Surface Area (aci	1.15	
		Irrigation System Efficiency:	85%	

STORAGE POND VOLUME SUMMARY DATA			
25-Year, 24-Hour Rainfall Volume (ac-ft):			0.55
Process Generated Wastewater Volume (ac-ft):			5.32
Treatment Volumes (anaerobic, facultative, aerob			0.00
Sludge Accumulation Volume (ac-ft):			1.00
Additional Volume (ac-ft):			0.00
Total Required Capacity Storage Pond (ac-ft):			6.87
As-Built Capacity			6.93
Avg Daily Flow:	gpd	16,500	
Avg Effluent EC, Ce:		1.00	
25-yr, 24-hr rainfall:	(inches)	4.8	
	Days Storage	105	

	POND INFLOW CALCULATIONS			HYDRAULIC CROP DEMAND CALCULATIONS					POND STORAGE SUMMARY			
MONTH	(1) Average Precipitation (inches)	(3) Process Inflow (ac-ft)	(4) Total Inflow (ac-ft)	(5) Runoff from Irrig. Area (inches)	(6) Effect. Rainfall on Irrig. Area (inches)	(7) Consumptive Use (inches)	(7a) Total Water Needed (inches)	(8) Net Crop Demand (ac-ft)	(9) Montly Lake Surface Evaporation (inches)	(10) Net Pond Evaporation (ac-ft)	(11) Crop Withdrawal (ac-ft)	(12) Storage at End-of-Month (ac-ft)
											start value --->	1.00
JAN	0.60	1.57	1.64	0.00	0.60	1.82	1.88	3.13	2.31	0.22	1.42	1.00
FEB	0.60	1.42	1.49	0.00	0.60	2.07	2.13	3.76	3.01	0.29	1.20	1.00
MAR	0.83	1.57	1.67	0.00	0.83	3.37	3.47	6.47	4.90	0.47	1.20	1.00
APR	1.02	1.52	1.64	0.00	1.02	4.49	4.63	8.84	6.03	0.58	1.06	1.00
MAY	2.22	1.57	1.83	0.00	2.22	5.31	5.47	7.97	6.46	0.62	1.21	1.00
JUN	2.63	1.52	1.82	0.00	2.63	5.88	6.06	8.40	8.02	0.77	1.05	1.00
JUL	2.41	1.57	1.85	0.00	2.41	6.26	6.44	9.89	8.45	0.81	1.04	1.00
AUG	2.68	1.57	1.88	0.00	2.68	5.63	5.80	7.64	7.25	0.69	1.18	1.00
SEP	2.11	1.52	1.76	0.00	2.11	4.36	4.49	5.83	5.80	0.56	1.21	1.00
OCT	1.73	1.57	1.77	0.00	1.73	3.57	3.68	4.77	5.12	0.49	1.28	1.00
NOV	0.70	1.52	1.60	0.00	0.70	2.33	2.40	4.17	3.67	0.35	1.25	1.00
DEC	0.70	1.57	1.65	0.00	0.70	1.83	1.89	2.91	2.64	0.25	1.40	1.00
TOTALS	18.23	18.48	20.58	0.00	18.23	46.91	48.33	73.79	63.66	6.10	14.48	
											4,718,105	gal
											0.58	ac-ft/ac/yr

NOTES:

(1) Precipitation taken from the Texas Water Development Board (https://waterdatafortexas.org/lake-evaporation-rainfall), Quad 305, 1940-2020, Hereford and surrounding areas.
(3) Inflow based on treatment plant design flow.
(4) Total Inflow is calculated as that volume of rainfall that falls on the pond and process water that enters the pond.
(5) Runoff from irrigated areas calculated using SCS Curve Number Method adjusted from 1 to 30 day curve number. (Ref. USDA SCS, Texas Engineering Technical Note No. 210-18-TX3, Figure 1, March 1983)
(6) Effective monthly rainfall on the irrigated area is taken as the difference between Column (6) and Column (1).
(7) Consumptive Use values taken from Borrelli, et al., 1998. Mean Crop Consumptive Use and Free-Water Evaporation for Texas, Texas Tech University, Lubbock, Texas. (Table 25: ET Crop for Turfgrass with Kcb=0.75, Hereford, TX)
(7a) Total Water Needed = Consumptive Use (7) / (1 - Leaching Fraction)
(8) Net Crop Demand = ((Consumptive Use(7) - Effective Rainfall(6))/12) x Irrigated Area/Irrigation System Efficiency.
(9) Monthly lake surface evaporation taken from Texas Water Development Board (https://waterdatafortexas.org/lake-evaporation-rainfall), Quad 305, 1954-2020, Hereford and surrounding areas.
(10) Net Evaporation from the water surface is taken as (Monthly Lake Surface Evap (9)/12) x (Pond Surface Area).
(11) Actual Withdrawal from the pond not to exceed Net Crop Demand. (No consideration given for nutrient demand of crop)
(12) Storage volume in the pond at the end of the month. The storage calculated in this column should not encroach in the volume reserved for the 25-year, 24-hour rainfall event.

STATE OF TEXAS
ANISSA PURSWELL
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PROFESSIONAL ENGINEER

Anissa Purswell
F2507 2/14/22

2/14/2022

Table 3. 30 TAC Chapter 309 WATER BALANCE MODEL

ENVIRO-AG ENGINEERING, INC.

Irrigated Area (ac):	25.0	Pond Surface (ac):	1.38
CN Irrigated Area:	71	Surface Area Ratio:	0.06
Proposed Crop:	Bermuda/Winter SG		
Ci:	7	Ce:	1
Irrigation Efficiency:	85%		

1	2	3	4	5	6	7	8	9	10	11
Month	Average Rainfall (in)	Average Runoff (in)	Avg Ri (in)	ET (in)	Leaching	Total Water Needed (in)	Effluent Req'd in Root Zone (in)	Evap from Water Surface (in)	Effluent Applied (in)	Consumption from Reservoir (in)
Jan	0.60	0.01	0.59	1.82	0.21	2.03	1.44	0.13	1.69	1.82
Feb	0.60	0.01	0.59	2.07	0.25	2.32	1.73	0.17	2.03	2.20
Mar	0.83	0.00	0.83	3.37	0.42	3.79	2.96	0.27	3.48	3.75
Apr	1.02	0.01	1.01	4.49	0.58	5.07	4.06	0.33	4.78	5.11
May	2.22	0.36	1.86	5.31	0.57	5.88	4.02	0.36	4.73	5.09
Jun	2.63	0.56	2.07	5.88	0.63	6.51	4.44	0.44	5.23	5.67
Jul	2.41	0.45	1.96	6.26	0.72	6.97	5.01	0.47	5.89	6.36
Aug	2.68	0.58	2.10	5.63	0.59	6.21	4.12	0.40	4.84	5.24
Sep	2.11	0.31	1.80	4.36	0.43	4.78	2.98	0.32	3.51	3.83
Oct	1.73	0.17	1.56	3.57	0.33	3.90	2.34	0.28	2.75	3.04
Nov	0.70	0.00	0.70	2.33	0.27	2.61	1.91	0.20	2.25	2.45
Dec	0.70	0.00	0.70	1.83	0.19	2.02	1.32	0.15	1.56	1.70
Total	18.23	2.47	15.76	46.91	5.19	52.10	36.34	3.51	42.75	46.27

TWDB Quad 305 Highest Rainfall, 2004:	35.89 in	Max monthly application rate (in):	3.86
TWDB Quad 305 Lowest Evap, 2019:	52.26 in		

12		13	14A	14B	15	16	17	18A	18B	19	20
Month	Effluent Inflow (ac-ft)	Effluent Inflow (in)	MRD (%)	Rainfall (MAX) (in)	Runoff (MAX) (in)	Max Ri (in)	Total Avail Water (in)	DoM (%)	Net E (MIN)	Storage (ac-in/ac)	AS (ac-in/ac)
Jan	1.57	0.75	3.4%	1.21	0.03	1.17	1.93	3.6%	0.10	-0.36	-0.55
Feb	1.42	0.68	3.3%	1.20	0.03	1.17	1.85	4.7%	0.14	-0.81	-1.36
Mar	1.57	0.75	4.4%	1.59	0.12	1.46	2.22	7.7%	0.22	-2.20	-3.56
Apr	1.52	0.73	5.6%	2.03	0.28	1.75	2.48	9.6%	0.28	-3.46	-7.02
May	1.57	0.75	12.3%	4.40	1.68	2.73	3.48	10.1%	0.29	-3.25	-10.27
Jun	1.52	0.73	14.5%	5.22	2.29	2.94	3.67	12.4%	0.36	-3.84	-14.11
Jul	1.57	0.75	13.2%	4.72	1.91	2.81	3.57	13.3%	0.38	-4.52	-18.63
Aug	1.57	0.75	14.9%	5.33	2.37	2.96	3.72	11.4%	0.33	-3.40	-22.03
Sep	1.52	0.73	11.5%	4.14	1.49	2.65	3.38	9.2%	0.26	-2.05	-24.08
Oct	1.57	0.75	9.1%	3.27	0.92	2.35	3.10	8.0%	0.23	-1.31	-25.38
Nov	1.52	0.73	3.9%	1.39	0.07	1.32	2.05	5.8%	0.17	-0.95	-26.33
Dec	1.57	0.75	3.9%	1.39	0.07	1.32	2.07	4.2%	0.12	-0.19	-0.19
Total	18.48	8.87	100%	35.89	11.26	24.63	33.50	100%	2.88		**-0.19**

Storage Required (ac-ft): -0.40

2.2 Effluent Characteristics

Design effluent quality is summarized in Table 4. Monitored values are presented in Section 9 of the Domestic Wastewater Permit Application Technical Report.

Table 4. Projected Effluent Quality

Parameter	Units	Design Value
BOD	mg/L	20
TSS	mg/L	20
Total N	mg/L	30
TKN	mg/L	30
NH3-N	mg/L	3
Total P	mg/L	8
Dissolved Oxygen	mg/L	2.0
Electrical Conductivity	mmhos/cm	3.2 (measured)
pH	s.u.	5 to 9

2.3 Nutrient Balance

The water balance model shows the total annual withdrawal from the pond and the resulting average monthly application volume. These numbers are compared to the liquid loadings calculated in the nutrient balance presented in Table 5 to show that adequate acreage of improved bermudagrass is available to use the reclaimed water.

In the nutrient balances, application rates were calculated for nitrogen (N) as the limiting nutrient for each cropping scenario. More detail regarding nutrient loadings is provided in the Annual Cropping Plan, Section 5.

Table 5. Nutrient Balance

ENVIRO-AG ENGINEERING, INC.

CROP: Bermuda/Winter SG **Acreage:** 25.0 ac (minimum)		**NITROGEN**	**PHOSPHORUS**
Effluent Concentration (1):	ppm	30	8
	lb/ac-in	6.80	1.8
Plant Available Fraction:		0.80	0.98
Adjusted Effluent Concentration:	ppm	24	7.84
Annual Crop Requirement (2):	lb/ac-yr	260	205
Application Loss (volatilization):		0.20	0.00
Total Crop Requirement:	lb/ac-yr	312	205
Annual Liquid Loading (3):	ft/yr	4.81	4.12
	in/yr	57.78	49.40
Effluent Needed at this Rate (4):	ac-in/yr	1,444	387
	ac-ft/yr	120.37	32.28
	ac-ft/mo	10.03	
	GPD	107,460	28,815
Effluent P2O5 applied at N rate:	lb/ac-yr	245	
Commercial P2O5 Needed:	lb/ac-yr	0	

Maximum Liquid Loading All Crops:	**ac-ft/yr**	**120.37**
Available Effluent from Water Balance:	**ac-ft/yr**	**14.48**

NOTES:

(1) Expected maximum effluent quality from treatment system.

(2) From NRCS S crops database, 2-cut Coastal Hay and SG Hay.

(3) Nitrogen-based loading calculated using L = N/2.7C, where:

L = Loading (ft/yr)

N = Total Crop N Requirement (lb/ac-yr)

C = Adjusted Effluent N Concentration (mg/L)

(4) Does not account for irrigation efficiency.

Refer to Water Balance Model for applied effluent.

3.0 IRRIGATION SYSTEM DESIGN

The irrigation system consists of approximately 1,565 total linear feet (LF) of buried irrigation piping and an existing center pivot sprinkler to distribute treated effluent to a 100-acre irrigation field. The center pivot sprinkler is nozzled to deliver 550 gpm. The system is designed to apply treated effluent at rates that will not exceed the infiltration capacity of the soil.

3.1 Irrigation System Design

A center pivot sprinkler consists of a series of sprinkler nozzles fixed to an overhead piping system mount on wheeled towers that rotates around a fixed center point. Water is delivered to the center of the sprinkler via buried piping. The sprinkler nozzles are of graduating sizes from the center outward to ensure uniform application across the entire field as the sprinkler rotates. The application rate is controlled by adjusting the speed of rotation as it travels around the pivot point – the slower the speed of rotation, the higher the application rate. The center pivot sprinkler denoted Pivot #1 is nozzled to deliver 550 gpm. The sprinkler chart is attached.

Pivot #1 can either be controlled manually via the control box at the center of the field, or can be controlled and monitored remotely using FieldNet®, which collects and transmits data on sprinkler position, system operating pressure and flow rate for viewing on a desktop computer or mobile app. The controller can be programmed to send alerts to the operator at selected setpoints, such as position or pressure loss.

A buried irrigation pipeline will deliver treated effluent to the center pivot sprinkler. The pipeline consists of approximately 1,030 LF of existing 10" PVC rated at 50 psi, and approximately 535 LF of 8" SDR 41 PIP rated at 100 psi new piping to connect the Pond 15 pump to the existing 10" pipeline. Existing 10" piping that was previously used for industrial wastewater distribution has been cut, capped and abandoned in place. There is no commingling of industrial wastewater with domestic effluent. New piping was installed using Class "C" embedment, with backfill compacted at 95% of standard proctor density (ASTM D698). The force main is designed to deliver domestic effluent to the center pivot sprinkler at a rate of 550 gpm and average 45 psi at the sprinkler nozzles.

3.2 Hydraulic Loading Rates

NRCS Soil Survey information shows the available water holding capacity of the soil is 0.18 inch per inch, with a saturated hydraulic conductivity of 0.06 to 0.20 inches per hour, which is the limiting factor in the design, rather than the crop water use. As shown in the center pivot documentation, the design application rate is approximately 0.012 in/hr. This loading rate is less than the maximum monthly application rate of 3.78 inches per month predicted by the 30 TAC Chapter 309 Water Balance Model.

The total 100 acres available allows for the irrigated area to be subdivided into at least 4 quadrants of approximately 25 acres each, allowing for maximum flexibility of effluent

management. Assuming only 25 acres is used each growing season, at the design flow of 16,500 GPD, the rest period could be approximately 28 days between irrigation events.

3.3 Application Method and Timing

Based on the expected N in the effluent and the Nutrient Budget in Table 4, 120 ac-ft would be needed annually to meet the N demand of the planned crop; however, the Water Balance Model predicts only approximately 14.5 ac-ft will be available annually. It is anticipated that irrigation will primarily occur during the early spring when water is available from rainfall and winter effluent storage in Pond 15, as-needed during the summer months, and in the fall to bring Pond 15 water levels down in anticipation of winter conditions.

Additional land application procedures include:

- Avoid application when the ground is frozen or saturated or during rainfall events unless necessary to protect the integrity of the effluent treatment/handling system.
- Application events should be conducted to minimize ponding and puddling of effluent, should not create tailwater (runoff) and should minimize the creation of nuisance conditions.
- Required setback distances will be maintained during land application events.

No supplemental fertilizer or irrigation is currently planned. Nutrient needs will be evaluated through annual soil sampling.

3.4 Public Health, Safety and Welfare

Proper operation of the irrigation system will protect public health, safety and welfare by ensuring land application of treated effluent at beneficial agronomic rates, and at low hydraulic loading rates. Access to the site by unauthorized personnel is prohibited. The system controls will be maintained inside a locked control building to prevent unauthorized system operation.

4.0 OPERATION AND MAINTENANCE PLAN

This operation and maintenance plan applies to the effluent storage pond and the irrigation system only. Procedures for operating and maintaining the treatment plant are addressed in a separate document.

4.1 Storage Pond

4.1.1 Operation

The storage pond is equipped with a staff gauge with 1 ft increments marked in a way that is visible from the berm. The bottom of the design 24-year, 24-hour rainfall level is marked as a visible indicator. Water level readings should be recorded weekly and after a 0.5-inch rainfall event. Pumping should occur as needed to meet the nutrient and/or moisture requirements of the forage crops, or after a rain event to maintain the design rainfall volume in the pond. It is anticipated that the most effluent will be available for irrigation during the early spring from rainfall and winter effluent storage. Efforts should also be made to dewater the pond in the fall to bring water levels down prior to the onset of winter conditions.

4.1.2 Maintenance

The storage pond should be inspected weekly and any damage and resulting corrective action will be documented. Vegetation of the side slopes should be maintained through mowing or herbicide controls. No large woody vegetation should be allowed to grow in or near the storage pond embankments.

4. 2 Irrigation Equipment

4.2.1 Operation

The irrigation pump is controlled manually. The system operator should perform a daily inspection during irrigation events to verify that the system is operating properly and to obtain flow meter readings. The operator must document the date, amount and location of each application event. When the applied rate differs from the planned rate, the reason for the deviation should be documented.

Land application must not occur when the ground is frozen or saturated or during rainfall events. Application rates shall not exceed the specified hydraulic loading rates or the maximum nutrient recommendation of the forage crops. Irrigation rates and timing shall minimize ponding and puddling of effluent, prevent the creation of tailwater (runoff) and the occurrence of nuisance conditions.

Land application records should be maintained on-site for a minimum of 5 years to document implementation and compliance with the permit. Records should include:

- Soil and effluent analysis
- Quantities, analysis and source of nutrients applied
- Dates, methods, sources, locations and rates of nutrients applied
- Weather conditions and soil moisture at the time of application

- Time elapsed between application event and precipitation events
- Dates of plan review, name of reviewer and recommended changes
- Records of employee training

4.2.3 Maintenance

Inspections of all pipelines, pumps, and sprinkler equipment should be conducted at an interval specified by the equipment manufacturer or at a minimum weekly and any problems noted should be corrected in a timely manner to ensure proper function of the system and to avoid accidental discharge.

Application equipment should be calibrated at a minimum of once per year, to ensure accurate application rates are achieved and to avoid over-application of nutrients. Piping and appurtenances between the storage pond and the irrigation field should be inspected for leaks or other problems at the beginning of each application event or at least weekly. If leaks or other problems are found, such as damaged or missing sprinkler nozzles, the irrigation equipment should be shut down until the problem can be corrected. Leaks or other problems and associated corrective action taken should be documented.

4.3 Sampling Procedures

4.3.1 Soil Sampling

Soil samples will be collected from land application fields utilizing industry-accepted agronomic soil sampling practices. Samples will be analyzed for the following parameters in accordance with the TLAP.

- pH (2:1 water:soil extract), standard units
- Electrical conductivity (2:1 water:soil extract), mmho/cm
- Sodium Adsorption Ratio (SAR)
- Organic matter, %
- Phosphorus (Mehlich III with ICP), mg/kg dry basis
- Potassium (Mehlich III), mg/kg dry basis
- Calcium (Mehlich III and saturated paste), mg/kg dry basis
- Magnesium (Mehlich III and saturated paste), mg/kg dry basis
- Sulfur (Mehlich III), mg/kg dry basis
- Sodium (Mehlich III and saturated paste), mg/kg dry basis
- Total Kjeldahl Nitrogen (TKN)
- Total Nitrogen
- Nitrate-N (1N KCl extract)

Soil samples should be collected annually. Approximately 15-20 subsamples should be collected to make one composite sample per field in each of the depths: 0-6 inches, 6-18 inches and 18-30 inches. Samples should be analyzed by an accredited laboratory.

4.3.2 Effluent Sampling

Land applied effluent grab samples should be collected from the storage pond pump house at an interval specified in the permit or at least annually to monitor changes in water quality characteristics. Nutrient content of the effluent should be used to update

the nutrient budget on an annual basis. This is in addition to samples collected from the treatment facility to monitor treatment plant functionality.

4.4 Employee Training

Personnel whose job responsibilities require operation of the facility's reclaimed water storage and land application equipment should be trained to ensure proper procedures are followed and appropriate records are kept. Annual employee training should be documented.

5.0 REFERENCES

Information used to develop the water balance models was obtained, in part, from the following sources:

Ayers, R.S. and D.W. Westcott. 1994. Water quality for agriculture. Food and Agriculture Organization of the United Nations (FAO) Irrigation and Drainage Paper 29 Rev. 1. Retrieved June 2016. http://www.fao.org/DOCReP/003/T0234e/T0234E00.htm#TOC

Borrelli, J., C.B. Fedler, and J.M. Gregory. 1998. Mean crop consumptive use and free-water evaporation for Texas. Texas Water Development Board Grant No. 95-483-137. Texas Tech University Department of Civil Engineering, Lubbock, Texas.

Texas Water Development Board. Retrieved February 2022. Precipitation and evaporation data for southern Deaf Smith County. https://waterdatafortexas.org/lake-evaporation-rainfall

USDA-NRCS. Retrieved 2006. Animal Waste Management software. Version 2.2.01.

USDA-NRCS 2015. Texas Waste Utilization and Nutrient Management 590-633 Plan. Version 5, S Tables.

Attachment 6

Pond Liner Certification

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Toby Baker, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 9, 2021

Anissa Purswell, P.E.
ENVIRO-AG Engineering, Inc.
3404 Airway Blvd.
Amarillo, Texas 79118

Re: Caviness Development, LTD.
Pond Liner Certification
Permit No. WQ0015574-001
WWPR Log No. 0321/159
CN602835209, RN110569571
Deaf Smith County

Dear Ms. Purswell:

On March 15, 2021, TCEQ received the project summary transmittal letter dated March 11, 2021 requesting a liner certification review for Pond 15 associated with Caviness Development, LTD. The entity is regulated by Texas Water Quality permit WQ0015744001. The pond in question, Pond 15, is located adjacent to the Caviness Beef Packing facility located southwest of Hereford, Texas in Deaf Smith County.

The rules which regulate the design, installation and testing of domestic wastewater projects are found in 30 TAC, Chapter 217, of the Texas Commission on Environmental Quality (TCEQ) rules titled, Design Criteria for Wastewater Systems.

TCEQ performed both a plan and geological review of the liner construction specifications submitted. All items which pertain to specific requirements which must be met as part of the construction of the irrigation storage pond liner seem to meet at least the minimum requirements of 30 TAC Chapter 217: Design Criteria for Wastewater Systems.

Given the results of the review of the submitted information TCEQ concurs with the liner certification for Pond 15 associated with Caviness Development, LTD.

You must keep certain materials on file for the life of the project and provide them to TCEQ upon request. These materials include an engineering report, test results, a summary transmittal letter, and the final version of the project plans and specifications. These materials shall be prepared and sealed by a Professional Engineer licensed in the State of Texas and must show substantial compliance with Chapter 217. All plans and specifications must conform to any waste discharge requirements authorized in a permit by the TCEQ. Certain specific items which shall be addressed in the engineering report are discussed in §217.10. Additionally, the engineering report must include all constants, graphs, equations, and calculations needed to show substantial compliance with Chapter 217.

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

Corporate Office:
3404 Airway Blvd.
Amarillo TX 79118

Central Texas:
9855 FM 847
Dublin TX 76446

New Mexico:
203 East Main Street
Artesia NM 88210

SOIL LINER CERTIFICATION

Caviness Development, Ltd.
Hereford, Deaf Smith County, TX

Soil Liner Certification – Pond #15 (Domestic WW Storage/Irrigation Pond)

Six 3-inch Shelby tube core samples were collected from Pond #15 to document that the liner meets the requirements of the TCEQ for soil liner. The liner thickness was documented to be at least 36 inches.

The hydraulic conductivity of the clay soil liner is documented as follows:

- Evap Pond #15 - 1 (Lab #5009) 3.4×10^{-8} cm/sec
- Evap Pond #15 - 2 (Lab #5010) 3.4×10^{-8} cm/sec
- Evap Pond #15 - 3 (Lab #5011) 5.2×10^{-8} cm/sec
- Evap Pond #15 - 4 (Lab #5012) 2.5×10^{-8} cm/sec
- Evap Pond #15 - 5 (Lab #5013) 3.1×10^{-8} cm/sec
- Evap Pond #15 - 6 (Lab #5014) 2.2×10^{-8} cm/sec

Based on the above documentation, the liner in Pond #15 is determined to be in accordance with TCEQ requirements for soil liners. The test locations were backfilled with bentonite chips. The test results meet the requirements of the TCEQ for hydraulic conductivity considered protective of ground and surface water sources.

Respectfully submitted,

12-18-2019

STATE OF TEXAS
ERICK V. EMERINE
103494
LICENSED
PROFESSIONAL ENGINEER

Erick Emerine, P.E. – License No. 103494
Enviro-Ag Engineering, Inc. – Firm No. 2507

Attachments: EAE Permeability Lab Reports
AT&E Moisture Density Testing Reports

CALCULATION OF SPECIFIC DISCHARGE

SITE: **Caviness Development, Ltd.**
LOCATION: **Hereford, Deaf Smith County, TX**
STRUCTURE: **Pond #15 (Domestic WW Storage/Irrigation Pond)**

ENGINEER: **E.Emerine**
DATE: **Dec. 2019**

This worksheet calculates the specific discharge through a soil liner based on the measured thickness of the installed clay liner and the results of the permeability testing. The maximum allowable specific discharge of the installed liner is 1.1 x E-06 cm/sec or 0.0374 in/day.

	Hydraulic Conductivity Results of Core Samples								
Laboratory Sample I.D.	5009	5010	5011	5012	5013	5014			
1. Water Depth, feet	10	10	10	10	10	10			
2. Liner Thickness, inches	36.0	36.0	36.0	36.0	36.0	36.0			
3. Hydraulic Conductivity, cm/sec	3.40E-08	3.40E-08	5.20E-08	2.50E-08	3.10E-08	2.20E-08			
4. Calculated specific discharge, v'									
Seepage Rate, inches/day	0.0050	0.0050	0.0077	0.0037	0.0046	0.0032			
Maximum Seepage Rate, inches/day	0.0374	0.0374	0.0374	0.0374	0.0374	0.0374			

NOTES:

(1) Water depth of the pond in feet.

(2) Soil liner thickness in inches.

(3) Hydaulic conductivity of the core sample(s) as determined by flexible wall permeameter in cm/sec (Ref: ASTM D 5084).
The following equation is used:

$$v' = k\,(H + d) / d$$

where: v' = Specific Discharge of area representative of core sample, inches/day
d = Measure Liner Thickness at core sample location, feet
k = Hydaulic Conductivity of liner based on core sample testing, inches/day
H = Maximum Water Depth, feet

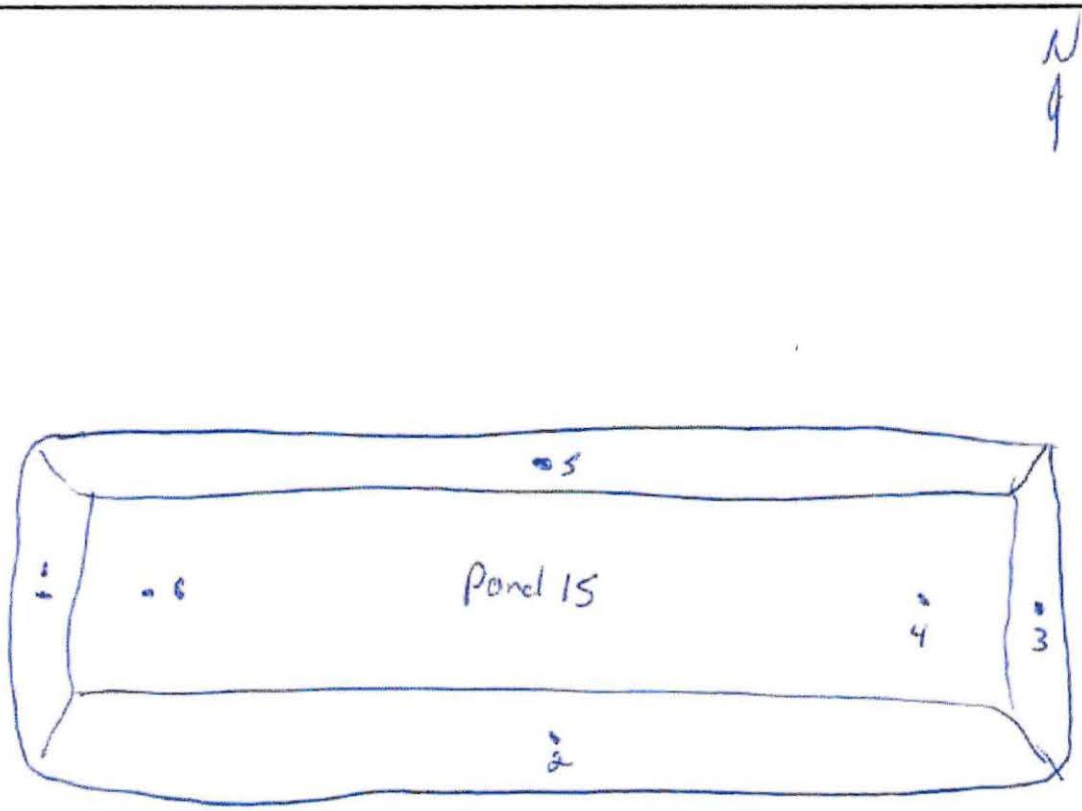
(4) Maximum Allowable Seepage Rate of 1.1 E-06 cm/sec (0.0374 in/day).

Erick Emerine, PE
Enviro-Ag Engineering, Inc.
TX Firm No. 2507

STATE OF TEXAS
ERICK V. EMERINE
103494
LICENSED
PROFESSIONAL ENGINEER

12-18-2019

TRIAXIAL PERMEABILITY CHAIN of CUSTODY



STRUCTURE	PERM REPORT I.D.	LAB LOG
1 W-slope		5009
2 S-slope		5010
3 E-slope		5011
4 E-BTTM		5012
5 N-slope		5013
6 W-BTTM		5014

Facility Name: Caviness Pond 15

Project Engineer: Eric

Sampled by: Tony

Date Sampled: 9/13/19

Date to Lab: 9-19-19

Received: Jared Pawley

ENVIRO-AG EAE ENGINEERING, INC.

Enviro-Ag Engineering, Inc.
ENGINEERING CONSULTANTS
3404 Airway Boulevard
AMARILLO, TEXAS 79118
TEL (806) 353-6123 FAX (806) 353-4132

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

LABORATORY SERVICES

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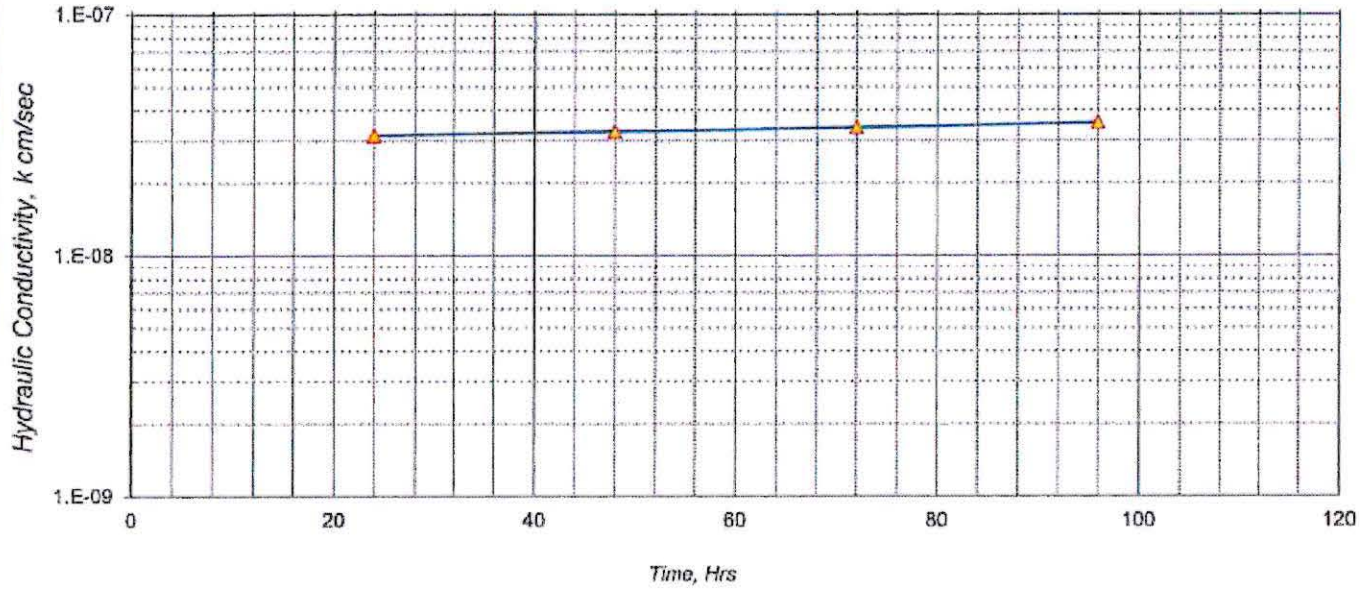
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Caviness Pond 15	**19/02/09**	**5009**
Sample ID:	**Sample Location:**	**Report Date:**
1	**W Slope**	**October 12, 2019**

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	1	
DESCRIPTION:	W Slope	
	INITIAL	FINAL
HEIGHT, in.	2.6	2.7
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	16.1	20.4
DRY DENSITY, pcf	112	110
SATURATION, %	85	103
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 3
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.0	3.2E-08
2	48.0	3.3E-08
3	72.0	3.4E-08
4	96.0	3.6E-08

AVERAGE LAST 4 : **3.4E-08**

COMMENTS:

Tap water used as permeant.

These results apply only to the above listed samples. The data and information are proprietary and can not be released without authorization of Enviro-Ag Engineering Inc.
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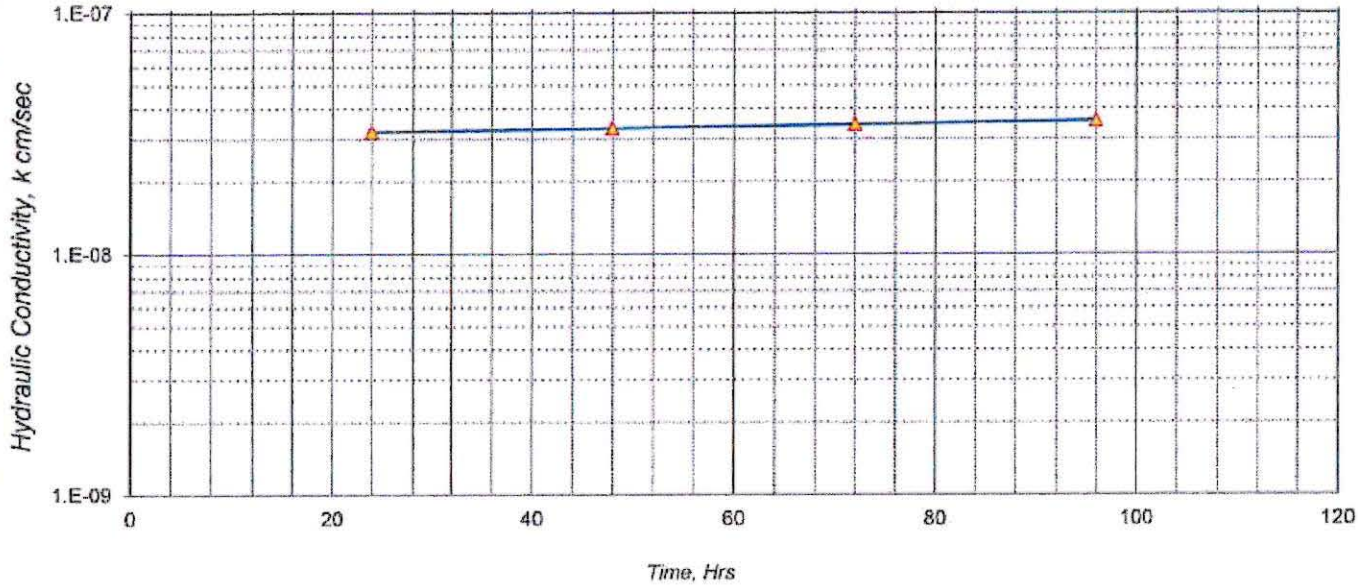
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Caviness Pond 15	19/02/09	5010
Sample ID:	**Sample Location:**	**Report Date:**
2	S Slope	October 12, 2019

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	2	
DESCRIPTION:	S Slope	
	INITIAL	FINAL
HEIGHT, in.	3.0	3.0
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	18.9	19.7
DRY DENSITY, pcf	112	109
SATURATION, %	100	98
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 3
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.0	3.2E-08
2	48.0	3.3E-08
3	72.0	3.4E-08
4	96.0	3.6E-08

AVERAGE LAST 4 : **3.4E-08**

COMMENTS:

Tap water used as permeant.

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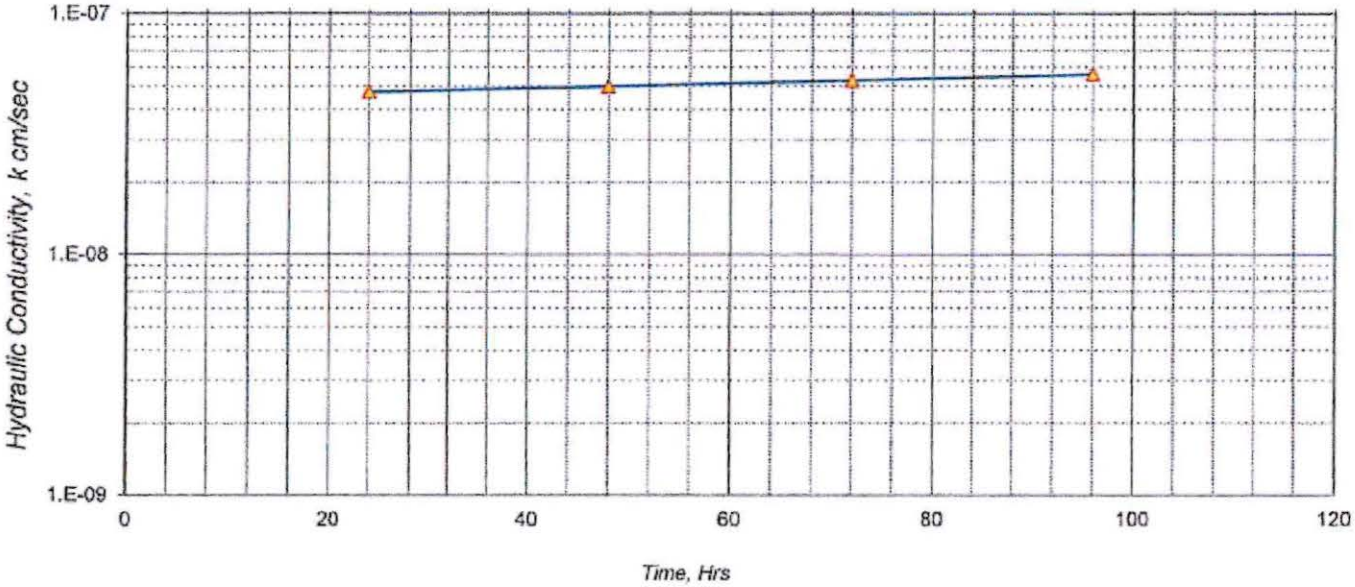
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Caviness Pond 15	19/02/09	5011
Sample ID:	**Sample Location:**	**Report Date:**
3	E Slope	October 12, 2019

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	3	
DESCRIPTION:	E Slope	
	INITIAL	FINAL
HEIGHT, in.	2.9	2.9
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	15.1	15.5
DRY DENSITY, pcf	122	120
SATURATION, %	107	103
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 2
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.0	4.7E-08
2	48.0	5.0E-08
3	72.0	5.3E-08
4	96.0	5.6E-08

AVERAGE LAST 4 : **5.2E-08**

COMMENTS:

Tap water used as permeant.

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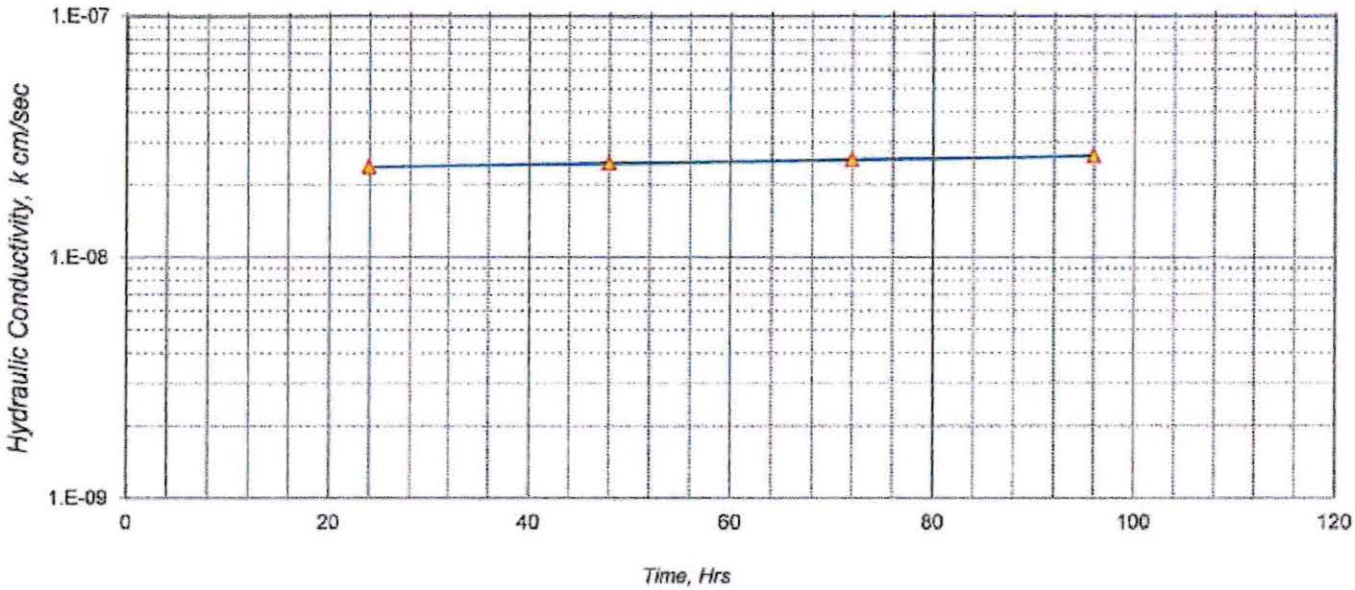
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Caviness Pond 15	19/02/09	5012
Sample ID:	**Sample Location:**	**Report Date:**
4	E Bottom	October 12, 2019

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	4	
DESCRIPTION:	E Bottom	
	INITIAL	FINAL
HEIGHT, in.	2.3	2.3
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	12.8	16.8
DRY DENSITY, pcf	119	117
SATURATION, %	83	102
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 4
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.0	2.4E-08
2	48.0	2.5E-08
3	72.0	2.5E-08
4	96.0	2.6E-08

AVERAGE LAST 4 : **2.5E-08**

COMMENTS:
Tap water used as permeant.

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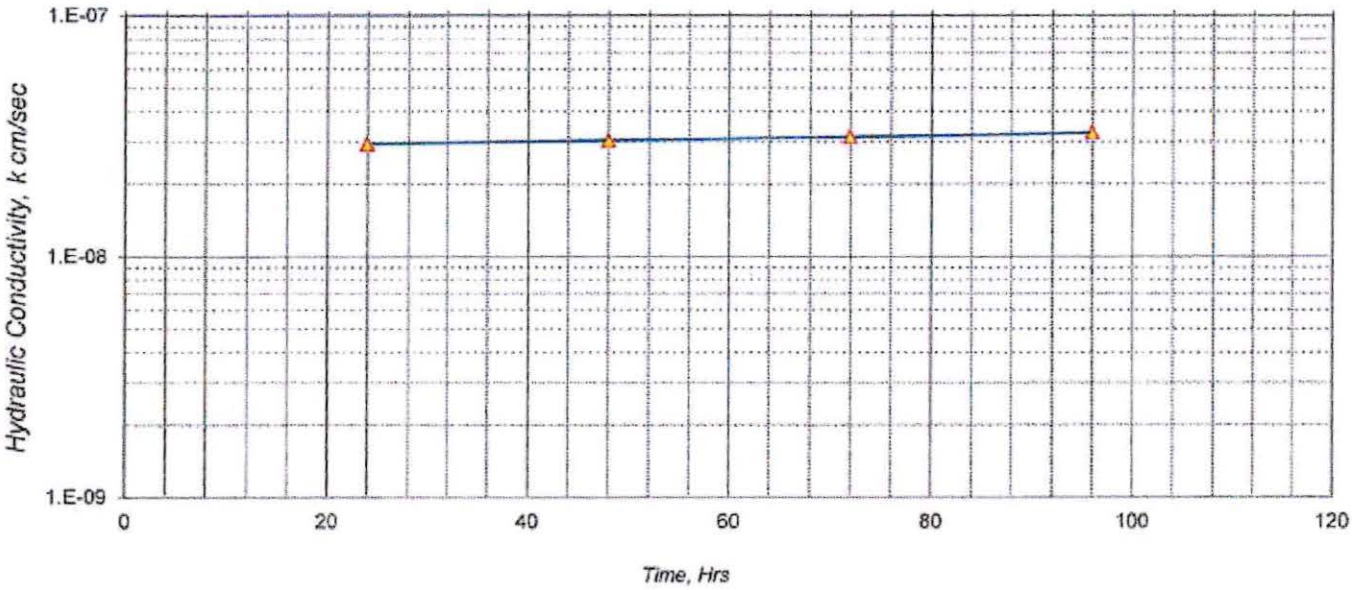
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No.	Lab Sample Number:
Caviness Pond 15	**19/02/09**	**5013**
Sample ID:	**Sample Location:**	**Report Date:**
5	**N Slope**	**October 12, 2019**

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	5	
DESCRIPTION:	N Slope	
	INITIAL	FINAL
HEIGHT, in.	2.7	2.8
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	17.2	26.2
DRY DENSITY, pcf	100	98
SATURATION, %	67	98
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 3
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.0	2.9E-08
2	48.0	3.0E-08
3	72.0	3.2E-08
4	96.0	3.3E-08

AVERAGE LAST 4 : **3.1E-08**

COMMENTS:

Tap water used as permeant.

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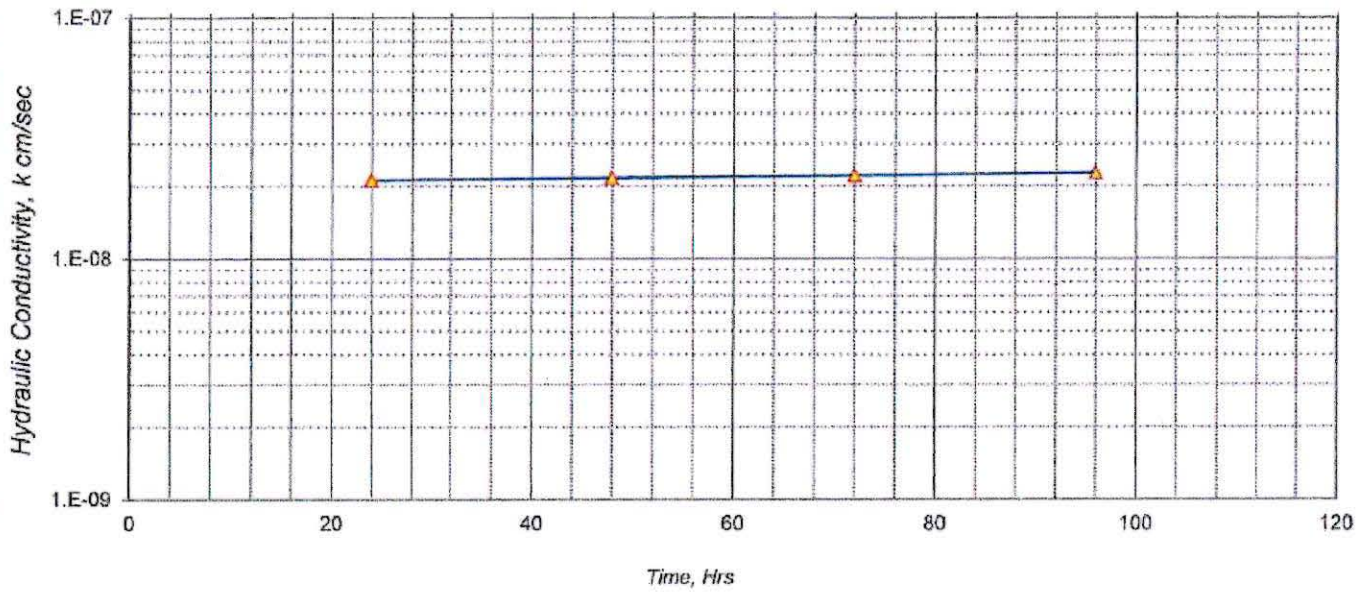
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Caviness Pond 15	**19/02/09**	**5014**
Sample ID:	**Sample Location:**	**Report Date:**
6	**W Bottom**	**October 12, 2019**

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	6	
DESCRIPTION:	W Bottom	
	INITIAL	FINAL
HEIGHT, in.	3.0	3.0
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	12.9	17.1
DRY DENSITY, pcf	119	117
SATURATION, %	83	103
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 3
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.0	2.1E-08
2	48.0	2.2E-08
3	72.0	2.2E-08
4	96.0	2.3E-08

AVERAGE LAST 4 : **2.2E-08**

COMMENTS:

Tap water used as permeant.

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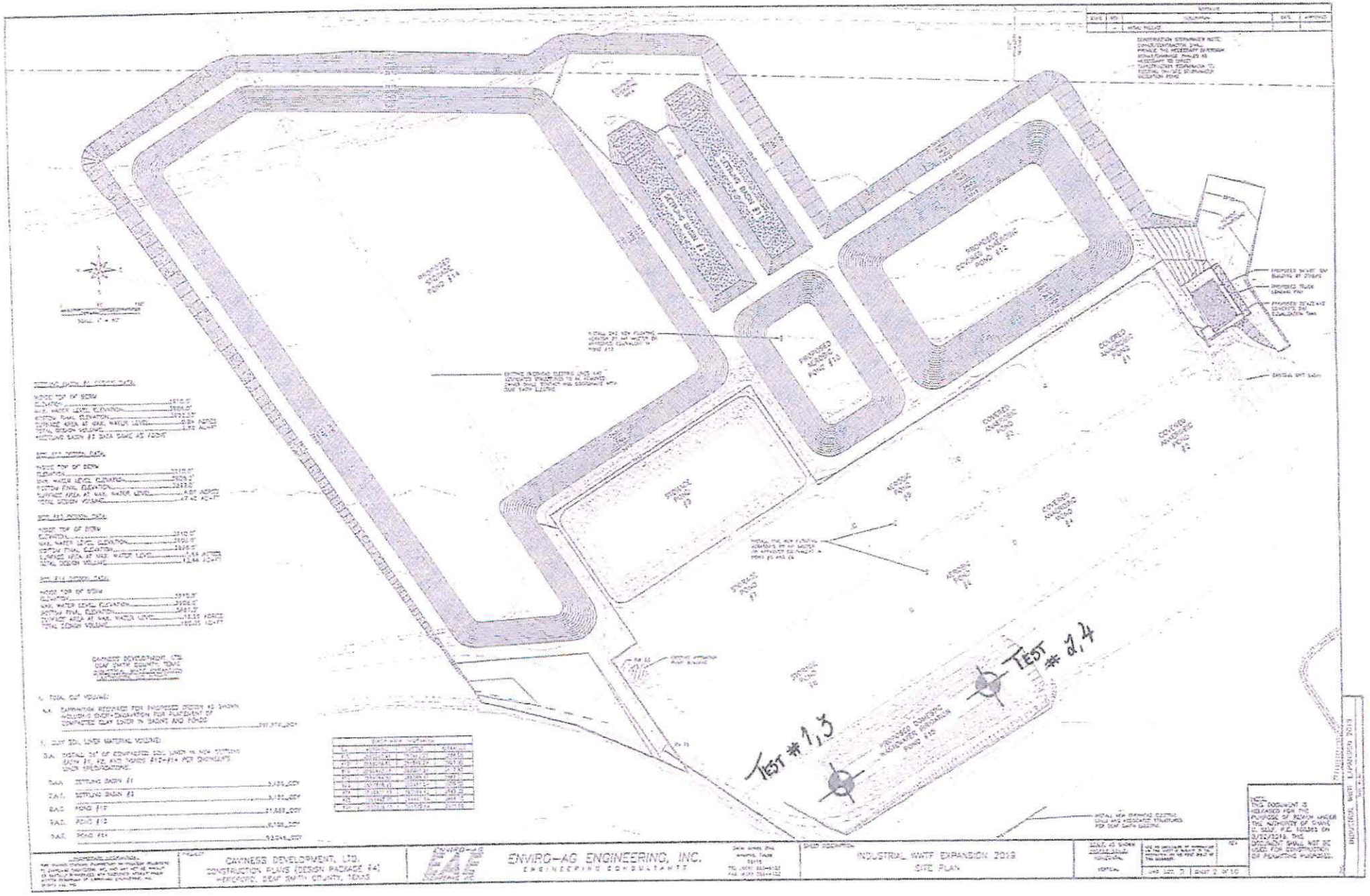
REPORT NO. 59484
PROJECT: POND EXPANSION 2019
DATE: 8-17-19
CLIENT: LAVINESS BEEF



IN-PLACE NUCLEAR DENSITY TEST REPORT

Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	08/17/19	Report No.:	59424
Client:	Caviness Beef Packers	Technician:	Gilbert Alaniz
Project:	Pond Expansion 2019	Time:	9:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1
2	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 (See Attachment)	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1*	West Berm - 1st Lift*	2	6	15.8	112.8	98.9
2	East Berm - 2nd Lift	2	6	17.0	111.0	97.3
3	West Berm - 2nd Lift	1	6	18.8	107.2	98.3
4	East Berm - 3rd Lift	1	6	19.5	107.3	98.4

Remarks: *Retest from Report No. 59767, Test No. 2 on 8/16/19.

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PROJECT INFORMATION			
Date:	08/19/19	Report No.:	59530A
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1
2	Dark Brown Lean Clay with Caliche Nodules (CL)	18.9	103.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	East Berm - 4th Lift	2	6	18.3	102.7	99.6
2	West Berm - 3rd Lift	2	6	19.0	101.9	98.8

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PROJECT INFORMATION			
Date:	08/19/19	Report No.:	59530B
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	12:00 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft^3)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1
2	Dark Brown Lean Clay with Caliche Nodules (CL)	18.9	103.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft^3)	Compaction (%)
1	East Berm - 5th Lift	2	6	19.7	100.8	97.8
2	West Berm - 4th Lift	2	6	18.9	102.1	99.0

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PROJECT INFORMATION			
Date:	08/19/19	Report No.:	59530C
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	2:45 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft^3)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1
2	Dark Brown Lean Clay with Caliche Nodules (CL)	18.9	103.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft^3)	Compaction (%)
1	East Berm - 6th Lift	1	6	15.8	113.7	99.6
2	West Berm - 5th Lift	1	6	14.2	112.9	98.9

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PROJECT INFORMATION			
Date:	08/19/19	Report No.:	59530D
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	5:15 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1
2	Dark Brown Lean Clay with Caliche Nodules (CL)	18.9	103.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	East Berm - 7th Lift	1	6	16.4	113.9	99.8
2	West Berm - 6th Lift	1	6	17.0	112.6	98.7

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PROJECT INFORMATION			
Date:	08/20/19	Report No.:	59531A
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft^3)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1
2	Dark Brown Lean Clay with Caliche Nodules (CL)	18.9	103.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft^3)	Compaction (%)
1	East Berm - 8th Lift	1	6	17.0	113.8	99.7
2	West Berm - 7th Lift	1	6	14.4	114.1	100.0
3	South Berm – 1st Lift	1	6	16.8	115.4	101.1
4	North Berm – 1st Lift	1	6	14.8	113.6	99.6

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PROJECT INFORMATION			
Date:	08/20/19	Report No.:	59531B
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	1:00 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	East Berm - 9th Lift	1	6	16.2	113.9	99.8
2	South Berm – 2nd Lift	1	6	15.8	111.1	97.4
3	North Berm – 2nd Lift	1	6	14.8	112.8	98.9

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PROJECT INFORMATION			
Date:	08/20/19	Report No.:	59531C
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	2:20 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	East Berm - 10th Lift	1	6	14.8	113.2	99.2
2	South Berm – 3rd Lift	1	6	15.4	110.3	96.7

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PROJECT INFORMATION			
Date:	08/20/19	Report No.:	59531D
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	4:30 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	East Berm - 11th Lift	1	6	16.6	110.4	96.8
2	South Berm – 4th Lift	1	6	17.0	112.7	98.8

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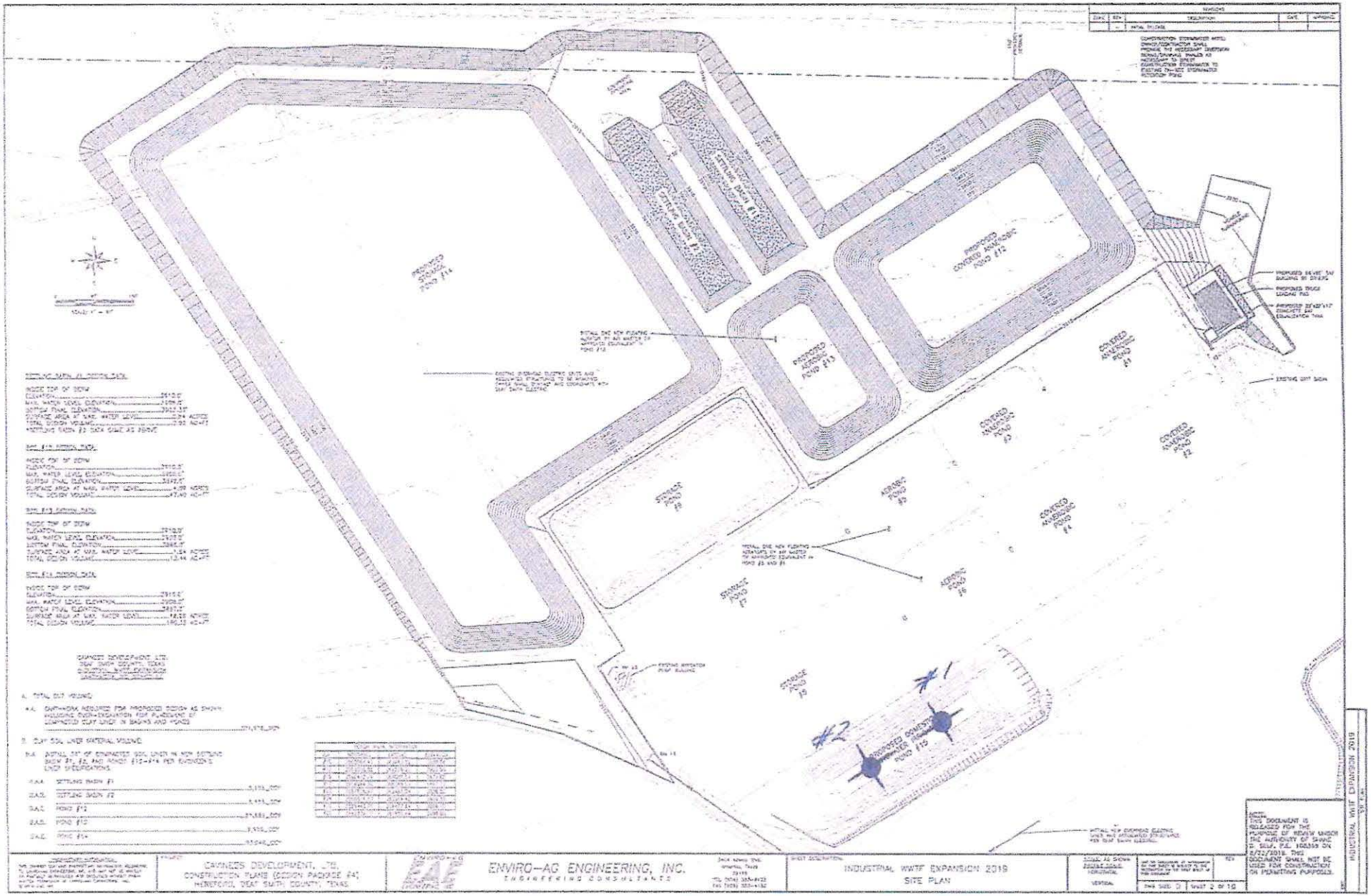
Date: 6-20-19
Project: Pond Expansion 2019
Invoice #: 59550
Location: Pond #15



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PROJECT INFORMATION			
Date:	08/30/19	Report No.:	59550
Client:	Caviness Beef Packers	Technician:	Kynan Rogers
Project:	Caviness Industrial Pond Expansion	Time:	4:00 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 1st Lift on Floor	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	14.7	116.4	102.0
2	See Attachment	1	6	15.5	109.4	95.9

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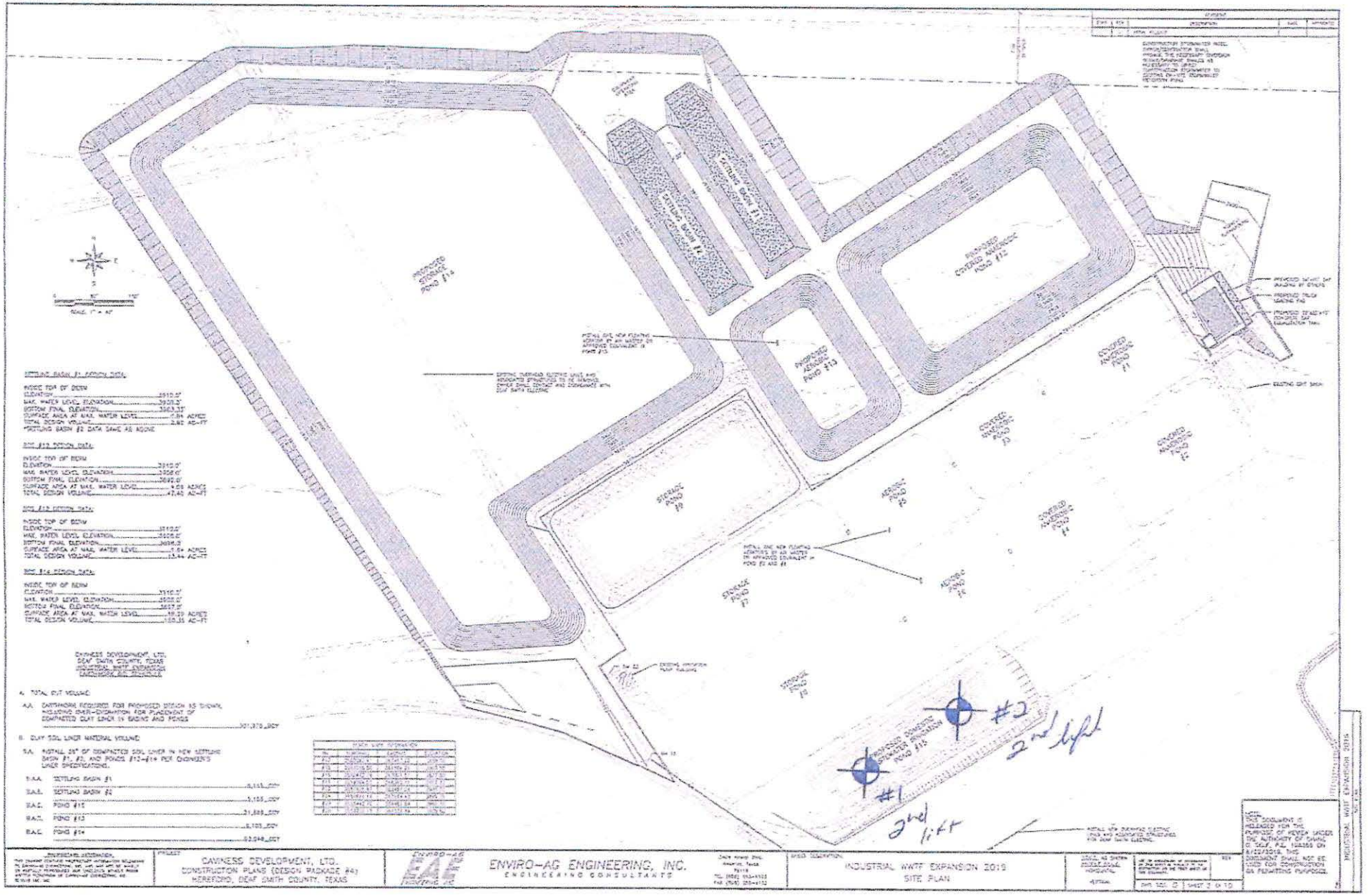
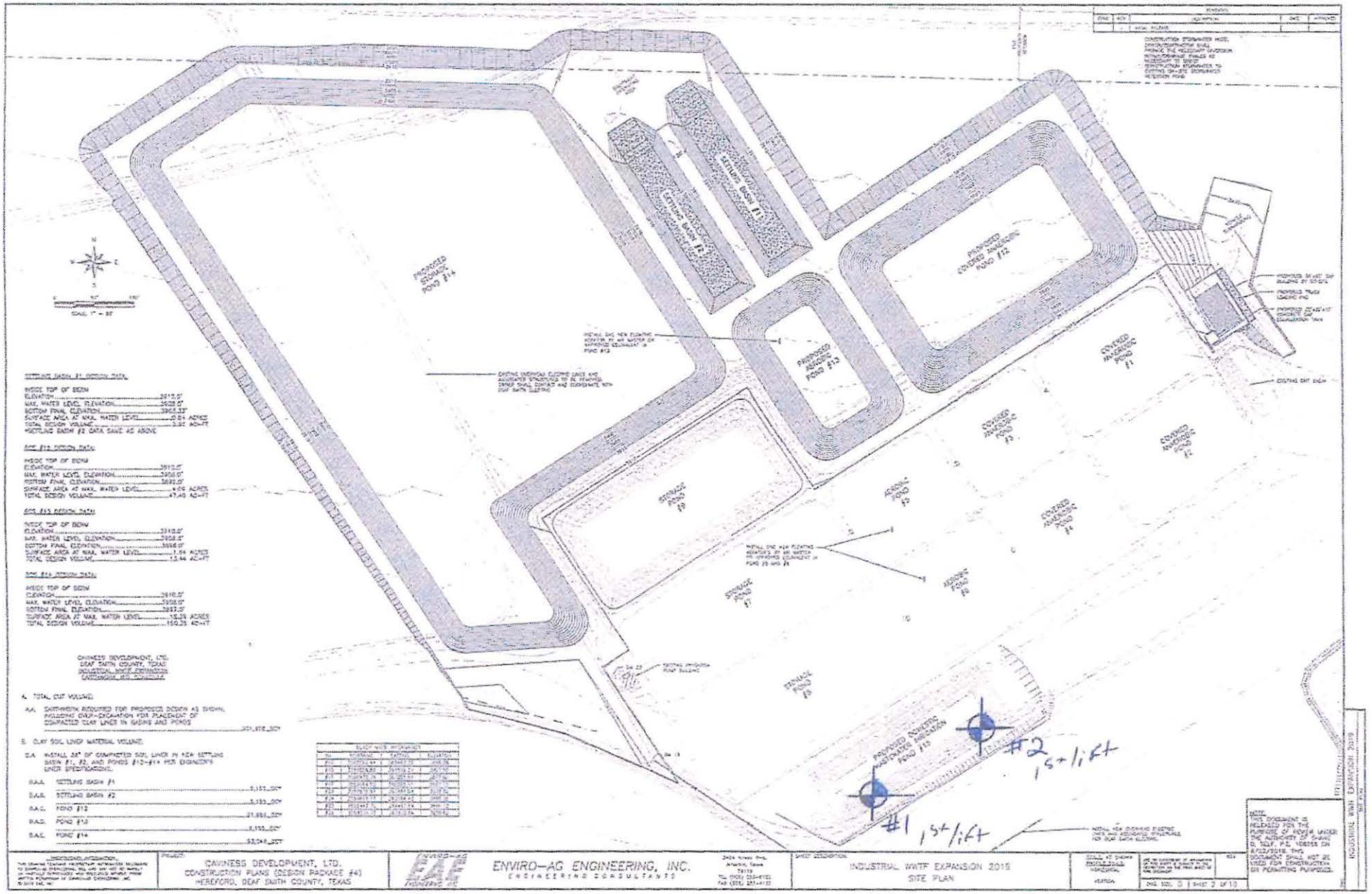
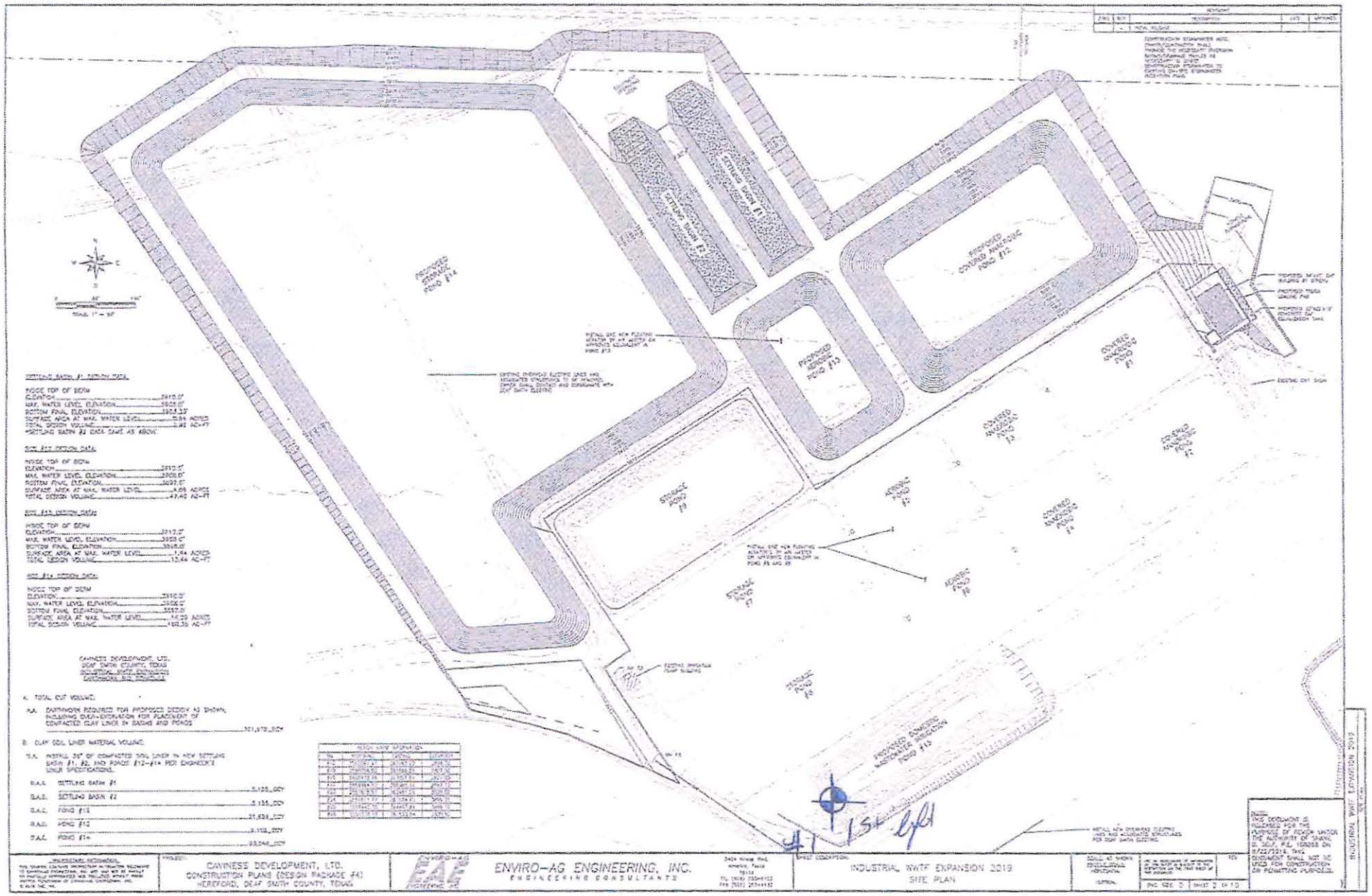
Report No. 59554 A
Client: Caviness Beef
Project: Pond Expansion 2019
DATE: 9/6/19



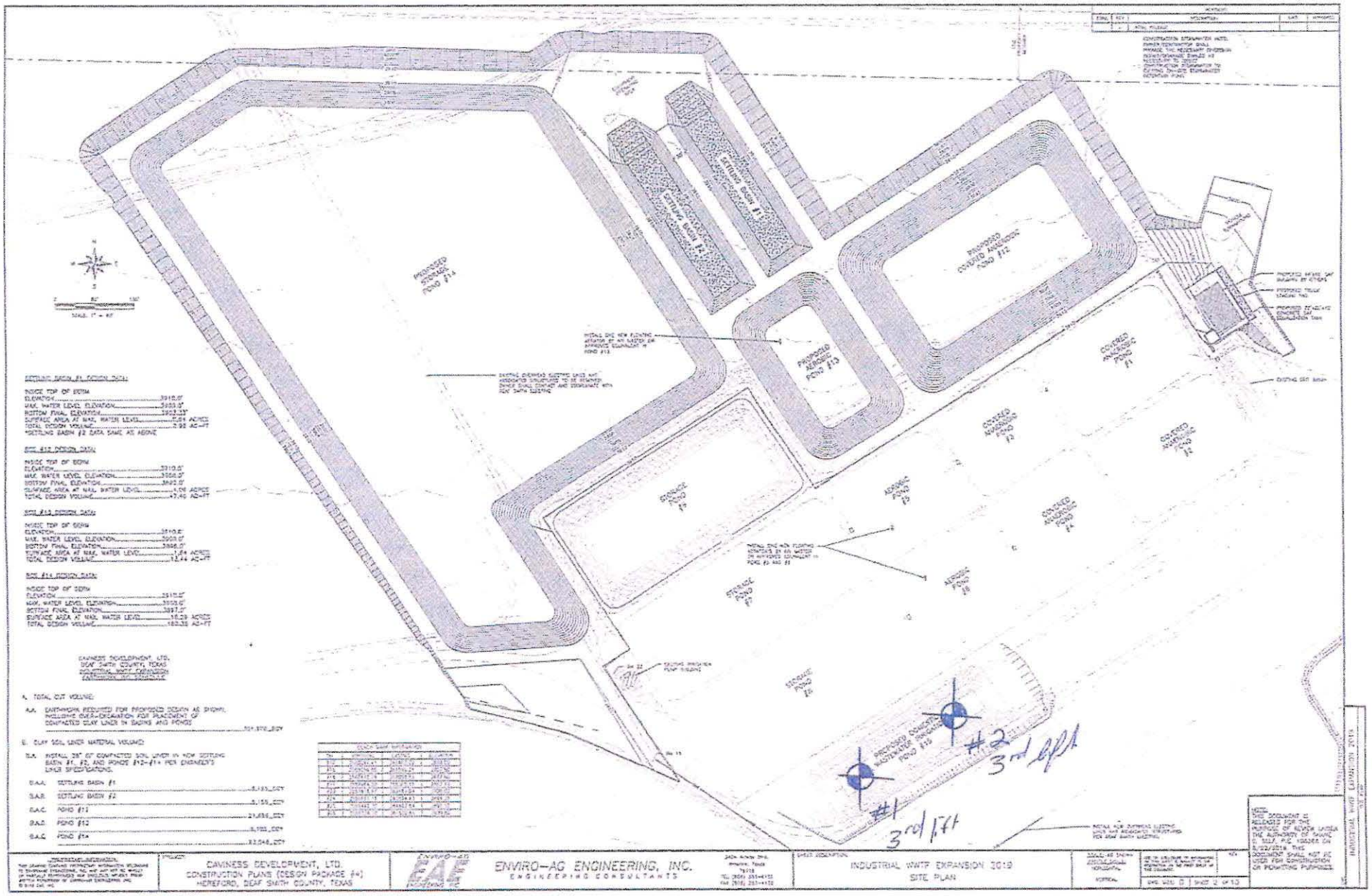
Report No. 3M5740
Client: Caviness Beef
Project: Pond Expansion 2019
DATE: 9-6-19



Report No. 573 37-L
Client: Caviness Beef
Project: Pond Expansion 2019
DATE: 9-6-19



Report No. 59537-0
Client: Caviness Beef
Project: Pond Expansion 2019
DATE: 9-6-19



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PROJECT INFORMATION			
Date:	09/06/19	Report No.:	59554A
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	12:00 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 2nd Lift on Floor – Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	15.5	115.0	100.8
2	See Attachment	1	6	16.5	113.7	99.6

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PROJECT INFORMATION			
Date:	09/06/19	Report No.:	59554B
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	12:00 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 1st Lift on South Slope – Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	14.5	112.6	98.7
2	See Attachment	1	6	16.6	113.4	99.4

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PROJECT INFORMATION			
Date:	09/06/19	Report No.:	59554C
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	3:30 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 1st Lift on West Slope – Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	17.0	111.3	97.5

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PROJECT INFORMATION			
Date:	09/06/19	Report No.:	59554D
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	3:30 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 3rd Lift on Floor – Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	14.3	113.3	99.3
2	See Attachment	1	6	15.0	112.7	98.8

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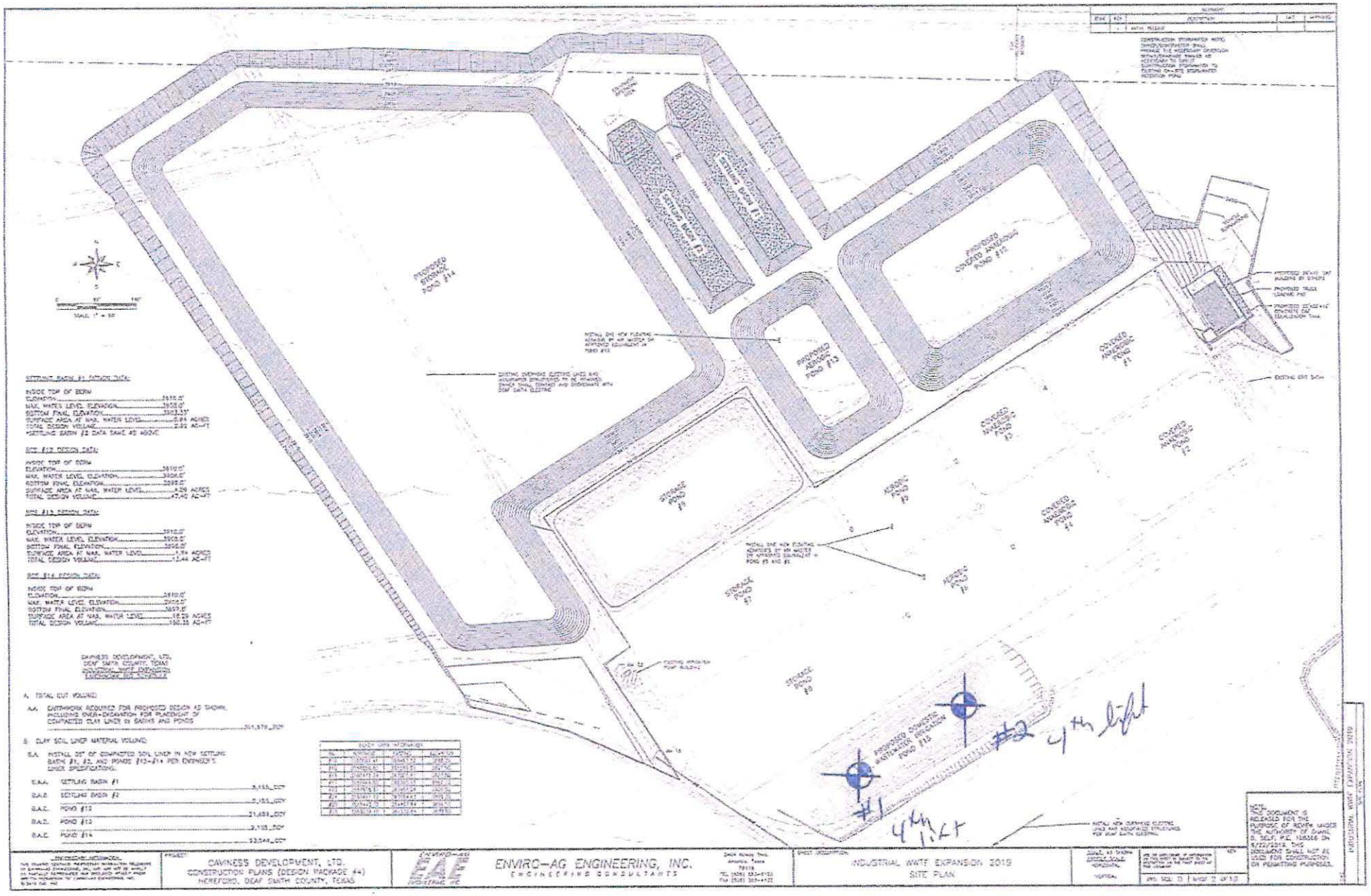
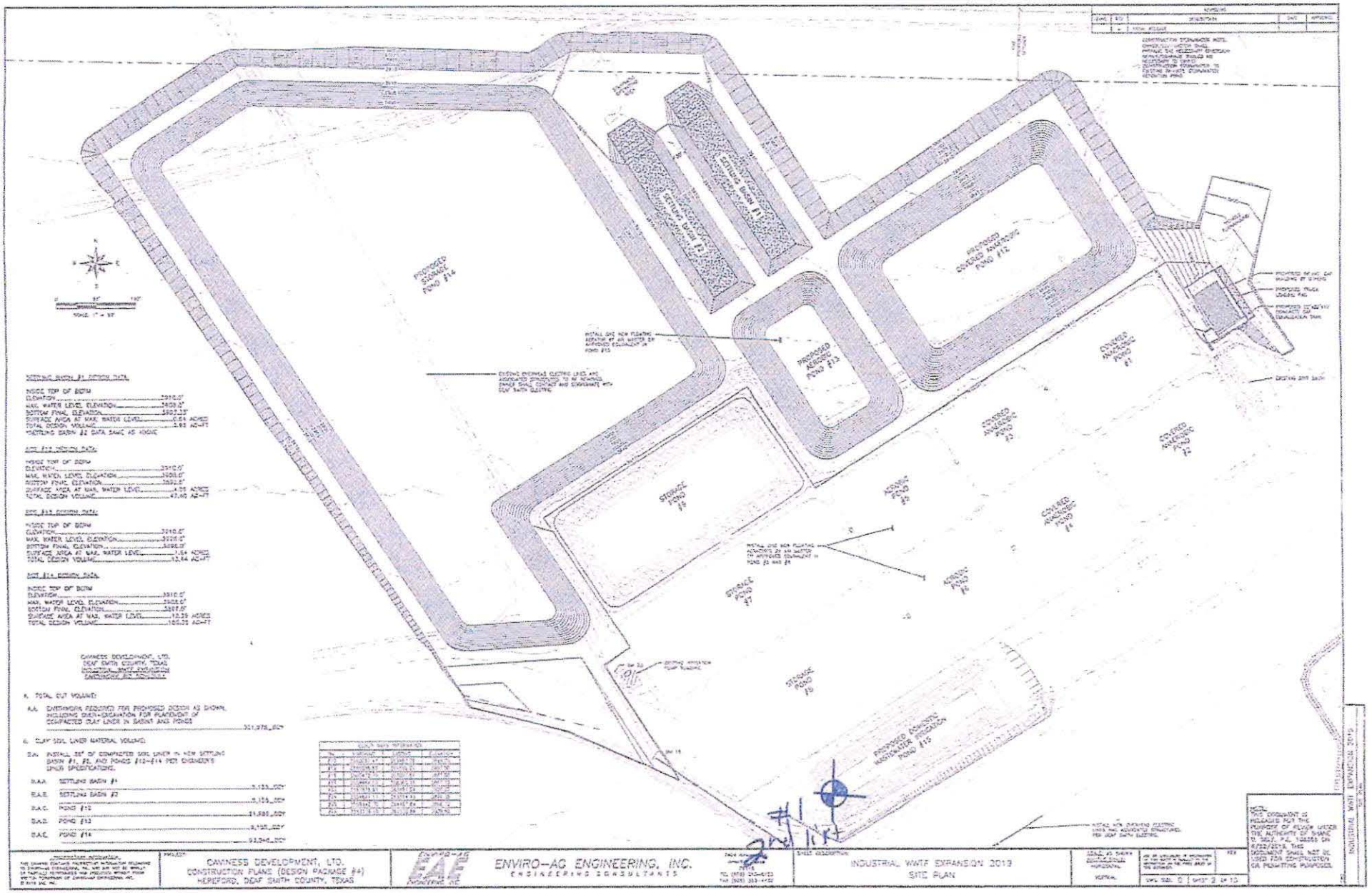
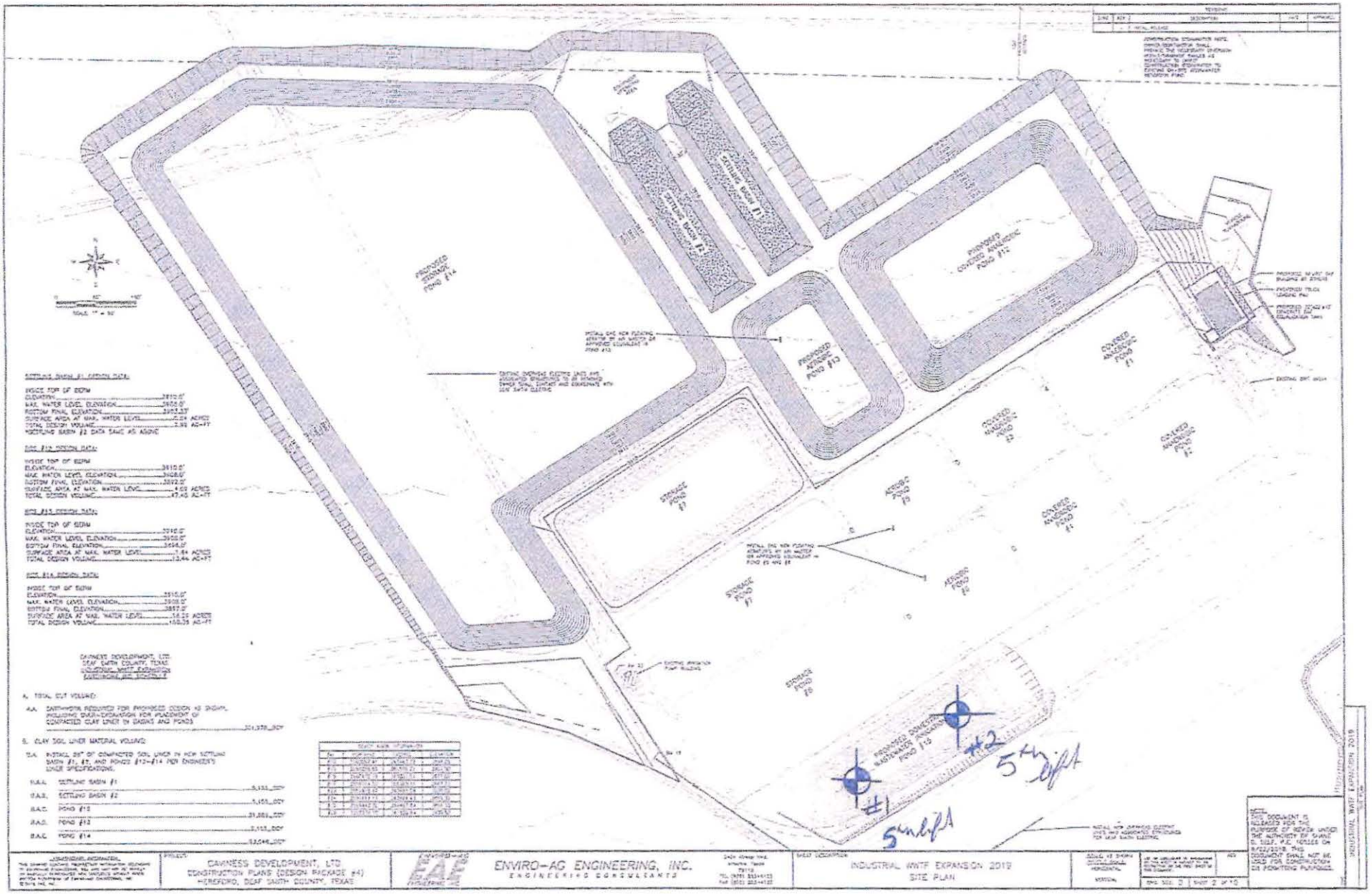
Report no. 595554
Client: Caviness Beef
Project: Pond Expansion 2019
DATE: 9-7-19



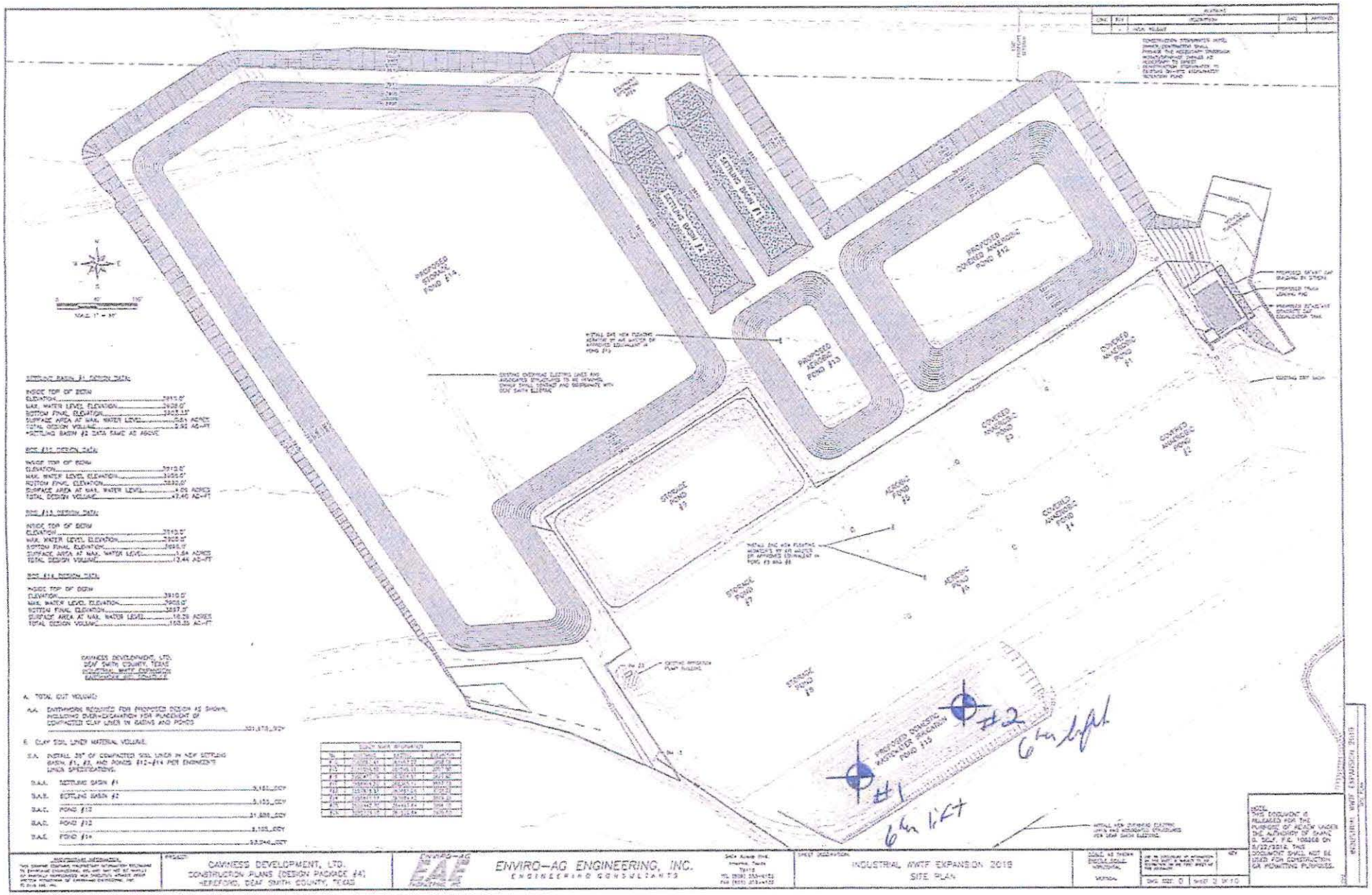
Report No. 59555-B
Client: Caviness Beef
Project: Pond Expansion 2019
DATE: 9-7-19



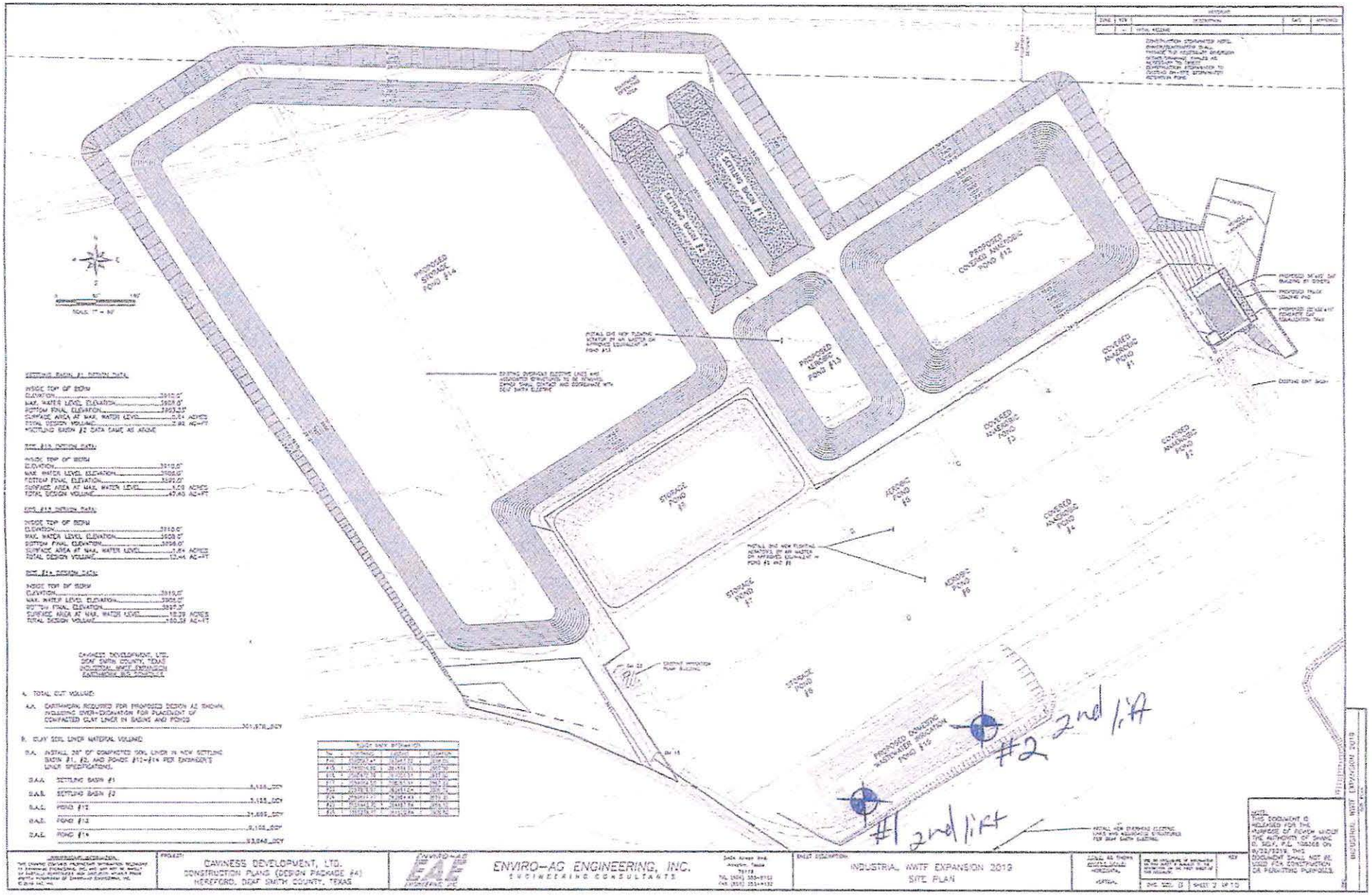
Report No. 59555-C
Client: Caviness Beef
Project: Pond Expansion 2019
DATE: 9-7-19



Report No 59555-D
Client: Cavness Beef
Project: Pond Expansion 2019
DATE: 9-7-19



Report No. 59555-E
Client: Cawiness Beef
Project: Pond Expansion 2019
DATE: 9-7-19



IN-PLACE NUCLEAR DENSITY TEST REPORT

Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/07/19	Report No.:	59555A
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	8:30 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 4th Lift on Floor – Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	16.6	114.4	100.3
2	See Attachment	1	6	16.7	115.1	100.9

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Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/07/19	Report No.:	59555B
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	10:30 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 2nd Lift on West Slope – Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	17.0	114.0	99.9

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Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/07/19	Report No.:	59555C
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	12:30 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 5th Lift on Floor – Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	16.3	113.3	99.3
2	See Attachment	1	6	14.6	112.9	98.9

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Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/07/19	Report No.:	59555D
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	2:30 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 6th Lift on Floor – Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	14.9	111.6	97.8
2	See Attachment	1	6	14.4	112.3	98.4

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Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/07/19	Report No.:	59555E
Client:	Caviness Beef Packers	Technician:	Rudy Ramirez
Project:	Caviness Industrial Pond Expansion	Time:	4:30 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 2nd Lift on South Slope–Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	See Attachment	1	6	14.8	113.6	99.6
2	See Attachment	1	6	14.5	112.4	98.5

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REPORT NO: 59594A
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/10/19

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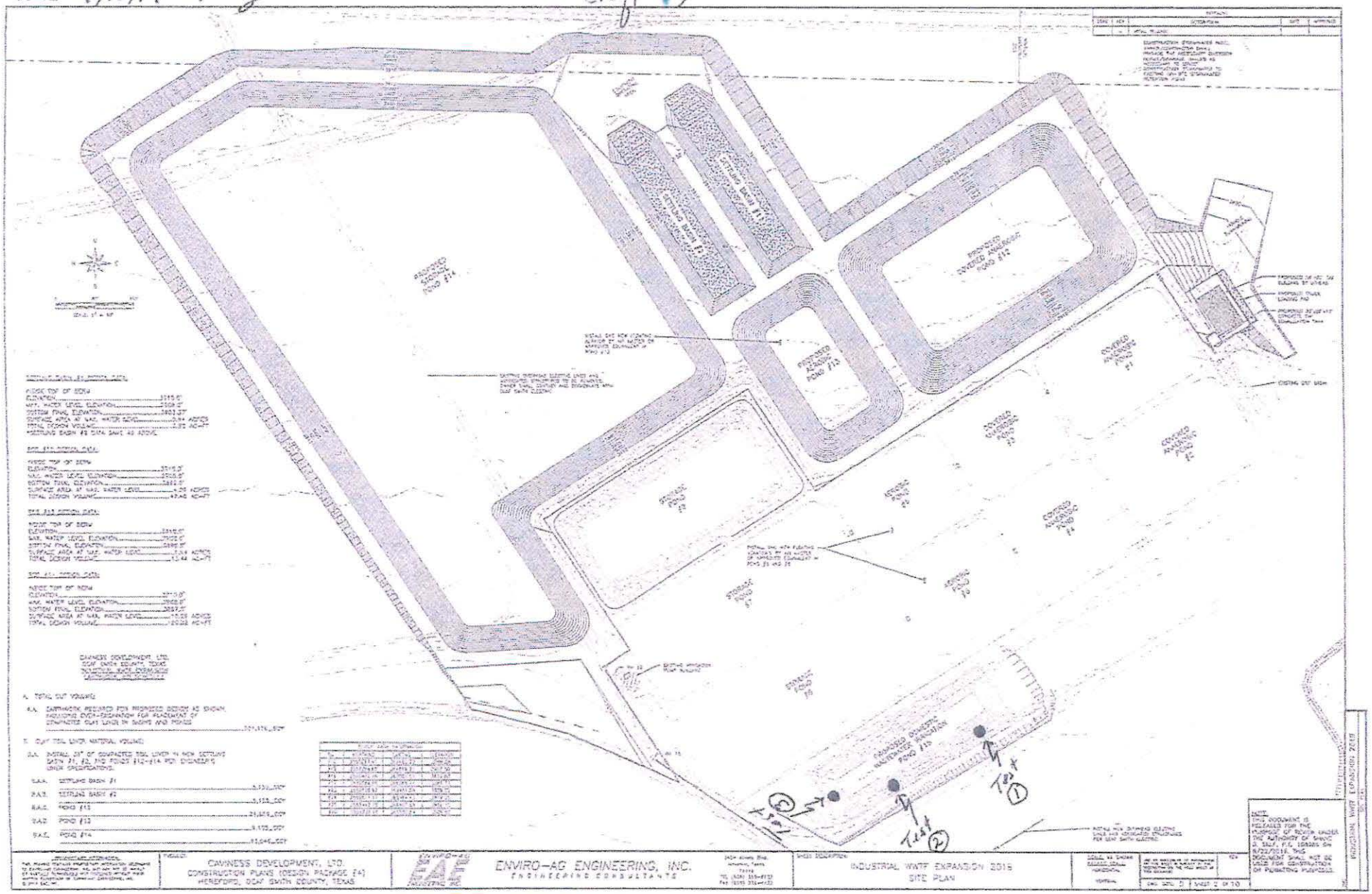
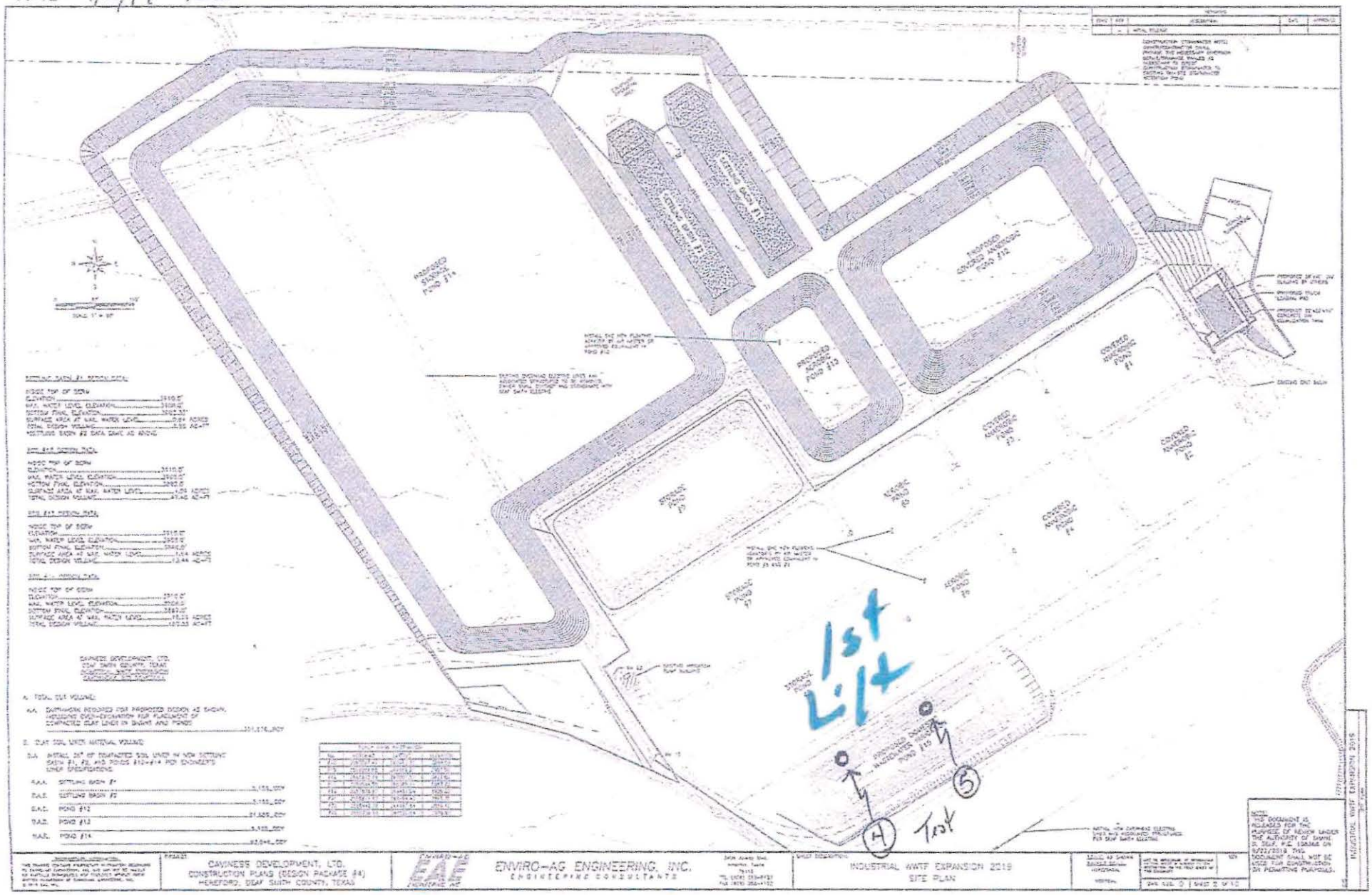
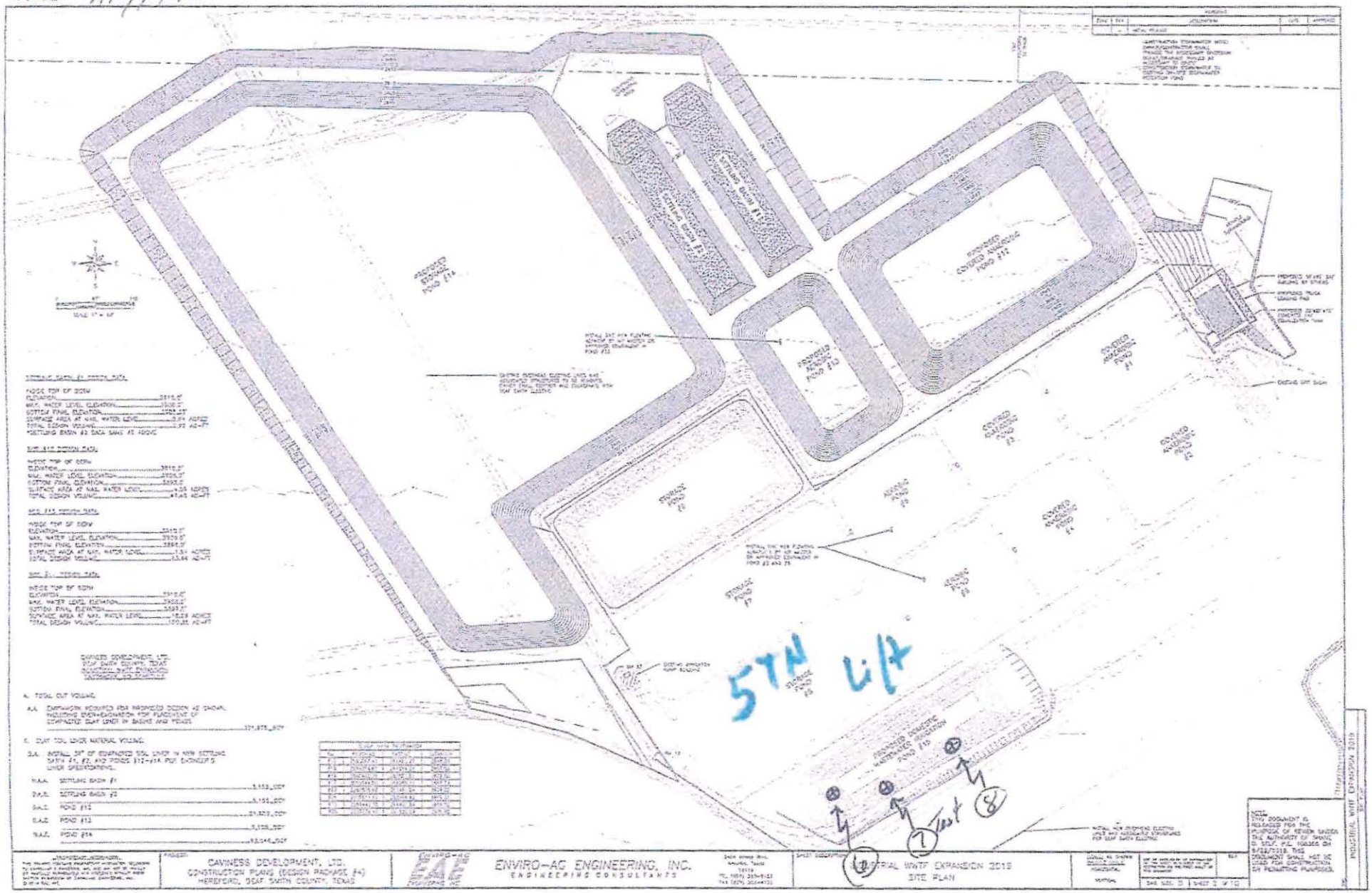


REPORT NO: 595948
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/10/19



REPORT NO: 59594C
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/10/19



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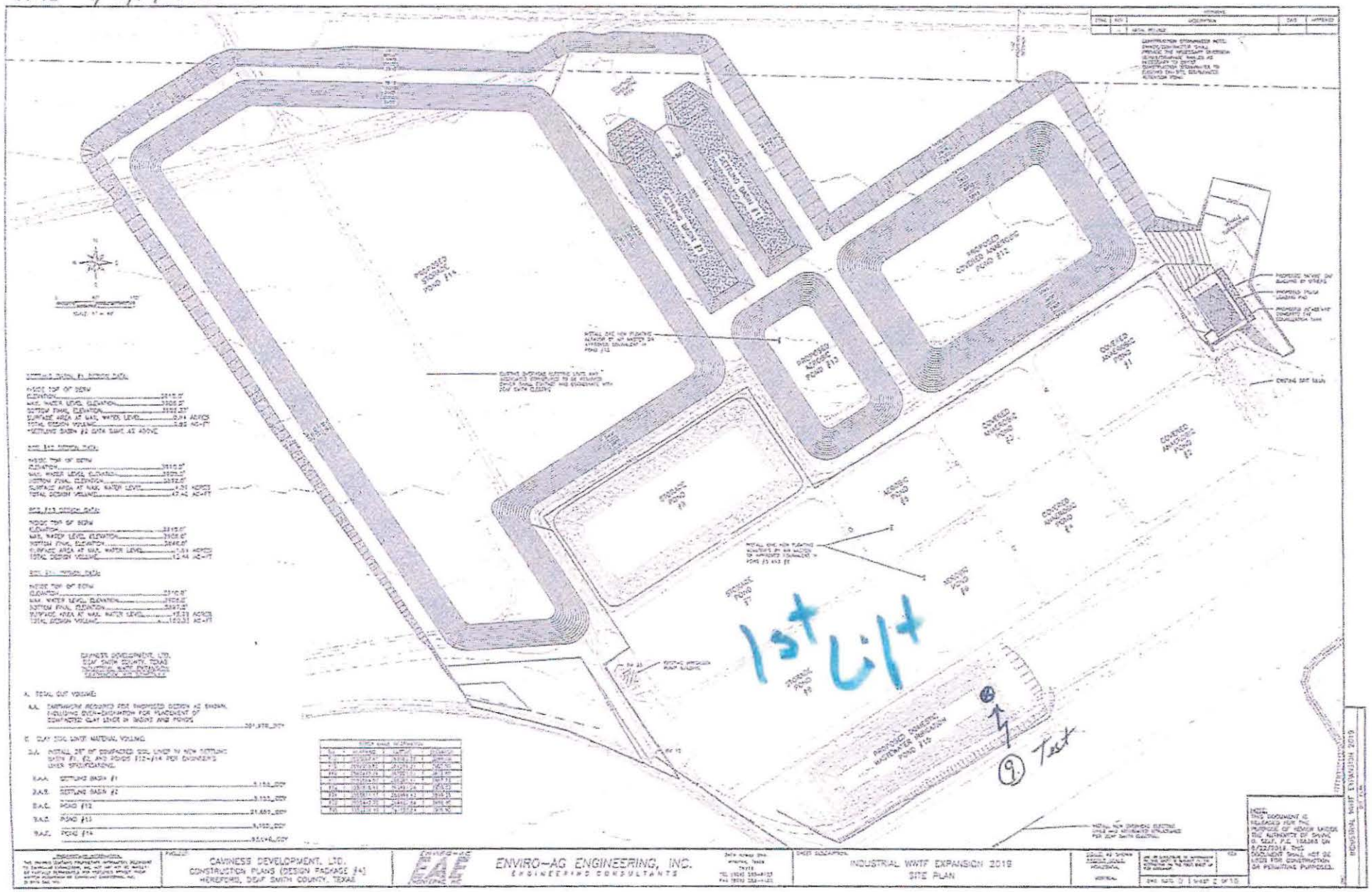
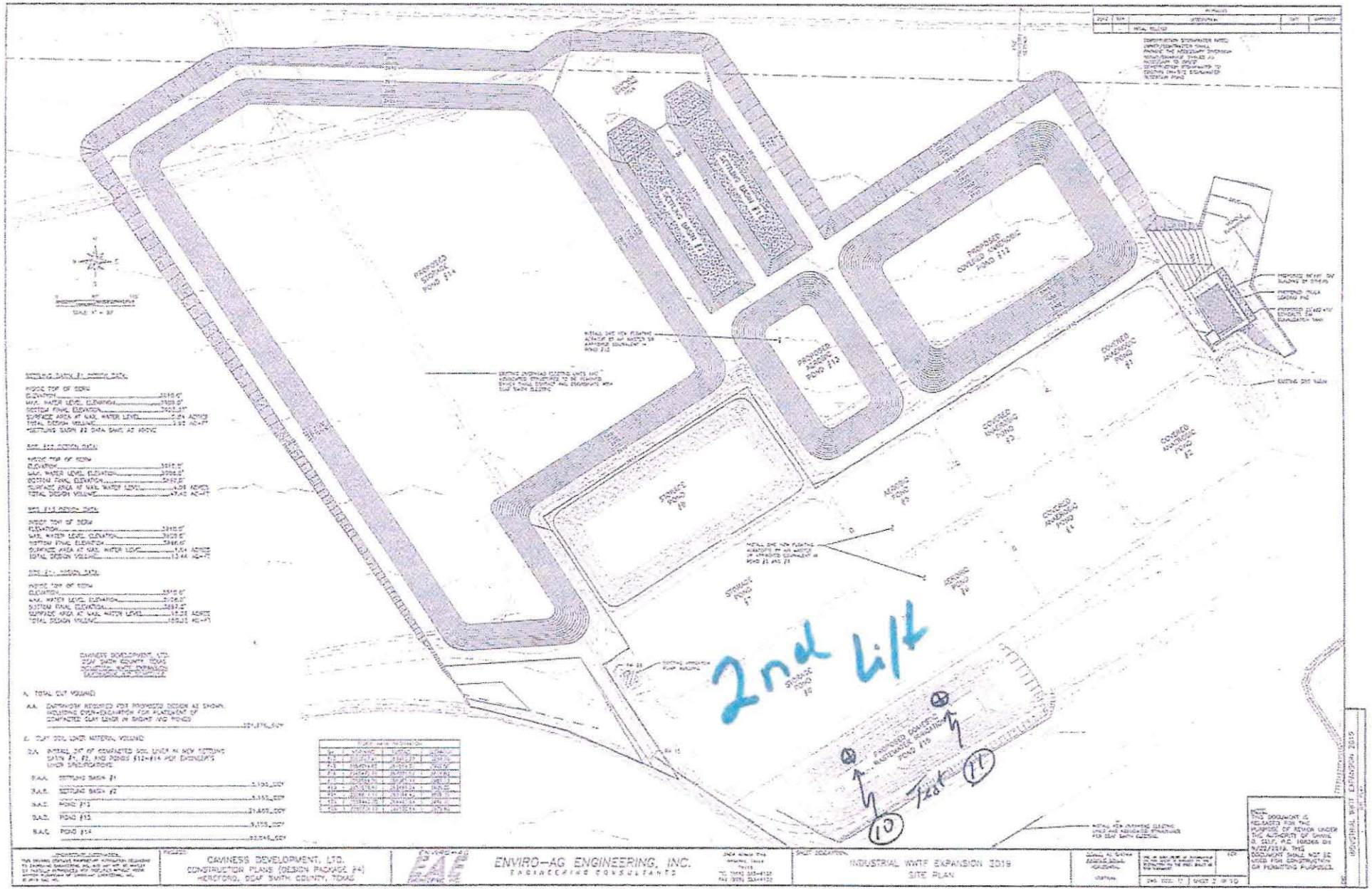
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/10/19



REPORT NO. 37374E
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/10/19



IN-PLACE NUCLEAR DENSITY TEST REPORT

Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/10/19	Report No.:	59594 A
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Caviness Industrial Pond Expansion	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	1 ± 3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Dark Brown Lean Clay (CL)	18.9	103.1
2	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 4th Lift – Clay Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	South Slope – East	1	6	18.9	102.7	99.6
2	South Slope – West	1	6	18.0	103.8	100.7
3	West Slope	1	6	19.0	98.4	95.4

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Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/10/19	Report No.:	59594 B
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Reddish Brown Lean Clay with Sand and Caliche Nodules (CL)	14.4	110.5
2	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	North Slope - West - 1st Lift	1	6	15.7	105.0	95.0
2	North Slope - East - 1st Lift	1	6	15.0	107.5	97.3

Remarks:

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IN-PLACE NUCLEAR DENSITY TEST REPORT

Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/10/19	Report No.:	59594 C
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Dark Brown Lean Clay with Caliche Nodules (CL)	18.9	103.1
2	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	West Slope - 5th Lift	1	6	17.9	100.3	97.3
2	South Slope - West - 5th Lift	2	6	16.2	108.8	99.7
3	South Slope - East - 5th Lift	2	6	17.8	105.3	96.5

Remarks:

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Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
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F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/10/19	Report No.:	59594 D
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Dark Brown Lean Clay with Caliche Nodules (CL)	18.9	103.1
2	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	East Slope - 1st Lift	2	6	17.5	103.8	95.1

Remarks:

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1113 N. McMasters St.
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F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/10/19	Report No.:	59594 E
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Dark Brown Lean Clay with Caliche Nodules (CL)	18.9	103.1
2	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	North Slope - West - 2nd Lift	2	6	15.8	105.0	96.2
2	North Slope - East - 2nd Lift	2	6	16.4	103.9	95.2

Remarks:

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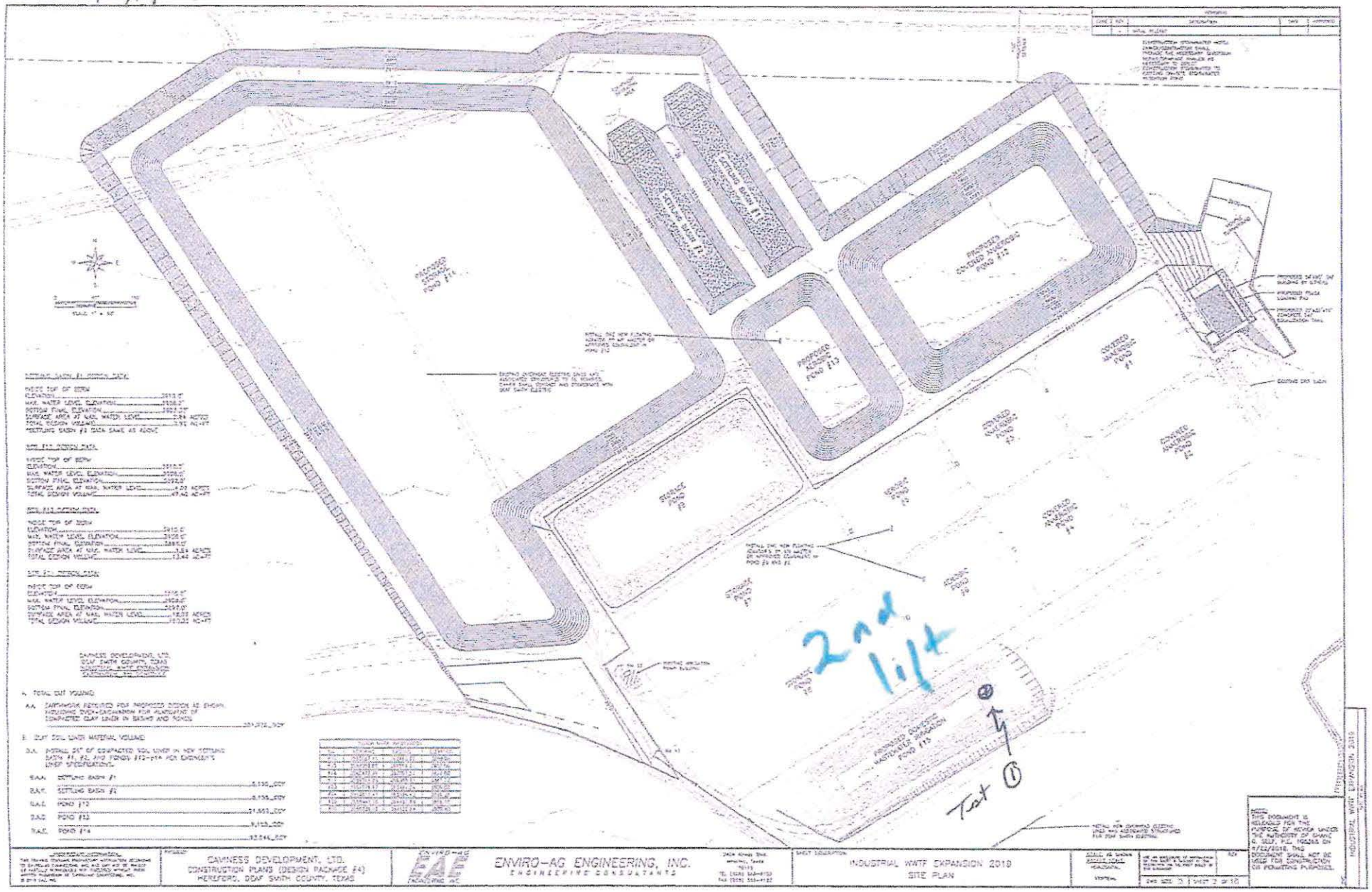
REPORT NO: 59595A
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/11/19



CAVINESS DEVELOPMENT, LTD.
CONSTRUCTION PLANS (DESIGN PACKAGE #4)
HEREFORD, DEAF SMITH COUNTY, TEXAS

ENVIRO-AG ENGINEERING, INC.
ENGINEERING CONSULTANTS

INDUSTRIAL WWTP EXPANSION 2019
SITE PLAN

SHEET 2 OF 10

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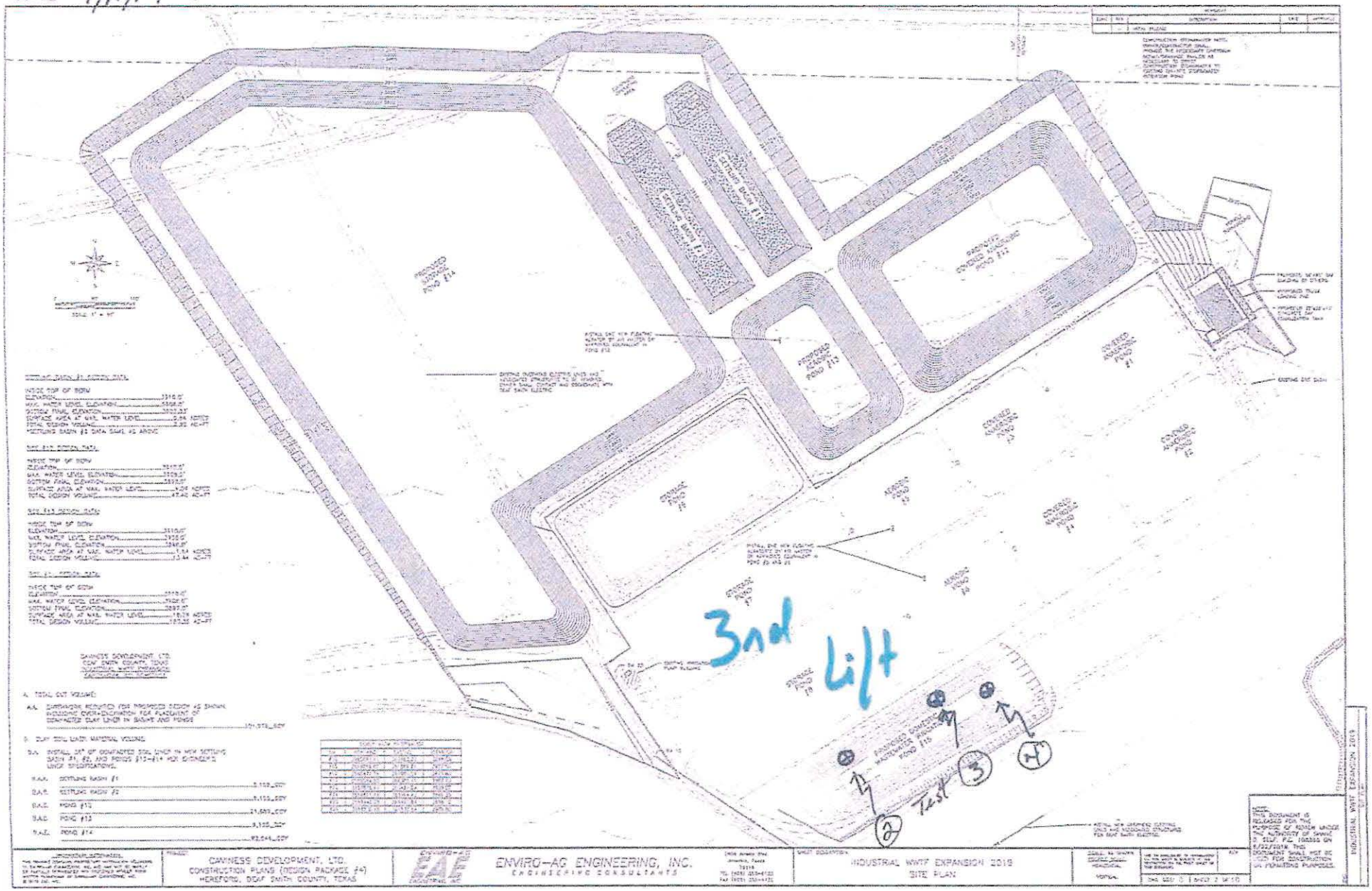
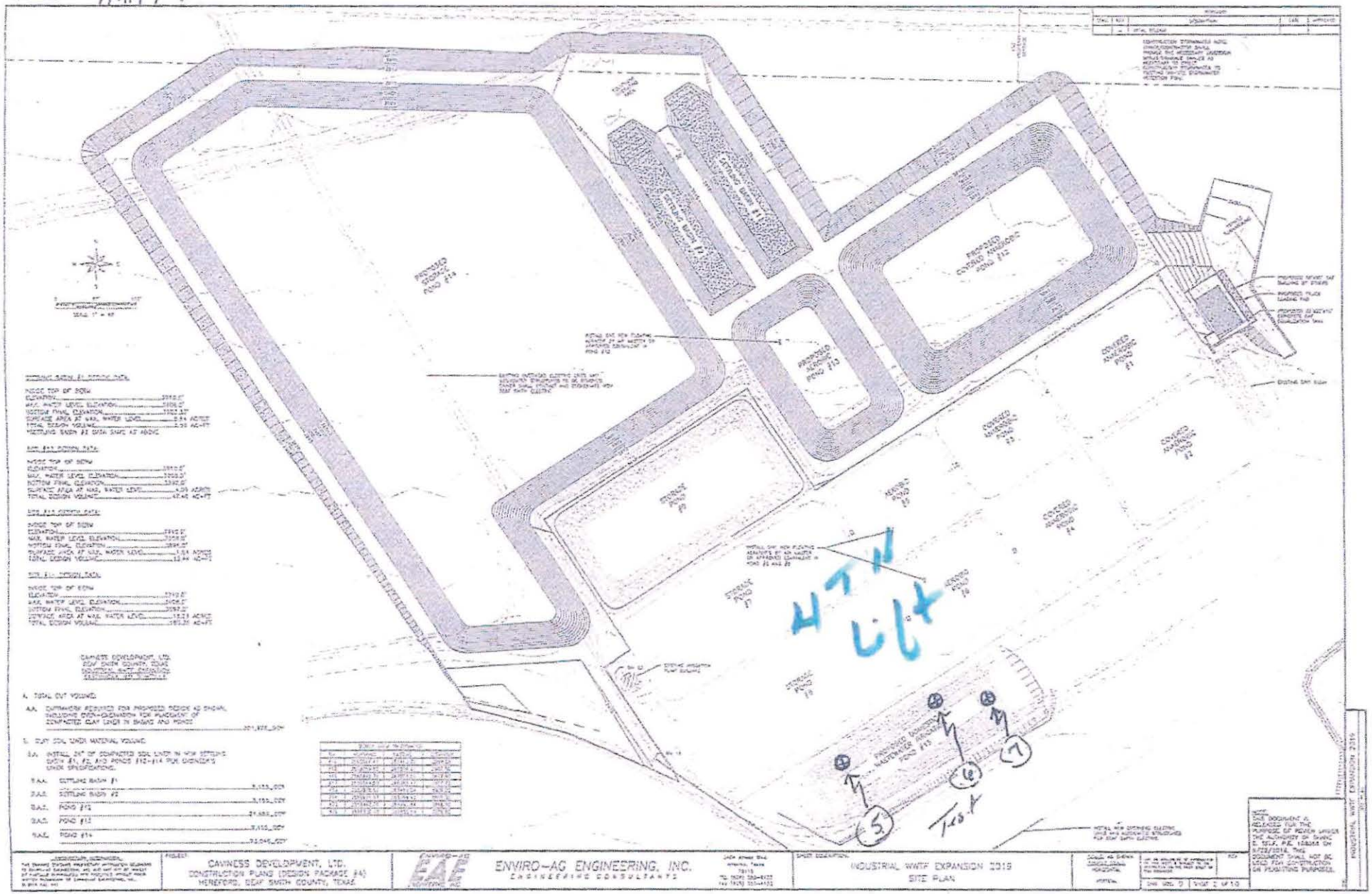
INDUSTRIAL WWTP EXPANSION 2019

REPORT NO: 595958
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/11/19



REPORT No: 59595C
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/11/19



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Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/11/19	Report No.:	59595 A
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1
2	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	East Slope - 2nd Lift	1	6	17.5	104.2	95.5

Remarks:

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Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/11/19	Report No.:	59595 B
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1
2	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	North Slope - West - 3rd Lift	1	6	15.8	105.0	96.2
2	North Slope - East - 3rd Lift	1	6	16.4	103.6	95.0
3	East Slope - 3rd Lift	1	6	15.8	105.2	96.4

Remarks:

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Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/11/19	Report No.:	59595 C
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	10:00 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1
2	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	North Slope - East - 4th Lift	1	6	18.8	104.0	95.3
2	North Slope - West - 4th Lift	1	6	17.6	103.9	95.2
3	East Slope - 4th Lift	1	6	17.7	106.3	97.4

Remarks:

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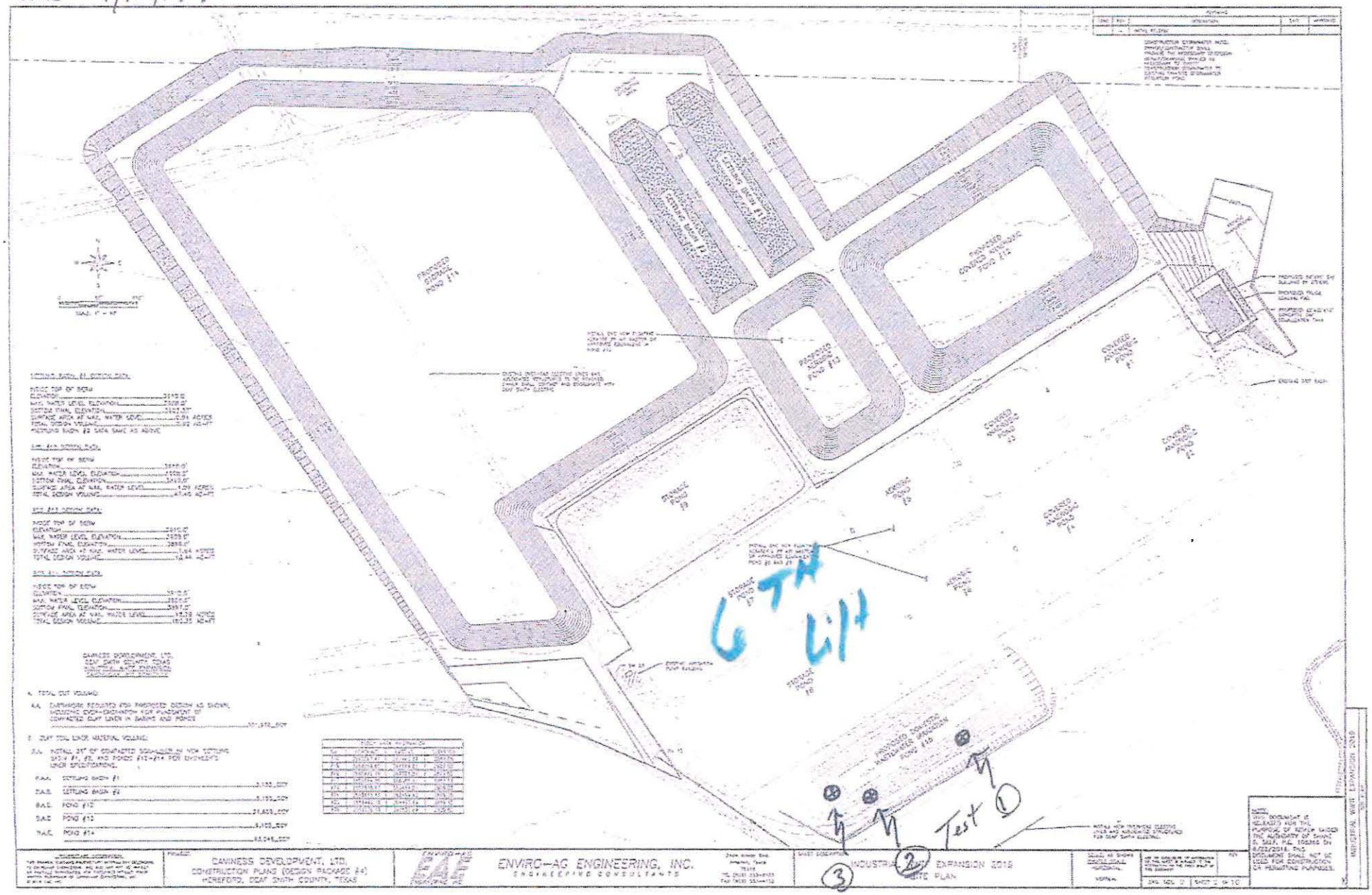
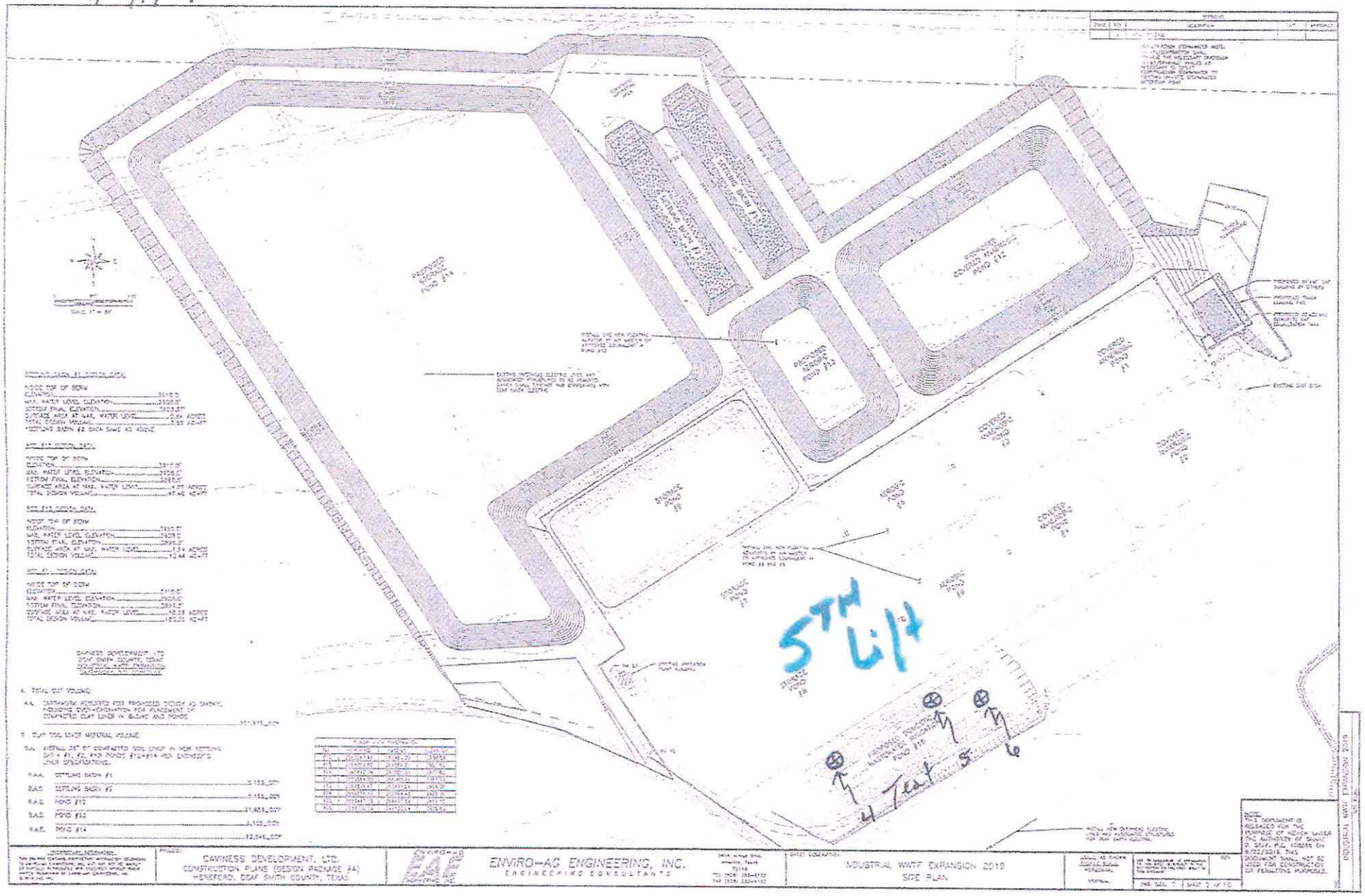
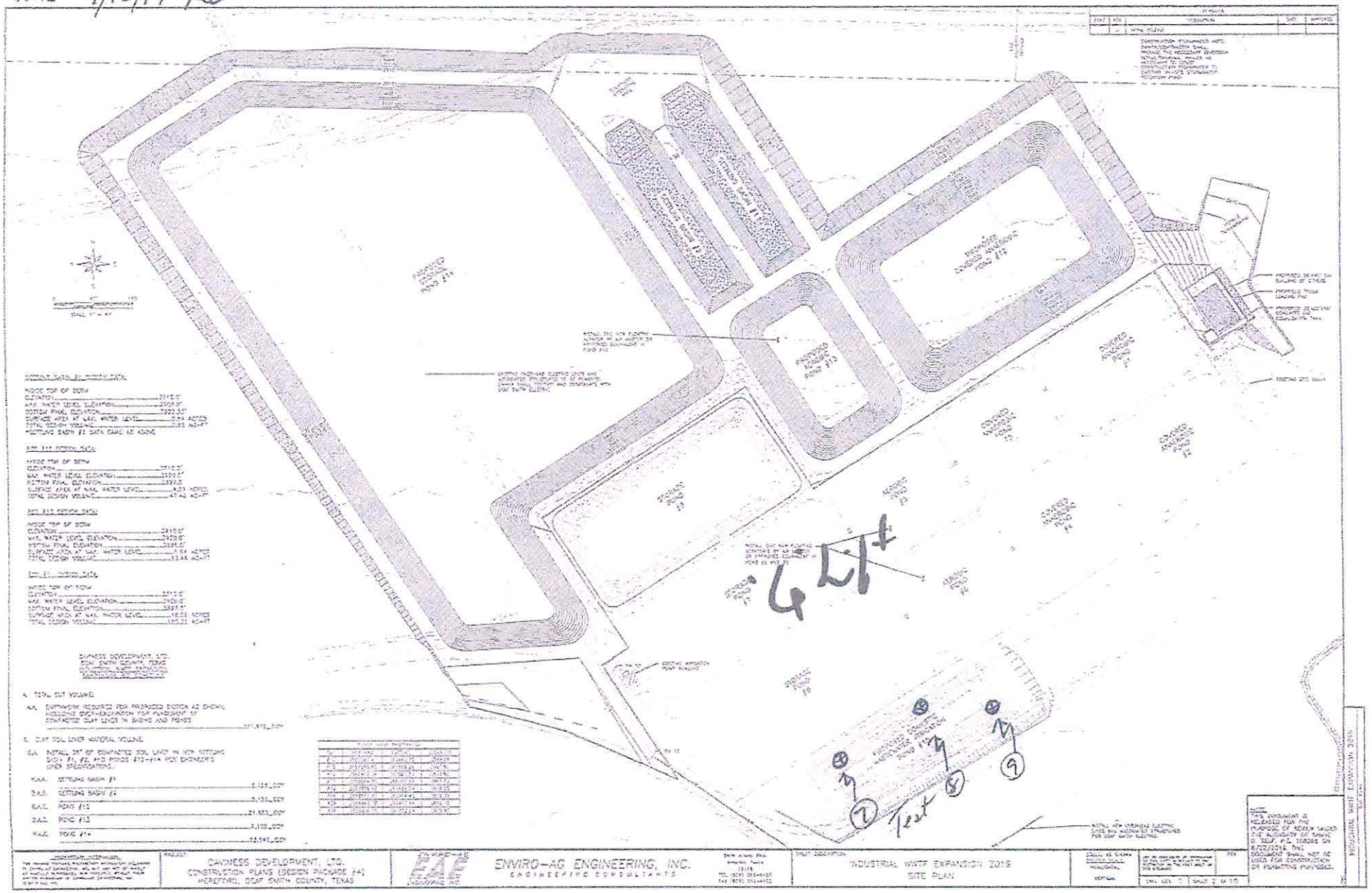
REPORT NO: 59596
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/12/19



REPORT NO: 59596
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/12/19



REPORT NO: 59594
CLIENT: CAVINESS BEEF
PROJECT: POND EXPANSION 2019
DATE: 9/12/19



IN-PLACE NUCLEAR DENSITY TEST REPORT

Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/12/19	Report No.:	59596 A
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	9:30 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft^3)
1	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1
2	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 6th Lift - Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft^3)	Compaction (%)
1	South Slope - East	1	6	16.7	105.5	96.7
2	South Slope - West	1	6	16.8	104.0	95.3
3	West Slope	1	6	15.8	109.4	100.3

Remarks:

AMARILLO TESTING & ENGINEERING, INC.
Texas Registered Engineering Firm F-3425

Copies to: Customer

Oziel E. Gonzalez, P.E.

c:\users\ate\documents\b density\2019\caviness beef\pond 15\59596a caviness pond expansion - density.doc

IN-PLACE NUCLEAR DENSITY TEST REPORT

Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/12/19	Report No.:	59596 B
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	9:30 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft³)
1	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1
2	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 5th Lift - Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft³)	Compaction (%)
1	North Slope - East	1	6	19.8	106.2	97.3
2	North Slope - West	1	6	19.3	105.1	96.3
3	East Slope	1	6	15.9	105.1	96.3

Remarks:

AMARILLO TESTING & ENGINEERING, INC.
Texas Registered Engineering Firm F-3425

Copies to: Customer

Oziel E. Gonzalez, P.E.

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IN-PLACE NUCLEAR DENSITY TEST REPORT

Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	09/12/19	Report No.:	59596 C
Client:	Caviness Beef Packers	Technician:	Richard Moya
Project:	Pond Expansion 2019	Time:	9:30 AM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft^3)
1	Light Reddish Brown Lean Clay with Caliche Nodules (CL)	16.8	109.1
2	Light Brown Lean Clay with Caliche Gravel (CL)	14.0	114.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 6th Lift - Pond Liner	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft^3)	Compaction (%)
1	North Slope - East	1	6	15.8	108.6	99.5
2	North Slope - West	1	6	17.0	104.4	95.7
3	East Slope	1	6	16.4	104.0	95.3

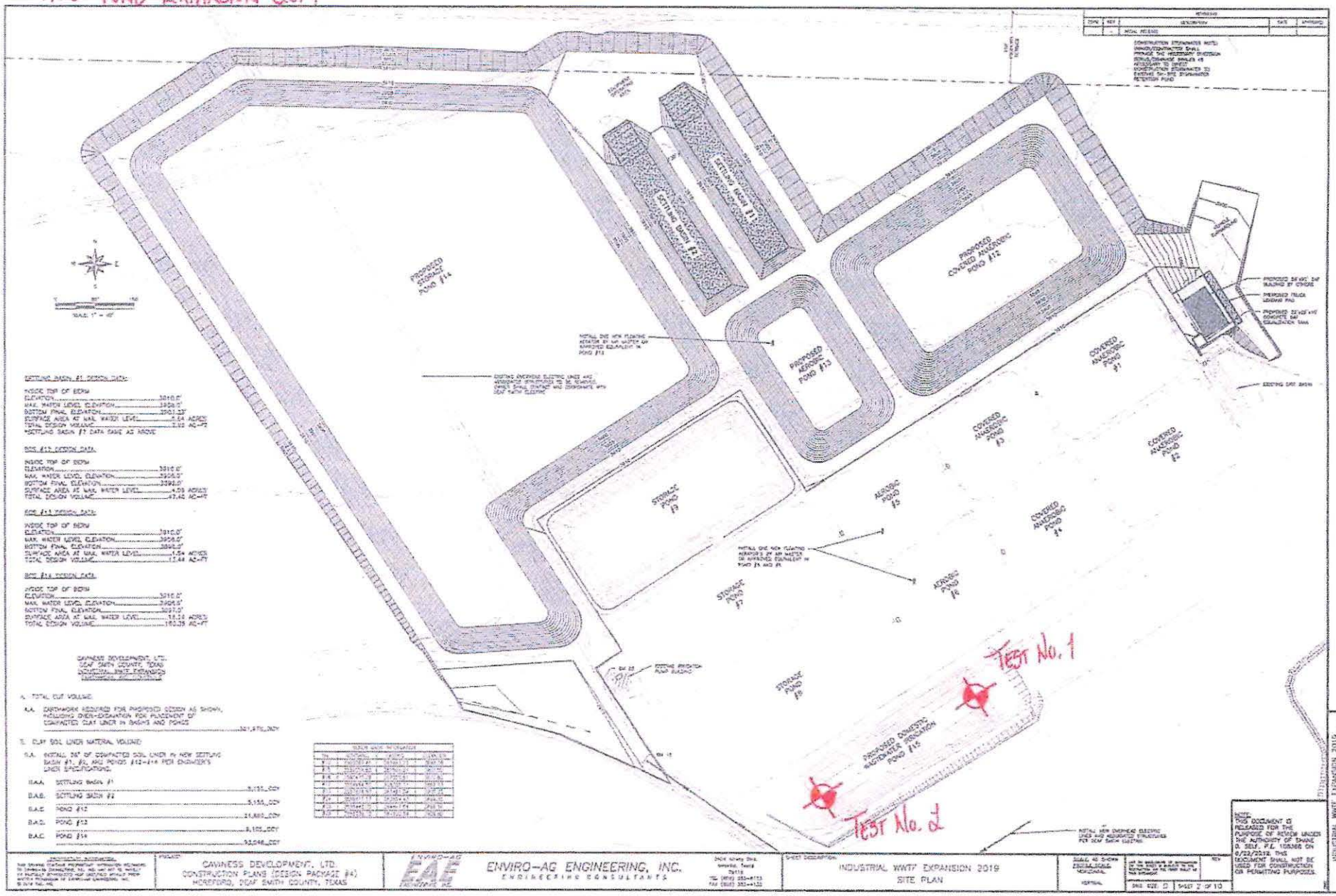
Remarks:

AMARILLO TESTING & ENGINEERING, INC.
Texas Registered Engineering Firm F-3425

Copies to: Customer

Oziel E. Gonzalez, P.E.

Report No: 59767 Date: 8/16/19
Client: Caviness Beef
Proj: Pond Expansion 2019



IN-PLACE NUCLEAR DENSITY TEST REPORT

Consulting Engineers & Materials Testing
1113 N. McMasters St.
Amarillo, TX 79106
T: (806) 374-2756
F: (806) 374-3277

PROJECT INFORMATION			
Date:	08/16/19	Report No.:	59767
Client:	Caviness Beef Packers	Technician:	Gilbert Alaniz
Project:	Pond Expansion 2019	Time:	4:30 PM
	Hereford, Texas	Source of Material:	Native
Ordered by:	Juan	Compaction Req.:	95 %
Contractor:		Moisture Req.:	-1 / +3 % (ASTM D698)

Sample No.	Material Description	Optimum Moisture (%)	Max. Dry Density (lbs/ft^3)
1	Dark Brown Lean Clay with Caliche Nodules (CL)	18.9	103.1

IN-PLACE DENSITY AND WATER CONTENT OF SOIL & AGGREGATE BY NUCLEAR METHODS (ASTM D 6938)

Test No.	Location: Pond #15 (See Attachment)	Sample No. Used	Probe Depth (in)	Moisture Content (%)	Dry Density (lbs/ft^3)	Compaction (%)
1	East Berm - 1st Lift	1	6	19.5	98.0	95.1
2*	West Berm - 1st Lift	1	6	9.6*	105.2	102.0

Remarks: *Test No. 2 failed due to low moisture.

AMARILLO TESTING & ENGINEERING, INC.
Texas Registered Engineering Firm F-3425

Copies to: Customer

Oziel E. Gonzalez, P.E.

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

Corporate Office:
3404 Airway Blvd.
Amarillo TX 79118

Central Texas:
9855 FM 847
Dublin TX 76446

New Mexico:
203 East Main Street
Artesia NM 88210

CERTIFICATION

Caviness Development, Ltd.
Hereford, Deaf Smith County, TX

Capacity Certification – Pond #15 (Domestic WW Storage/Irrigation Pond)

An as-built survey was conducted on 09/13/2019 by Enviro-Ag Engineering, Inc., to determine the total capacity of Pond #15. The capacity with two feet of dry freeboard was calculated to be:

Structure	**Capacity**
Pond #15	6.93 acre-feet

Respectfully submitted,

12-18-2019

STATE OF TEXAS
ERICK V. EMERINE
103494
LICENSED
PROFESSIONAL ENGINEER

Erick Emerine, P.E. – License No. 103494
Enviro-Ag Engineering, Inc. – Engineering Firm No. 2507

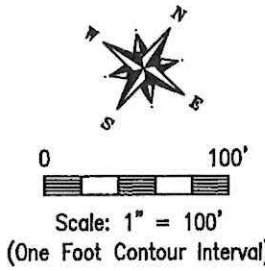
Attachments: As-Built Capacity Drawing Plan & Profile
Pond Marker Schematic

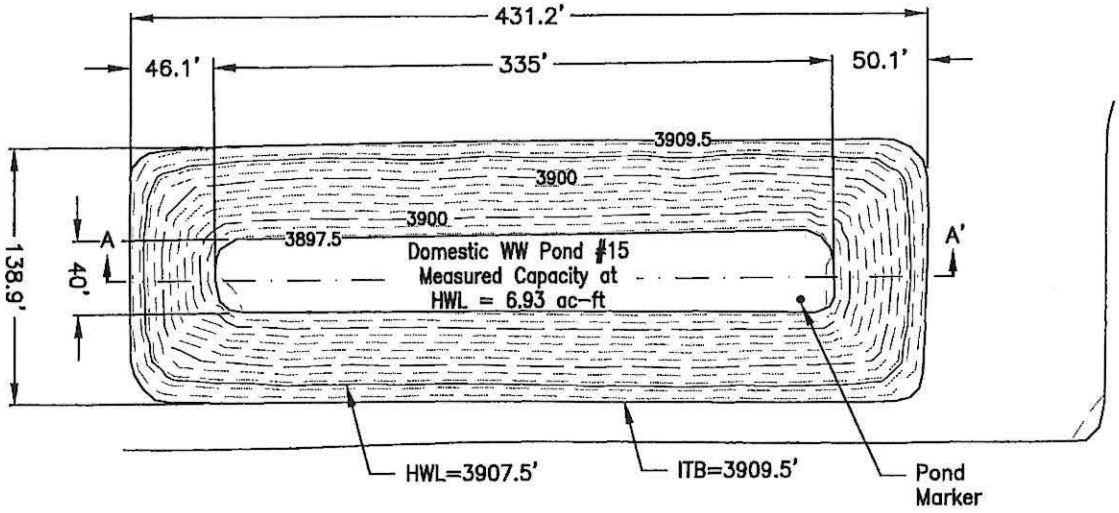
Caviness Development, Ltd. – Hereford, TX – 12/18/2019

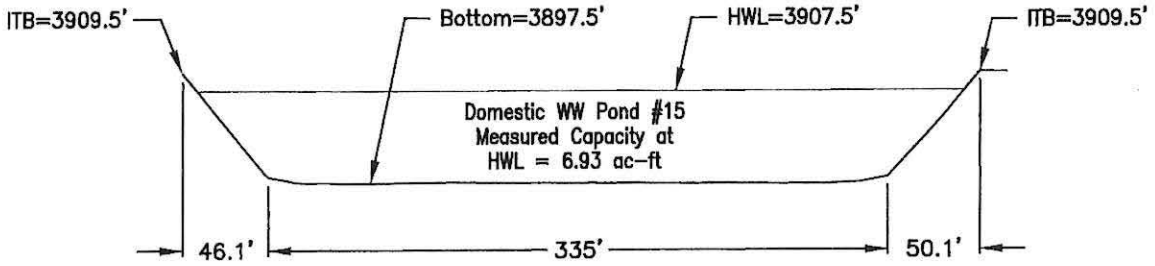
Domestic Wastewaster/Irrigation Pond #15 Volume Data
Date Surveyed: 09/13/2019
Surveyed By: TS
Drawn By: EE

Inside Top of Berm Elevation.....3909.5'
Bottom Elevation.....3897.5'
H.W.L. Elevation w/ 2' Freeboard.....3907.5'
Capacity at H.W.L. .....6.93 Ac–Ft
Surface Area at H.W.L. .....1.15 Acres
Surface Area at I.T.B.....1.38 Acres

Note:
Dimensions rounded to the nearest tenth of a foot.

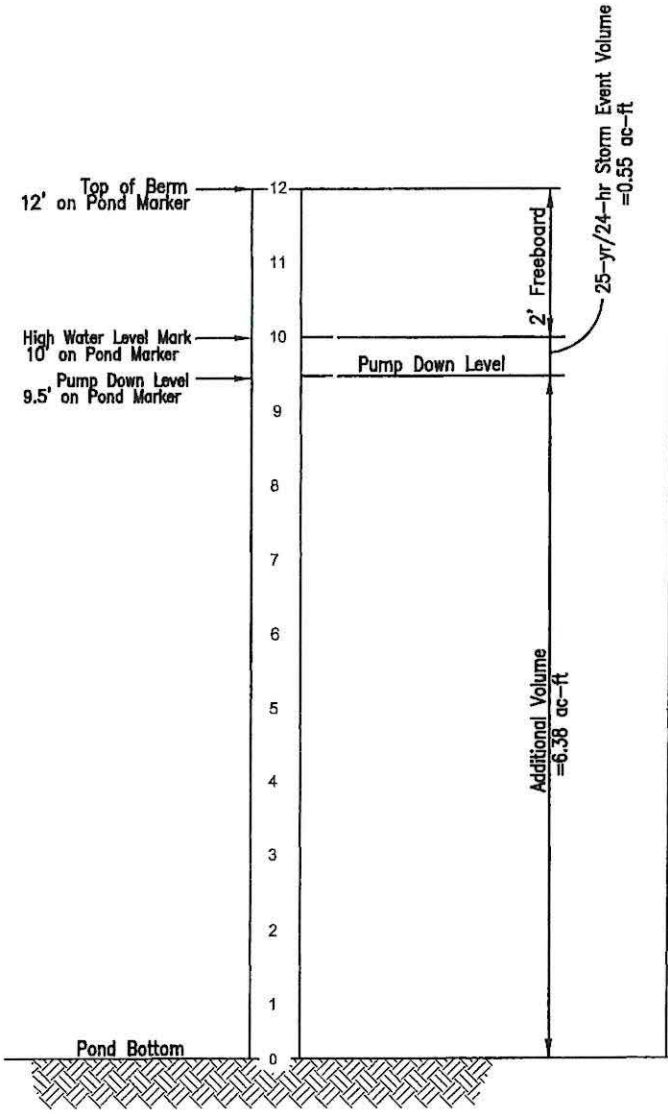






Cross Section A–A'
NTS

Caviness Development, Ltd. Hereford Deaf Smith County, TX	Pond #15 - Domestic WW Storage/Irrigation As-Built Capacity Drawing Plan & Profile	ENVIRO–AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



Cumulative Volume	Gallons by Foot
6.93 Ac-Ft	359,511 Gal.
5.83 Ac-Ft	326,462 Gal.
4.82 Ac-Ft	294,357 Gal.
3.92 Ac-Ft	264,166 Gal.
3.11 Ac-Ft	235,427 Gal.
2.39 Ac-Ft	207,849 Gal.
1.75 Ac-Ft	181,425 Gal.
1.19 Ac-Ft	156,162 Gal.
0.71 Ac-Ft	132,054 Gal.
0.31 Ac-Ft	100,097 Gal.

Caviness Development, Ltd. Hereford Deaf Smith County, TX	Pond #15 - Domestic WW Storage/Irrigation As-Built Capacity Drawing Pond Marker Schematic	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

Attachment 7

Plain Language Summary – English & Spanish

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PLAIN LANGUAGE SUMMARY FOR TPDES OR TLAP PERMIT APPLICATIONS

Plain Language Summary Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

Applicants should use this template to develop a plain language summary as required by Title 30, Texas Administrative Code (30 TAC), Chapter 39, Subchapter H. Applicants may modify the template as necessary to accurately describe their facility as long as the summary includes the following information: (1) the function of the proposed plant or facility; (2) the expected output of the proposed plant or facility; (3) the expected pollutants that may be emitted or discharged by the proposed plant or facility; and (4) how the applicant will control those pollutants, so that the proposed plant will not have an adverse impact on human health or the environment.

Fill in the highlighted areas 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 you are subject to the alternative language notice requirements in 30 TAC Section 39.426, **you must provide a translated copy of the completed plain language summary in the appropriate alternative language as part of your application package**. For your convenience, a Spanish template has been provided below.

ENGLISH TEMPLATE FOR TPDES or TLAP NEW/RENEWAL/AMENDMENT APPLICATIONS
Enter 'INDUSTRIAL' or 'DOMESTIC' here WASTEWATER/STORMWATER
The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC 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.

Caviness Development, Ltd. (CN602835209) operates Caviness Sanitary Waste Facility (RN110569571), a domestic wastewater treatment facility. The facility is located at 3255 US Highway 60, in Hereford, Deaf Smith County, Texas 79045. The purpose of this application is to provide administrative and technical information necessary to renew the existing permit with no increase in flow or changes to the existing treatment facility and land application. This permit will not authorize a discharge of pollutants into water in the state.

Discharges from the facility are expected to contain domestic waste from employee restrooms, showers and breakrooms at the Caviness Beef Packers beef slaughter, fabrication and rendering plant. The domestic waste is treated by a self-contained package treatment plant designed and manufactured by WSI International, LLC, and consists of influent bar screens, an equalization tank with aeration for odor control aerobic sludge digester, chlorine contact tank for disinfection and associated pumps and piping.

PLANTILLA EN ESPAÑOL PARA SOLICITUDES NUEVAS/RENOVACIONES/ENMIENDAS DE TPDES o TLAP

AGUAS RESIDUALES DOMESTICAS /AGUAS PLUVIALES

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 Capítulo 39 del Código Administrativo de Texas 30. La información proporcionada en este resumen puede cambiar durante la revisión técnica de la solicitud y no es una representación ejecutiva fedérale de la solicitud de permiso.

Caviness Development, LTD. (CN602835209) opera Caviness Sanitary Waste Facility RN110569571), una instalacion de tratamiento de aguas residuales domésticas. La instalación está ubicada en 3255 US Highway 60, en Hereford, Condado de Deaf Smith, Texas 79045. El propósito de esta solicitud es proporcionar la información administrativa y técnica necesaria para renovar el permiso existente sin aumento en el flujo ni cambios en la instalación de tratamiento y aplicación del terreno actuales. Este permiso no autorizará una descarga de contaminantes en el agua en el estado.

Se espera que las descargas de la instalación contengan desechos domésticos de los aseos, duchas y salas de descanso de los empleados en el matadero y la planta de procesamiento y aprovechamiento de residuos de carne de res de Caviness Beef Packers. Los desechos domésticos están tratados por una autónoma planta paquete de tratamiento diseñada y fabricada por WSI International, LLC, que consta de rejillas de criba de afluente, un tanque de ecualización con aireación para el control de olores, un digestor aeróbico de lodos, un tanque de contacto de cloro para la desinfección y bombas y tubería asociadas.

RE: Application to Renew Permit No. WQ0015744001 - Notice of Deficiency Letter

Amy Peoples <apeoples@enviroag.com>
Fri 7/5/2024 8:00 AM
To:Savannah Jackson <Savannah.Jackson@tceq.texas.gov>
Cc:regan@cavinessbeef.com <regan@cavinessbeef.com>;Erwin Madrid <Erwin.Madrid@tceq.texas.gov>

1 attachments (117 KB)
Caviness – Municipal Discharge Renewal Spanish NORI.docx;

Savannah,
The address that you have for the Hereford City Hall is correct – 224 Lee Avenue. The information relevant to the application is also correct. I have attached the public notice in Spanish.

Please let me know if you need anything else.

Sincerely,

Amy Peoples
Enviro-Ag Engineering, Inc.
3404 Airway Blvd
Amarillo, TX 79118
806-353-6123 – Office
620-417-0525 - Cell

From: Savannah Jackson <Savannah.Jackson@tceq.texas.gov>
Sent: Wednesday, July 03, 2024 12:00 PM
To: Amy Peoples <apeoples@enviroag.com>
Cc: regan@cavinessbeef.com; Erwin Madrid <Erwin.Madrid@tceq.texas.gov>
Subject: Application to Renew Permit No. WQ0015744001 - Notice of Deficiency Letter

IRONSCALES couldn't recognize this email as this is the first time you received an email from this sender Savannah.Jackson@tceq.texas.gov

CAUTION: This email originated from outside of Enviro-Ag Engineering. Do not click links or open attachments unless you have verified the sender and know the content is safe.

Dear Ms. Amy Peoples,

The attached Notice of Deficiency letter sent on July 3, 2024, requests additional information needed to declare the application administratively complete. Please send the complete response to my attention by July 17, 2024.

Thank you,

Savannah Jackson
Texas Commission on Environmental Quality
Water Quality Division
512-239-4306
savannah.jackson@tceq.texas.gov

Disclaimer

The information contained in this communication from the sender is confidential. It is intended solely for use by the recipient and others authorized to receive it. If you are not the recipient, you are hereby notified that any disclosure, copying, distribution or taking action in relation of the contents of this information is strictly prohibited and may be unlawful.

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Comisión de Calidad Ambiental del Estado de Texas

AVISO DE RECIBO DE LA SOLICITUD Y
EL INTENTO DE OBTENER PERMISO PARA LA CALIDAD DEL AGUA
RENOVACION

PERMISO NO. WQ0015744001

SOLICITUD. Caviness Development, Ltd, P.O. Box 790, Hereford, Texas 79045 ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para renovar el Permiso No. WQ0015744001 del Sistema de Eliminación de Descargas de Contaminantes de Texas (TPDES) para autorizar la descarga de aguas residuales tratadas en un volumen que no sobrepasa un flujo promedio diario de 16.500 galones por día mediante riego superficial de 100 acres de tierra agrícola de acceso no público. La planta y la ruta de descarga están ubicadas en 3255 U.S. Highway 60 en el Condado de Deaf Smith, Texas 79045. La TCEQ recibió esta solicitud el 27 de junio de 2004. La solicitud para el permiso estará disponible para leerla y copiarla en Hereford City Hall, 224 Lee Avenue, Hereford en el Condado de Deaf Smith, Texas antes de la fecha de publicación de este aviso en el periódico. La solicitud, incluyéndose cualquier actualización y avisos asociados, están disponibles electrónicamente en la siguiente página web: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tlap-applications. Este enlace a un mapa electrónico de la ubicación general del sitio o de la instalación es proporcionado como una cortesía y no es parte de la solicitud o del aviso. Para la ubicación exacta, consulte la solicitud. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-102.476666.34.756666&level=18.

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. Si ciertos criterios se cumplen, la TCEQ puede actuar sobre una solicitud para renovar un permiso sin proveer una oportunidad de una audiencia administrativa de lo contencioso.

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

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

También se puede obtener información adicional de Caviness Development, Ltd. a la dirección indicada arriba o llamando al Sr. Regan Caviness, Vice Presidente, al 806-357-2443.

Fecha de emission: