



Technical Package Cover Page

This file contains the following documents:

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



Portada de Paquete Técnico

Este archivo contiene los siguientes documentos:

1. Resumen de la solicitud (en lenguaje sencillo)
 - Inglés
 - Idioma alternativo (español)
2. Primer aviso (NORI, Aviso de Recepción de Solicitud e Intención de Obtener un Permiso)
 - Inglés
 - Idioma alternativo (español)
3. Segundo aviso (NAPD, Aviso de Decisión Preliminar)
 - Inglés
 - Idioma alternativo (español)
4. Materiales de la solicitud **
5. Proyecto de permiso **
6. Resumen técnico u hoja de datos **

Section 15. Plain Language Summary (Instructions Page 40)

If you are subject to the alternative language notice requirements in [30 Texas Administrative Code §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

DOMESTIC WASTEWATER

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 Texas Administrative Code Chapter 39. The information provided in this summary may change during the technical review of the application and are not federal enforceable representations of the permit application.

CSWR-Texas Utility Operating Company, LLC (CN605844786) operates Abraxas WWTF RN101521391, a domestic wastewater treatment plant. The facility is located at 3301 Cattlebaron Road, in Fort Worth, Parker County, Texas 76108.

Renewal to discharge not more than 0.020 million gallons a day of domestic wastewater via Outfall 001.

Discharges from the facility are expected to contain Biochemical Oxygen Demand, Total Suspended Solids, E. Coli, pH, and Total Residual Chlorine. Domestic wastewater is treated by an activated sludge process plant with extended aeration. Treatment units include a bar screen, an aeration basin, a final clarifier, post-aeration, an aerobic sludge digester, and a chlorine contact chamber.

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

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

AGUAS RESIDUALES DOMÉSTICAS

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 son representaciones federales exigibles de la solicitud de permiso.

1. CSWR-Texas Utility Operating Company, LLC (CN605844786) opera Abraxas WWTF RN1015213916, una Planta de tratamiento de aguas residuales domésticas. La instalación es ubicada 3301 Cattlebaron Rd., en White Settlement, Condado de Parker, Texas 76108.

Renovación para descargar no más de 0.020 millones de galones por día de aguas residuales domésticas a través del Vertedero 001.

Se espera que las descargas de la instalación contengan Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), E. coli, pH, and Total Residual Chlorine. Las aguas residuales descargadas aquí incluyen aguas residuales domésticas. Las aguas son tratadas por una rejilla de barras, un tanque de aireación, un clarificador final, aireación post-tratamiento, un digestor de lodos aeróbicos y una cámara de contacto con cloro.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY



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

PERMIT NO. WQ0015010001

APPLICATION. CSWR-Texas Utility Operating Company, LLC, 1630 Des Peres Road, Suite 140, Des Peres, Missouri 63131, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0015010001 (EPA I.D. No. TX0133116) to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 75,000 gallons per day. The domestic wastewater treatment facility is located at 3301 Cattlebaron Road, near the city of Fort Worth, in Parker County, Texas 76108. The discharge route is from the plant site to a man-made pond; thence to an unnamed drainage ditch; thence to an unnamed tributary; thence to Haywire Lake #2; thence to the unnamed tributary; thence to an unnamed impoundment; thence to the unnamed tributary; thence to Haywire Lake #1; thence to the unnamed tributary; thence to Silver Creek; thence to Lake Worth. TCEQ received this application on August 15, 2024. The permit application will be available for viewing and copying at East Park County Library, 201 North Farm-to-Market Road 1187, Aledo, in Parker 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/tpdes-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=-97.5499,32.7897&level=18>

ALTERNATIVE LANGUAGE NOTICE. Alternative language notice in Spanish is available at:

<https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications>.

El aviso de idioma alternativo en español está disponible en

<https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-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 CSWR-Texas Utility Operating Company, LLC at the address stated above or by calling Ms. April Dobbins, EHS Compliance Coordinator, at 314-380-9508.

Issuance Date: October 9, 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. WQ0015010001

SOLICITUD. CSWR – Texas, 1630 Des Peres Rd., Ste 140 in Des Peres, MO 63131 ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para renovar el Permiso No. WQ0015010001 (EPA I.D. No. TX 0133116) 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 75,000 galones por día. La planta de aguas residuales domesticas está ubicada 3301 Camino de Baron Ganadero cerca de Fort Worth, en el Condado de Parker, Texas 76108. La ruta de descarga es del sitio de la planta a una laguna artificial, de allí a un canal sin nombre, de allí a un afluente sin nombre, de allí al Lago Haywire #2, de allí a un embalse sin nombre, de allí a un afluente sin nombre, de allí al Lago Haywire #1, de allí a un afluente sin nombre, de allí a Silver Creek, de allí al Lago Worth en el Segmento No. 0807 de la Cuenca del Río Trinity. La TCEQ recibió esta solicitud el August 15, 2024. La solicitud para el permiso estará disponible para leerla y copiarla en 201 North Camino de la granja al mercado 1187, Aledo en Parker Texas La aplicación incluidas las actualizaciones y los avisos asociados están disponibles electrónicamente en la siguiente pagina web:

<https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications> . antes de la fecha de publicación de este aviso en el periódico. 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=-97.5499,32.7897&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. Además, puede pedir que la TCEQ ponga su nombre en una o más de las listas correos siguientes (1) la lista de correo permanente para recibir los avisos del solicitante indicado por nombre y número del permiso específico y/o (2) la lista de correo de todas las solicitudes en un condado específico. Si desea que se agregue 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 del CSWR - Texas a la dirección indicada arriba o llamando a April Dobbins al 314-380-9508.

Fecha de emisión: 9 de octubre de 2024

Texas Commission on Environmental Quality



NOTICE OF APPLICATION AND PRELIMINARY DECISION FOR TPDES PERMIT FOR MUNICIPAL WASTEWATER

RENEWAL

PERMIT NO. WQ0015010001

APPLICATION AND PRELIMINARY DECISION. CSWR-Texas Utility Operating Company, LLC, 1630 Des Peres Road, Suite 140, Des Peres, Missouri 63131, has applied to the Texas Commission on Environmental Quality (TCEQ) for a renewal of Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0015010001, which authorizes the discharge of treated domestic wastewater at a daily average flow not to exceed 75,000 gallons per day. TCEQ received this application on August 15, 2024.

The facility is located at 3301 Cattlebaron Road, in Parker County, Texas 76108. The treated effluent is discharged to a man-made pond, thence to an unnamed drainage ditch, thence to an unnamed tributary, thence to Haywire Lake #2, thence to the unnamed tributary, thence to an unnamed impoundment, thence to the unnamed tributary, thence to Haywire Lake #1, thence to the unnamed tributary, thence to Silver Creek, thence to Lake Worth in Segment No. 0807 of the Trinity River Basin. The unclassified receiving water uses are limited aquatic life use for man-made pond, minimal aquatic life use for drainage ditch and the unnamed tributary and high aquatic life use for Haywire Lakes 1 and 2 and the unnamed impoundment. The designated uses for Segment No. 0807 are primary contact recreation, public water supply, and high aquatic life use. All determinations are preliminary and subject to additional review and/or revisions. This link to an electronic map of the site or facility's general location is provided as a public courtesy and is not part of the application or notice. For the exact location, refer to the application.

<https://gisweb.tceq.texas.gov/LocationMapper/?marker=-97.5499,32.7897&level=18>

The TCEQ Executive Director has completed the technical review of the application and prepared a draft permit. The draft permit, if approved, would establish the conditions under which the facility must operate. The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The permit application, Executive Director's preliminary decision, and draft permit are available for viewing and copying at East Park County Library, 201 North Farm-to-Market Road 1187, Aledo, in Parker Texas. The application, including any updates, and associated notices are available electronically at the following webpage:

<https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications>

ALTERNATIVE LANGUAGE NOTICE. Alternative language notice in Spanish is available at <https://www.tceq.texas.gov/permitting/wastewater/plain-language-summaries-and-public-notice>. El aviso de idioma alternativo en español está disponible en <https://www.tceq.texas.gov/permitting/wastewater/plain-language-summaries-and-public-notice>.

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

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

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number; applicant's name and 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.**

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

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

All written public comments and public meeting requests must be submitted to the Office of the Chief Clerk, MC 105, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, TX 78711-3087 or electronically at www.tceq.texas.gov/goto/comment within 30 days from the date of newspaper publication of this notice.

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

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

Further information may also be obtained from CSWR-Texas Utility Operating Company, LLC at the address stated above or by calling Ms. Amanda Sappington, EHS Compliance Manager, at 314-464-3976.

Issuance Date: February 26, 2025

Comisión De Calidad Ambiental Del Estado De Texas



AVISO DE LA SOLICITUD Y DECISIÓN PRELIMINAR PARA EL PERMISO DEL SISTEMA DE ELIMINACION DE DESCARGAS DE CONTAMINANTES DE TEXAS (TPDES) PARA AGUAS RESIDUALES MUNICIPALES

RENOVACIÓN

PERMISO NO. WQ0015010001

SOLICITUD Y DECISIÓN PRELIMINAR. CSWR-Texas Utility Operating Company, LLC, 1630 Des Peres Road, Suite 140, Des Peres, Missouri 63131, ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) una renovación para autorizar la descarga diaria de aguas residuales domésticas tratadas. El flujo promedio no debe exceder los 75,000 galones por día. La TCEQ recibió esta solicitud el 15 de agosto de 2024.

La planta está ubicada en 3301 Cattlebaron Road en el Condado de Parker, Texas. El efluente tratado es descargado a un estanque artificial, de allí a una zanja de drenaje sin nombre, de allí a un afluente, de allí a Haywire Lake #2, de allí al afluente sin nombre, de allí a un afluente sin nombre embalse, de allí al afluente sin nombre, de allí al lago Haywire #1, de allí al afluente sin nombre afluente, de allí a Silver Creek, de allí a Lake Worth en el Segmento No. 0807 de la Cuenca del Río Trinity. Los usos no clasificados de las aguas receptoras son limitados usos de la vida acuática para a vida acuática en estanques artificiales, usos acuáticos mínimos uso de vida para zanjas de drenaje y el afluente sin nombre y uso de vida acuática alta para Haywire Lakes 1 y 2 y el embalse sin nombre. Los usos designados para el Segmento No. 0807 son elevados, de vida acuática; abastecimiento de agua potable, y recreación de contacto principal.

El Director Ejecutivo de la TCEQ ha completado la revisión técnica de la solicitud y ha preparado un borrador del permiso. El borrador del permiso, si es aprobado, establecería las condiciones bajo las cuales la instalación debe operar. El Director Ejecutivo ha tomado una decisión preliminar que si este permiso es emitido, cumple con todos los requisitos normativos y legales. La solicitud del permiso, la decisión preliminar del Director Ejecutivo y el borrador del permiso están disponibles para leer y copiar en East Park County Library, 201 North Farm-to-Market Road 1187, Aledo, TX. La solicitud (cualquier actualización y aviso inclusive) está disponible electrónicamente en la siguiente página web:

<https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-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=-97.5499,32.7897&level=18>

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

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 para descargar aguas residuales sin proveer una oportunidad de una audiencia administrativa de lo contencioso.

ACCIÓN DEL DIRECTOR EJECUTIVO. El Director Ejecutivo puede emitir una aprobación final de la solicitud a menos que exista un pedido antes del plazo de vencimiento de una audiencia administrativa de lo contencioso o se ha presentado un pedido de reconsideración. Si un pedido ha llegado antes del plazo de vencimiento de la audiencia o el pedido de reconsideración ha sido presentado, el Director Ejecutivo no emitirá una aprobación final sobre el permiso y enviará la solicitud y el pedido a los Comisionados de la TCEQ para consideración en una reunión programada de la Comisión.

LISTA DE CORREO. Si somete comentarios públicos, un pedido para una audiencia administrativa de lo contencioso o una reconsideración de la decisión del Director Ejecutivo, la Oficina del Secretario Principal enviará por correo los avisos públicos en relación con la solicitud. Además, puede pedir que la TCEQ ponga su nombre en una o más de las listas de 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 específico. Si desea que se agregue su nombre en una de las listas designe cual lista(s) y envía por correo su pedido a la Oficina del Secretario Principal de la TCEQ.

Todos los comentarios escritos del público y los pedidos una reunión deben ser presentados durante los 30 días después de la publicación del aviso a la Oficina del Secretario Principal, MC 105, TCEQ, P.O. Box 13087, Austin, TX 78711-3087 or por el internet a www.tceq.texas.gov/about/comments.html. Tenga en cuenta que cualquier información personal que usted proporcione, incluyendo su nombre, número de teléfono, dirección de correo electrónico y dirección física pasarán a formar parte del registro público de la Agencia.

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

También se puede obtener información adicional del CSWR-Texas Utility Operating Company, LLC a la dirección indicada arriba o llamando a Amanda Sappington, EHS Compliance Manager, al 314-464-3976.

Fecha de emission: 26 de febrero de 2025



TPDES PERMIT NO. WQ0015010001
*[For TCEQ office use only - EPA I.D.
No. TX0133116]*

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

This is a renewal that replaces TPDES
Permit No. WQ0015010001 issued on
March 22, 2023

PERMIT TO DISCHARGE WASTES
under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

CSWR-Texas Utility Operating Company, LLC

whose mailing address is

1630 Des Peres Road, Suite 140
Des Peres, Missouri 63131

is authorized to treat and discharge wastes from the Abraxas Wastewater Treatment Facility, SIC Code
4952

located at 3301 Cattlebaron Road, in Parker County, Texas 76108

to a man-made pond, thence to an unnamed drainage ditch, thence to an unnamed tributary, thence to
Haywire Lake #2, thence to the unnamed tributary, thence to an unnamed impoundment, thence to the
unnamed tributary, thence to Haywire Lake #1, thence to the unnamed tributary, thence to Silver
Creek, thence to Lake Worth in Segment No. 0807 of the Trinity River Basin

only according to effluent limitations, monitoring requirements, and other conditions set forth in this
permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ), the laws of the
State of Texas, and other orders of the TCEQ. The issuance of this permit does not grant to the
permittee the right to use private or public property for conveyance of wastewater along the discharge
route described in this permit. This includes, but is not limited to, property belonging to any individual,
partnership, corporation or other entity. Neither does this permit authorize any invasion of personal
rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the
permittee to acquire property rights as may be necessary to use the discharge route.

This permit shall expire at midnight, **five years from the date of issuance.**

ISSUED DATE:

For the Commission

INTERIM EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTSOutfall Number 001

1. During the period beginning upon the date of issuance and lasting through the completion of expansion to the 0.075 million gallons per day (MGD) facility, the permittee is authorized to discharge subject to the following effluent limitations:

The daily average flow of effluent shall not exceed 0.020 MGD nor shall the average discharge during any two-hour period (2-hour peak) exceed 42 gallons per minute.

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>				<u>Min. Self-Monitoring Requirements</u>	
	Daily Avg mg/l (lbs/day)	7-day Avg mg/l	Daily Max mg/l	Single Grab mg/l	Report Daily Avg. & Max. Single Grab Measurement Frequency	Sample Type
Flow, MGD	Report	N/A	Report	N/A	Continuous	Totalizing Meter
Biochemical Oxygen Demand (5-day)	20 (3.3)	30	45	65	One/week	Grab
Total Suspended Solids	20 (3.3)	30	45	65	One/week	Grab
<i>E. coli</i> , colony-forming units or most probable number per 100 ml	126	N/A	N/A	399	One/quarter	Grab

2. The effluent shall contain a total chlorine residual of at least 1.0 mg/l and shall not exceed a total chlorine residual of 4.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored five times per week by grab sample. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
3. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per month by grab sample.
4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
5. Effluent monitoring samples shall be taken at the following location(s): Following the final treatment unit.
6. The effluent shall contain a minimum dissolved oxygen of 2.0 mg/l and shall be monitored once per week by grab sample.

FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTSOutfall Number 001

1. During the period beginning upon the completion of expansion to the 0.075 million gallons per day (MGD) facility and lasting through the date of expiration, the permittee is authorized to discharge subject to the following effluent limitations:

The daily average flow of effluent shall not exceed 0.075 MGD nor shall the average discharge during any two-hour period (2-hour peak) exceed 208 gallons per minute.

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>				<u>Min. Self-Monitoring Requirements</u>	
	Daily Avg mg/l (lbs/day)	7-day Avg mg/l	Daily Max mg/l	Single Grab mg/l	Report Daily Avg. & Max. Single Grab Measurement Frequency	Sample Type
Flow, MGD	Report	N/A	Report	N/A	Continuous	Totalizing Meter
Carbonaceous Biochemical Oxygen Demand (5-day)	10 (6.3)	15	25	35	One/week	Grab
Total Suspended Solids	15 (9.4)	25	40	60	One/week	Grab
Ammonia Nitrogen	3 (1.9)	6	10	15	One/week	Grab
<i>E. coli</i> , colony-forming units or most probable number per 100 ml	126	N/A	N/A	399	One/quarter	Grab

2. The effluent shall contain a total chlorine residual of at least 1.0 mg/l and shall not exceed a total chlorine residual of 4.0 mg/l after a detention time of at least 20 minutes (based on peak flow) and shall be monitored five times per week by grab. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.
3. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per month by grab sample.
4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
5. Effluent monitoring samples shall be taken at the following location(s): Following the final treatment unit.
6. The effluent shall contain a minimum dissolved oxygen of 4.0 mg/l and shall be monitored once per week by grab sample.

DEFINITIONS AND STANDARD PERMIT CONDITIONS

As required by Title 30 Texas Administrative Code (TAC) Chapter 305, certain regulations appear as standard conditions in waste discharge permits. 30 TAC § 305.121 - 305.129 (relating to Permit Characteristics and Conditions) as promulgated under the Texas Water Code (TWC) §§ 5.103 and 5.105, and the Texas Health and Safety Code (THSC) §§ 361.017 and 361.024(a), establish the characteristics and standards for waste discharge permits, including sewage sludge, and those sections of 40 Code of Federal Regulations (CFR) Part 122 adopted by reference by the Commission. The following text includes these conditions and incorporates them into this permit. All definitions in TWC § 26.001 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. 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 one million gallons per day or greater permitted flow.
- b. 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.
- c. Daily maximum flow - the highest total flow for any 24-hour period in a calendar month.
- d. Instantaneous flow - the measured flow during the minimum time required to interpret the flow measuring device.
- e. 2-hour peak flow (domestic wastewater treatment plants) - the maximum flow sustained for a two-hour period during the period of daily discharge. The average of multiple measurements of instantaneous maximum flow within a two-hour period may be used to calculate the 2-hour peak flow.
- f. Maximum 2-hour peak flow (domestic wastewater treatment plants) - the highest 2-hour peak flow for any 24-hour period in a calendar month.

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.
- d. Daily discharge - the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the sampling day.

The daily discharge determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily discharge determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that day.

- e. Bacteria concentration (*E. coli* or Enterococci) - Colony Forming Units (CFU) or Most Probable Number (MPN) of bacteria per 100 milliliters effluent. The daily average bacteria concentration is a geometric mean of the values for the effluent samples collected in a calendar month. The geometric mean shall be determined by calculating the n th root of the product of all measurements made in a calendar month, where n equals the number of measurements made; or, computed as the antilogarithm of the arithmetic mean of the logarithms of all measurements made in a calendar month. For any measurement of bacteria equaling zero, a substituted value of one shall be made for input into either computation method. If specified, the 7-day average for bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.
 - f. Daily average loading (lbs/day) - the arithmetic average of all daily discharge loading calculations during a period of one calendar month. These calculations must be made for each day of the month that a parameter is analyzed. The daily discharge, in terms of mass (lbs/day), is calculated as (Flow, MGD x Concentration, mg/l x 8.34).
 - g. Daily maximum loading (lbs/day) - the highest daily discharge, in terms of mass (lbs/day), 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 that 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 AND REPORTING REQUIREMENTS

1. Self-Reporting

Monitoring results shall be provided 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 and reporting in accordance with 30 TAC §§ 319.4 - 319.12. Unless otherwise specified, effluent monitoring data shall be submitted each month, to the Enforcement Division (MC 224), by the 20th day of the following month for each discharge which is described by this permit whether or not a discharge is made for that month. Monitoring results must be submitted online using the NetDMR reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. Monitoring results must be signed and certified as required by Monitoring and Reporting Requirements No. 10.

As provided by state law, the permittee is subject to administrative, civil and criminal penalties, as applicable, for negligently or knowingly violating the Clean Water Act (CWA); TWC §§ 26, 27, and 28; and THSC § 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 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 § 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 (or longer as required by 40 CFR Part 503), monitoring and reporting records, including strip charts and records of calibration and maintenance, copies of all records required by this permit, records of all data used to complete the application for this permit, and the certification required by 40 CFR § 264.73(b)(9) 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, application or certification. 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 the calculation and reporting of the values submitted on the approved self-report form. Increased frequency of sampling shall be indicated on the self-report form.

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 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 Enforcement Division (MC 224) within five working days of becoming aware of the noncompliance. For Publicly Owned Treatment Works (POTWs), effective December 21, 2025, the permittee must submit the written report for unauthorized discharges and unanticipated bypasses that exceed any effluent limit in the permit using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. 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 that exceeds any effluent limitation in the permit.
 - iii. Violation of a permitted maximum daily discharge limitation for pollutants listed specifically in the Other Requirements section of an Industrial TPDES 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 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 Enforcement Division (MC 224) as promptly as possible. For effluent limitation violations, noncompliances shall be reported on the approved self-report form.
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 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).

11. All POTWs must provide adequate notice to the Executive Director of the following:

- a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to CWA § 301 or § 306 if it were directly discharging those pollutants;
- b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit; and
- c. For the purpose of this paragraph, adequate notice shall include information on:
 - i. The quality and quantity of effluent introduced into the POTW; and
 - ii. Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

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 that 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 TWC§ 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 Other Requirements section of this permit.
- h. In accordance with 30 TAC § 305.535(a), the permittee may allow any bypass to occur from a TPDES permitted facility which does not cause permitted effluent limitations to be exceeded or an unauthorized discharge to occur, but only if the bypass is also for essential maintenance to assure efficient operation.
- i. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under TWC §§ 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) for violations including, but not limited to, negligently or knowingly violating the federal CWA §§ 301, 302, 306, 307, 308, 318, or 405, or any condition or limitation implementing any sections in a permit issued under the CWA § 402, or any requirement imposed in a pretreatment program approved under the CWA §§ 402 (a)(3) or 402 (b)(8).

3. Inspections and Entry

- a. Inspection and entry shall be allowed as prescribed in the TWC Chapters 26, 27, and 28, and THSC § 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 TWC § 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 to a permitted facility may meet one of the criteria for determining whether a facility is a new source in accordance with 30 TAC § 305.534 (relating to New Sources and New Dischargers); or
 - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements in Monitoring and Reporting Requirements No. 9; or
 - iii. 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 TWC § 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.
 - f. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under CWA § 307(a) for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition. The permittee shall comply with effluent standards or prohibitions established under CWA § 307(a) for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not

yet been modified to incorporate the requirement.

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 that requires a permit or other authorization pursuant to the Texas Health and Safety Code.

7. Relationship to Water Rights

Disposal of treated effluent by any means other than discharge directly to water in the state must be specifically authorized in this permit and may require a permit pursuant to TWC Chapter 11.

8. Property Rights

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

9. 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.

10. 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.

11. 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 TWC §

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 required for TPDES permit applications, effluent data, including effluent data in permits, draft permits and permit applications, and other 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 that 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% 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% 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% 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 judgment 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. For Publicly Owned Treatment Works (POTWs), the 30-day average (or monthly average) percent removal for BOD and TSS shall not be less than 85%, unless otherwise authorized by this permit.
11. Facilities that 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 Registration 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 § 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.

12. For industrial facilities to which the requirements of 30 TAC § 335 do not apply, sludge and solid wastes, including tank cleaning and contaminated solids for disposal, shall be disposed of in accordance with THSC § 361.

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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 supplies the sewage sludge 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 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 4) 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. The permittee must submit this annual report by September 30th of each year using the online electronic reporting system available through TCEQ's website. If the permittee requests and obtains an electronic reporting waiver, the annual report can be submitted in hard copy to the TCEQ Regional Office (MC Region 4) and the Enforcement Division (MC 224).

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

<u>Pollutant</u>	<u>Ceiling Concentration</u> <u>(Milligrams per kilogram)*</u>
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 on 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. Biosolids shall be injected below the surface of the land.
 - ii. No significant amount of the biosolids shall be present on the land surface within one hour after biosolids are 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 biosolids 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):

<u>Amount of biosolids (*) metric tons per 365-day period</u>	<u>Monitoring Frequency</u>
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, or 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

<u>Pollutant</u>	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

<u>Pollutant</u>	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 biosolids enters a wetland or other waters in the State.
2. Bulk biosolids 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 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 biosolids 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 treatment activities.
 - b. The location, by street address, and specific latitude and longitude, of each site on which biosolids are applied.
 - c. The number of acres in each site on which bulk biosolids are applied.
 - d. The date and time 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 biosolids 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 submit the following information in an annual report to the TCEQ by September 30th of each year. The permittee must submit this annual report using the online electronic reporting system available through TCEQ's website. If the permittee requests and obtains an electronic reporting waiver, the annual report can be submitted in hard copy to the TCEQ Regional Office (MC Region 4) and Enforcement Team(MC 224).

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 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 meets 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 4) 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 4) and the Enforcement Division (MC 224) 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 submit the following information in an annual report to the TCEQ by September 30th of each year. The permittee must submit this annual report using the online electronic reporting system available through TCEQ's website. If the permittee requests and obtains an electronic reporting waiver, the annual report can be submitted in hard copy to the TCEQ Regional Office (MC Region 4) and Enforcement Division (MC 224).

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 submit the following information in an annual report to the TCEQ by September 30th of each year. The permittee must submit this annual report using the online electronic reporting system available through TCEQ's website. If the permittee requests and obtains an electronic reporting waiver, the annual report can be submitted in hard copy to the TCEQ Regional Office (MC Region 4) and Enforcement Division (MC 224).

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.

TCEQ Revision 06/2020

OTHER REQUIREMENTS

1. 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 that 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.

2. The facility is not located in the Coastal Management Program boundary.
3. The permittee shall comply with the requirements of 30 TAC § 309.13 (a) through (d). In addition, by ownership of part of the required buffer zone area, the permittee shall comply with the requirements of 30 TAC § 309.13(e). The buffer zone extends to Cattlebaron Drive to the southwest and a floodplain area regulated by the Parker County Director of the County Health Department. Should, in the future, Parker County approve residential structures within the area where the buffer zone extends, the permittee, in the case of odor complaints, will be subjected to the provisions of 30 TAC § 309.13(e). See Attachment A.
4. The permittee shall provide facilities for the protection of its wastewater treatment facility from a 100-year flood.
5. In accordance with 30 TAC § 319.9, a permittee that has at least twelve months of uninterrupted compliance with its bacteria limit may notify the commission in writing of its compliance and request a less frequent measurement schedule. To request a less frequent schedule, the permittee shall submit a written request to the TCEQ Wastewater Permitting Section (MC 148) for each phase that includes a different monitoring frequency. The request must contain all of the reported bacteria values (Daily Avg. and Daily Max/Single Grab) for the twelve consecutive months immediately prior to the request. If the Executive Director finds that a less frequent measurement schedule is protective of human health and the environment, the permittee may be given a less frequent measurement schedule. For this permit, one/quarter may be reduced to one/sixth months in the Interim and Final phases. **A violation of any bacteria limit by a facility that has been granted a less frequent measurement schedule will require the permittee to return to the standard frequency schedule and submit written notice to the TCEQ Wastewater Permitting Section (MC 148).** The permittee may not apply for another reduction in measurement frequency for at least 24 months from the date of the last violation. The Executive Director may establish a more frequent measurement schedule if necessary to protect human health or the environment.
6. A certified operator shall inspect the facility daily and maintain at the plant site a record of these inspections. These records shall be available at the plant site for inspection by authorized representatives of the commission for at least three years.

During this daily inspection, the proper operation and maintenance of activated sludge plant shall be checked so as to comply with all the permit conditions.

7. Within six months of permit issuance, the permittee shall submit to the TCEQ Wastewater Permitting Section (MC 148) a structural assessment of the wastewater treatment plant performed by a licensed Texas professional engineer. The assessment shall specifically include an evaluation of the extent to which the structural integrity of the treatment plant has been impaired by being submerged in water for prolonged periods and safeguards to protect the structural integrity of the plant assuming the plant remains partially submerged on a continual basis.

This provision is continued from the permit issued on February 11, 2020, and March 22, 2023, which has not been complied with to date.

8. In the event the City of Fort Worth (City) annexes any portion of the Hilltop Village subdivision, the permittee shall submit plans to the City within 90 days of the date of annexation for connecting the permittee's wastewater collection system to the City's sewer system, in conformity with all applicable City of Fort Worth ordinances and policies concerning wastewater utility construction and installation. The permittee shall implement such plans upon their approval in writing by the City.
9. Within 30 days from the permittee's wastewater collection system connection to the City's sewer system and the ceasing of operation of this facility, the permittee shall apply to the TCEQ for cancellation of this permit.
10. Within 120 days from the permittee's wastewater collection system connection to the City's sewer system and the ceasing of operation of this facility, the permittee shall decommission its wastewater treatment facility. 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 in accordance with the Operational Requirements 3(b), page 13 of this permit.
11. The permittee shall implement the following schedule of activities: complete the repairs or construction of additional treatment units necessary to maintain compliance with effluent limitations for TSS, BOD, CL and *E. coli* no later than 18 months from the date of permit issuance.

The permittee shall submit quarterly progress reports in accordance with the following schedule. The requirement to submit quarterly progress reports expires 18 months from date of permit issuance.

PROGRESS REPORT DATES: January 1, April 1, July 1, October 1.

The quarterly progress reports must contain a discussion of the events that have been completed at the time of the report and their effect, if any, on the permittee's compliance with effluent limitations for BOD, TSS, CL and *E. coli*. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

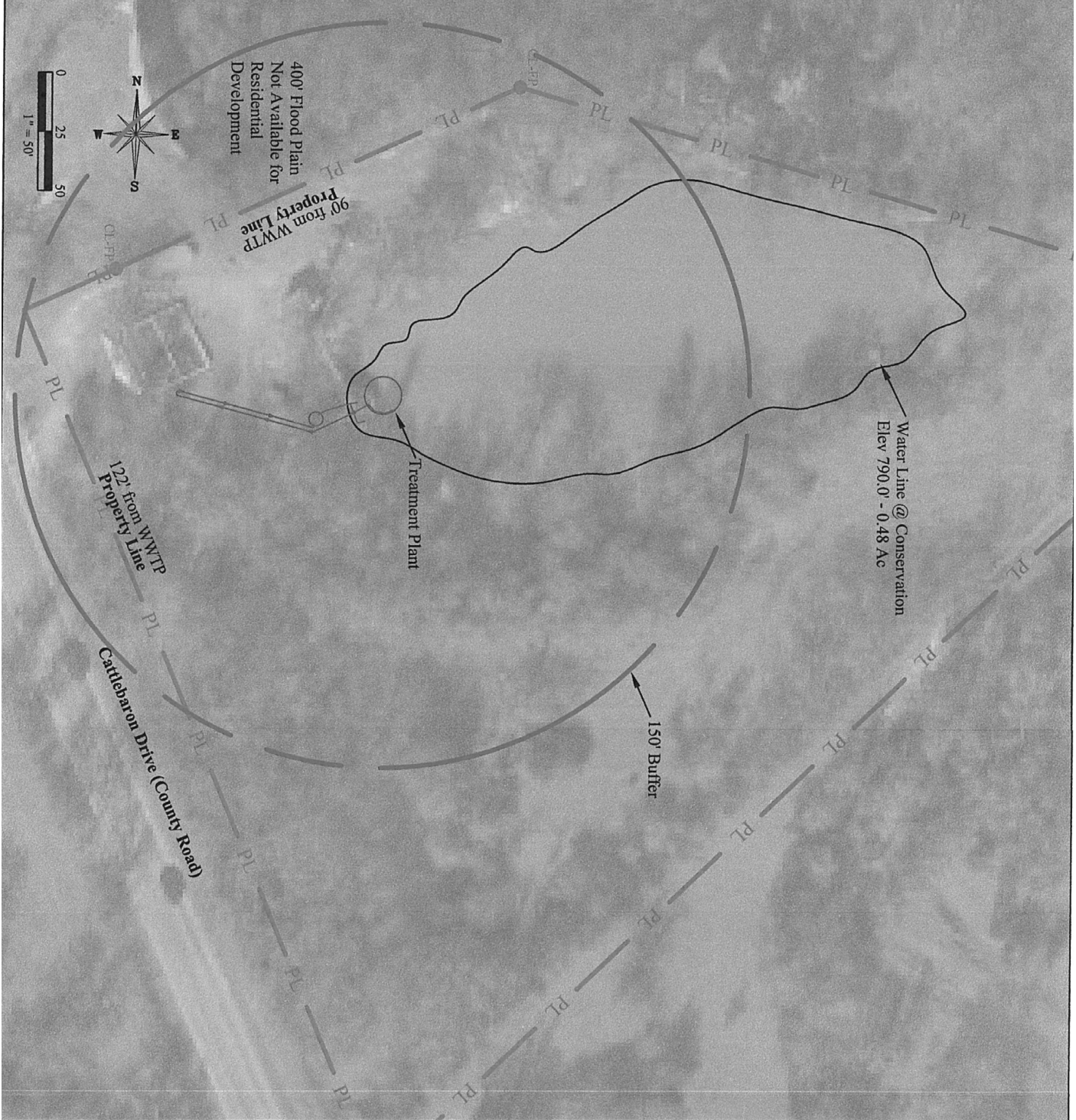
All reports must be submitted no later than 14 days following each schedule date to the

TCEQ Regional Office (MC Region 4) and the Enforcement Division (MC 224) of the TCEQ.

THE PERMITTEE IS REQUIRED TO MEET ALL EFFLUENT LIMITATIONS AND ANY CONDITIONS/PROVISIONS OF THIS PERMIT. THIS PROVISION DOES NOT RESTRICT THE TCEQ'S ABILITY TO TAKE ENFORCEMENT OR OTHER CORRECTIVE ACTION BASED ON NON-COMPLIANCE WITH THE EFFLUENT LIMITATIONS ESTABLISHED IN THIS PERMIT OR ANY OTHER PROVISION CONTAINED IN THIS PERMIT.

12. The permittee shall notify the TCEQ Regional Office (MC Region 4), and the Applications Review and Processing Team (MC 148) of the Water Quality Division, in writing at least forty-five days prior to the completion of the new facilities on Notification of Completion Form 20007.

ATTACHMENT A – BUFFER ZONE MAP
WQ0015010001



Abraxas Corporation
7921 Main Street
North Richland Hills, Texas 76180

RECEIVED
DEC 03 2018 *SAM* Site Plan
Water Quality Division

RECEIVED
DEC 03 2018
Water Quality Division

**STATEMENT OF BASIS/TECHNICAL SUMMARY
AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION**

DESCRIPTION OF APPLICATION

Applicant:	CSWR-Texas Utility Operating Company, LLC Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0015010001, EPA ID No. TX0133116
Regulated Activity:	Domestic Wastewater Permit
Type of Application:	Renewal
Request:	Renewal with no changes
Authority:	Federal Clean Water Act (CWA) § 402; Texas Water Code (TWC) § 26.027; 30 Texas Administrative Code (TAC) Chapters 30, 305, 307, 309, 312, and 319; Commission policies; and United States Environmental Protection Agency (EPA) guidelines.

EXECUTIVE DIRECTOR RECOMMENDATION

The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The draft permit includes an expiration date of **five years from the date of issuance**.

REASON FOR PROJECT PROPOSED

The applicant has applied to the Texas Commission on Environmental Quality (TCEQ) for a renewal of the existing permit that authorizes the discharge of treated domestic wastewater at a daily average flow not to exceed 0.020 million gallons per day (MGD) in the Interim phase and a daily average flow not to exceed 0.075 MGD in the Final phase. The existing wastewater treatment facility serves the Hilltop Village Subdivision in Parker County.

PROJECT DESCRIPTION AND LOCATION

The Abraxas Wastewater Treatment Facility is an activated sludge process plant operated in the conventional mode. Treatment units in an interim phase includes a bar screen, an aeration basin, a reaeration basin, a final clarifier, aerobic sludge digester, two sludge drying beds, a chlorination system, and a chlorine contact chamber. And treatment units in Final phase will include a bar screen, an aeration basin, a final clarifier, a post aeration, an aerobic sludge digester and a chlorine contact chamber. The facility is in operation.

Sludge generated from the treatment facility is hauled by a registered transporter to Village Creek Wastewater Treatment Facility, Permit No. WQ0010494013, in Tarrant County, to be digested, dewatered, and then disposed of with the bulk of the sludge from the plant accepting the sludge. The draft permit also authorizes the disposal of sludge at a TCEQ-authorized land application site, co-disposal landfill, wastewater treatment facility, or facility that further processes sludge.

The plant site is located at 3301 Cattlebaron Road, in Parker County, Texas 76108.

Outfall Location:

Outfall Number	Latitude	Longitude
001	32.789700 N	97.549900 W

The treated effluent is discharged to to a man-made pond, thence to an unnamed drainage ditch, thence to an unnamed tributary, thence to Haywire Lake #2, thence to the unnamed tributary, thence to an unnamed impoundment, thence to the unnamed tributary, thence to Haywire Lake #1, thence to the unnamed tributary, thence to Silver Creek, thence to Lake Worth in Segment No. 0807 of the Trinity River Basin. The unclassified receiving water uses are limited aquatic life use for man-made pond, minimal aquatic life use for drainage ditch and the unnamed tributary and high aquatic life use for Haywire Lakes 1 and 2 and the unnamed impoundment. The designated uses for Segment No. 0807 are primary contact recreation, public water supply, and high aquatic life use. The effluent limitations in the draft permit will maintain and protect the existing instream uses. All determinations are preliminary and subject to additional review and/or revisions.

Effluent limitations for the conventional effluent parameters (i.e., Five-Day Biochemical Oxygen Demand or Five-Day Carbonaceous Biochemical Oxygen Demand, Ammonia Nitrogen, etc.) are based on stream standards and waste load allocations for water-quality limited streams as established in the Texas Surface Water Quality Standards (TSWQS) and the State of Texas Water Quality Management Plan (WQMP).

In a case such as this, end-of-pipe compliance with pH limits between 6.0 and 9.0 standard units reasonably assures instream compliance with the TSWQS for pH when the discharge authorized is from a minor facility. This technology-based approach reasonably assures instream compliance with TSWQS criteria due to the relatively smaller discharge volumes authorized by these permits. This conservative assumption is based on TCEQ sampling conducted throughout the state which indicates that instream buffering quickly restores pH levels to ambient conditions. Similarly, this approach has been historically applied within EPA issued NPDES general permits where technology-based pH limits were established to be protective of water quality criteria.

The effluent limits recommended above have been reviewed for consistency with the State of Texas WQMP. The existing limits are contained in the approved WQMP.

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

Segment No. 0807 is currently listed on the State's inventory of impaired and threatened waters, the 2022 CWA Section 303(d) list. The listing is for Dioxin in edible tissue from the Lake Worth Dam in Tarrant County to a point 4.0 km (2.5 mi) downstream of Eagle Mountain Dam in Tarrant County, up to normal pool elevation of 594 feet (impounds West Fork Trinity River) (Assessment Unit 0807_01). This is a domestic wastewater treatment facility. The facility does not receive industrial wastewater contributions, therefore the effluent from this facility should not contribute to the dioxin in edible tissue impairment of this segment.

Total Maximum Daily Load (TMDL) Project No. 63: *One Total Maximum Daily Load for Polychlorinated Biphenyls (PCBs) in Fish Tissue in Lake Worth* has been approved for this segment. On August 10, 2005, the TCEQ to address elevated concentrations of PCBs in fish caught from the lake. The EPA approved the TMDL on October 13, 2005. Because PCBs are already restricted and no significant additional loading is expected, this TMDL does not specifically attempt to quantify an allowable load of PCBs that may be released to the lake. Within the context of this TMDL, legacy pollutants are considered background sources that reflect the site-specific release history and loss rates of the subject area. Continuing loading may occur from nonpoint source runoff, leaching or erosion of any sediment sources that exist within the watershed. In the case of PCBs in Lake Worth, a principal contributing source has been identified and is undergoing mitigation under the federal CERCLA program. Therefore, no load reductions or effluent limits for PCBs are required in this permit at this time.

SUMMARY OF EFFLUENT DATA

The following is a summary of the applicant's effluent monitoring data for the period August 2022 through August 2024. The average of Daily Average value is computed by the averaging of all 30-day average values for the reporting period for each parameter: flow, five-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and ammonia nitrogen (NH₃-N). The average of Daily Average value for *Escherichia coli* (*E. coli*) in colony-forming units (CFU) or most probable number (MPN) per 100 ml is calculated via geometric mean.

<u>Parameter</u>	<u>Average of Daily Average</u>
Flow, MGD	0.036
BOD ₅ , mg/l	30
TSS, mg/l	45
<i>E. coli</i> , CFU or MPN per 100 ml	5

DRAFT PERMIT CONDITIONS

The draft permit authorizes a discharge of treated domestic wastewater at an interim volume not to exceed a daily average flow of 0.020 MGD and a final volume not to exceed a daily average flow of 0.075 MGD.

The effluent limitations in the Interim phase of the draft permit, based on a 30-day average, are 20 mg/l BOD₅, 20 mg/l TSS, 126 CFU or MPN of *E. coli* per 100 ml, and 2.0 mg/l minimum dissolved oxygen (DO). The effluent shall contain a total chlorine residual of at least 1.0 mg/l and shall not exceed a total chlorine residual of 4.0 mg/l after a detention time of at least 20 minutes based on peak flow.

The effluent limitations in the Final phase of the draft permit, based on a 30-day average, are 10 mg/l five-day carbonaceous biochemical oxygen demand (CBOD₅), 15 mg/l TSS, 3.0 mg/l ammonia-nitrogen (NH₃-N), 126 CFU or MPN of *E. coli* per 100 ml, and 4.0 mg/l minimum DO. The effluent shall contain a total chlorine residual of at least 1.0 mg/l and shall not exceed a total chlorine residual of 4.0 mg/l after a detention time of at least 20 minutes based on peak flow.

Effective April 1998 all permits containing BOD₅ limitations with associated ammonia limitations are revised to replace BOD₅ limits with CBOD₅ limits as established at 30 TAC § 309.1(c).

The draft permit includes Sludge Provisions according to the requirements of 30 TAC Chapter 312, Sludge Use, Disposal, and Transportation. Sludge generated from the treatment facility is hauled by a registered transporter to Village Creek Wastewater Treatment Facility, Permit No. WQ0010494013, in Tarrant County, to be digested, dewatered, and then disposed of with the bulk of the sludge from the plant accepting the sludge. The draft permit also authorizes the disposal of sludge at a TCEQ-authorized land application site, co-disposal landfill, wastewater treatment facility, or facility that further processes sludge.

SUMMARY OF CHANGES FROM APPLICATION

None.

SUMMARY OF CHANGES FROM EXISTING PERMIT

The Standard Permit Conditions, Sludge Provisions, and Other Requirements sections of the draft permit have been updated.

The draft permit includes all updates based on the 30 TAC 312 rule change effective April 23, 2020.

Other Requirement No. 11 of the existing permit has been removed with the submittal of the plans and specifications for the 0.075 MGD treatment facility and approval on December 27, 2023 (Log No. 1023/032).

Other Requirement No.11 in the draft permit has been added to provide a quarterly progress report for compliance with the permit effluent limitations and status of the structural assessment.

Other Requirement No. 12 in the draft permit has been added in the draft permit to submit Notification of Completion Form 20007 prior to the completion of the new facilities.

BASIS FOR DRAFT PERMIT

The following items were considered in developing the draft permit:

1. Application received on October 07, 2024, and additional information received on October 07, 2024, November 26, 2024, December 6, 2024 and December 30, 2024.
2. TPDES Permit No. WQ0015010001 issued on March 22, 2023.

3. The effluent limitations and conditions in the draft permit comply with EPA-approved portions of the 2018 Texas Surface Water Quality Standards (TSWQS), 30 TAC §§ 307.1 - 307.10, effective March 1, 2018; 2014 TSWQS, effective March 6, 2014; 2010 TSWQS, effective July 22, 2010; and 2000 TSWQS, effective July 26, 2000.
4. The effluent limitations in the draft permit meet the requirements for secondary treatment and the requirements for disinfection according to 30 TAC Chapter 309, Subchapter A: Effluent Limitations.
5. Interoffice Memoranda from the Water Quality Assessment Section of the TCEQ Water Quality Division.
6. Consistency with the Coastal Management Plan: The facility is not located in the Coastal Management Program boundary.
7. *Procedures to Implement the Texas Surface Water Quality Standards (IP)*, Texas Commission on Environmental Quality, June 2010, as approved by EPA, and the IP, January 2003, for portions of the 2010 IP not approved by EPA.
8. Texas 2022 CWA Section 303(d) List, Texas Commission on Environmental Quality, June 1, 2022; approved by the EPA on July 7, 2022.
9. Texas Natural Resource Conservation Commission, Guidance Document for Establishing Monitoring Frequencies for Domestic and Industrial Wastewater Discharge Permits, Document No. 98-001.000-OWR-WQ, May 1998.
10. TMDL Project No. 63: *One Total Maximum Daily Load for Polychlorinated Biphenyls (PCBs) in Fish Tissue in Lake Worth* has been approved for this segment.

PROCEDURES FOR FINAL DECISION

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

Once a draft permit is completed, it is sent, along with the Executive Director's preliminary decision, as contained in the technical summary or fact sheet, to the Chief Clerk. At that time, the Notice of Application and Preliminary Decision will be mailed to the same people and published in the same newspaper as the prior notice. This notice sets a deadline for making public comments. The applicant must place a copy of the Executive Director's preliminary decision and draft permit in the public place with the application.

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

After the public comment deadline, the Executive Director prepares a response to all significant public comments on the application, or the draft permit raised during the public comment period. The Chief Clerk then mails the Executive Director's response to comments and final decision to people who have filed comments, requested a contested case hearing, or requested to be on the mailing list. This notice provides that if a person is not satisfied with the Executive Director's response and decision, they can request a contested case hearing or file a request to reconsider the Executive Director's decision within 30 days after the notice is mailed.

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

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

For additional information about this application, contact Sumitra Pokharel at (512) 239-4722.

Sumitra Pokharel

Sumitra Pokharel
Municipal Permits Team
Wastewater Permitting Section (MC 148)

12/02/2024

Date

August 10, 2024

Texas Commission on Environmental Quality
Water Quality Division
Applications Review and Processing Team (MC148)
P.O. Box 13087
Austin, Texas 78711-3087

Re: Abraxas Wastewater Treatment Facility, Renewal

Dear Reviewing and Processing Team:

Central States Water Resources (CSWR) – Texas Utility Operating Company is pleased to submit the attached application for renewal of NPDES permit TX0133116 for its Abraxas Wastewater Treatment Facility located at 3301 Cattlebaron Dr., White Settlement, Texas 77465.

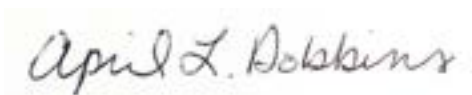
In addition to the renewal application, we are pursuing a major upgrade to the facility. Plans and specifications were submitted to TCEQ on October 5, 2023 and approval was issued December 27, 2023. This new facility will incorporate advanced treatment technologies to enhance efficiency and ensure compliance with all regulatory standards. We anticipate this construction will be completed by September 1, 2025. The approval letter detailing the new construction can be found as Attachment 3 to this application.

CSWR is dedicated to being a responsible steward of the environment and providing reliable wastewater services to our customers.

Thank you for considering our renewal application. We welcome your feedback and are available to provide any additional information or documentation you may need.

We also acknowledge and value the Texas Commission on Environmental Quality's continued support in ensuring compliance across CSWR-Texas facilities statewide. Should you have any questions about this submission, please feel free to contact me directly at 314-380-9508 or adobbins@cswrgroup.com.

Sincerely,



April L. Dobbins
EHS Compliance Coordinator
Central States Water Resources

From: Krista Obernuefemann
To: Krista Obernuefemann
Subject: TCEQ ePay Receipt for 582EA000621589

Krista Obernuefemann
Account Executive Manager
Email: krista@cswrgroup.com
617-242-3804 (TX) / 314-380-8515 (MO)
1630 Des Peres Rd, Ste 140, St Louis, MO 63131
cswr@cswrgroup.com

-----Original Message-----
From: krista@cswrgroup.com <krista@cswrgroup.com>
Sent: Wednesday, August 14, 2024 2:28 PM

To: Krista Obernuefemann <krista@cswrgroup.com>

Subject: TCEQ ePay Receipt for 582EA000621589

This is an automated message from the TCEQ ePay system. Please do not reply.

Trace Number: 582EA000621589

Date: 08/14/2024 02:28 PM

Payment Method: ACH - Authorization 0079974846 TCEQ Amount: \$630.00 Texas.gov Price: \$630.00*

* This service is provided by Texas.gov, the official website of Texas. The price of this service includes funds that support the ongoing operations and enhancements of Texas.gov, which is provided by a third party in partnership with the State.

Actor: KRISTA OBERNUEFEMANN

Email: krista@cswrgroup.com

Payment Contact: KRISTA OBERNUEFEMANN

Phone: 314-380-8515

Company: CSWR TEXAS UTILITY OPERATING CO

Address: 1630 DES PERES RD STE 140, ST LOUIS, MO 63131

Fees Paid:

Fee Description	AR Number	Amount
-----------------	-----------	--------

WW PERMIT - FACILITY WITH FLOW < .05 MGD - RENEWAL		\$300.00
--	--	----------

30 TAC 305.53B WQ RENEWAL NOTIFICATION FEE		\$15.00
--	--	---------

WW PERMIT - FACILITY WITH FLOW < .05 MGD - RENEWAL		\$300.00
--	--	----------

30 TAC 305.53B WQ RENEWAL NOTIFICATION FEE		\$15.00
--	--	---------

TCEQ Amount: \$630.00
=====

=====

Voucher: 717265

Trace Number: 582EA000621589

Date: 08/14/2024 02:28 PM

Payment Method: ACH - Authorization 0079974846 Voucher Amount: \$300.00 Fee Paid: WW PERMIT -

FACILITY WITH FLOW < .05 MGD - RENEWAL Site Name: ABRAXAS WWTF Site Address: 3301

CATTLEBARON RD, FORT WORTH, TX 76108 Site Location: 3301 CATTLEBARON RD FORT WORTH TX

76108 Customer Name: CSWR-TEXAS UTILITY OPERATING COMPANY LLC Customer Address: 1630 DES

PERES RD STE 140, ST LOUIS, MO 63131 Program Area ID: WQ001501001

Voucher: 717266

Trace Number: 582EA000621589

Date: 08/14/2024 02:28 PM

Payment Method: ACH - Authorization 0079974846 Voucher Amount: \$15.00 Fee Paid: 30 TAC 305.53B WQ

RENEWAL NOTIFICATION FEE

Voucher: 717267

Trace Number: 582EA000621589

Date: 08/14/2024 02:28 PM

Payment Method: ACH - Authorization 0079974846 Voucher Amount: \$300.00 Fee Paid: WW PERMIT -

FACILITY WITH FLOW < .05 MGD - RENEWAL Site Name: TCP WWTP Site Address: 669 CLAM DR,

PALACIOS, TX 77465 Site Location: 669 CLAM DR PALACIOS TX 77465 Customer Name: CSWR-TEXAS

UTILITY OPERATING COMPANY LLC Customer Address: 1630 DES PERES RD STE 140, ST LOUIS, MO

63131 Program Area ID: WQ005399001

Voucher: 717268

Trace Number: 582EA000621589

Date: 08/14/2024 02:28 PM

Payment Method: ACH - Authorization 0079974846 Voucher Amount: \$15.00 Fee Paid: 30 TAC 305.53B WQ

RENEWAL NOTIFICATION FEE



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.)		
<input type="checkbox"/> New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)		
<input checked="" type="checkbox"/> Renewal (Core Data Form should be submitted with the renewal form)		<input type="checkbox"/> Other
2. Customer Reference Number (if issued)		3. Regulated Entity Reference Number (if issued)
CN 605844786		RN 101521391

[Follow this link to search for CN or RN numbers in Central Registry**](#)

SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)			
<input type="checkbox"/> New Customer <input checked="" type="checkbox"/> Update to Customer Information <input type="checkbox"/> Change in Regulated Entity Ownership					
<input type="checkbox"/> Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)					
<i>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).</i>					
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)				<i>If new Customer, enter previous Customer below:</i>	
CSWR-Texas Utility Operating Company LLC					
7. TX SOS/CPA Filing Number		8. TX State Tax ID (11 digits)		9. Federal Tax ID (9 digits)	
803367893		32071353422		84-3250493	
10. DUNS Number (if applicable)					
11. Type of Customer:		<input checked="" type="checkbox"/> Corporation		<input type="checkbox"/> Individual	
Government: <input type="checkbox"/> City <input type="checkbox"/> County <input type="checkbox"/> Federal <input type="checkbox"/> Local <input type="checkbox"/> State <input type="checkbox"/> Other		<input type="checkbox"/> Sole Proprietorship		Partnership: <input type="checkbox"/> General <input type="checkbox"/> Limited	
12. Number of Employees		13. Independently Owned and Operated?			
<input type="checkbox"/> 0-20 <input type="checkbox"/> 21-100 <input checked="" type="checkbox"/> 101-250 <input type="checkbox"/> 251-500 <input type="checkbox"/> 501 and higher		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
14. Customer Role (Proposed or Actual) – as it relates to the Regulated Entity listed on this form. Please check one of the following					
<input checked="" type="checkbox"/> Owner <input type="checkbox"/> Operator <input type="checkbox"/> Owner & Operator <input type="checkbox"/> Other:					
<input type="checkbox"/> Occupational Licensee <input type="checkbox"/> Responsible Party <input type="checkbox"/> VCP/BSA Applicant					
15. Mailing Address:		1630 Des Peres Road			
		Ste. 140			
City		Des Peres		State	MO
ZIP		63131		ZIP + 4	
16. Country Mailing Information (if outside USA)				17. E-Mail Address (if applicable)	
				adobbins@cswrgroup.com	
18. Telephone Number		19. Extension or Code		20. Fax Number (if applicable)	

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.)

CSWR - Abraxas WWTF

23. Street Address of the Regulated Entity:

(No PO Boxes)

3301 Cattlebaron Road

City

Fort Worth

State

TX

ZIP

76108

ZIP + 4

24. County

Parker

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

25. Description to

Physical Location:

East off of Cattlebaron Road behind fence

26. Nearest City

State

Nearest ZIP Code

Fort Worth

TX

76108

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

27. Latitude (N) In Decimal:

32.789880

28. Longitude (W) In Decimal:

-97.549669

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

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

Wastewater Treatment

34. Mailing

Address:

1630 Des Peres Road

Ste. 140

City

Des Peres

State

MO

ZIP

63131

ZIP + 4

35. E-Mail Address:

adobbins@CSWRgroup.com

36. Telephone Number

37. Extension or Code

38. Fax Number (if applicable)

(314) 380-9508

() -

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.

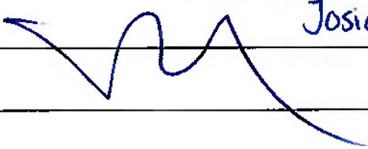
<input type="checkbox"/> Dam Safety	<input type="checkbox"/> Districts	<input type="checkbox"/> Edwards Aquifer	<input type="checkbox"/> Emissions Inventory Air	<input type="checkbox"/> Industrial Hazardous Waste
<input type="checkbox"/> Municipal Solid Waste	<input type="checkbox"/> New Source Review Air	<input type="checkbox"/> OSSF	<input type="checkbox"/> Petroleum Storage Tank	<input type="checkbox"/> PWS
<input type="checkbox"/> Sludge	<input type="checkbox"/> Storm Water	<input type="checkbox"/> Title V Air	<input type="checkbox"/> Tires	<input type="checkbox"/> Used Oil
<input type="checkbox"/> Voluntary Cleanup	<input checked="" type="checkbox"/> Wastewater	<input type="checkbox"/> Wastewater Agriculture	<input type="checkbox"/> Water Rights	<input type="checkbox"/> Other:
	WQ0015010001, TX0133116			

SECTION IV: Preparer Information

40. Name:	Amberly Schulz			41. Title:	Compliance Specialist
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address		
(573) 214-1075		() -	aschulz@trccompanies.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:	CSWR-Texas Utility Operating Company		Job Title:	President / CEO	
Name (In Print):	Josiah Cox			Phone:	(314) 1736-4672
Signature:				Date:	8/12/2024



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION

CHECKLIST

Complete and submit this checklist with the application.

APPLICANT: CSWR - Texas Utility Operating Company, LLC

PERMIT NUMBER: WQ0015010001

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

	Y	N		Y	N
Administrative Report 1.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Original USGS Map	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Administrative Report 1.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Affected Landowners Map	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SPIF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Landowner Disk or Labels	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Core Data Form	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Buffer Zone Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Public Involvement Plan Form	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Flow Diagram	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Technical Report 1.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Drawing	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Technical Report 1.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Original Photographs	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 2.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Design Calculations	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Solids Management Plan	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 3.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water Balance	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 3.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 3.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 4.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 5.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 6.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 7.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			

For TCEQ Use Only

Segment Number _____ County _____

Expiration Date _____ Region _____

Permit Number _____



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

**APPLICATION FOR A DOMESTIC WASTEWATER PERMIT
ADMINISTRATIVE REPORT 1.0**

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

Section 1. Application Fees (Instructions Page 29)

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

Flow	New/Major Amendment	Renewal
<0.05 MGD	\$350.00 <input type="checkbox"/>	\$315.00 <input checked="" type="checkbox"/>
≥0.05 but <0.10 MGD	\$550.00 <input type="checkbox"/>	\$515.00 <input type="checkbox"/>
≥0.10 but <0.25 MGD	\$850.00 <input type="checkbox"/>	\$815.00 <input type="checkbox"/>
≥0.25 but <0.50 MGD	\$1,250.00 <input type="checkbox"/>	\$1,215.00 <input type="checkbox"/>
≥0.50 but <1.0 MGD	\$1,650.00 <input type="checkbox"/>	\$1,615.00 <input type="checkbox"/>
≥1.0 MGD	\$2,050.00 <input type="checkbox"/>	\$2,015.00 <input type="checkbox"/>

Minor Amendment (for any flow) \$150.00 ☐

Payment Information:

Mailed Check/Money Order Number:

Check/Money Order Amount:

Name Printed on Check:

EPAY Voucher Number:

Copy of Payment Voucher enclosed? Yes ☐

Section 2. Type of Application (Instructions Page 29)

- | | |
|---|---|
| <input type="checkbox"/> New TPDES | <input type="checkbox"/> New TLAP |
| <input type="checkbox"/> Major Amendment <u>with</u> Renewal | <input checked="" type="checkbox"/> Minor Amendment <u>with</u> Renewal |
| <input type="checkbox"/> Major Amendment <u>without</u> Renewal | <input type="checkbox"/> Minor Amendment <u>without</u> Renewal |
| <input type="checkbox"/> Renewal without changes | <input type="checkbox"/> Minor Modification of permit |

For amendments or modifications, describe the proposed changes: Owner Change, Name Change

For existing permits:

Permit Number: WQ00015010001

EPA I.D. (TPDES only): TX0133116

Expiration Date: 02/11/2025

Section 3. Facility Owner (Applicant) and Co-Applciant Information (Instructions Page 29)

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

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

CSWR-Texas Utility Operating Company, LLC

(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: 605844786

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., Ms., Miss): Mr.

First and Last Name: Josiah Cox

Credential (P.E, P.G., Ph.D., etc.):

Title: President

B. Co-applciant 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-applciant applying for this permit?

N/A

(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-applciant 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: N/A

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., Ms., Miss): N/A

First and Last Name: N/A

Credential (P.E, P.G., Ph.D., etc.): N/A

Title: N/A

Provide a brief description of the need for a co-permittee: N/A

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.

Attachment: Core Data Form Only

Section 4. Application Contact Information (Instructions Page 30)

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

First and Last Name: April Dobbins

Credential (P.E, P.G., Ph.D., etc.):

Title: EHS Compliance Coordinator

Organization Name: CSWR

Mailing Address: 1630 Des Peres Road, Ste. 140

City, State, Zip Code: Des Peres, Missouri 63131

Phone No.: 314-380-9508 Ext.:

Fax No.:

E-mail Address: adobbins@cswrgroup.com

Check one or both: ☒ Administrative Contact

☐ Technical Contact

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

First and Last Name: Amberly Schulz

Credential (P.E, P.G., Ph.D., etc.):

Title: Compliance Specialist

Organization Name: TRC

Mailing Address: 1000 Clark Ave., 4th Floor

City, State, Zip Code: St. Louis, MO 63102

Phone No.: 573-214-1075 Ext.:

Fax No.:

E-mail Address: aschulz@trccompanies.com

Check one or both: ☐ Administrative Contact

☒ Technical Contact

Section 5. Permit Contact Information (Instructions Page 30)

Provide two names of individuals that can be contacted throughout the permit term.

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

First and Last Name: April Dobbins

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: EHS Compliance Coordinator

Organization Name: CSWR

Mailing Address: 1630 Des Peres Road, Ste. 140

City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-380-9508 Ext.: [REDACTED]

Fax No.: [REDACTED]

E-mail Address: adobbins@cswrgroup.com

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

First and Last Name: Clarence Wittwer

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: Regional Manager of Operations

Organization Name: CSWR

Mailing Address: 1630 Des Peres Road, Ste. 140

City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-380-8505 Ext.: [REDACTED]

Fax No.: [REDACTED]

E-mail Address: cwittwer@cswrgroup.com

Section 6. Billing Information (Instructions Page 30)

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., Ms., Miss): [REDACTED]

First and Last Name: Krista

Credential (P.E, P.G., Ph.D., etc.): Obernuefemann

Title: Accounts Payable and Treasury Manager

Organization Name: CSWR

Mailing Address: 1630 Des Peres Road, Ste. 140

City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-380-8515 Ext.: [REDACTED]

Fax No.: [REDACTED]

E-mail Address: ap@cswrgroup.com

Section 7. DMR/MER Contact Information (Instructions Page 31)

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

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: April Dobbins

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: EHS Compliance Coordinator

Organization Name: CSWR

Mailing Address: 1630 Des Peres Road, Ste. 140

City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-380-9508 Ext.: [REDACTED] Fax No.: [REDACTED]

E-mail Address: adobbins@cswrgroup.com

DMR data is required to be submitted electronically. Create an account at:
<https://www.tceq.texas.gov/permitting/netdmr/netdmr.html>.

Section 8. Public Notice Information (Instructions Page 31)

A. Individual Publishing the Notices

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: April Dobbins

Credential (P.E, P.G., Ph.D., etc.): [REDACTED]

Title: EHS Compliance Coordinator

Organization Name: CSWR

Mailing Address: 1630 Des Peres Road, Ste. 140

City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-380-9508 Ext.: [REDACTED] Fax No.: [REDACTED]

E-mail Address: adobbins@cswrgroup.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 person to be listed in the Notices

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

First and Last Name: April Dobbins

Credential (P.E, P.G., Ph.D., etc.):

Title: EHS Compliance Coordinator

Organization Name: CSWR

Phone No.: 314-380-9508 Ext.:

E-mail: adobbins@cswrgroup.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: East Parker County Library

Location within the building: Back/Circulation Desk

Physical Address of Building: 201 N. FM 1187

City: Aledo

County: Parker

Contact Name: Beck Gorman

Phone No.: Ext.: 817-441-6545

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. 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: Not necessary, this is a renewal with owner and name change only.

Section 9. Regulated Entity and Permitted Site Information (Instructions Page 33)

- A. If the site is currently regulated by TCEQ, provide the Regulated Entity Number (RN) issued to this site. RN101521391

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):

Abraxas WWTF

- C. Owner of treatment facility: CSWR-Texas Utility Operating Company, LLC

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

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

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

First and Last Name: CSWR-Texas Utility Operating Company, LLC

Mailing Address: 1630 Des Peres Road, Ste. 140

City, State, Zip Code: Des Peres, Missouri 63131

Phone No.: 314-736-4672

E-mail Address: jcox@cswrgroup.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:

- E. Owner of effluent disposal site:

Prefix (Mr., Ms., Miss):

First and Last Name:

Mailing Address:

City, State, Zip Code:

Phone No.: [REDACTED] E-mail Address: [REDACTED]

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: [REDACTED]

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

Prefix (Mr., Ms., Miss): [REDACTED]

First and Last Name: [REDACTED]

Mailing Address: [REDACTED]

City, State, Zip Code: [REDACTED]

Phone No.: [REDACTED] E-mail Address: [REDACTED]

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: [REDACTED]

Section 10. TPDES Discharge Information (Instructions Page 34)

- 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:

[REDACTED]

- 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:

[REDACTED]

City nearest the outfall(s): Fort Worth

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

Outfall Latitude: 32.78923

Longitude: -97.549817

- 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:

- 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

Section 11. TLAP Disposal Information (Instructions Page 36)

- 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:

N/A

- B. City nearest the disposal site: N/A

- C. County in which the disposal site is located: N/A

- D. Disposal Site Latitude: N/A Longitude: N/A

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

N/A

- F. For **TLAPs**, please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained:

N/A

Section 12. Miscellaneous Information (Instructions Page 37)

- 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: N/A

Amount past due: N/A

E. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

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

Enforcement order number: N/A

Amount past due: N/A

Section 13. Attachments (Instructions Page 38)

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: 8x12 reproduced topo map

Section 14. Signature Page (Instructions Page 39)

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

Permit Number: N/A

Applicant: N/A

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): Josiah Cox

Signatory title: N/A

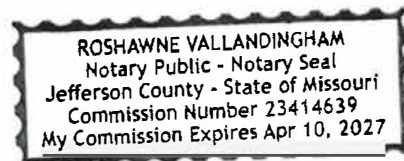
Signature: _____ Date: 8/12/2024
(Use blue ink)

Subscribed and Sworn to before me by the said Josiah Cox
on this 12th day of August, 2024.
My commission expires on the 10th day of April, 2027.

Roshawne Vallandingham
Notary Public

[SEAL]

County, Texas
ST. LOUIS, MO



Section 15. Plain Language Summary (Instructions Page 40)

If you are subject to the alternative language notice requirements in [30 Texas Administrative Code §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

DOMESTIC WASTEWATER

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 Texas Administrative Code Chapter 39. The information provided in this summary may change during the technical review of the application and are not federal enforceable representations of the permit application.

CSWR-Texas Utility Operating Company, LLC (CN605844786) operates Abraxas WWTF RN101521391, a domestic wastewater treatment plant. The facility is located at 3301 Cattlebaron Road, in Fort Worth, Parker County, Texas 76108.

Renewal to discharge not more than 0.020 million gallons a day of domestic wastewater via Outfall 001.

Discharges from the facility are expected to contain Biochemical Oxygen Demand, Total Suspended Solids, E. Coli, pH, and Total Residual Chlorine. Domestic wastewater is treated by an activated sludge process plant with extended aeration. Treatment units include a bar screen, an aeration basin, a final clarifier, post-aeration, an aerobic sludge digester, and a chlorine contact chamber.

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

AGUAS RESIDUALES DOMÉSTICAS

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 son representaciones federales exigibles de la solicitud de permiso.

1. Introduzca el nombre del solicitante aquí. (2. Introduzca el número de cliente aquí (es decir, CN6 #####).) 3. Elija del menú desplegable. 4. Introduzca el nombre de la instalación aquí. 5. Introduzca el número de entidad regulada aquí (es decir, RN1 #####). 6. Elija del menú desplegable. 7. Introduzca la descripción de la instalación aquí. . La instalación 8. Elija del menú desplegable. ubicado 9. Introduzca la ubicación aquí. , en 10. Introduzca el nombre de la ciudad aquí. , Condado de 11. Introduzca el nombre del condado aquí. , Texas 12. Introduzca el código postal aquí. . 13. Introduzca el resumen de la solicitud de solicitud aquí. <<Para las aplicaciones de TLAP incluya la siguiente oración, de lo contrario, elimine:>> Este permiso no autorizará una descarga de contaminantes en el agua en el estado.

Se espera que las descargas de la instalación contengan 14. Liste todos los contaminantes esperados aquí. . 15. Introduzca los tipos de aguas residuales descargadas aquí. 16. Elija del menú desplegable. tratado por 17. Introduzca una descripción del tratamiento de aguas residuales utilizado en la instalación aquí.

DOMESTIC ADMINISTRATIVE REPORT 1.1

The following information is required for new and amendment applications.

Section 1. Affected Landowner Information (Instructions Page 41)

- A. Indicate by a check mark that the landowners map or drawing, with scale, includes the following information, as applicable:
- ☐ The applicant's property boundaries
 - ☐ The facility site boundaries within the applicant's property boundaries
 - ☐ The distance the buffer zone falls into adjacent properties and the property boundaries of the landowners located within the buffer zone
 - ☐ The property boundaries of all landowners surrounding the applicant's property (Note: if the application is a major amendment for a lignite mine, the map must include the property boundaries of all landowners adjacent to the new facility (ponds).)
 - ☐ The point(s) of discharge and highlighted discharge route(s) clearly shown for one mile downstream
 - ☐ The property boundaries of the landowners located on both sides of the discharge route for one full stream mile downstream of the point of discharge
 - ☐ The property boundaries of the landowners along the watercourse for a one-half mile radius from the point of discharge if the point of discharge is into a lake, bay, estuary, or affected by tides
 - ☐ The boundaries of the effluent disposal site (for example, irrigation area or subsurface drainfield site) and all evaporation/holding ponds within the applicant's property
 - ☐ The property boundaries of all landowners surrounding the effluent disposal site
 - ☐ The boundaries of the sludge land application site (for land application of sewage sludge for beneficial use) and the property boundaries of landowners surrounding the applicant's property boundaries where the sewage sludge land application site is located
 - ☐ The property boundaries of landowners within one-half mile in all directions from the applicant's property boundaries where the sewage sludge disposal site (for example, sludge surface disposal site or sludge monofill) is located
- B. ☐ Indicate by a check mark that a separate list with the landowners' names and mailing addresses cross-referenced to the landowner's map has been provided.
- C. Indicate by a check mark in which format the landowners list is submitted:
- ☐ USB Drive ☐ Four sets of labels
- D. Provide the source of the landowners' names and mailing addresses:
- E. As required by *Texas Water Code § 5.115*, is any permanent school fund land affected by this application?
- ☐ Yes ☐ No

If **yes**, provide the location and foreseeable impacts and effects this application has on the land(s):

Section 2. Original Photographs (Instructions Page 44)

Provide original ground level photographs. Indicate with checkmarks that the following information is provided.

- ☐ At least one original photograph of the new or expanded treatment unit location
- ☐ At least two photographs of the existing/proposed point of discharge and as much area downstream (photo 1) and upstream (photo 2) as can be captured. If the discharge is to an open water body (e.g., lake, bay), the point of discharge should be in the right or left edge of each photograph showing the open water and with as much area on each respective side of the discharge as can be captured.
- ☐ At least one photograph of the existing/proposed effluent disposal site
- ☐ A plot plan or map showing the location and direction of each photograph

Section 3. Buffer Zone Map (Instructions Page 44)

A. Buffer zone map. Provide a buffer zone map on 8.5 x 11-inch paper with all of the following information. The applicant's property line and the buffer zone line may be distinguished by using dashes or symbols and appropriate labels.

- The applicant's property boundary;
- The required buffer zone; and
- Each treatment unit; and
- The distance from each treatment unit to the property boundaries.

B. Buffer zone compliance method. Indicate how the buffer zone requirements will be met. Check all that apply.

- ☐ Ownership
- ☐ Restrictive easement
- ☐ Nuisance odor control
- ☐ Variance

C. Unsuitable site characteristics. Does the facility comply with the requirements regarding unsuitable site characteristic found in 30 TAC § 309.13(a) through (d)?

- ☐ Yes ☐ No

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

FOR AGENCIES REVIEWING DOMESTIC TPDES WASTEWATER PERMIT APPLICATIONS

TCEQ USE ONLY:

Application type: ____Renewal ____Major Amendment ____Minor Amendment ____New

County: _____ Segment Number: _____

Admin Complete Date: _____

Agency Receiving SPIF:

____ Texas Historical Commission

____ U.S. Fish and Wildlife

____ Texas Parks and Wildlife Department

____ U.S. Army Corps of Engineers

This form applies to TPDES permit applications only. (Instructions, Page 53)

The SPIF must be completed as a separate document. The TCEQ will mail a copy of the SPIF to each agency as required by the TCEQ agreement with EPA. If any of the items are not completely addressed or further information is needed, you will be contacted to provide the information before the permit is issued. Each item must be completely addressed.

Do not refer to a response of any item in the permit application form. Each attachment must be provided with this form separately from the administrative report of the application. The application will not be declared administratively complete without this form being completed in its entirety including all attachments.

The following applies to all applications:

1. Permittee: CSWR – Texas Utility Operating Company, LLC

Permit No. WQ00 0015010001

EPA ID No. TX 0133116

Address of the project (or a location description that includes street/highway, city/vicinity, and county):

3301 Cattlebaron Road, Fort Worth, Parker County

Provide the name, address, phone and fax number of an individual that can be contacted to answer specific questions about the property.

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

First and Last Name: April Dobbins

Credential (P.E, P.G., Ph.D., etc.):

Title: EHS Compliance Coordinator

Mailing Address: 1630 Des Peres Road Ste. 140

City, State, Zip Code: Des Peres, Missouri 63131

Phone No.: 314-380-9508 Ext.:

Fax No.:

E-mail Address: adobbins@cswrgroup.com

2. List the county in which the facility is located: Parker
3. If the property is publicly owned and the owner is different than the permittee/applicant, please list the owner of the property.

N/A

4. Provide a description of the effluent discharge route. The discharge route must follow the flow of effluent from the point of discharge to the nearest major watercourse (from the point of discharge to a classified segment as defined in 30 TAC Chapter 307). If known, please identify the classified segment number.

Facility to unnamed drainage ditch, thence to an unnamed tributary, thence to Haywire Lake #2, thence to an unnamed tributary, thence to an unnamed impoundment, thence to an unnamed tributary, thence to Haywire Lake #1, thence to an unnamed tributary, thence to Silver Creek, then to Lake Worth in Segment No. 0807 of the Trinity River Basin

5. Please provide a separate 7.5-minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. Please highlight the discharge route from the point of discharge for a distance of one mile downstream. (This map is required in addition to the map in the administrative report).

Provide original photographs of any structures 50 years or older on the property.

Does your project involve any of the following? Check all that apply.

- ☐ Proposed access roads, utility lines, construction easements
- ☐ Visual effects that could damage or detract from a historic property's integrity
- ☐ Vibration effects during construction or as a result of project design
- ☐ Additional phases of development that are planned for the future
- ☐ Sealing caves, fractures, sinkholes, other karst features

☐ Disturbance of vegetation or wetlands

6. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves, or other karst features):

None

7. Describe existing disturbances, vegetation, and land use:

Existing WWTF

THE FOLLOWING ITEMS APPLY ONLY TO APPLICATIONS FOR NEW TPDES PERMITS AND MAJOR AMENDMENTS TO TPDES PERMITS

8. List construction dates of all buildings and structures on the property:

N/A

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

N/A

WATER QUALITY PERMIT

PAYMENT SUBMITTAL FORM

Use this form to submit the Application Fee, if the mailing the payment.

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

Mail this form and the check or money order to:

BY REGULAR U.S. MAIL

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

BY OVERNIGHT/EXPRESS MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, Texas 78753

Fee Code: WQP Waste Permit No: WQ0015010001

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

5. APPLICATION INFORMATION

Name of Project or Site: Abraxas WWTF

Physical Address of Project or Site:

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

Staple Check or Money Order in This Space

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
DOMESTIC WASTEWATER PERMIT APPLICATION

DOMESTIC TECHNICAL REPORT 1.0

**The Following Is Required For All Applications
Renewal, New, And Amendment**

Section 1. Permitted or Proposed Flows (Instructions Page 51)

A. Existing/Interim I Phase

Design Flow (MGD): 0.020 MGD

2-Hr Peak Flow (MGD): 42 gpm

Estimated construction start date:

Estimated waste disposal start date:

B. Interim II Phase

Design Flow (MGD):

2-Hr Peak Flow (MGD):

Estimated construction start date:

Estimated waste disposal start date:

C. Final Phase

Design Flow (MGD): 0.075 MGD

2-Hr Peak Flow (MGD): 0.30

Estimated construction start date:

Estimated waste disposal start date:

D. Current operating phase: 0.020 MGD

Provide the startup date of the facility: Operating

Section 2. Treatment Process (Instructions Page 51)

A. Treatment process description

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 in the permit, a description of *each phase* must be provided.** Process description:

Current Phase: Aeration, Clarifier, chlorine contact chamber, and aerobic digester. Final Phase: Activated sludge process plant with extended aeration. Treatment units include a fine bar screen, aeration basin, final clarifier, post aeration, aerobic sludge digester, and a chlorine contact chamber.

Port or pipe diameter at the discharge point, in inches: 6-inch

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)
Aeration Basin (current)	1	17.5 ft x 4.3 ft x 10 ft
Clarifier (current)	1	10 ft diameter by 10 ft deep
Chlorine contact chamber (current)	1	3.2 ft x 4.3 ft x 10 ft
Digester (current)	1	10.6 ft x 4.3 ft x 10 ft
Secondary Clarifier (Future)	1	20 ft. diameter, 11 ft SWD

Treatment Unit Type	Number of Units	Dimensions (L x W x D)
Aerobic Sludge Digester (Future)	1	13.1 ft x 12 ft x 10.5 ft SWD

C. Process flow diagrams

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

Attachment:

Section 3. Site Drawing (Instructions Page 52)

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:

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

This treatment system serves the Hilltop Village Subdivision in Parker County, Fort Worth, Texas.

Section 4. Unbuilt Phases (Instructions Page 52)

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.

Section 5. Closure Plans (Instructions Page 53)

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.

See attached closure approval

Section 6. Permit Specific Requirements (Instructions Page 53)

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: December 27, 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.

Approval Letter attached

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.

Buffer zone map attached

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*.

CSWR - Texas will schedule a PE to conduct a structural assessment of 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.

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 512-239-0000. 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.

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 512-239-0000.

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

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 or TXRNE

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:

<div></div>

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.

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.

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.

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, a Sewage Sludge Solids Management Plan is required. See Example 5 in the instructions.

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

1. Acceptance of sludge from other WWTPs

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

Yes ☐ No ☒

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

In addition, provide the date that the plant started accepting sludge or is anticipated to start accepting sludge, an estimate of monthly sludge acceptance (gallons or millions of gallons), an estimate of the BOD₅ concentration of the sludge, and the design BOD₅ concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

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 a the date that the plant started accepting septic waste, or is anticipated to start accepting septic waste, an estimate of monthly septic waste acceptance (gallons or millions of gallons), an estimate of the BOD₅ concentration of the septic waste, and the design BOD₅ concentration of the influent from the collection system. Also note if this information has or has not changed since the last permit action.

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 the facility accepting or will it 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.

Section 7. Pollutant Analysis of Treated Effluent (Instructions Page 58)

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).

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

Table 1.0(2) - Pollutant Analysis for Wastewater Treatment Facilities

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
CBOD ₅ , mg/l	22	22	1	Grab	5/30/24 7:52
Total Suspended Solids, mg/l	20.8	37	9	EPA 160.2	multiple
Ammonia Nitrogen, mg/l	11.6	11.6	1	Grab	5/30/24 7:52
Nitrate Nitrogen, mg/l	<0.40	<0.40	1	Grab	5/30/24 7:52
Total Kjeldahl Nitrogen, mg/l	21.0	21.0	1	Grab	5/30/24 7:52
Sulfate, mg/l	144	144	1	Grab	5/30/24 7:52
Chloride, mg/l	89.0	89.0	1	Grab	5/30/24 7:52

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
Total Phosphorus, mg/l	1.64	1.64	1	Grab	5/30/24 7:52
pH, standard units	7.7	7.9	9	EPA 150.1	multiple
Dissolved Oxygen*, mg/l	6.5	3.7 (min)	9	EPA 360.1	multiple
Chlorine Residual, mg/l	1.89	1.89	1	Grab	5/30/24 7:52
<i>E.coli</i> (CFU/100ml) freshwater	<1	<1	1	Grab	5/30/24 7:52
Enterococci (CFU/100ml) saltwater					
Total Dissolved Solids, mg/l	722	722	1	Grab	5/30/24 7:52
Electrical Conductivity, µmohs/cm, †					
Oil & Grease, mg/l	<7	<7	1	Grab	5/30/24 7:52
Alkalinity (CaCO ₃)*, mg/l	398	398	1	Grab	5/30/24 7:52

*TPDES permits only

†TLAP permits only

Table 1.0(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					

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
pH, standard units					
Fluoride, mg/l					
Aluminum, mg/l					
Alkalinity (CaCO ₃), mg/l					

Section 8. Facility Operator (Instructions Page 60)

Facility Operator Name: Gary Stout

Facility Operator's License Classification and Level: Wastewater Operator C

Facility Operator's License Number: WW0070966

Section 9. Sewage Sludge Management and Disposal (Instructions Page 60)

A. Sludge disposal method

Identify the current or anticipated sludge disposal method or methods from the following list. Check all that apply.

- ☐ Permitted landfill
- ☐ Permitted or Registered land application site for beneficial use
- ☐ Land application for beneficial use authorized in the wastewater permit
- ☒ Permitted sludge processing facility
- ☐ Marketing and distribution as authorized in the wastewater permit
- ☐ Composting as authorized in the wastewater permit
- ☐ Permitted surface disposal site (sludge monofill)
- ☐ Surface disposal site (sludge monofill) authorized in the wastewater permit
- ☐ Transported to another permitted wastewater treatment plant or

permitted sludge processing facility. If you selected this method, a written statement or contractual agreement from the wastewater treatment plant or permitted sludge processing facility accepting the sludge must be included with this application.

☐ Other:

B. Sludge disposal site

Disposal site name: Village Creek WWTF

TCEQ permit or registration number: WQ0010494013

County where disposal site is located: Tarrant

C. Sludge transportation method

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

Name of the hauler: Magna Flow Environmental

Hauler registration number: 21484

Sludge is transported as a:

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

Section 10. Permit Authorization for Sewage Sludge Disposal (Instructions Page 60)

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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Marketing and Distribution of sludge	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Sludge Surface Disposal or Sludge Monofill	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Temporary storage in sludge lagoons	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

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 61)

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:

- USDA Natural Resources Conservation Service Soil Map:

Attachment:

- Federal Emergency Management Map:

Attachment:

- Site map:

Attachment:

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:

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/A

Zinc: N/A

Total PCBs: N/A

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 1×10^{-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 63)

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 63)

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

☐ 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.

[Click to enter text.](#)

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.

Table 1.0(2) – Pollutant Analysis for Wastewater Treatment Facilities

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
CBOD ₅ , mg/l	22	-	1	GRAB	5/30/24 7:52
Total Suspended Solids, mg/l	32	-	1	GRAB	5/30/24 7:52
Ammonia Nitrogen, mg/l	11.6	-	1	GRAB	5/30/24 7:52
Nitrate Nitrogen, mg/l	<0.40	-	1	GRAB	5/30/24 7:52
Total Kjeldahl Nitrogen, mg/l	21.0	-	1	GRAB	5/30/24 7:52
Sulfate, mg/l	144	-	1	GRAB	5/30/24 7:52
Chloride, mg/l	89.0	-	1	GRAB	5/30/24 7:52
Total Phosphorus, mg/l	1.64	-	1	GRAB	5/30/24 7:52
pH, standard units	7.3	-	1	GRAB	5/30/24 7:52
Dissolved Oxygen*, mg/l	5.1	-	1	GRAB	5/30/24 7:52
Chlorine Residual, mg/l	1.89	-	1	GRAB	5/30/24 7:52
<i>E.coli</i> (CFU/100ml) freshwater	<1	-	1	GRAB	5/30/24 7:52
Enterococci (CFU/100ml) saltwater	-	-	-	-	5/30/24 7:52
Total Dissolved Solids, mg/l	722	-	1	GRAB	5/30/24 7:52
Electrical Conductivity, µmohs/cm, †	1350	-	1	GRAB	5/30/24 7:52

Oil & Grease, mg/l	<7	-	1	GRAB	5/30/24 7:52
Alkalinity (CaCO ₃)*, mg/l	398	-	1	GRAB	5/30/24 7:52

*TPDES permits only

†TLAP permits only

Table 1.0(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: [Click to enter text.](#)

Facility Operator's License Classification and Level: [Click to enter text.](#)

Facility Operator's License Number: [Click to enter text.](#)

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 \geq 1 MGD
- ☐ Serves \geq 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

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: Serissa Beck, EML

Title: General Manager

Signature: _____

Date: _____

Serissa Beck
6/6/24



ENVIRONMENTAL MONITORING LABORATORY, L.L.C

P.O. Box 477
6145 State Highway 171
Hillsboro, Texas 76645
Phone: 254-582-2622

BIOLOGICAL & CHEMICAL ANALYSIS / UTILITIES MANAGEMENT & OPERATION / WATERWELL DRILLING & SERVICE / GEOLOGICAL INVESTIGATION

ANALYTICAL REPORT 24053007

For:

Abraxas

Patterson Professional Services
9963 US HWY 377 South
Collinsville, Texas 76233

Sample Site: Renewal Analysis

Collected Date: 05/30/24



Certificate Number: T104704247-23-25

Lab Number: TX01547

Authorized for release by:

06-JUN-24

Serissa Beck, Assistant General Manager

homeoffice@yourwaterlab.com

The test results in this report meet all 2009 NELAP and 2016 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory



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BIOLOGICAL & CHEMICAL ANALYSIS / UTILITIES MANAGEMENT & OPERATION / WATERWELL DRILLING & SERVICE / GEOLOGICAL INVESTIGATION

ANALYTICAL RESULTS

Analytical Report: 24053007

Lab ID: 24053007-001 Collected Date: 05/30/24 07:52 Matrix: Waste Water
Client: Abraxas Received Date: 05/30/24 11:20 Temp at Receipt: 4 °C
Sample Site: Renewal Analysis Report Date: 06/06/24 Sample Collector: GS

Analyte	Abbreviation	Method	TNI Cert	Date Analyzed	Result	Units
Ammonia Nitrogen	NH3N	SM 4500-NH3/D	NP	06/03/24 08:52	11.6	mg/L
Carbonaceous BOD	CBOD	SM 5210/B	NP	05/31/24 07:26	22	mg/L
Total Suspended Solids	TSS	SM 2540/D	NP/P	05/31/24 10:07	32	mg/L
pH	SM4500-H	SM4500/H	N	05/30/24 07:52	7.3	SU
Nitrate as N	E300.0	E 300.0	NP/P	05/30/24 14:06	<0.400	mg/L
Dissolved Oxygen	DO	SM 4500-O	N	05/30/24 07:52	5.1	mg/L
Total Phosphorus (as P)	T.PHOS.	SM 4500-P/E	NP	06/03/24 10:33	1.64	mg/L
Nitrogen, Total Kjeldahl	TKN	SM 4500-NH3/D	NP	06/03/24 13:51	21.0	mg/L
Total dissolved solids	SM2540C	SM 2540/C	N	05/30/24 14:53	722.0	mg/L
Sulfate	E300.0	E 300.0	NP/P	05/30/24 15:46	144	mg/L
Chloride	Cl-	SM 4500-Cl-/B	NP	05/30/24 16:00	89.0	mg/L
Chlorine	SM4500-CL	SM4500-CL	NP	05/30/24 07:52	1.89	mg/L
n-Hexane Extractable Material (HEM)	O&G	SM 5520/B	NP	06/05/24 12:26	<7.00	mg/L
Alkalinity, Total (CaCO3)	ALK	SM 2320/B	NP	05/30/24 12:15	398	mg/L
Conductivity @ 25C	Cond	SM 2510/B	NP	05/30/24 12:25	1350	umhos/cm
E. coli	E. coli	IDEXX Colilert	NP	05/30/24 12:24	<1.00	MPN/100 mL

P: Potable water NP: Non Potable water N: Not Certified

Version 1.000 was revised to correct sample site. SB 5/30/24

QUALITY ASSURANCE & QUALITY CONTROL

Control #: 24053007

ANALYTE	ABBR./ALT.NAME	STANDARD METHOD	UNITS	Quality Control					Q
				S.D.	CV%	REC.1%	REC.2%	MDL/PQL	
Nitrate as N	E300.0	E 300.0	mg/L					0.400 / 0.400	
Sulfate	E300.0	E 300.0	mg/L					1.00 / 1.80	
Alkalinity, Total (CaCO3)	ALK	SM 2320/B	mg/L					1.50 / 5.00	
Chloride	CL-	SM 4500-Cl-/B	mg/L	1.41	0.28	102	100	1.00 / 3.00	
Ammonia Nitrogen	NH3N	SM 4500-NH3/D	mg/L	0.02	2.00	97.5	94.4	0.0300 / 0.100	
Nitrogen, Total Kjeldahl	TKN	SM 4500-NH3/D	mg/L	0.08	0.57	97.9	99.0	0.0200 / 0.120	
Total Phosphorus (as P)	T.PHOS.	SM 4500-P/E	mg/L	0.06	1.08	98.7	100.5	.02 / .05	
n-Hexane Extractable Material (HEM)	O&G	SM 5520/B	mg/L	0.28	0.28	101.3	101.0	7.00 / 7.00	
Chemical Oxygen Demand	COD	SM 5220/D	mg/L						
Turbidity	TURB.	SM 2130/B	NTUs						
Total Percent Solids	%d.w	SM 2540/G	%						N

Biochemical Oxygen Demand(BOD) Carbonaceous Biochemical Oxygen Demand(CBOD) Method: SM 5210/B			Dissolved Oxygen Method: SM 4500-O*/G			Total Suspended Solids (TSS, MLSS) Method: 2540/D		
Results	Units	Description	Results	Units	Description	Results	Units	Description
0.18	mg/L	Blank 1 - CBOD	8.88	mg/L	Set Up Calibration	0	mg/L	Blank 1
0.17	mg/L	Blank 2 - CBOD	8.88	mg/L	Read Off Calibration	0.2	mg/L	Blank 2
0.16	mg/L	Blank 3 - CBOD	20	°C	Set Up Temperature	0.4	mg/L	Blank 3
			20	°C	Read Off Temperature	3.56	%	Relative % Difference
184	mg/L	G/GA Std 1 - CBOD	757	mm Hg	Set Up Barometer	2.4	%	Relative % Difference
183	mg/L	G/GA Std 2 - CBOD	754	mm Hg	Read Off Barometer	4.44	%	Relative % Difference
183	mg/L	G/GA Std 3 - CBOD				1.1	%	Relative % Difference
183	mg/L	G/GA Average - CBOD				1.22	%	Relative % Difference
						2.1	%	Relative % Difference
0.72	mg/L	Seed Corr/mL - CBOD				0.94	%	Relative % Difference
0.71	mg/L	Seed Corr/mL - CBOD						
0.76	mg/L	Seed Corr/mL - CBOD						
0.71	mg/L	Seed Corr Average - CBOD						
			Fecal Coliform Method: SM9222 /D MF			Conductivity @ 25° C Method: SM2510/B Standards ran for each analytical batch.		
			Results	Units	Description	Results	Units	Description
				CFU/100ml	Pre Blank		umhos/cm	Conductivity Standard
				CFU/100ml	Post Blank		umhos/cm	Conductivity Standard
							umhos/cm	Conductivity Standard
			TDS by SM2540/C					
			Results	Units	Description			
			0	mg/L	Blank			
			E. coli By IDEXX Colilert (enumeration)					
			MPN/100 mL					

Report Out Date: 06/06/2024

Serissa R Beck

Serissa Beck
Assistant General Manager

QUALITY ASSURANCE & QUALITY CONTROL

Standard Method E 300.0
Matrix Waste Water
Batch Number 76403

Sample ID	Parameter	Result	Ref. Value	Spike Conc.	Per. Rec.	Rec. Limits	RPD	RPD Limits	Flags
76403-1-LCS	Nitrate as N	7.94 mg/L		8.00 mg/L	99%	90-110%		0-20%	
76403-1-LCSD	Nitrate as N	7.81 mg/L		8.00 mg/L	98%	90-110%	2%	0-20%	
76403-1-UNS	Nitrate as N	0.200 mg/L			0%	90-110%		0-20%	
24053007-001S	Nitrate as N	7.95 mg/L	0.200 mg/L	8.00 mg/L	97 %	80-120%		0-20%	
24053007-001SD	Nitrate as N	7.98 mg/L	0.200 mg/L	8.00 mg/L	97 %	80-120%	0.38%	0-20%	

Standard Method E 300.0
Matrix Waste Water
Batch Number 76404

Sample ID	Parameter	Result	Ref. Value	Spike Conc.	Per. Rec.	Rec. Limits	RPD	RPD Limits	Flags
76404-1-LCS	Sulfate	15.2 mg/L		15.0 mg/L	101%	90-110%		0-20%	
76404-1-LCSD	Sulfate	14.9 mg/L		15.0 mg/L	99%	90-110%	2%	0-20%	
76404-1-UNS	Sulfate	5.46 mg/L			0%	90-110%		0-20%	
24053007-001S	Sulfate	20.6 mg/L	5.46 mg/L	15.0 mg/L	101 %	80-120%		0-20%	
24053007-001SD	Sulfate	20.7 mg/L	5.46 mg/L	15.0 mg/L	102 %	80-120%	0.48%	0-20%	

Standard Method SM 2540/C
Matrix Waste Water
Batch Number 76412

Sample ID	Parameter	Result	Ref. Value	Spike Conc.	Per. Rec.	Rec. Limits	RPD	RPD Limits	Flags
76412-1-MB	Total dissolved solids	< mg/L			0%	80-120%		0-10%	

QUALITY ASSURANCE & QUALITY CONTROL

Standard Method SM 5210/B

Matrix Waste Water

Batch Number 76416

Sample ID	Parameter	Result	Ref. Value	Spike Conc.	Per. Rec.	Rec. Limits	RPD	RPD Limits	Flags
76416-1-BKS01	Carbonaceous BOD	184 mg/L		198 mg/L	93%	85-115%		0-25%	
76416-2-BKS02	Carbonaceous BOD	183 mg/L		198 mg/L	92%	85-115%		0-25%	
76416-3-BKS03	Carbonaceous BOD	183 mg/L		198 mg/L	92%	85-115%		0-25%	
76416-4-BKS04	Carbonaceous BOD	183 mg/L		198 mg/L	92%	85-115%		0-25%	
76416-1-BLK01	Carbonaceous BOD	0.180 mg/L			0%	85-115%		0-25%	
76416-2-BLK02	Carbonaceous BOD	0.170 mg/L			0%	85-115%		0-25%	
76416-3-BLK03	Carbonaceous BOD	0.160 mg/L			0%	85-115%		0-25%	

Standard Method SM 2540/D

Matrix Waste Water

Batch Number 76427

Sample ID	Parameter	Result	Ref. Value	Spike Conc.	Per. Rec.	Rec. Limits	RPD	RPD Limits	Flags
76427-1-MB	Total Suspended Solids	<1.000 mg/L			0%	80-120%		0-10%	
76427-2-MB	Total Suspended Solids	0.2000 mg/L			0%	80-120%		0-10%	
76427-3-MB	Total Suspended Solids	0.4000 mg/L			0%	80-120%		0-10%	



Environmental Monitoring Laboratory ♦ P.O. Box 477 / 6145 State Highway 171, Hillsboro, Texas 76645 ♦ Phone: (254) 582-2622

TCEQ Lab ID: T104704247-23-25

Panhandle Division

13260 South US Hwy 287 Amarillo, Texas 79118

Purchase Order / Chain of Custody

Southwest Division

811 E. Young Street Llano, Texas 78643

Office: 325-247-2265 Emergency: 817-352-3317

EPA Lab ID: TX01547

East Texas Division

14295 S.H. 155 North Winona, Texas 75792

Office: 903-877-9222 Emergency: 817-352-6535



Report To: <u>Patterson</u>		Report To: (Buyer)		ANALYSES REQUESTED										CL2				
Company:		Purchase Order #:																
9963 US Hwy 371 South Collinsville, TX 76233		Address:												1.89				
Phone: Fax:		Phone: Fax:																
Project Name: <u>Abravos</u>		Quote #:																
Project Location: <u>WWTP</u>		City, State:																
Date Due:		Rush: 0% 25% 50% 100%		Sampler: (Please Print) <u>Gary Stuart</u>														
Lab#	Client Sample ID	Matrix	Date	Time	*Pres. Code	1 Bottle Code	CBOD / BOD	TSS, TDS	pH	DO	NH3N (pH<2.0, H2SO4) SM4500-NH3 D or G unless specified	TKN, TOT PHOS	FECAL COLIFORM / E.COLI (Sterile)	MLSS	ALKALINITY, CHLORIDE, CONDUCT	OIL & GREASE	NITRATE, SULFATE	Sample Remarks
24053007	1. Renewal Analysis	WW	5/30/24	0752	1	1	X	X	X	X								
	2.			0804	2	1					X							
	3.			0801	6	1						X						
	4.				1	1								X				
	5.				2	2										X		
	6.				1	1											X	
	7.																	
	8.																	
	9.																	
	10.																	
Relinquished By:		Date	Time	Received By:		Date	Time	COOLER ID: <u>JE467</u>										
1. <u>Gary Stuart</u>		5/30/24	1120	1. <u>H. S. Stuart</u>		5/30/24	1120	Ice: <u>NO</u> <u>4</u>										
2.				2.				Temperature: _____										
3.				3.				* Preservation Codes: 1. None 2. Substrate 3. Nitric 4. NaOH + Zn/Ac 5. NaOH 6. Sulfite + Thiosulfate										
4.				4.				1 Bottle (1 L) 1. Plastic 2. Glass + Tut. 3. 40 ml VOA										

Complete sample information is vital for proper login and reporting. EML may need to subcontract some analyses due to equipment or procedural limitations.

Check us out on the web: <http://www.yourwaterlab.com>

Email us at: homeoffice@yourwaterlab.com

Revised 11/2023

ATTACHMENT 1

INDIVIDUAL INFORMATION

Section 1. Individual Information (Instructions Page 50)

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

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

Full legal name (first, middle, last): N/A

Driver's License or State Identification Number: N/A

Date of Birth: N/A

Mailing Address: N/A

City, State, and Zip Code: N/A

Phone Number: N/A Fax Number: N/A

E-mail Address: N/A

CN: N/A

For Commission Use Only:

Customer Number:

Regulated Entity Number:

Permit Number:

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 applications 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 Attached ☒ N/A ☐ Yes

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

Things to Know:

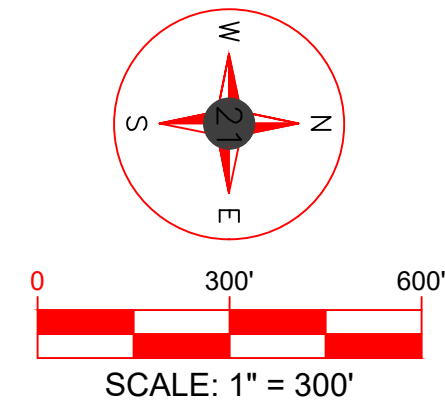
- All the items shown on the map must be labeled.
- The applicant's complete property boundaries must be delineated which includes boundaries of contiguous property owned by the applicant.
- The applicant cannot be its own adjacent landowner. You must identify the landowners immediately adjacent to their 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)*

ATTACHMENT 1
MAPS

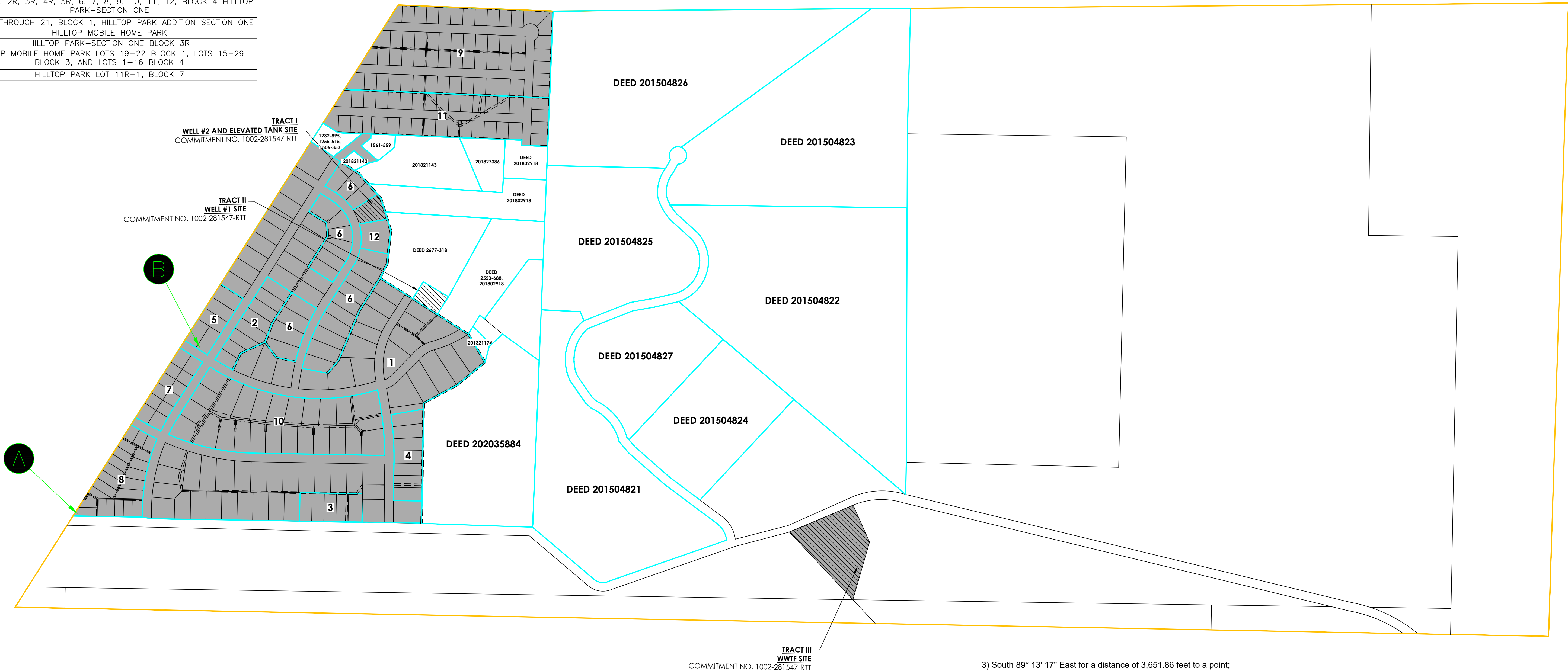


FINAL SERVICE AREA MAP
ABRAXAS - FORT WORTH
(WATER & WASTEWATER)
FORT WORTH, TX

*SHADED AREAS REPRESENT PLATS THAT HAVE BEEN ACCOUNTED FOR

SUBDIVISION LOCATIONS	
(SHADED AREAS REPRESENT PLATS THAT HAVE BEEN ACCOUNTED FOR)	
1	"HILLTOP PARK" SECTION ONE AN ADDITION TO MESA GRANDE VILLAGE
2	LOTS 4R, 5R, 6R, 7R, 8R, 9R, 25 AND 26, BLOCK 6, HILLTOP PARK ADDITION
3	LOTS 2A, 3A-1, 4A-1, 5A-1, 5B-1, BLOCK 2, HILLTOP PARK ADDITION
4	LOTS 2A, 3A1, 3B1, 4A1, 5A1, 6A1, 6B1, BLOCK 9, HILLTOP PARK
5	LOTS 10AR, 11AR, 12AR, 12BR, BLOCK 5 HILLTOP PARK
6	LOTS 4AR, 4BR, 5AR, 5BR, 6AR, 6BR, 7R, 8R, 9R, 10R, 11R, 12R, 14R, 15AR, 15BR, BLOCK 6, AND LOTS 15BR, 16R, 17R, 18R, 19R, 21R, 22R, 23R, 24R, BLOCK 7, HILLTOP PARK-SECTION ONE
7	LOTS 1R, 2R, 3R, 4R, 5R, 6, 7, 8, 9, 10, 11, 12, BLOCK 4 HILLTOP PARK-SECTION ONE
8	LOTS 1 THROUGH 21, BLOCK 1, HILLTOP PARK ADDITION SECTION ONE
9	HILLTOP MOBILE HOME PARK
10	HILLTOP PARK-SECTION ONE BLOCK 3R
11	HILLTOP MOBILE HOME PARK LOTS 19-22 BLOCK 1, LOTS 15-29 BLOCK 3, AND LOTS 1-16 BLOCK 4
12	HILLTOP PARK LOT 11R-1, BLOCK 7

LIFT STATION SUMMARY		
NUMBER	NAME	SUBDIVISION PLAT
A	LIFT STATION #1	"HILLTOP PARK" SECTION ONE AN ADDITION TO MESA GRANDE VILLAGE
B	LIFT STATION #2	LOTS 10AR, 11AR, 12AR, 12BR, BLOCK 5, HILLTOP PARK



MAP DISCLAIMER:
This document is a graphic representation of the approximate service area for a utility system. It is solely to provide a visual of the area of the system. This drawing does not constitute a property boundary survey and shall not be used to convey property.

Utility Note Disclaimer:
The utilities shown hereon are depicted based on the original design plans provided by the system manager. 21 Design Group, Inc performed no field verification of the layout and are unable to determine the exact location at this time. The location represents approximate location only and should not be construed as being 100% accurate. It is shown to provide general layout of the system only and should not be used to interpret encroachments.

MAP LEGEND	
UTILITY SERVITUDE PER RECORD PLAT	---
LOT LINE	---
SUBDIVISION OUTLINE	---
UTILITY AREA SERVICED	---

Abraxas

The area served is approximately 14.3 miles northeast of the City of Weatherford, Texas located in the Texas and Pacific Railway Company Survey (A-1505), the Joseph P. Farmer Survey (A-2631) and the H.J. Thompson Survey (A-2434), in Parker County, Texas and being more particularly described as follows:

BEGINNING at a point at the southwest corner of Lot 1, Block 1 of the Hilltop Mobile Home Park Subdivision, a subdivision in Parker County, Texas;

THENCE, the following six (6) courses:

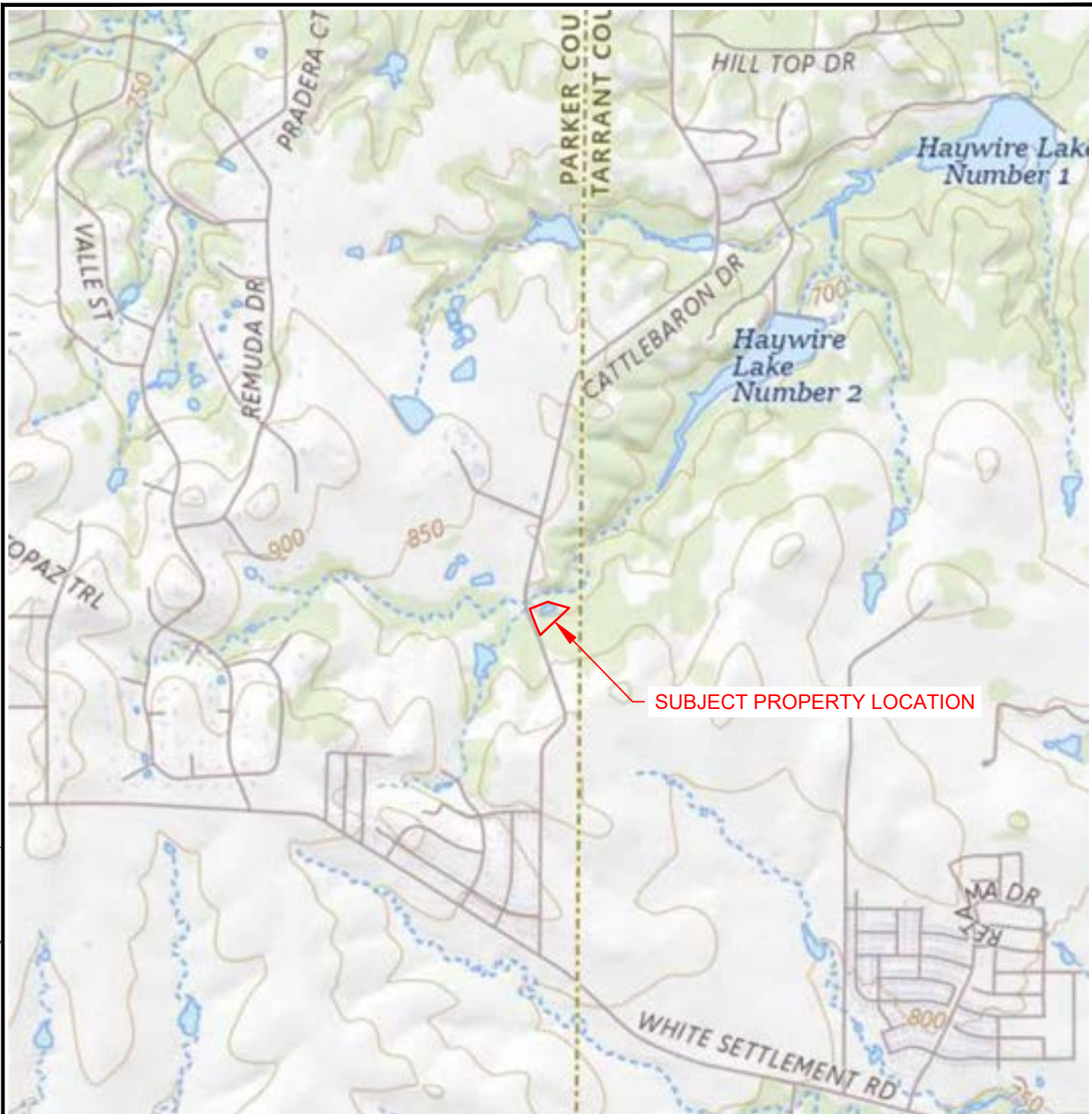
- 1) North 01° 18' 29" East for a distance of 893.00 feet to a point;
- 2) North 01° 29' 19" West for a distance of 5,849.87 feet to a point;

- 3) South 89° 13' 17" East for a distance of 3,651.86 feet to a point;
- 4) South 00° 03' 55" West for a distance of 8,835.43 feet to a point;
- 5) North 58° 35' 31" West for a distance of 623.01 feet to a point;
- 6) North 58° 34' 26" West for a distance of 3,490.09 feet to the **POINT OF BEGINNING**, and containing 635.740 acres of land, more or less.

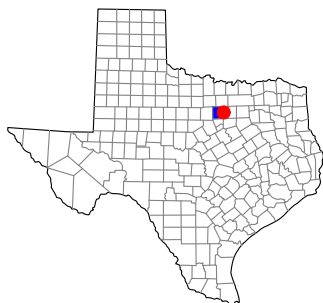
NOTE: This description is for exhibit only and does not represent an actual boundary survey. This exhibit is based on a service area shape provided by 21 Design Group. The surveyor did not abstract nor preform any field verification of the exhibit accuracy. The location represents approximate location only and should not be construed as being 100% accurate.

DATE:	1/27/21
PROJECT NO:	0559-19
DRAWN BY:	K.A.R.
SCALE:	1"=300'
SHEET NAME:	
SERVICE AREA MAP	

8.5411 - USER: Jkoniar - ATTACHED XREFS: - ATTACHED IMAGES: Capture-AERIAL 254; Capture-AERIAL 345; Capture-GIS; Capture-TOPO; Capture-AEZ
DRAWING NAME: J:\Central States Water Resources\Abraxas WWTF\503581.0011.0003\503581.0011.0003-01.dwg --- PLOT DATE: July 17, 2024 - 2:10PM --- LAYOUT: FIGURE 1
Version: 2017-10-21



SOURCE NOTE: USGS 7.5 MINUTE US TOPO SERIES TOPOGRAPHIC MAP, SPRINGTOWN SE, 2022.



QUADRANGLE LOCATION
PARKER COUNTY, TEXAS



0 1,000 2,000
SCALE IN FEET
1" = 2,000'

PROJECT: **CENTRAL STATES WATER RESOURCES
ABRAXAS WASTEWATER TREATMENT FACILITY
3301 CATTLEBARON ROAD
FORT WORTH, TEXAS 76108**

TITLE: **SUBJECT PROPERTY LOCATION MAP**

DRAWN BY:	J. KONIAR	PROJ NO.:	503581.0011.0003
CHECKED BY:	A. SCHULZ	FIGURE 1	
APPROVED BY:	A. SCHULZ		
DATE:	JULY 2024		



1000 Clark Ave.
FL 4
St. Louis, MO 63102
Phone: 314.241.2694

FILE NO.: 503581.0011.0003-01.dwg

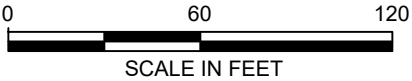
11x17 -- USER: J.Koniar -- ATTACHED IMAGES: Capture-AERIAL 2514; Capture-AERIAL 345; Capture-GIS; Capture-TOPO; Capture-KMZ;
DRAWING NAME: J:\Central States Water Resources\Abraxas WWTF\503581.0011.0003-01.dwg -- PLOT DATE: July 17, 2024 - 2:10PM -- LAYOUT: FIGURE 2




SOURCE NOTE: AERIAL PROVIDED BY GOOGLE EARTH, MARCH, 2024.

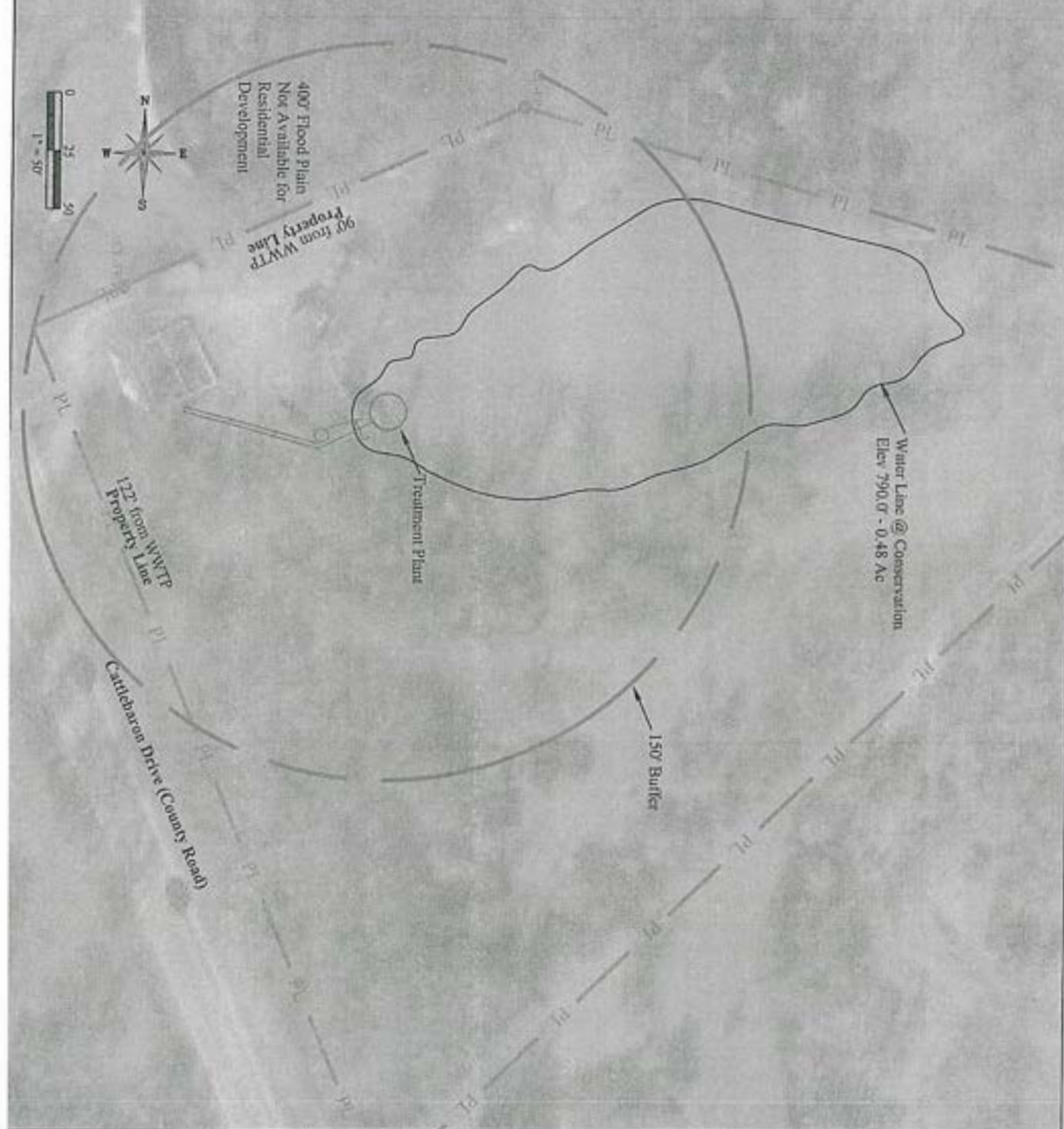
LEGEND

--- SUBJECT PROPERTY BOUNDARY



PROJECT: CENTRAL STATES WATER RESOURCES ABRAXAS WASTEWATER TREATMENT FACILITY 3301 CATTLEBARON ROAD FORT WORTH, TEXAS 76108			
TITLE: SUBJECT PROPERTY LAYOUT			
DRAWN BY:	J. KONIAR	PROJ NO.:	503581.0011.0003
CHECKED BY:	A. SCHULZ	FIGURE 2	
APPROVED BY:	A. SCHULZ		
DATE:	JULY 2024		
		1000 Clark Ave. FL 4 St. Louis, MO 63102 Phone: 314.241.2694	
		FILE NO.: 503581.0011.0003-01.dwg	

ATTACHMENT A - BUFFER ZONE MAP
WQ0015010001 - ABRAXAS CORPORATION



Abraxas Corporation
7921 Main Street
North Richland Hills, Texas 76180

Site Plan

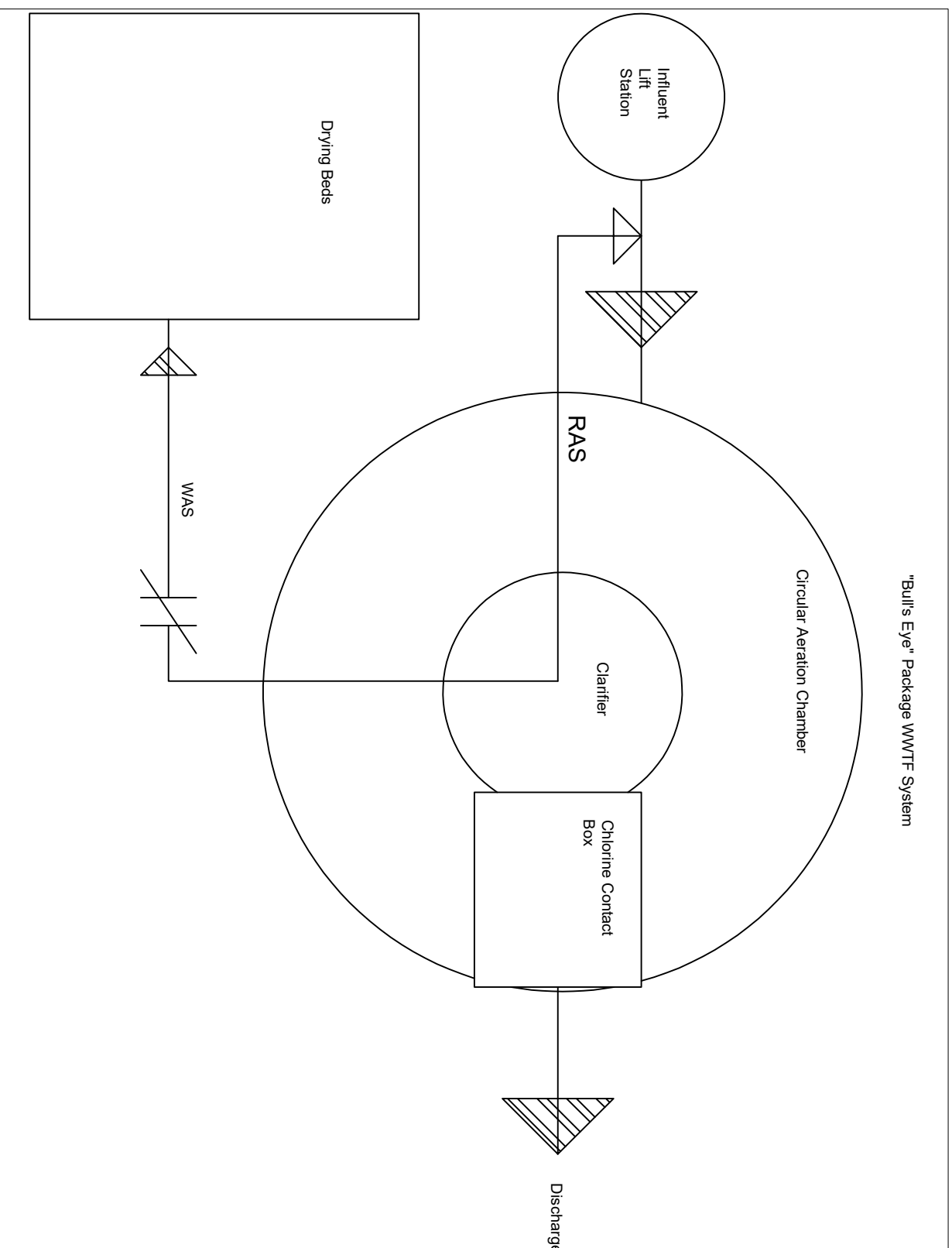
RECEIVED

APR 1 2018

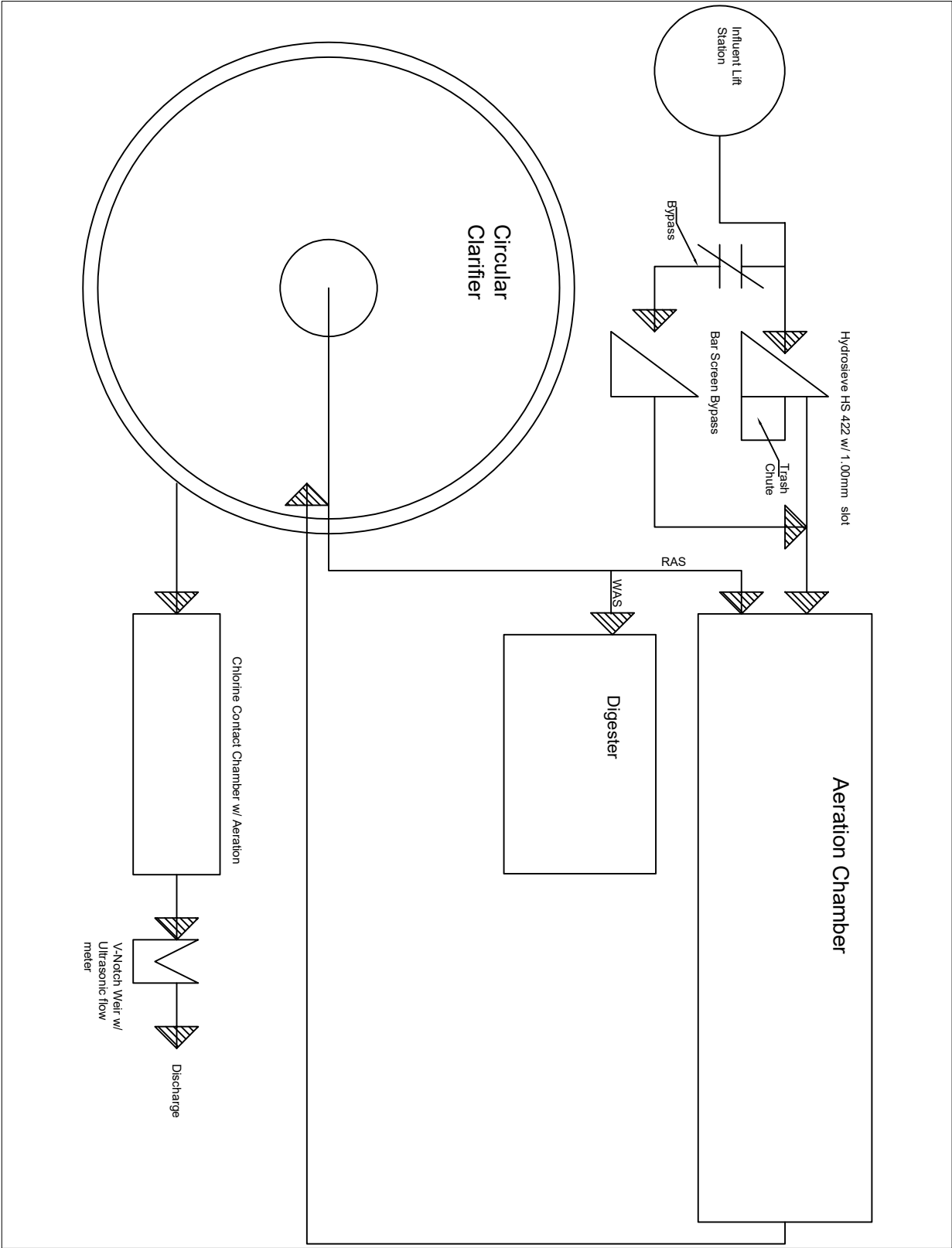
Water Quality Division

ATTACHMENT 2
FIGURES

Abraxas WWTP Existing Flow Path 7/31/24



Abraxas WWTF Planned Flow Path 7/31/24



ATTACHMENT 3
UPGRADE PLANS

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Kelly Keel, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

December 27, 2023

Michael W. Mathena, P.E.
LIGHTPOINT Engineering, LLC
604 West Worsham, Suite 100
Willis, Texas 77340

Re: CSWR-Texas Utility Operating Company LLC
Abraxas Wastewater Treatment Plant
Permit No. WQ0015010-001
WWPR Log No. 1023/032
CN605844786, RN101521391
Parker County

Dear Mr. Mathena:

On October 5, 2023, TCEQ received the project summary transmittal letter dated September 28, 2023, which provided details for a replacement lift station and wastewater treatment plant at Central Sates Water Resources' (CSWR) Abraxas WWTP. The new plant will be a standard activated sludge processing facility to treat and average daily flow (ADF) of 0.075 MGD and 2-hour peak daily flow (PDF) of 0.30 MGD; the current permitted final flow phase. The plant must produce an effluent stream which meets effluent concentration limits of 10 mg/l for CBOD₅, 15 mg/l for TSS, 3 mg/l for NH₃-N, and 126 cfu/100 ml for E. coli while maintaining a minimum dissolved oxygen concentration of 4.0 mg/l. The specific lift station and treatment units comprising the plant are listed below.

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.

The project's scope of work includes the following items:

- Construction of a new triplex lift station
 - Lift stations firm capacity of 300,000 gpd
 - Three submersible pumps, 2 duty, 1 standby
 - Capacity of each pump is approximately 150,000 gpd
 - 3.8 HP pumps at 30 ft. TDH
- Constructing a 75,000 gpd ADF/300,000 gpd PDF WWTP
 - Fine bar screen
 - Aeration basin
 - Dimensions of 45 ft. x 12 ft. x 10.5 ft., 5,670 ft³ working volume
 - Fine bubble diffusers

- Circular secondary clarifier
 - 20 ft. diameter, 11 ft SWD
- Aerobic digester
 - 13.1 ft x 12 ft. 10.5 ft. SWD
- 90-degree V-notch weir flow metering
- Two centrifugal blowers, 265 SCFM
- Emergency generator
- Chlorine feed system with redundant pumps
- Non-potable water system
- Security fencing, lighting, and all required appurtenances

The TCEQ review of the submitted project information seems to indicate the updated design meets at least the minimum requirements of 30 TAC Chapter 217: Design Criteria for Wastewater Systems. The result of the TCEQ provides evidence which all TCEQ to conditionally approve the project for completion as the plant design provided should allow the plant to produce an effluent stream which can meet the permitted effluent concentration limits at the 0.075 MGD ADF with a permitted two-hour peak flow of 0.300 MGD.

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.

No variances of any 30 TAC Chapter 217 requirements were requested or granted as part of this project review. If in the future, any variances from the Chapter 217 requirements are desired for the project, each variance must be requested in writing by the design engineer. Then, the TCEQ will consider granting a written approval to the variance from the rules for the specific project and the specific circumstances.

Within 60 days of the completion of construction, an appointed engineer shall notify both the Wastewater Permits Section of the TCEQ and the appropriate Region Office of the date of completion. The engineer shall also provide written certification that all construction, materials, and equipment were substantially in accordance with the approved project, the rules of the TCEQ, and any change orders filed with the TCEQ. All notifications, certifications, and change orders must include the signed and dated seal of a Professional Engineer licensed in the State of Texas.

Michael W. Mathena

Page 3

December 27, 2023

The TCEQ will provide a notification of intent to review whenever a project is to undergo a complete plans and specifications review. Please be reminded of 30 TAC §217.7(a) of the rules which states, "Approval given by the executive director or other authorized review authority does not relieve an owner of any liability or responsibility with respect to designing, constructing, or operating a collection system or treatment facility in accordance with applicable commission rules and the associated wastewater permit".

If you have any questions, or if we can be of any further assistance, please call Louis C. Herrin II, P.E. at (512) 239-4552.

Sincerely,

A handwritten signature in blue ink, reading "Paul A. Brochi". The signature is fluid and cursive, with a long horizontal stroke at the end.

Paul A. Brochi, P.E.

Wastewater Permits Section (MC 148)

Water Quality Division

Texas Commission on Environmental Quality

PAB/tc



ENGINEERING, LLC

CONTRACT SPECIFICATIONS

ABRAXAS WASTEWATER TREATMENT PLANT

FOR

**CENTRAL STATES WATER RESOURCES
1630 DES PERES ROAD, SUITE 140
DES PERES, MISSOURI 63131**

LPE PROJECT No. GCL706-26

FEBRUARY 2024

MIKE MATHENA, P.E.
PROJECT MANAGER
LIGHTPOINT ENGINEERING, LLC
TPBE FIRM REGISTRATION No. 18938

TECHNICAL SPECIFICATION TABLE OF CONTENTS

<u>NUMBER AND TITLE</u>	<u>NO. OF PAGES</u>
--------------------------------	----------------------------

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024100 DEMOLITION

PART 1 GENERAL

1.01 SCOPE

- A. Demolishing and removing existing structures, equipment, and materials.
- B. Disposing of demolished materials and equipment

1.02 RELATED SECTIONS

SECTION 013300 - Submittal Procedures

1.03 SUBMITTALS

- A. Submittals shall conform to requirements of SECTION 013300 - Submittal Procedures.
- B. Submit proposed methods, equipment, materials, and sequence of operations for demolition of structures. Describer coordination for shutting off, capping, and removing temporary utilities. Plan operations to minimized temporary disruption of utilities to existing facilities or adjacent property.
- C. Submit proposed demolition and removal schedule for approval. Notify ENGINEER in writing at lease forty-eight (48) hours before starting demolition.
- D. Obtain all required permits for building demolition.

1.04 OWNERSHIP OF MATERIAL AND EQUIPMENT

- A. Materials and equipment designated for reuse or salvage are listed below. Protect items designated for reuse or salvage from damage during demolition, handling, and storage. Restore damaged items to satisfactory condition.
- B. Items to be reused or salvaged: N/A
- C. Materials and equipment not designated for reuse or salvage become property of CONTRACTOR.

1.05 STORAGE AND HANDLING

- A. Store and protect materials and equipment designated for reuse until time of installation.
- B. Deliver items to be salvaged to storage areas as directed by OWNER's Representative.
- C. Remove equipment and materials not designated for reuse or salvage and all waste and debris resulting from demolition from Site. Remove material as work progresses to avoid clutter.

1.06 ENVIRONMENTAL CONTROLS

- A. Minimize spread of dust and flying particles. If required by governing regulations, use temporary enclosures and other suitable methods to prevent the spread of dust, dirt, and debris.

- B. Use appropriate controls to limit noise from demolition.
- C. Do not use water where it can create dangerous or objectionable conditions, such as localized flooding, erosion, or sedimentation of nearby ditches or streams.
- D. Stop demolition and notify OWNER's Representative if underground fuel storage tanks, asbestos, PCB's, contaminated soils, or other hazardous materials are encountered.
- E. Dispose of removed equipment, materials, waste, and debris in a manner conforming to applicable laws and regulations.

PART 2 PRODUCTS

2.01 EQUIPMENT AND MATERIALS FOR DEMOLITION

- A. Use equipment and materials approved under SECTION 013300 - Submittal Procedures.
- B. Fires are not permitted.
- C. Do not use a "drop hammer" where the potential exists for damage to underground utilities, structures, or adjacent improvements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Provide safe working conditions for employees throughout demolition and removal operations. Observe safety requirements for work below grade.
- B. Maintain safe access to adjacent property and buildings. Do not obstruct roadways, sidewalks, or passageways adjacent to the Work.
- C. Perform demolition in a manner to prevent damage to adjacent property. Repair damage to OWNER's property or adjacent property and facilities.
- D. CONTRACTOR shall be responsible for safety and integrity of adjacent structures and shall be liable for any damage due to movement or settlement. Provide proper framing and shoring necessary for support. Cease operations if an adjacent structure appears to be endangered. Resume demolition only after proper protective measures have been taken.
- E. Erect and maintain enclosures barriers, warning lights, and other required protective devices.

3.03 UTILITY SERVICES

- A. Follow rules and regulations of authorities or companies having jurisdiction over communications, pipelines, and electrical distribution services.
- B. Notify and coordinate with utility company and adjacent building occupants when temporary interruptions of utility service is necessary.
- C. For water and sanitary services, return all equipment to water district or City operations group as required. Cap all water lines and sanitary sewers that are abandoned.

3.04 DEMOLITION OF STRUCTURES

- A. Demolish structure to the lines and grades shown on the Drawings. Remove all equipment piping, grating, handrails, and ancillary equipment related to structures designated for removal. Where no limits are shown, the limits shall be four inches (4") outside new items to be installed. Removals beyond these limits shall be at CONTRACTOR's expense to satisfactorily reconstruct excess removals.
 - 1. Demolish concrete and masonry in small sections.
 - 2. Do not overload existing roof or structures.
- B. Demolish structures to a minimum of three feet (3') below finished grade, unless otherwise indicated on the Drawings. Drill one (1) one-inch (1") hole in structure floor for every ten square feet (10² ft) of floor area. Backfill underground structure with sand to a point three feet (3') below grade. Backfill to grade with select material. Top six inches (6") with topsoil.

3.05 DISPOSAL

- A. Remove from the site all items contained in or upon the structure not designated for reuse or salvage.
- B. Follow method of disposal required by regulatory agencies.

3.06 BACKFILL

Backfill holes with sand compacted to a density of ninety five percent (95%) Standard Proctor to a point three feet (3') below grade. Backfill remaining three feet (3') with select material compacted to a density of ninety five percent (95%) of Standard Proctor. Top six inches (6") Shall be topsoil material.

3.07 MECHANICAL WORK ITEMS

- A. Mechanical removals consist of dismantling and removing existing piping, pumps, motors, water tanks, equipment, and other appurtenances. It includes cutting, capping, and plugging required to restore use of existing utilities.
- B. Remove existing process, water, chemical, gas, fuel oil, and other piping not required for new work. Take out piping to the limits shown or to a point three feet (3') below grade. Purge chemical and fuel lines and tanks. Verify that such lines are safe prior to removal or capping.
- C. Where piping that is to be removed passes through existing walls, cut and cap piping on each side of the wall. Use cap appropriate for pipe material to be capped. Provide fire-rated sealant for walls classified as fire-rated.
- D. When underground piping is to be altered or removed, cap the remaining piping. Abandoned underground piping may be left in place unless it interferes with new work or is shown or specified to be removed. Piping less than fifteen inches (15") in diameter may be plugged and abandoned in place. For piping fifteen inches (15") in diameter and greater to be abandoned, fill with sand, pressure grout, or other approved method, and plug with concrete or brick masonry bulkhead.

3.08 ELECTRICAL WORK ITEMS

- A. Electrical removals may consist of disconnecting and removing existing switch gear, distribution switchboards, control panels, bus duct, conduits and wires, panel boards, lighting fixtures, and miscellaneous electrical equipment.

- B. Remove existing electrical equipment and fixtures, if designated for removal on the Drawings, to prevent damage to allow continued operation of existing systems and to maintain the integrity of the grounding systems.
- C. Remove poles and metering equipment, if designated for removal on the drawings. Coordinate electrical removals with the power company, as necessary. Verify that power is properly de-energized and disconnected.
- D. Where shown or otherwise required, remove wiring in underground duct systems. Verify function of wiring before disconnecting and removing. Plug ducts which are not to be reused at entry to buildings.
- E. Changes to electrical systems shall conform to applicable codes.

PART 4 PAYMENT

Payment shall be made for materials furnished or Work performed as specified in the Bid Proposal.

END OF SECTION

031100 CONCRETE FORMING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work included: Provide formwork in accordance with the provisions of this section for all cast-in-place concrete shown on the Drawings or required by other Sections of these Specifications.
- B. Related work described elsewhere: Excavating for footings is described in SECTION 312316 - EXCAVATION AND FILL.

1.02 QUALITY ASSURANCE

- A. Design of formwork is the CONTRACTOR's responsibility.
- B. Standards: Comply with all pertinent provisions of the ACI 437 as listed in SECTION 031100 - CONCRETE.

PART 2 PRODUCTS

2.01 FORM MATERIALS

- A. Construct formwork for exposed (painted and unpainted) concrete surfaces with smooth faced undamaged plywood or other panel type materials acceptable to the Architect, to provide continuous, straight, smooth as-cast surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Construct formwork for concrete concealed from view covered with cement plaster with rough sawn boards sound grade, as approved by ENGINEER, to provide a mechanical bond for subsequent application of plaster.
- C. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without excessive and objectionable bow or deflection.

2.02 DESIGN OF FORMWORK

- A. *General:*
 - 1. Design, erect, support, brace, and maintain formwork so that it will safely support vertical and lateral loads that might be applied, until such loads can be supported by the concrete structure.
 - 2. Carry vertical and lateral loads to ground by formwork system and in-place construction that has attained adequate strength for that purpose.
 - 3. Construct framework so that concrete members and structures are of correct size, shape, alignment, elevation, and position.
 - 4. Design forms and falsework to include assumed values of live load, dead load, weight of moving equipment operated on framework, concrete mix, height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of structure during construction.

5. Provide shore and struts with positive means of adjustment capable of taking up framework settlement during concrete placing operations, using wedges or jacks or a combination thereof.
6. Provide trussed supports when adequate foundations for shores and struts cannot be secured.
7. Support form facing materials by structural members spaced sufficiently close to prevent objectionable deflection.
8. Fit forms placed in successive units for continuous surfaces to accurate alignment, free from irregularities and within allowable tolerances.
9. Provide camber in formwork as required for anticipated deflections due to weight and pressures of fresh concrete and construction loads.
10. Provide formwork sufficiently tight to prevent leakage of cement past during concrete placement. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins.

B. *Earth Forms:*

Side forms of footings may be omitted, and concrete placed directly against excavation only when requested by the CONTRACTOR and accepted by the ENGINEER. When omission of forms is accepted, provide additional concrete one inch (1") on each side of the minimum design profiles and dimensions shown.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

Examine the substrate and conditions under which work of this Section is to be performed, and correct unsatisfactory conditions which would prevent proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 FORM CONSTRUCTION

A. *General:*

1. Construct forms complying with ACI 347, to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, level, and plumb work in finish structures.
2. Provide for openings, offsets, sinkages, keyways, recesses, moldings, reglets, chamfers, blocking, screeds, bullheads, anchorages, inserts, and other features required.
3. Forms for openings, and construction which accommodates installation by other trades whose materials and products must be fabricated before the opportunity exists to verify the measurements of adjacent construction which affects such installations, shall be accurately sized and located as dimensioned on the Drawings. In the event that deviation from the drawing dimensions results in problems in the field, the CONTRACTOR shall be responsible for resolution of the conditions as approved by the ENGINEER, without additional expense to the OWNER.

B. *Fabrication:*

1. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage concrete surfaces. Provide top forms for inclined surfaces where the slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and assure ease of removal.
2. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspections before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to temporary openings on forms in as inconspicuous locations as possible, consistent with design requirements. Form intersecting planes to provide true, clean cut corners.

C. *Falsework:*

1. Erect falsework and support, brace and maintain it to safely support vertical, lateral, and asymmetrical loads applied until such loads can be supported by in-place construction.
2. Provide wedges, jacks, or camber strips to facilitate vertical adjustments. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to produce work of required dimensions.

D. *Control Joints - Locate as indicated:*

1. Provision for other trades - Provide openings in concrete formwork to accommodate work of other trades. Verify size and location of openings, recesses, and chases with the trade requiring such items. Accurately place and securely support items to be built into forms.
2. Cleaning and tightening - Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before concrete is placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

3.03 INSTALLATION OF EMBEDDED ITEMS

- A. *General:* Set and build into the work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of the items to be attached thereto.
- B. *Edge forms and screeds strips for slabs:* Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in the finished slab surface. Provide and secure units to support types of screeds required.

3.04 SHORES AND SUPPORTS

Comply with ACI 347 for shoring and reshoring in multistory construction, and as herein specified. Submit a shore removal and reshoring schedule and drawings for the Architect's review before proceeding with this work. Do not proceed until schedule and drawings have been reviewed.

3.05 REMOVAL OF FORMS

- A. Formwork not supporting concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than fifty degrees Fahrenheit (50°F) for twenty four

(24) hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operation, and provided that curing and protection operations are maintained.

- B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements may not be removed in less than fourteen (14) days, and not until concrete has attained design minimum twenty eight (28) day compressive strength. Determine potential compressive strength of in-place concrete by testing field-cured specimens' representative on the concrete location or members, as specified in other Sections.
- C. Form facing material may be removed four (4) days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.06 RE-USE OF FORMS

Clean and repair surfaces of forms to be re-used in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork. When forms are reused for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets.

END OF SECTION

032000 CONCRETE REINFORCING

PART 1 GENERAL

1.01 SCOPE

This section includes requirements for concrete reinforcement. Coordinate the requirements of this Section with the following:

SECTION 031100 - CONCRETE FORMING
SECTION 033100 - CONCRETE
SECTION 321313 - CONCRETE PAVEMENT
SECTION 321613 - CONCRETE CURB, GUTTER, SIDEWALK, AND DRIVEWAYS

1.02 REFERENCE STANDARDS

The latest editions of reference standards listed below form a part of this specification and are applicable to this project.

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A-615, "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement"
 - 2. ASTM A-185, "Specification for Welded Steel Wire Fabric Concrete Reinforcement"
 - 3. ASTM A-306, "Specification for Carbon Steel Bars Subject to Mechanical Property Requirements"
- B. American Concrete Institute (ACI):
 - 1. ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures"
 - 2. ACI 318, "Building Code Requirements for Reinforced Concrete"
- C. Concrete Reinforcing Steel Institute (CRSI):
 - 1. CRSI 163, "Recommended Practice for Placing Reinforcing Bars"
 - 2. CRSI 165, "Recommended Practice for Placing Bar Supports, Specifications, and Nomenclature"

1.03 SUBMITTALS

- A. *Certificates*: Submit the manufacturer's certificates giving the properties of steel proposed for use. List the manufacturer's test number and heat number, chemical analysis, yield point, tensile strength, and percent elongation. Also identify on the certificates the proposed location of the steel in the work.
- B. *Bill of Materials*: Submit bills of materials to be reviewed with Shop Drawings.
- C. *Shop Drawings*:
 - 1. Submit Shop Drawings according to Section 013300 - SUBMITTAL PROCEDURES. Show reinforcement fabrications, bar placement location, splices, spacing, and bar designation, bar type, length, size,

bending, number of bars, location of bars to accommodate post-tensioning tendons, and other pertinent information, including dimensions.

2. Provide sufficient detail to permit placement of reinforcement without use of design drawings. Reproduction of design drawings for use as Shop Drawings will not be allowed. Begin fabrication of reinforcing steel after Shop Drawings have been reviewed by the ENGINEER.
3. Refer to ACI reference standards for detailing, locations, placing, splicing, etc. of reinforcing steel to be shown on Shop Drawings.

1.04 SCHEDULING

Schedule materials for delivery to the site so that items may be installed immediately upon delivery. Plan the schedule accommodate other work, especially post-tensioning. Place items in the proper sequence so that removal and replacement to accommodate other work is avoided.

1.05 HANDLING AND STORAGE

Store steel reinforcement above the ground on platforms, skids, or other supports. Protect reinforcing, as far as practicable, from mechanical injury, surface deterioration, and rusting caused by exposure to the weather.

1.06 INSPECTION

Make storage and fabrication facilities of the supplier and fabricator available for inspection by the ENGINEER prior to and during fabrication.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. *Deformed Bars*: Use deformed bars conforming to ASTM A-615, grade as specified on drawings, for all bars except column spirals and those shown on drawings to be smooth bars. Where grade is not specified on drawings, use Grade 60.
- B. *Smooth Bars*: Use bars conforming to ASTM A-306, Grade 70, for all smooth bars including column spirals.
- C. *Marking*: Clearly mark all bars with waterproof tags showing the number of bars, size, mark, length, and yield strength. Mark steel with the same designation as the member in which it occurs. Key marks to the concrete placement number as designated in the concrete placement sequence shown on the Drawings.
- D. *Welded Wire Fabric*: ASTM A-185, electrically-welded wire fabric of cold-drawn wire. Provide gauge and mesh size as shown.

2.02 MECHANICAL BAR SPLICES

- A. *G-Loc Splices*: As manufactured by Gateway Building Products, 3233 W. Grand Avenue, Chicago, Illinois, or approved equal.
- B. *Cadweld Splices*: As manufactured by Erico Products, Inc., 2070 E. 61st Place, Cleveland, Ohio, or approved equal.

2.03 TIE WIRE

Use 18-gauge annealed steel for tie wire.

2.04 ACCESSORIES

Provide chairs, riser bars, ties, and other accessories made of plastic or metal, except as otherwise specified. Where concrete surfaces are exposed to the weather in finished work, provide plastic or plastic-coated accessories only. Use of galvanized accessories is not permitted in these locations. Use plastic accessories manufactured by W.H.C. Products, Inc., Houston, Texas or approved equal.

PART 3 EXECUTION

3.01 NOTIFICATION

Notify the ENGINEER at least twenty-four (24) hours before concrete placement so that reinforcement may be inspected, and errors corrected without delaying the work.

3.02 FABRICATION

- A. *Cold-Form Bent Bars*: Fabricate cold-form bent bars to the shapes shown on the Drawings. Do not straighten or re-bend bars without specific approval. On the job, cut bars by shearing or sawing.
- B. *Splices*: Use a minimum number of splices. Lap splices in strict accord with ACI 318 or as shown. Where it is necessary to splice reinforcement other than as shown, ENGINEER will determine the character of the splice. Do not make splices at points of maximum stress. Stagger splices in adjacent bars.
- C. *Fabrication Tolerances*: Bars used for concrete reinforcement must conform to the following fabrication tolerances:

MEASUREMENT	TOLERANCE IN INCHES
Sheared Length	± 1
Depth of truss bars to 8" depth	+ 0, - 1/4
Depth of truss bars over 8" depth	+ 0, - 1/2
Stirrups, ties, and spirals	± 1/4
All other bends	± 1

3.03 PLACING

- A. *Condition of Reinforcement*: Reinforcement must be free of injurious seams, flaws, cracks, scale, loose or flaky rust, or other foreign material, including oil, mud, or coating that will reduce the bond to concrete.
- B. *Placement Tolerances*: Place reinforcement within the following tolerances:

PLACEMENT	TOLERANCES IN INCHES
Concrete cover to formed surfaces	± 1/4
Minimum spacing between bars	± 1/4
Top bars in slabs and beams to 8" depth	± 1/4
Top bars in slabs and beams between 8" and 24" depth	± 1/2
Top bars in slabs and beams more than 24" in depth	± 1
Crosswise of members spaced evenly within	± 2
Lengthwise of members	± 2

- C. *Concrete Cover*: Except as otherwise shown, provide a clear cover measured from reinforcement to the face of the concrete as listed:

SURFACES	MEASUREMENT IN INCHES
Interior not exposed to weather	
Slabs, joist, and walls	3/4
Beams, girders, and columns	1 1/2
Exterior not in contact with earth or water	
Slabs and walls, No. 6 and smaller bars	1
Slabs and walls, No. 7 and larger bars	1 1/2
Beams, girders, and columns	2
Exterior in contact with earth or fresh water	
Slabs and walls, No. 6 and smaller bars	1 1/2
Slabs and walls, No. 7 and larger bars	2
Beams, girders, and columns	2 1/2
Exposed to salt water or salt spray	
Slabs and walls	2
Beams, girders, and columns	3
Footings	
Top and sides	2
Bottom	3
Increase measurements under these conditions:	
Cover of top bars for slabs without wearing surface designed to carry vehicular traffic	1/2
When using No.14 or No.18 bars	1/2

3.04 ASSEMBLY

- A. *Reinforcing Bars in Forms*: Use spacers, chairs, wire ties, and other accessory items necessary to properly assemble, space, and support reinforcing. Provide accessories of sufficient number, size, and strength to adequately prevent deflection or displacement of reinforcement due to construction loads or concrete placement. Accessories recommended by CRSI will be used if not otherwise specified or shown. Accessories shall be of a size to provide concrete cover as previously specified. Use appropriate accessories to position and support bolts, anchors, and other embedded items. Tie reinforcing bars at each intersection and to accessories. Blocking reinforcement upon concrete or masonry is prohibited.
- B. *Reinforcement for Concrete on Ground*: Support reinforcement on plastic chairs spaced about three feet on center each way. Use a minimum of one chair for each nine square feet. Fasten chairs to the reinforcement as recommended by the manufacturer of the chairs.
- C. *Vertical Reinforcement in Columns*: Offset vertical bars by at least one bar diameter at splices. Provide accurate templates for column dowels to insure proper placement.
- D. *Mechanical Bar Splices*: Use only where indicated.

E. *Welded Wire Fabric:*

1. For welded wire fabric designated as load carrying reinforcement, make lapped splices so that the overlap measured between the outer-most cross wires of each fabric sheet is not less than the spacing of cross wires plus two inches.
2. For welded wire fabric not specifically designated as load carrying reinforcement, make lapped splices so that the overlap measured between the outermost cross wires of each fabric sheet is not less than two inches. Extend the fabric across supporting beams and walls to within four inches of concrete edges. Also extend the fabric through contraction joints and construction joints, other than keyed joints in slabs on the ground.

F. *Construction Joints:* Provide continuous reinforcing through joints. As a general rule, place unscheduled joints at midspan. Obtain specific approval for jointing and bar splicing that is not indicated on the Drawings. Splices shown on reviewed Shop Drawings are acceptable.

G. *Interferences:* If reinforcing interferes with the locations of other reinforcing steel, conduits, or embedded items, request instruction from the ENGINEER. The ENGINEER need not be notified if bars are moved to avoid such interferences unless the bars are moved more than one bar diameter or enough to exceed specified tolerances. Do not cut reinforcement to install inserts, conduits, mechanical openings, or other items without approval.

H. *Field Bending:* Shape reinforcing bent during construction operations to conform to the Drawings. Thoroughly inspect the reinforcing for breaks. If reinforcing is damaged, replace, Cadweld, or otherwise repair as directed. Do not bend reinforcement after it is embedded in concrete.

I. *Welding:* Unless directed by ENGINEER, do not weld reinforcing bars.

END OF SECTION

032100 REINFORCING STEEL

PART 1 GENERAL

1.01 DESCRIPTION

- A. *Work included:* Provide complete, in place, all steel required for reinforcement of cast-in-place concrete as shown on the Drawings.
- B. Related work described elsewhere: Steel reinforcement is also required under SECTION 032000 - CONCRETE REINFORCING.

1.02 PRODUCT HANDLING

- A. *Delivery:* Deliver reinforcement to the job site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.
- B. *Storage:* Store reinforcement at the job site in a manner to prevent damage and accumulation of dirt and excessive rust.

PART 2 PRODUCTS

2.01 MATERIALS

- A. *Reinforcing bars:* Comply with ASTM A 615, Grade 40.
- B. *Steel wire:* Comply with ASTM A 82.
- C. *Welded wire fabric:* Comply with ASTM A 185
- D. *Supports for reinforcement:* Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement in place.

2.02 FABRICATION

- A. *General:* Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with CRSI Manual. In case of fabricating errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.
- B. *Unacceptable materials:* Reinforcement with any of the following defects will not be permitted in the Work:
 - 1. Bar lengths, depths, and bends exceeding specified fabrication tolerances.
 - 2. Bend or kinks not indicated on the Drawings or final Shop Drawings.
 - 3. Bars with reduced cross section due to excessive rusting or other cause.

PART 3 EXECUTION

3.01 INSPECTION

Examine the substrate, formwork, and the conditions under which concrete reinforcement is to be placed, and correct conditions which would prevent proper and timely completion of the work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General:

1. Comply with the specified standards for details and methods of reinforcement placement and supports, and as herein specified.
2. Clean reinforcement to remove loose rust and mill scale, earth, and other materials which reduce to destroy bond with concrete.
3. Position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operation. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
4. Place reinforcement to obtain the minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports together with sixteen (16) gage wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.
5. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh.
6. Provide sufficient numbers of supports and of strength to carry reinforcement. Do not place reinforcing bars more than two inches (2") beyond the last leg of any continuous bar support. Do not use supports as bases for runaways for concrete conveying equipment and similar construction loads.

B. *Splices*: Provide standard reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying.

END OF SECTION

033100 CONCRETE

PART 1 GENERAL

1.01 SCOPE

This Section governs for all cast-in-place concrete required for this project, and all materials necessary for the concrete work, related inspection materials necessary for the concrete work, related inspection and testing, as shown on the Drawings and specified herein.

1.02 MEASUREMENT AND PAYMENT

Unless otherwise specified, no separate payment will be made for concrete as an item. Cost of concrete, associated materials, equipment, placing of labor for manufacturing, transporting, placing, finishing and curing, and other associated work, shall be included in the unit price bid for specific items as set forth in the proposal. Payment will not be made for unauthorized work.

1.03 SUBMITTALS

- A. Concrete mix design with test results.
- B. Certification from manufacturer that concrete mix meets specification.
- C. Test reports for all required concrete tests.
- D. Mill report for all reinforcing steel bars.

1.04 REFERENCE STANDARDS

- A. ACI 347, "Guide to Formwork for Concrete"
- B. ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures"
- C. ACI117, "Specification for Tolerances for Concrete Construction and Materials"
- D. ASTM A120, "Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses"
- E. ASTM A663, "Steel Bars, Carbon, Merchant Quality, Mechanical Properties"
- F. ASTM D994, "Preformed Expansion Joint Filler for Concrete (Bituminous Type)"
- G. ASTM D1751, "Preformed Expansion Joint fillers for Concrete Paving and Structural Construction (Non-extending and Resilient Bituminous Types)"
- H. ASTM D1752, "Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction"
- I. ASTM A615, "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement"
- J. ASTM A185, "Specification for Welded Steel Wire Fabric for Concrete Reinforcement"

- K. ASTM C94, "Standard Specification for Ready-Mixed Concrete"
- L. ASTM C150, "Standard Specification for Portland Cement"
- M. ASTM C260, "Standard Specification for Air-Entaining Admixtures for Concrete"
- N. ASTM C494, "Specification for Chemical Admixtures for Concrete"
- O. ASTM C618, "Specifications for Fly Ash and Raw or Calcined natural Pozzolans for Use in Portland Cement Concrete"
- P. ASTM C595, "Specifications for Blended Hydraulic Cements"
- Q. ASTM C136, "Standard Test Method for Sieve Analysis of Fine and course Aggregates"
- R. CRSI 163, "Recommended Practice for Placing Reinforcing Bars"
- S. CRSI 165, "Recommended Practice for Placing Bar Supports, Specifications, and Nomenclature"

PART 2 PRODUCTS

2.01 MATERIALS

- A. *Cement*: Cement shall be Portland Cement, Type I or Type II conforming to ASTM C150. Portland Cement Type III may be used only with permission of ENGINEER or in special cases as defined in the Drawings and Specifications. If Type III cement is used, it shall not be placed if the anticipated air temperature is expected to drop below sixty degrees Fahrenheit (60°F) in the next twelve (12) hours beginning at the pour of concrete.
- B. *Admixtures*:
 - 1. Admixtures to be used in concrete, when required or permitted, shall conform to the appropriate specifications listed below:
 - a. Air-entraining admixtures - "Specification of Air-Entraining Admixtures for Concrete" (ASTM C260). Air entrainment shall be 4.5% plus or minus 1.5%, in accordance with ASTM C231.
 - b. Water-reducing, retarding, and accelerating admixtures - "Specification for Chemical Admixtures for Concrete" (ASTM C494). Water reducers may be used to improved workability of concrete. Concrete shall still meet specifications required with the addition of water reducers. Retardant shall be used with temperature exceeds ninety degrees Fahrenheit (90°F).
 - c. Pozzolanic admixtures - "Specification for Fly Ash and Raw or Calcined Natural Pozzolans for Use in Portland Cement Concrete" (ASTM C618).
 - d. Fly-Ash shall be Type C or Type F, in accordance with ASTM C618. When used, 'cement' shall be defined as 'cement plus fly-ash'. It shall be composed of Type I or Type III Portland cement up to twenty five percent (25%) fly-ash by weight of cementitious materials.
 - 2. Allowable Admixtures: If required or permitted, admixtures shall be subject to the following:
 - a. The amount of calcium chloride shall not exceed two percent (2%) by weight of cement.
 - b. All admixtures shall be used in accordance with the manufacturer's instructions except as otherwise specified herein.

C. *Water*: Mixing water for concrete shall be fresh, clean, and potable, in accordance with ASTM C94.

D. *Aggregates*:

1. Aggregates for normal weight concrete shall conform to "Specification for Concrete Aggregates" (ASTM C33). Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the appropriate grading requirements of the applicable ASTM specification, measured in compliance with ASTM C136.
2. Maximum Size of Coarse Aggregate: The nominal maximum size of the aggregate shall not be more than one-fifth (1/5) of the narrowest dimension between sides of forms, one-third (1/3) of depth of slabs, nor three-fourths (3/4) of the minimum clear spacing between reinforcing bars. These limitations may be waived if, in the judgement of ENGINEER, workability and methods of consolidation are such that the concrete can be placed without honeycomb of voids.
3. Coarse Aggregate

- a. Coarse aggregate shall consist of durable particles of gravel, crushed stone, or combinations thereof, in accordance with ASTM C33, free from frozen material or injurious amounts of salt, alkali, vegetable or organic matter, or other objectionable material either free or as an adherent coating, and its quality shall be reasonably uniform throughout. It shall contain no more than one quarter percent (0.25%) by weight of clay lumps, not more than one percent (1.0%) by weight of laminated and/or friable particles. It shall have a wear of not more than thirty five percent (35%) when tested in accordance with ASTM method C131 the "Los Angeles Abrasion Test".
- b. When tested by ASTM method C136, it shall meet the following grading requirements:

TABLE I
COARSE AGGREGATE GRADATION

Retained on 1 3/4" sieve	0%
Retained on 1 1/2" sieve	0% to 5%
Retained on 3/4" sieve	30% to 65%
Retained on 3/8" sieve	70% to 90%
Retained on No.4 sieve	95% to 100%

- c. The loss by decantation shall be a maximum of one percent (1%).

4. Fine Aggregate

- a. Fine aggregate shall consist of clean, hard, durable, and uncoated particles of natural or manufactured sand, in accordance with ASTM C33, or a combination thereof, with or without a mineral filler, in accordance with ASTM C618. It shall be free from frozen material, or injurious amounts of salt, alkali, vegetable or organic matter, or other objectionable material and it shall contain no more than a half percent (0.5%), by weight, or clay lumps. When subjected to the color test for organic impurities (ASTM method C40), the fine aggregate shall not show a color darker than the standard.

- b. Unless otherwise specified, fine aggregate shall meet the following grading requirements:

TABLE II
FINE AGGREGATE GRADATION

Retained on 3/8" sieve	0%
Retained on No. 4 sieve	0% to 5%
Retained on No. 8 sieve	0% to 20%
Retained on No. 16 sieve	15% to 50%
Retained on No. 30 sieve	35% to 75%
Retained on No. 50 sieve	65% to 90%
Retained No. 100 sieve	90% to 100%
Retained No. 200 sieve	97% to 100%

- c. Fine aggregate shall be subjected to the Sand Equivalent Test, Tex-203-F. The sand equivalent shall be not less than 80%.

5. Reinforcing Steel and Tie Bars.
6. Reinforcing steel shall be Grade 60, in accordance with ASTM A615. Steel shall be stored in a manner to protect from mechanical injury and prevent accumulation of dirt and rust.
7. Steel wire shall comply with ASTM A82. Wire shall be 18-gauge.
8. Welded Wire Fabric shall comply with ASTM A185.
9. Chairs, riser bars, ties, and other accessories shall be made of plastic or metal, except as otherwise specified. Where concrete surfaces are exposed to the weather in finished work, provide plastic or plastic-coated accessories only. Use plastic accessories manufactured by W.H.C. Products, Inc., Houston, Texas or approved equal.
10. Steel shall be Cold Bent, to shapes shown. Once steel has been bent it shall not be bent again.
11. Placing of Reinforcing Steel.
12. Condition of Reinforcement: Reinforcement must be free of injurious seams, flaws, cracks, scale, loose or flaky rust, or other foreign material, including oil, mud, or coating that will reduce the bond to concrete.
13. Placement Tolerances: Place reinforcement within the following tolerances.

<i>Placement</i>	<i>Tolerance in Inches</i>
Concrete cover to formed surfaces	± 1/4
Minimum spacing between bars	± 1/4
Top bars in slabs and beams to 8-inch depth	± 1/4
Top bars in slabs and beams between 8 and 24-inch depth	± 1/2
Top bars in slabs and beams more than 24 inches in depth	± 1
Crosswise of members spaced evenly within	± 2
Lengthwise of members	± 2

14. Concrete Cover: Except as otherwise shown, provide a clear cover measured from reinforcement to the face of the concrete as listed.

<i>Surfaces</i>	<i>Measurement in Inches</i>
Interior not exposed to weather	
Slabs, joists, and walls	3/4
Beams, girders, and columns	1 1/2
Exterior not in contact with earth or water	
Slabs and walls, No. 6 and smaller bars	1
Slabs and walls, No. 7 and larger bars	1 1/2
Beam, girders, and columns	2
Exterior in contact with earth or fresh water	
Slabs and walls, No. 6 and smaller bars	1 1/2
Slabs and walls, No. 7 and larger bars	2
Beams, girders, and columns	2 1/2
Exposed to saltwater or salt spray	
Slabs and walls	2
Beams, girders, and columns	3
Footings	
Top and sides	2
Bottom	3
Increase measurements under these conditions:	
Cover of top bars for slabs without wearing surface	1/2
d designed to carry vehicular traffic	
When using No. 14 or No 18 bars	1/2

E. Storage of Materials

1. Storage of Materials
2. All Cement, Fly-Ash and mineral fillers shall be stored in a well-ventilated facility that protects materials from weather, dampness, and moisture.
3. Concrete aggregates shall not be contaminated from foreign materials.

2.02 TESTING REQUIREMENTS

- A. Concrete mixes shall be approved prior to placing of concrete. Mixes shall meet or exceed the following requirements:

<i>Minimum Compressive Strength, psi at 28 days</i>	<i>Minimum Cement Content sac/cubic yard</i>	<i>Maximum Water content Gal/sack of cement</i>	<i>General Use</i>
3,000	4.5	6.0	Headwalls; sidewalks; driveways; channels
3,500	5.0	6.0	Concrete Pavement, curbs, gutters
4,000	5.5	5.0	Heavy Weight Concrete

- B. The Slump of the concrete mixes shall be in accordance with ASTM C143. A minimum of one slump test per strength specimen is required. Unless otherwise permitted or specified, the concrete shall be proportioned and produced to have a slump per the following table. A tolerance of up to one-inch (1") above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent ten (10) batches tested, whichever is fewer, does not exceed the maximum limit. Concrete of lower than usual slump may be used provided it is properly placed and consolidated. Slump maximum for concrete with admixtures shall be compared with concrete mix design.

<i>Type of Construction</i>	<i>Compressive Strength of Concrete, psi</i>	<i>Maximum Slump (pre-admixture)</i>
Concrete Pavement, Curb, Gutter	3,500	3"
Sidewalks, Headwalls, Channels	3,000	5"
Driveways	3,000	3"
Heavy Weight	4,000	3"

- C. Four (4) specimens shall be taken, for every one-hundred (100) cubic yards, or fraction thereof, for each mix design placed for that day, and tested for compressive strength in accordance with ASTM C21 and ASTM C39. The first two shall be tested at seven (7) days, and the remaining two tested at twenty-eight (28) days. Four (4) specimens shall be taken for every one-hundred (100) cubic yards, or fraction thereof, for each mix design placed that day, and tested for flexural strength, when directed by the ENGINEER, in accordance with ASTM C31 and ASTM C78. The first two shall be tested at seven (7) days and the remaining two tested at twenty-eight (28) days. The seven (7) day test will be used as an early indication of developing strength, and the twenty-eight (28) day test to ensure that the compressive strength requirement has been met and accepted. Each time a set of specimens is taken for testing, the slump will be determined in accordance with ASTM Method C143 and the air content in accordance with ASTM Method C173 or C231. The minimum compressive strengths are as follows:

<i>Type of Construction</i>	<i>28-Day Compressive Strength of Concrete, psi</i>
Concrete Pavement, Curb, Gutter	3,500
Sidewalks, Headwalls, Channels	3,000
Driveways	3,000

- D. A test core shall pass compressive strength of three thousand (3,000) psi prior to opening to traffic. The tests shall be performed in accordance with ASTM C31 and ASTM C39. Tests shall conform with Geotechnical Report requirements. Any contradiction between this specification, construction drawings, and geotechnical reports shall be brought to the ENGINEER's attention immediately for clarification.
- E. If the test specimens fall below the required compressive strength, the ENGINEER has the right to have the concrete removed and replaced at no additional cost to the OWNER.

F. High Early Strength Concrete

Use high early strength concrete pavement as shown on drawings. The design shall have the following:

Type of Construction	Minimum Cement Content (Type III) sack/cubic yard	24-Hour Compressive Strength of Concrete, psi	72-Hour Flexural Strength of Concrete, psi	Water Cement Ratio (Maximum)	Slump (Maximum)
High Early Strength Concrete	7	3,000	500	0.45	5"

Air-entrainment shall not be issued in High Early Strength concrete. Accelerating agents, Type C, may be used in accordance with ASTM C494. Fly-ash may be used in lieu of increased cement content. If used, cement content shall be five and a half (5.5) sack per cubic yard with no more than twenty-five percent (25%) fly-ash by weight.

A test cores passing comprehensive strength of three thousand (3,000) psi and test beams passing flexural strength of five hundred (500) psi shall pass prior to opening pavement to traffic.

If the test specimens fall below the required compressive strength, additional cores shall be taken and tested for compressive strength. If the additional cores also fall below the required strength, the ENGINEER has the right to have the concrete removed and replaced at no additional cost to the OWNER.

PART 3 EXECUTION

3.01 PROPORTIONS

- A. *General:* Concrete for all parts of the work shall be of the specified quality capable of being placed without excessive segregation and, when hardened, of developing all characteristics required by these Drawings and Specifications. Proportioning of design mix shall be governed by ACI 211.1-77 or as currently amended.
- B. *Selection of Proportions:*
 1. General: The proportions of ingredients shall be such as to produce a mixture which will work readily into the corners and angles of the forms and around reinforcement by the methods of placing and consolidation employed on the Work, but without permitting the materials to segregate or excessive free water to collect on the surface.
 2. A testing lab, meeting the requirements of Section - 014529 Testing Laboratory Services, shall compile field tested data on concrete design that has been proven to meet requirements specified in this Section for concrete strength, durability, and slump. Testing results shall be provided to the ENGINEER upon completion of tests. Ability to produce the required average strength calculated in accordance with this paragraph shall be determined on the basis of the strength test record of thirty (30) or more tests made during the past year which will permit establishing, directly or by interpolation, the water-cement ratio corresponding to the required average strength.

3. Basis for Selecting Proportions:

- a. Where the testing laboratory has a control record, based on at least thirty (30) consecutive strength tests of a similar mix or mixes obtained within the past year representing similar materials and conditions to those expected, the average strength used as the basis for selecting proportions shall exceed the specified strength f_c' by at least:
 - 400 psi if the standard deviation is less than 300 psi
 - 550 psi if the standard deviation is 300 to 400 psi
 - 700 psi if the standard deviation is 400 to 500 psi
 - 900 psi if the standard deviation is 500 to 600 psi
- b. If the standard deviation exceeds 600 psi or if a suitable record strength test performance is not available, proportions shall be selected to produce an average strength at least 1,200 psi or greater than specified strength f_c' .
- c. The strength test history used to determine standard deviation will be considered to comply with the above requirement for thirty (30) consecutive strength tests if the test represents either a group of thirty (30) consecutive batches for the same class of concrete or the statistical average for two groups totaling thirty (30) or more batches of the same class of concrete or the statistical average for two groups totaling thirty (30) or more batches. The tests used in establishing the standard deviation shall represent concrete produced for a specified strength or strengths within 1,000 psi of that required for the proposed Work; changes in materials and proportions within the population of background tests shall not have been more closely restricted than will be the case for the proposed Work.

- C. *Mixing and Production:* All concrete shall be ready mixed and shall be batched, mixed, and transported in accordance with ASTM C94.

3.02 DURABILITY

Concrete of normal weight for portions of the structure required to be watertight shall have a water-cement ration not exceeding 0.48 if exposure will be to fresh water or 0.44 for exposure to seawater.

3.03 FORMWORK

A. *General:*

1. Forms shall be used, wherever necessary, to confine the concrete and shape it to the required dimensions. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete and shall have sufficient rigidity to maintain specified tolerances.
2. Earth cuts shall not be used as forms for vertical surfaces unless required or permitted.
3. Shop Drawings for formwork including the location of shoring and reshoring shall be submitted for approval as required by ENGINEER.

B. *Design and Installation of Formwork:*

1. The design and engineering of the formwork, as well as its construction, shall be the responsibility of CONTRACTOR.

2. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Chamfer strips shall be placed in the corners of forms to produce beveled edges on permanently exposed surfaces. Interior corners on such surfaces and the edges of formed joints will not require beveling unless shown on the Drawings.
3. Positive means of adjustment (wedges or jacks) of shores and struts shall be provided and all settlement shall be taken up during concrete placing operation. Forms shall be securely braced against lateral deflections.
4. Temporary openings shall be provided at the base of column forms and wall forms and at other points where necessary to facilitate cleaning and observation immediately before concrete is placed.
5. Form accessories to be partially or wholly embedded in the concrete, such as ties and hangers, shall be of a commercially manufactured type. Non-fabricated wire shall not be used.
 - a. Form ties shall be constructed so that the ends or end fasteners can be removed without causing appreciable spalling at the faces of the concrete.
 - b. After the end fasteners of form ties have been removed, the embedded portion of the ties shall terminate not less than two (2) diameters or twice the minimum dimension of the tie from the formed faces of concrete to be permanently exposed to view except that in no case shall this distance be less than three-quarter inches (3/4"). When the formed face of the concrete is not to be permanently exposed to view or exposed to corrosive liquids, form ties may be cut off flush with the formed surfaces.
6. At construction joints, contact surface of the form sheathing for flush surfaces exposed to view shall overlap the hardened concrete in the previous placement by not more than one inch (1"). The forms shall be held against the hardened concrete to prevent offsets or loss of mortar at the construction joint and to maintain a true surface.
7. Wedges used for final adjustment of the forms prior to concrete placement shall be fastened in position after the final check.
8. Formwork shall be so anchored to shores or other supporting surfaces or members that upward or lateral movement of any part of the formwork system during concrete placement will be prevented.
9. Runways for moving equipment shall be provided with struts or legs and shall be supported directly on the formwork or structural member without resting on the reinforcing steel.

C. Formwork Tolerances:

1. Formwork shall be constructed so that the line and surface of columns, piers, walls, and arises shall not vary from plumb more than one-quarter inch (1/4") in any ten-foot (10') length and not more than one-half-inch (1/2") over the entire length. Variations from level of slabs, beams, ceilings, and arises shall not be more than one-quarter inch (1/4") in any ten-foot (10') length or three-eighths inches (3/8") over the entire length. Variation in the size or elevation location of sleeves or wall and floor openings shall not be more than plus or minus one-quarter-inch ($\pm 1/4"$).
2. CONTRACTOR shall establish and maintain, in an undisturbed condition and until final completion and acceptance of the Project, sufficient control points and benchmarks to be used for reference purposes to check tolerances.

D. *Preparation of Form Surface:*

1. All surfaces of forms and embedded materials shall be cleaned of any accumulated mortar or grout from previous concreting and of all other foreign material before concrete is placed in them.
2. Before placing of either the reinforcing steel or the concrete, the surfaces of the forms shall be covered with an approved coating material that will effectively prevent absorption of moisture and prevent bond with the concrete and will not stain the concrete surfaces. A field applied form release agent or sealer of approved type or a factory applied non-absorptive liner may be used.
3. Excess form coating material shall not be allowed to stand in puddles in the forms nor shall such coating be allowed to come in contact with hardened concrete against which fresh concrete is to be placed.

E. *Removal of Forms:*

1. When repair of surface defects or finishing is required at an early age, forms shall be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations.
2. Top forms on sloping surfaces of concrete shall be removed as soon as the concrete has attained sufficient stiffness to prevent sagging. Any needed repairs or treatment required on such sloping surfaces shall be performed at once and be followed by the specified curing.
3. Wood forms for wall openings shall be loosened as soon as this can be accomplished without damage to the concrete.
4. Formwork for columns, walls, sides of beams, and other parts not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations.
5. Forms and shoring in formwork used to support the weight for concrete in beams, slabs, columns, and other structural members shall remain in place until the concrete has reached the following curing time:

<i>Outside Temperature</i>	<i>32° F - 50°F</i>	<i>Above 50° F</i>
Type I Cement	7 Days	5 Days
Type II Cement	9 Days	6 Days
Type III Cement	4 Days	3 Days

Should field cured test specimens prepared on the concrete mix confirm a strength in excess of sixty five percent (65%) of the design ultimate strength then, with the approval of ENGINEER, CONTRACTOR may remove forms, in less time than that indicated above. For temperature below thirty-two degrees Fahrenheit (32°F) the curing shall be as specified by ENGINEER.

6. When shores and other vertical supports are so arranged that the non-load-carrying form-facing material may be removed without loosening or disturbing the shores and supports, the facing material may be removed at an earlier age as specified or permitted.

3.04 JOINTS AND EMBEDDED ITEMS

A. General:

1. Joints not shown on the Drawings shall be so made and located to least impair the strength of the structure and shall be approved by ENGINEER.
2. All reinforcement shall be continued across joints. Keys and inclined dowels shall be provided as directed by ENGINEER. Longitudinal keys at least one and one-half inches (1 1/2") deep shall be provided in all joints in walls and between walls and slabs or footings.
3. The surface of the concrete at all joints shall be thoroughly cleaned and all laitance removed prior to placing adjoining concrete.
4. When required or permitted, bond shall be obtained by one of the following methods:
 - a. The use of an approved adhesive applied in accordance to manufacturer's recommendations.
 - b. The use of an approved chemical retarder which delays but does not prevent setting of the surface mortar. Retarded mortar shall be removed within twenty-four (24) hours after placing to produce a clean exposed aggregate bonding surface.
 - c. Roughening the surface of the concrete in an approved manner that will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate, or damaged concrete at the surface.

B. Expansion Joints:

1. Reinforcement or other embedded metal items bonded to the concrete (except dowels in floors bonded on only one side of joints) shall not be permitted to extend continuously through any expansion joint.
2. Pre-molded expansion joint filler shall be of the type required by the contract documents and shall conform to one of the following:
 - a. "Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)" (ASTM D994).
 - b. "Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)" (ASTM D1751).
 - c. "Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction" (ASTM D1752).

C. Water Stops:

1. The material, design, and location of water stops in joints shall be indicated on the Drawings.
2. Each piece of pre-molded water stop shall be of maximum practicable length so that the number of end joints will be held to a minimum.
3. Joints at intersections and at ends of pieces shall be made in the manner most appropriate to the material being used. Joints shall develop effective water tightness fully equal to that of the continuous water stop material, shall permanently develop not less than fifty percent (50%) of the mechanical strength of the parent section, and shall permanently retain their flexibility.

D. *Other Embedded Items:*

1. All sleeves, inserts, anchors, and embedded items required for adjoining work or its support shall be placed prior to placing concrete.
2. All contactors whose work is related to the concrete, or must be supported by it, shall be given ample notice and opportunity to introduce and/or furnish embedded items before the concrete is placed.

E. *Placing Embedded Items:* Expansion joint material, water stops, and other embedded items shall be positioned accurately and supported against displacement. Voids in sleeve, inserts, and anchor slots shall be filled temporarily with readily removable material to prevent the entry of concrete into the voids.

3.05 PRODUCTION OF CONCRETE

A. *Ready-Mixed Concrete:* Ready-mixed concrete shall be batched, mixed, and transported in accordance with "Specification for Ready-Mixed Concrete" (ASTM C94). Plant equipment and facilities shall conform to the "Check List for Certification of Ready Mixed Concrete Production Facilities" of the National Ready Mixed Concrete Association. The maximum time interval between addition of cement to batch and placement of concrete in forms shall be forty-five (45) minutes when the temperature is above ninety degrees Fahrenheit (90°F), sixty (60) minutes when the temperature is seventy one degrees Fahrenheit (71°F) to ninety degrees Fahrenheit (90°F), and ninety (90) minutes when the temperature is seventy degrees Fahrenheit (70°F) or below.

B. *Control of Admixtures:*

1. Air-entraining admixtures, calcium chloride, and other chemical admixtures shall be charged into the mixer as solutions and shall be measured by means of an approved mechanical dispensing device. The liquid shall be considered a part of the mixing water. Admixtures that cannot be added in solution may be weighed or may be measured by volume as recommended by the manufacturer.
2. Addition of retarding admixtures shall be completed within one (1) minute after addition of water to the cement has been completed, or prior to the beginning of the last three-fourths (3/4) of the required mixing, whichever comes first.

C. *Tempering and Control of Mixing Water:*

1. Concrete shall be mixed only in quantities for immediate use. Concrete which has begun to set shall not be re-tempered but shall be discarded.
2. When concrete arrives at the project with slump below that suitable for placing, as indicated by the Specifications, water may be added only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded. The water shall be incorporated by additional mixing equal to at least half of the total mixing required. An addition of water above that permitted by the limitation on water-cement ratio shall be accompanied by a quantity of cement sufficient to maintain the proper water-cement ratio. Such addition shall be authorized by ENGINEER or his Representative.

D. *Weather Conditions:* Except upon specific written authorization by ENGINEER, concrete shall not be placed when the temperature is below forty degrees Fahrenheit (40°F) and falling; but, it may be placed when the temperature is above thirty-five degrees Fahrenheit (35°F) and rising; the temperature being taken in the shade and away from artificial heat.

- E. If weather shows to be above ninety-five degrees Fahrenheit (95°F), forms and subgrade shall be sprinkled with water immediately before placing concrete.

3.06 CONCRETE DELIVERY

Clean delivery equipment as necessary to prevent accumulation of old concrete before loading fresh concrete. Use agitated delivery equipment for concrete designed to have a slump of more than five inches (5"). Segregated concrete is subject to rejection. Place agitated concrete within sixty (60) minutes of batching. Place non-agitated concrete within forty-five (45) minutes after batching. In hot weather or under conditions causing quick setting of the concrete, times may be reduced by the Engineer. Time limitations may be extended if the CONTRACTOR can demonstrate that the concrete can be properly placed, consolidated, and finished without the use of additional water.

3.07 PLACING CONCRETE

A. *Preparation:*

1. Contractor shall provide ENGINEER a minimum of twenty-four (24) hours advance notice before placing concrete to allow for inspections of forms, reinforcing steel, and other preparations. If concrete placement is scheduled for a Saturday, minimum forty-eight (48) hours' notice shall be given.
2. Hardened concrete and foreign materials shall be removed from the inner surfaces of the conveying equipment.
3. Form work shall have been completed; water shall have been removed; reinforcement shall have been secured in place; expansion joint material, anchors, and other embedded items shall have been positioned; and the entire preparation shall have been approved.
4. Semi porous subgrades shall be sprinkled sufficiently to eliminate suction and porous subgrades shall be sealed.

B. *Conveying Concrete:*

1. Concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients and in a manner which will assure the required quality of the concrete is maintained.
2. Truck mixers, agitators, and non-agitating units and their manner of operation shall conform to the applicable requirements of "Specification for Ready-Mixed Concrete" (ASTM C94).
3. Chutes shall be metal or metal-lined and shall have a slope not exceeding one vertical to two horizontal (2:1) and not less than one vertical to three horizontal (3:1). Chutes more than twenty feet (20') long and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.
4. Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity. Pneumatic placement shall be controlled so that segregation is not apparent in the discharge concrete. The loss of slump in pumping or pneumatic conveying equipment shall not exceed two inches (2"). Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy.

5. Depositing: Concrete shall be deposited continuously, or in layers of such thickness that no concrete will be deposited on concrete which hardened sufficiently to cause the formation of seams or planes of weaknesses within the section. If a section cannot be placed continuously, construction joints shall be located as shown in the Drawings or as approved. Placing shall be carried on at such a rate that the concrete that is being integrated with fresh concrete is still plastic. Concrete that has partially hardened or has been contaminated by foreign materials shall not be deposited. Temporary spreaders in forms shall be removed when the concrete placing has reached an elevation rendering their service unnecessary. They may remain embedded in the concrete only if made of metal or concrete and if prior approval has been obtained.
6. Placing of concrete in supported elements shall not be started until the concrete previously placed in columns and walls is no longer plastic and has been in place at least two (2) hours, and has achieved sufficient strength to support itself and any additional loads that the supported elements may require at the time of placement.
7. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to re-handling or flowing. Concrete shall not be subjected to any procedure which will cause segregation.
8. All concrete shall be consolidated by vibration, spading, rodding, or forking so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, eliminating all air or stone pockets which may cause honey-combing, pitting, or planes of weakness. Internal vibrators shall have a minimum frequency of 8000 vibrations per minute and sufficient amplitude to consolidate the concrete effectively. They shall be operated by competent workman. Use of vibrators to transport concrete within forms shall not be allowed. Vibrators shall be inserted and withdrawn at points approximately eighteen inches (18") apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not sufficient to cause segregation, generally from five (5) to fifteen (15) seconds. A spare vibrator shall be kept on the job site during all concrete placing operations. Where the concrete is to have an as-cast finish, a full surface of mortar shall be brought against the form by the vibration process, supplemented if necessary by spading to work the coarse aggregate back from the formed surface.
9. Do not allow the pavement edge to deviate from the established paving line by more than 1/2 inch at any point. Place the concrete as near as possible to its final locations and minimize segregation and re-handling. Where hand spreading is necessary, distribute concrete using shovels. Do not use rakes or vibrators to distribute concrete.
10. Pavement: Consolidate all concrete by approved mechanical vibrators operated on the front of the paving equipment. Use immersion-type vibrators that simultaneously consolidate the full width of the placement when machine finishing. Keep vibrators that simultaneously consolidate the full width of the placement when machine finishing. Keep vibrators from dislodging reinforcement. Use hand operated vibrators to consolidate concrete in areas not accessible to the machine-mounted vibrators. Do not operate machine-mounted vibrators while the paving equipment is stationary. Vibrator operations are subject to review.
11. Temperature Restrictions: Place concrete that is between forty degrees Fahrenheit (40°F) and ninety-five degrees (95°F) when measured in accordance with TxDOT Tex-422 A at the time of discharge, except that concrete may be used if it was already in transit when the temperature was found to exceed the allowable maximum. Take immediate corrective action or cease concrete production when the concrete temperature exceeds ninety-five degrees (95°F). Do not place concrete when the ambient temperature in the shade is below forty degrees Fahrenheit (40°F) and falling unless approved by the ENGINEER. Concrete may be placed when the ambient temperature in the shade is above thirty-five degrees Fahrenheit (35°F) and rising or above forty degrees

Fahrenheit (40°F). When temperatures warrant protection against freezing, protect the pavement with an approved insulating material capable of protecting the concrete for the specified curing period. Submit for approval proposed measures to protect the concrete from anticipated freezing weather for the first seventy-two (72) hours after placement. Repair or replace all concrete damaged by freezing.

3.08 CURING AND PROTECTION

- A. *General:* Beginning immediately after placement, concrete shall be protected from premature drying and excessively hot or cold temperatures and shall be maintained with minimal moisture loss at a relatively constant temperature for the period necessary for hydration of the cement and hardening of the concrete. The materials and methods of curing shall be subject to approval.
- B. *Preservation of Moisture:*
 - 1. For concrete surfaces not in contact with forms, one of the following procedures shall be applied immediately after completion of placement and finishing:
 - a. Ponding or continuous sprinkling.
 - b. Application of absorptive mats or fabric kept continuously wet.
 - c. Application of sand kept continuously wet.
 - d. Continuous application of steam (not exceeding 150°F) or mist spray.
 - e. Application of waterproof sheet materials, conforming to "Specifications for Waterproof Sheet Materials for Curing Concrete" (ASTM C171).
 - f. Application of other moisture-retaining covering as approved.
 - g. Application of a pigmented curing compound conforming to "Specification for Liquid Membrane Forming Compounds for Curing Concrete" (ASTM C309). The compound shall be applied in accordance with the recommendations of the manufacturer immediately after any water sheen which may develop after finishing has disappeared from the concrete surface. It shall not be used on any surface against which additional concrete or other material is to be bonded unless it is proven the curing compound will not prevent bond, or unless positive measures are taken to remove it completely from areas to receive bonded applications.
 - 2. Moisture loss from surfaces placed against wooden forms or metal forms exposed to heating by the sun shall be minimized by keeping the forms wet until they can be safely removed. After form removal, the concrete shall be cured until the end of the time prescribed in Section 12.0.B.3 by one of the methods of Section 12.0.B.1.
 - 3. Curing in accordance with Section 12.0.B shall be continued for at least seven (7) days in the case of all concrete except high-early-strength concrete for which the period shall be at least twenty-four (24) hours AND a compressive test cylinder shall pass three thousand (3,000) psi. Alternatively, if tests are made of cylinders kept adjacent to the structure and cured by the same methods, moisture retention measures may be terminated when the average compressive strength has reached seventy percent (70%) of the specified straight, f_c' . If one of the curing procedures of 12.0.B is used initially, it may be preplaced by one of the other procedures of Section 12.0.B any time after the concrete is one (1) day old provided the concrete is not permitted to become surface dry during the transition.

C. *Temperature, Wind, and Humidity:*

1. Cold Weather: When the mean daily outdoor temperature is less than forty-five degrees Fahrenheit (45°F), the temperature of the concrete shall be maintained between fifty degrees Fahrenheit (50°F) and seventy degrees Fahrenheit (70°F) for the required curing period of Section 12.0.B. When necessary, arrangements for heating, covering, insulating, or housing the concrete work shall be made in advance of placement and shall be adequate to maintain the required temperature without injury due to concentration of heat. Combustion heaters shall not be used during the first twenty-four (24) hours unless precautions are taken to prevent exposure of the concrete to exhausted gases which contain carbon dioxide.
2. Hot Weather: When necessary, provisions for windbreaks, shading, fog spraying, sprinkling, ponding, or wet covering with a light-colored material shall be made in advance of placement, and such protective measure shall be taken as quickly as concrete hardening and finishing operations will allow.
3. Rate of Temperature Change: Changes in temperature of the air immediately adjacent to the concrete during and immediately following the curing period shall be kept as uniform as possible shall not exceed five degrees Fahrenheit (5°F) in any one (1) hour or fifty degrees Fahrenheit (50°F) in any twenty-four (24) hour period.

3.09 REPAIR OF SURFACE DEFECTS

- A. *General:* Surface defects, including tie holes, unless otherwise specified by the Contract Documents, shall be repaired immediately after form removal.
- B. *Repair of Defective Areas:* All honeycombed and other defective concrete shall be removed down to sound concrete. If chipping is necessary, the edges shall be perpendicular to the surface or slightly undercut. No feather edges will be permitted. The area to be patched and an area at least six inches (6") wide surrounding it shall be dampened to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately one (1) part cement to one (1) part fine sand passing a No. 30 mesh sieve, mixed to the consistency of thick cream, and then well brushed into the surface.
- C. *Proprietary Materials:* With ENGINEER'S approval, proprietary compounds for adhesion or as patching ingredients may be used in lieu of or in addition to the foregoing patching procedures. Such compounds shall be used in accordance with the manufacturer's recommendations.

3.10 FINISHING OF FORMED SURFACES

- A. *General:* After removal of forms, the surfaces of concrete shall be given one or more of the finishes specified below in locations designated by the Drawings, ENGINEER, or his/her representative.
- B. *As-Cast Finishes:*
 1. No selected form facing materials shall be specified for rough form finish surfaces. Tie holes and defects shall be patched. Fins exceeding one-quarter inch (1/4") in height shall be chipped off or rubbed off. Otherwise, surfaces shall be left with the texture imparted by the forms.
 2. Forms incorporating a smooth form facing material shall produce a smooth, hard, uniform texture on the concrete. It may be plywood, tempered concrete-form-grade hardboard, metal, plastic, or other approved material capable of producing the desired finish. The arrangement of the facing material shall be orderly and symmetrical, with the number of seams kept to the practical minimum. It shall be supported by studs or other backing capable of preventing excessive

deflection. Materials with raised grain, torn surfaces, worn edges, patches, dents, or other defects which will impair the texture of the concrete surface shall not be used. Tie holes and defects shall be patched. All fins shall be completely removed.

- C. *Rubbed Finishes*: Smooth rubbed finish shall be produced on newly hardened concrete no later than the day following form removal. Surfaces shall be wetted and rubbed with carborundum brick or other abrasive until uniform color and texture are provided. No cement grout shall be used other than the cement past drawn from the concrete itself by the rubbing process.
- D. *Unspecified Finish*: If the finish is not designated on the Drawings, then the concrete finish for surfaces not exposed to public view shall be the rough form finish and for concrete exposed to public view shall be a smooth form smooth rubbed finish.

3.11 CONSTRUCTION JOINTS

A. *Vertical Construction Joints*:

- 1. No vertical construction joints shall be allowed in any other structures unless submitted and approved in writing by ENGINEER.
- 2. Details and locations as proposed by CONTRACTOR, to meet his/her construction techniques, must be submitted in a Shop Drawing for approval by ENGINEER.

B. *Horizontal Construction Joints*: Horizontal construction joints shall be as shown on the Drawings or as directed by ENGINEER.

C. *Structural Slabs*: Location of joints shall be submitted and approved by ENGINEER.

3.12 GROUTS AND ADHESIVES

Where non-shrink grout is indicated on the Drawings for plugging holes in concrete and filling concrete pipe sleeves and block outs, CONTRACTOR shall provide high strength, non-shrink, non-metallic, grout with compressive strength not less than five-thousand (5,000) psi at three (3) days and eight-thousand (8,000) psi at twenty-eight (28) days. Furnish products as manufactured by Five Star Products, Burke Company, or approved equal.

END OF SECTION

099500 PAINTS AND COATINGS

PART 1 GENERAL

1.01 SCOPE

This section includes preparing surfaces, providing adequate conditions for proper workmanship, and furnishing and applying the protective coating materials required for metallic and plastic surfaces.

1.02 REFERENCES

- A. ANSI A13.1 - Color Schedule.
- B. ANSI/AWWA C213 - Fusion-bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines.
- C. Federal Specification TT-P-28 - Paint, Aluminum, Heat Resisting (1200 °F).
- D. Federal Standard 595A - Federal Standard Colors.
- E. Military Specification DOD-P-23236 - Paint Coating Systems, Steel Ship Tank, Fuel and Salt Water Ballast, Class 2.
- F. NACE Standard TM-01-70 - Visual Standard for Surfaces of New Steel Airblast Cleaned with Sand Abrasive.
- G. NSF Standard 61 - Drinking Water System Components - Health Effects.
- H. SSPC-PA1 - Paint Application Specification No. 1.
- I. SSPC-PA2 - Paint Application Specification No. 2.
- J. SSPC- Paint 16 - Coal Tar Epoxy-Polyamide Black (or Dark Red) Paint.
- K. SSPC-SP1 - Solvent Cleaning.
- L. SSPC-SP2 - Hand Tool Cleaning.
- M. SSPC-SP3 - Power Tool Cleaning.
- N. SSPC-SP5 - White Metal Blast Cleaning.
- O. SSPC-SP6 - Commercial Blast Cleaning.
- P. SSPC-SP7 - Brush-off Blast Cleaning.
- Q. SSPC-SP10 - Near-white Blast Cleaning.

1.03 DEFINITIONS

- A. Paint, coatings, or finishes as used in this Section include surface treatments, emulsions, enamels, paints, epoxy resins, and other protective coatings, with the exceptions of galvanizing or anodizing, whether used as a pretreatment, primer, intermediate coat, or finish coat.
- B. DFT means minimum dry film thickness.

1.04 PERFORMANCE REQUIREMENTS

See the Drawings and other Specifications to determine how coatings under this Section will be applied. Paint or coat new and modified surfaces in conformance with this Section.

1.05 QUALIFICATIONS

- A. Where protective coatings are to be applied by a subcontractor, employ a subcontractor who possesses a valid state license as required for performance of painting and coating work called for in this Specification.
- B. In accordance with SECTION 004513 - Bidder's Qualifications, submit at least five (5) references showing that the painting subcontractor has previous successful experience with the indicated or comparable coating systems. Include the name, address, and the telephone number for the owner of each installation for which the painting subcontractor provided the protective coating.

PART 2 PRODUCTS

2.01 MANUFACTURERS

Each of the following manufacturers is capable of supplying many of the specified coating materials. Where manufacturers and paint numbers are listed, it is to show the type and quality of coatings that are required. Proposed substitute materials will be considered as indicated under paragraph 2.02.E

Ameron
Acro Protective Coatings
Tnemec Company

Inorganic Coatings, Inc.
Carboline Coatings Company
Valspar Corporation

2.02 MATERIALS

- A. *Suitability*: Use suitable coating materials as recommended by the manufacturer.
- B. *History*: Provide coating materials that have a record of satisfactory performance in industrial plants, manufacturing facilities, and water and wastewater plants.
- C. *Compatibility*: Use only compatible materials from a single manufacturer. Give particular attention to compatibility of primers and finish coats. If necessary, apply a barrier coat or tie coat between existing prime coat and subsequent field coats to ensure compatibility.
- D. *Colors*: Use colors and shades of colors of all coats of paint as indicated on the coating schedules or selected by the OWNER's Representative. Make each coat of a slightly different shade to facilitate inspection of surface coverage of each coat. The OWNER's Representative will select finish colors from the manufacturer's standard color samples.
- E. *Substitute or Approved Equal Products*: Suitability for substitution or approved equal products shall be solely determined by the ENGINEER. To establish equality, furnish satisfactory documentation from the manufacturer of the proposed substitute product that the material meets the indicated requirements and is equivalent or better in the following properties:
 - 1. Resistance to abrasion and physical damage.
 - 2. Resistance to chemical attack.
 - 3. Life expectancy.
 - 4. Ability to recoat in future.

5. Solids content by volume.
 6. Dry film thickness per coat.
 7. Compatibility with other coatings.
 8. Suitability for the intended service.
 9. Temperature limitations in service and during application.
 10. Type and quality of recommended undercoats and topcoats.
 11. Ease of application.
 12. Ease of repairing damaged areas.
 13. Stability of colors.
 14. Local representative and his or her history of service to accounts.
- F. *Substitutions:* For substitutions submit protective coating materials which are standard products produced by the above listed manufacturers who are regularly engaged in production of such materials for essentially identical service conditions in the Houston area that have been in place for at least ten (10) years. Provide ENGINEER with the names of not less than ten (10) successful applications of the proposed manufacturer's products that comply with these requirements.
- G. *Blasting Media:*
1. Abrasive material used in blasting operations shall be ninety-nine percent (99%) Silica Free "Black Beauty" or approved equal.
 2. Mesh or size of material shall be adequate to achieve the required surface profile necessary for a proper coating bond.

2.03 INDUSTRIAL COATING SYSTEMS

A. System 1 - Aliphatic Polyurethane:

1. Prime coat: Rust inhibitive two-component epoxy coating with a minimum solids content of sixty-eight percent (68%) by volume.
 - a. DFT = 4 mils
 - b. Products: Ameron 385, Carboline 893, Tnemec 69, or equal.
2. Finish coats (one or more): Two-component aliphatic acrylic polyurethane coating, providing superior color and gloss retention, resistance to splash from acid and alkaline chemicals, resistance to chemical fumes and severe weathering and with a minimum solids content of fifty-eight percent (58%) by volume.
 - a. DFT = 3 mils
 - b. Products: Ameron Amerishield, Carboline 134 HS, Tnemec 74, or equal.
3. Total system DFT = 7 mils.
4. Apply more than one finish coat as necessary to produce a finish with uniform color and texture.

B. System 2 - Inorganic Zinc/Polyurethane:

1. Prime coat: Inorganic zinc primer that is water or solvent-based, self-curing, zinc silicate two-component inorganic coating containing at least eighty-five percent (85%) metallic zinc by weight in the dried film and is recommended by the coating manufacturer as a primer for this system.
 - a. DFT = 3 mils
 - b. Products: Ameron Dimetecote 21-5 or 21-9, Inorganic Coatings 531, Valspar 13-F-6, or equal.
 2. Intermediate coat: High-build, two-component epoxy with a solids content of at least seventy percent (70%) by volume.
 - a. DFT = 4 mils
 - b. Products: Ameron 385, Inorganic Coatings P24, Valspar 76, or equal.
 3. Finish coats (one or more): Two-component aliphatic acrylic or polyester polyurethane coating material that provides superior color and gloss retention, resistance to chemical fumes and severe weathering, and a minimum solids content of fifty-eight percent (58%) by volume.
 - a. DFT = 3 mils
 - b. Products: Ameron Amerishield, Inorganic Coatings 64, Valspar 54, or equal.
 4. Total system DFT = 10 mils.
 5. Apply intermediate coat in excess of 4 mils DFT or in more than one coat as necessary to completely cover the inorganic zinc primer and prevent application bubbling of the polyurethane finish coat.
 6. Apply more than one finish coat as necessary to produce a finish with uniform color and texture.
 7. If inorganic zinc primer is used as a pre-construction or shop-applied primer, and there are damaged or uncoated areas, spot blast the damaged area with abrasive and then coat with the specified material.
- C. System 3 - Inorganic Zinc, Water-Based:
1. Prime coat and finish coat (one): Water-based, self-curing, zinc silicate coating with a 2-component inorganic coating material that contains at least 85 percent of metallic zinc by weight in the dried film.
 - a. DFT = 3 mils
 - b. Products: Ameron Dimetecote 21-5, Inorganic Coatings 531, Valspar 13-F-6, or equal.
 2. Total system DFT = 3 mils.
- D. System 4 - Acrylic Latex:
1. Prime coat: Apply a prime coat as recommended by manufacturer.
 - a. DFT = 2 mils
 - b. Products: As recommended by manufacturer.
 2. Finish coats (2 or more): Single-component, water-based acrylic latex with a fungicide additive having a minimum solids content of thirty-five percent (35%) by volume.
 - a. DFT = 6 mils
 - b. Products: Ameron 220, Carboline 3300, Tnemec 6, or equal.
 3. Total system DFT = 8 mils.

4. Select coating material that is available in the ANSI safety colors.
- E. System 5 - Epoxy, Equipment: Two-component, rust-inhibitive, polyamide-cured epoxy coating material with a re-coatable finish that is available in a wide selection of colors. Minimum solids content of sixty-six percent (66%) by volume. Resistant to service conditions of condensing moisture, splash and spillage of lubricating oils, and frequent wash-down and cleaning.
1. Prime coat:
 - a. DFT = 3 mils
 - b. Products: Ameron 38P, Tnemec 69, or equal.
 2. Prime coat (where shop applied):
 - a. DFT = 3 mils
 - b. Products: Universal primer, Ameron 185 HS, Tnemec 50-330 or 161, or equal.
 3. Finish coats (2 or more):
 - a. DFT = 6 mils
 - b. Products: Ameron 385, Tnemec 69, or equal.
 4. Total system DFT = 9 mils.
- F. System 6 - Aliphatic Polyurethane, Fiberglass
1. Prime coat (tie coat): Use a primer, tie coat, or mist coat recommended by the manufacturer.
 - a. Products: Ameron 385P, Tnemec P66, or equal.
 2. Finish coats (2 or more): Two-component, aliphatic polyurethane coating material with superior color and gloss retention, resistance to splash from acid and alkaline chemicals, and resistance to chemical fumes and severe weathering.
 - a. DFT = 3 mils
 - b. Products: Ameron Amerishield, Tnemec 74, or equal.
- G. System 8 - Aluminum Metal Isolation: One coat of a high-build polyamide epoxy paint.
1. Products: Tnemec P66, or equal
 2. Total system DFT = 8 mils.
- H. System 9 - Aluminum Silicone Resin:
1. Prime coat and finish coat (2 or more): Aluminum silicone resin material suitable for a service temperature of up to one thousand degrees Fahrenheit (1000°F). Complies with Federal Specification TT-P-28.
 - a. DFT = 3 mils
 - b. Products: Tnemec Series 39-1061, Ameron 878, or equal.
 2. Total system DFT = 3 mils.

2.04 SUBMERGED AND SEWER SERVICE COATING SYSTEMS

A. System 100 - Amine-Cured Epoxy:

1. Prime coat and finish coats (3 or more): High-build, amine-cured, epoxy resin with a solids content of at least eighty percent (80%) by volume. Suitable for long-term immersion service in potable water and municipal wastewater
 - a. DFT = 16 mils
 - b. Products: Ameron 39, Tnemec 140, or equal.
2. For coating of valves and non-submerged equipment, DFT = 12 mils.
3. For potable water service, select a coating material listed by the NSF International as in compliance with NSF Standard 61.

B. System 101 - Polyamide Cured Epoxy:

1. Prime coat and finish coats (3 or more): High-build, polyamide epoxy resin with a solids content of at least fifty-six percent (56%) by volume. Suitable for long-term immersion in potable water and municipal wastewater.
 - a. DFT = 12 mils
 - b. Products: Tnemec 20, Valspar 32PWR, or equal.
2. For potable water service, select a coating material listed by the NSF International as in compliance with NSF Standard 61.

C. System 102 - Coal Tar Epoxy:

1. Prime coat: Prime coats are for use as a shop primer only. Omit prime coat when both surface preparation and coating are performed in the field.
 - a. DFT = 1.5 mils
 - b. Products: Ameron 83HS, Tnemec P66, or equal.
2. Finish coats (2 or more): High-build 2-component amine or polyamide-cured coal tar epoxy with a solids content of at least sixty-eight percent (68%) by volume. Suitable for long-term immersion in wastewater and for coating of buried surfaces.
 - a. DFT = 16 mils
 - b. Products: Ameron 78 HB, Tnemec 46 H-413, or equal.
3. Total system DFT = 17.5 mils.
4. Conforming to Mil Spec DOD-P-23236, or to SSPC Paint 16.

D. System 103 - Fusion Bonded Epoxy: One hundred percent (100%) powder epoxy applied in accordance with the latest revision of AWWA C213, except that surface preparation shall be as specified in the coating system schedule of this Section. Apply the coating using the fluidized bed process.

1. Liquid Epoxy: For field repairs, use a liquid epoxy applied in not less than three (3) coats to provide a DFT of fifteen (15) mils. Use a liquid epoxy that is One hundred percent (100%) solids epoxy as recommended by the powder epoxy manufacturer.

- a. Coating:
 - i. DFT = 16 mils
 - ii. Products: Scotchkote 134 or 206N, or equal.
 - b. Total system DFT = 16 mils.
2. For coating of valves, DFT = 12 mils.

PART 3 EXECUTION

3.01 SUBMITTALS

Make submittals in accordance with SECTION 013300 - Submittal Procedures and in accordance with SECTION 013323 - Product Data, Shop Drawings and Samples.

A. Product Data - Submit the following information at least thirty (30) days prior to protective coating work:

- 1. Submit eight (8) copies of a coating materials list naming the manufacturer and the coating number, keyed to the coating systems described in this Section. Submit the list prior to or at the time of sample submittal.
- 2. Paint Manufacturer's Information - For each coating system to be used, submit the following data:
 - a. Paint manufacturer's data sheet for each product proposed, including statements on the suitability of the material for the intended use.
 - b. Technical and performance information that demonstrates compliance with the system performance and material requirements.
 - c. Paint manufacturer's instructions and recommendations on surface preparation and application.
 - d. Colors available for each product, where applicable.
 - e. Compatibility of shop and field applied coatings, where applicable.
 - f. Material Safety Data Sheet for each product used.

B. Samples - Submit the following information at least thirty (30) days prior to protective coating work:

- 1. Submit color samples of paint, finishes, and other coating materials on 8-1/2-inch by 11-inch sheet metal or heavy cardstock. Have each sheet completely coated over its entire surface with one protective coating material, type, and color.
- 2. Provide two sets of color samples to match each color selected by the OWNER's Representative from the manufacturer's standard color sheets. If custom-mixed colors are indicated, prepare color samples using color formulations prepared to match the color samples furnished by the OWNER's Representative.
- 3. Submit one fifteen pound (15lb) sample of each abrasive proposed to be used for surface preparation for submerged and severe service coating systems.

3.02 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: Supply coating materials in sealed containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, and name of manufacturer, all plainly legible at the time of use.
- B. Storage and Protection: Store coating materials under conditions recommended by the Material Safety Data Sheets. Keep coating materials thoroughly stirred, strained, and with uniform consistency during application. Do not mix coatings of different manufacturers.

3.03 ENVIRONMENTAL REQUIREMENTS

- A. Ventilate area where coating is being applied. Post and enforce “NO SMOKING OR OPEN FLAME” signs until coating has cured.
- B. Provide lighting level of eighty foot (80') candles (860 lx) measured mid-height at substrate surface.
- C. Restrict worker access and construction traffic from areas where coatings are being applied or cured.
- D. Do not apply coatings under the following conditions:
 - 1. Temperature outside of the manufacturer’s recommended minimum and maximum range.
 - 2. Dust or smoke laden atmosphere.
 - 3. When the substrate or air temperature is less than five degrees Fahrenheit (5°F) above dew point.
 - 4. When air temperature is expected to drop below forty degrees Fahrenheit (40°F) or less than five degrees Fahrenheit (5°F) above the dew point within eight (8) hours after application of coating.
 - 5. When wind conditions are not calm.
- E. Determine the dew point by use of a sling psychrometer in conjunction with U. S. Department of Commerce, Weather Bureau psychrometric tables.

3.04 SHOP QUALITY CONTROL

- A. Advance Notice: Provide ENGINEER a minimum of 48 Hours advance notice of the start of any surface preparation work. See SECTION 013229 - Periodic Work Observation.
- B. Perform surface preparation and coating applications in the presence of the OWNER’s Field Project Representative, unless the OWNER’s Field Project Representative has granted prior approval to perform such work in his absence.

3.05 PREPARATION

- A. Cleaning and Touch-up: Clean surfaces to receive protective coatings. Examine cleaned surfaces to be coated. Correct surface defects before application of any coating material. Touch up marred or abraded spots on shop-primed and on factory-finished surfaces prior to coating application. Verify that surfaces to be coated are dry and free of visible dust.
- B. Do not apply protective coatings to the following surfaces unless specifically named or shown to be coated:
 - 1. Concrete.
 - 2. Stainless steel, bronze, or brass.
 - 3. Machined surfaces.
 - 4. Grease fittings.
 - 5. Glass.
 - 6. Equipment nameplates.

7. Platform gratings, stair treads, door thresholds, and other walk surfaces.
8. Galvanized steel electrical conduit and associated galvanized and factory-coated junction boxes and electrical panels.
9. Galvanized surfaces inside buildings and not exposed to view.
10. Manhole and valve cover and rings, storm water inlet gratings, covers, and frames.

C. Protection

1. Protection of Adjacent Property: The CONTRACTOR shall be responsible for protecting the adjacent homesites and property during all protective coating operations
2. Protection of Surfaces Not to be Coated: Protect surfaces that are not to receive protective coatings during surface preparation, cleaning, and coating operations.
3. Remove, mask, or otherwise protect hardware, lighting fixtures, switch plates, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces to be painted. Provide drop cloths to prevent coating materials from falling on or marring adjacent surfaces. Protect the working parts of mechanical and electrical equipment from damage during surface preparation and coating operations. Mask openings in motors to prevent entry of coating or other materials.
4. Do not damage adjacent work during blast cleaning operations. Conduct spray painting under carefully controlled conditions. Promptly repair any damage to adjacent work or adjoining property occurring from blast cleaning or coating operations.

- D. Protection of Painted Surfaces: Coordinate cleaning and coating so that dust and other contaminants from the cleaning process will not fall on wet, newly-coated surfaces.

3.06 MIXING AND THINNING OF MATERIALS

- A. Manufacturer's Recommendations: Unless otherwise indicated, strictly comply with the coating manufacturer's printed recommendations and instructions for thinning, mixing, handling, applying, and protecting its coating materials, for preparation of surfaces for coating, and for all other procedures relative to coating.
- B. Use protective coating materials within the manufacturer's recommended shelf life.

3.07 SURFACE PREPARATION

- A. Surface Preparation Standards: The following referenced surface preparation standards of the Steel Structures Painting Council form a part of this Specification:
1. Solvent Cleaning (SSPC-SP1): Removal of oil, grease, soil, salts, and other soluble contaminants by cleaning with solvent, vapor, alkali, emulsion, or steam.
 2. Hand Tool Cleaning (SSPC-SP2): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by hand chipping, scraping, sanding, and wire brushing.
 3. Power Tool Cleaning (SSPC-SP3): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by power tool chipping, descaling, sanding, wire brushing, and grinding.
 4. White Metal Blast Cleaning (SSPC-SP5): Removal of visible rust, oil, grease, soil, dust, mill scale, paint, oxides, corrosion products, and foreign matter by blast cleaning.

5. Commercial Blast Cleaning (SSPC-SP6): Removal of visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining is limited to no more than 33 percent of each square inch of surface area.
 6. Brush-off Blast Cleaning (SSPC-SP7): Removal of all visible oil, grease, soil, dust, loose mill scale, loose rust, and loose paint.
 7. Near-white Blast Cleaning (SSPC-SP10): Removal of visible oil, grease, soil, dust mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining is limited to no more than 5 percent of each square inch of surface area.
- B. Ferrous Metal Surface Preparation (Un-galvanized)
1. Provide SSPC-SP5 - White Metal Blast Cleaning surface preparation. Where there is a conflict between these specifications and the coating manufacturer's printed recommendations for the intended service, the higher degree of cleaning applies.
 2. Perform metal surface preparation in conformance with the current SSPC Standards and this Section. Blast-clean surfaces shall match standard samples in NACE Standard TM-01-70.
 3. Remove oil, grease, welding fluxes, and other surface contaminants prior to blast cleaning using solvent cleaning in SSPC-SP1.
 4. Round or chamfer sharp edges and grind smooth burrs, surface defects and welded splatter prior to blast cleaning.
 5. Select the type and size of abrasive to produce a surface profile that meets the coating manufacturer's recommendation for the particular coating and service conditions. As abrasives for submerged and severe service coating systems use clean, hard, sharp-cutting crushed slag. Do not use automated blasting systems for surfaces that will be in submerged service. Do not use metal shot or grit for surfaces that will be in submerged service, even if subsequent abrasive blasting is planned with hard, sharp-cutting crushed slag.
 6. Do not reuse abrasive except when an automated blasting system is used for surfaces that will be in non-submerged service. For automated blasting systems, use clean, oil-free abrasives. Use at least fifty percent (50%) grit in the abrasive mix.
 7. Comply with the applicable federal, state, and local air pollution control regulations for blast cleaning.
 8. For air-blast cleaning supply compressed air at adequate pressure from well-maintained compressors equipped with oil and moisture separators which remove at least ninety-five percent (95%) of the contaminants.
 9. Clean surfaces of dust and residual particles of the cleaning operation using dry air-blast cleaning, vacuuming, or another approved method prior to painting.
 10. In enclosed areas and other areas where dust may settle, vacuum the surface clean and wipe it with a tack cloth.
 11. Remove damaged or defective coating by the specified blast cleaning to meet the clean surface requirements before re-coating.
 12. If the specified abrasive blast cleaning will damage adjacent work, the area to be cleaned is less than one-hundred square feet (100sqf), and the coated surface will not be submerged in service, then SSPC-SP2 - Hand Tool Cleaning or SSPC-SP3 - Power Tool Cleaning, may be used.

13. Completely remove shop-applied coatings of unknown composition before the specified coatings are applied. Examine valves, castings, ductile or cast iron pipe, and fabricated pipe or equipment for the presence of shop-applied temporary coatings. Completely remove temporary coatings by solvent cleaning per SSPC-SP1 before starting abrasive blast cleaning.

C. Surface Preparation of Ferrous Surfaces with Existing Field Applied Coatings

1. Preparatory Cleaning: Remove grease, oil, heavy chalk, dirt, or other contaminants by solvent or detergent cleaning prior to abrasive blast cleaning. Determine the generic type of the existing coatings by laboratory testing.
2. Abrasive Blast Cleaning: Remove deteriorated coatings by abrasive blast cleaning to SSPC-SP6 - Commercial Blast Cleaning. Clean areas of tightly adhering coatings to SSPC-SP7 - Brush-off Blast Cleaning, with the remaining thickness of existing coating not to exceed three (3) mils.
3. Incompatible Coatings: If coatings to be applied are not compatible with existing coatings, apply intermediate coatings conforming to the paint manufacturer's recommendation for the indicated coating system or completely remove the existing coating prior to abrasive blast cleaning. Make a small trial application for compatibility prior to painting large areas.
4. Unknown Coatings: Completely remove coatings of unknown composition prior to application of new coatings.
5. Water-abrasive or Wet-abrasive Blast Cleaning: Where specified or where job site conditions do not permit dry-abrasive blasting for industrial coating systems due to dust or air pollution considerations, water-abrasive blasting or wet-abrasive blasting may be used. In both methods, use paint-compatible corrosion inhibitors. Begin the coating application as soon as surfaces are dry. Perform water-abrasive blasting using high-pressure water with sand injection. In both methods, use equipment that is commercially-produced with a successful service record. Do not use wet-blasting methods for submerged and severe-service coating systems, unless specified.

D. Plastic, Fiberglass, And Nonferrous Metals Surface Preparation

1. Aluminum and Galvanized Metal: Clean in accordance with SSPC-SP1 Solvent Cleaning, then use a pretreatment primer such as a vinyl butyral wash primer or prepare in accordance with SSPC-SP7, Brush-Off Blast Cleaning.
2. Bronze, Fiberglass, and PVC: Clean in accordance with SSPC-SP1 Solvent Cleaning, then hand sand using a medium abrasive sandpaper.
3. Brass: Remove oxidation using a hub-type abrasive wire wheel., then clean in accordance with SSPC-SP1 Solvent Cleaning.
4. Stainless Steel: Prepare in accordance with SSPC-SP7, Brush-Off Blast Cleaning.

3.08 COATINGS FOR EQUIPMENT

- A. Unless otherwise indicated, equipment, or parts of equipment which are not submerged in service, shall be shop-primed and then finish-coated in the field after installation. For methods, materials, application equipment, and other details of shop painting, comply with this Section. If the shop primer requires top coating within a specified period of time, apply the finish coat in the shop and then touch-up the paint after installation.

- B. Perform surface preparation and coating work in the field for equipment, or parts and surfaces of equipment which are submerged or inside an enclosed hydraulic structure when in service, with the exception of pumps and valves.
- C. For certain pieces of equipment, it may be undesirable or impractical to apply finish coatings in the field. Such equipment may include engine generator sets, equipment such as electrical control panels, switchgear or main control boards, submerged parts of pumps, ferrous metal passages in valves, or other items where it is not possible to obtain the required quality in the field. For such equipment prime and finish-coat it in the shop and touch it up in the field after installation. Use the identical material for touch up that was used for shop painting. Require the manufacturer of each such piece of equipment to certify as part of its shop drawings that the surface preparation is in accordance with these specifications. Submit the coating material data sheet with the shop drawings for the equipment.
- D. For certain small pieces of equipment, the manufacturer may have a standard coating system that is suitable for the intended service conditions. In such cases, the final determination of suitability will be made during review of the shop drawing submittals. Equipment of this type generally includes only indoor equipment such as instruments, small compressors, and chemical metering pumps.
- E. Protect shop-painted surfaces during shipment and handling. Protect surfaces with padding or blocking. Lift equipment with canvas or nylon slings. Do not expose primed surfaces to the weather for more than two (2) months before being top coated or less time if recommended by the coating manufacturer.
- F. Repair damage to shop-applied coatings in accordance with this Section and the coating manufacturer's printed instructions.
- G. Make certain that the shop primers and field topcoats are compatible and meet the requirements of this Section. Submit copies of applicable coating manufacturer's data sheets with equipment shop drawings.

3.09 APPLICATION

- A. Use skilled craftsmen and experienced supervision.
- B. Coating system schedules summarize surfaces to be coated, required surface preparation, and coating systems to be applied. Coating notes on Drawings are used to show exceptions to schedules, to show or extend limits of coating systems, or to clarify or show details for application of coating systems.
- C. Apply protective coatings to produce an even film of uniform thickness.
- D. Apply protective coatings in accordance with the manufacturer's instructions and this Section, whichever has the most stringent requirements.
- E. Apply protective coatings to steel substrates in accordance with SSPC-PA1 - Paint Application Specification No. 1.
- F. Apply finish coats after concrete, masonry, and equipment installation is complete and the work areas are clean and dust free. Finished surfaces shall be free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish.
- G. Give special attention to edges, angles, weld seams, flanges, nuts and bolts, and other places where insufficient film thicknesses are likely to occur. Use stripe painting to ensure that these areas receive a film thickness equivalent to adjacent areas.
- H. Give special attention to materials that will be joined so closely that proper surface preparation and application are not possible. Coat such contact surfaces prior to assembly or installation.

- I. Inspect cleaned surfaces and each coat prior to succeeding coats. Schedule inspections with the OWNER's Representative in advance. If surfaces are damaged, clean, repair, and refinish to original condition.
- J. Coat blast-cleaned ferrous metal surfaces before rusting or other deterioration of the surface occurs. Limit blast cleaning to only those surfaces that can be coated in the same working day.

3.10 CURING OF COATINGS

- A. Maintain curing conditions in accordance with the recommendations of the coating material manufacturer and this Section, whichever is the most stringent. Complete curing before placing the coating systems into service.
- B. In the case of enclosed areas, forced air ventilation using heated air if necessary, may be required until the coatings have fully cured.
- C. Forced Air Ventilation of Enclosed Hydraulic Structures: Forced air ventilation is required for the application and curing of coatings on the interior surfaces of enclosed hydraulic structures. During application and curing periods, continuously exhaust air from the lowest level of the structure using portable ducting. After interior coating operations have been completed, provide a final curing period for a minimum of ten (10) days, operating the forced air ventilation system continuously.

3.11 FIELD QUALITY CONTROL

- A. Advance Notice: Provide the OWNER's Representative a minimum of three (3) days advance notice of the start of any field surface preparation work or coating application work.
- B. Perform surface preparation and coating applications in the presence of the OWNER's Representative unless the OWNER's Representative has granted prior approval to perform such Work in his absence.
- C. Erect and move scaffolding where requested by the OWNER's Representative to facilitate inspection. Provide additional illumination to light areas to be inspected.
- D. Inspection Devices: Until final acceptance of coatings, furnish inspection devices in good working condition for the detection of holidays and measurement of dry-film thicknesses of protective coatings. Provide the services of a trained holiday detector operator until the final acceptance of the protective coatings. Operate holiday detector in the presence of the OWNER's Representative.
 - 1. Holiday Detection Testing - Perform holiday detection tests on coated ferrous surfaces that will be:
 - a. submerged in water or other liquids, or
 - b. surfaces which are enclosed in a vapor space, or
 - c. surfaces coated with any of the submerged and severe service coating systems.
 - 2. Test Procedures
 - a. For surfaces having a total dry-film coating thickness exceeding twenty (20) mils; use a pulse-type holiday detector such as Tinker & Rasor Model AP-W, D.E. Stearns Co. Model 14/20, or equal. Adjust the unit to operate at the voltage required to cause a spark jump across an air gap equal to twice the specified coating thickness.
 - b. For surfaces having a total dry-film coating thickness of twenty (20) mils or less, use Tinker & Rasor Model M1 non-destructive type holiday detector, K-D Bird Dog, or equal. Use a unit that operates at less than 75-volts. For thicknesses between ten (10) and (20) mils, add a non-sudsing-type wetting agent, such as Kodak Photo-Flo, or equal, to the water prior to wetting the detector sponge.

3. Mark and repair or recoat areas that contain holidays in accordance with the coating manufacturer's printed instructions and then retest.
4. Film Thickness Testing:
 - a. Ferrous Metals: Measure the dry-film coating thickness in accordance with the SSPC Paint Application Specification No. 2 using a magnetic-type dry-film thickness gauge such as Mikrotest Model FM, Elcometer Model 111/1EZ, or equal. Test each coat for the correct thickness. Do not take measurements until at least 8 hours after coating application.
 - b. Non-ferrous Metals and Other Substrates: Measure the coating thickness at the time of application using a wet-film gauge.
 - c. Surface Profile and Surface Preparation:
 - d. A surface profile of 1.5 mil minimum to 2.5 mils maximum will be strictly verified by either or both the "Keane-Tator Surface Profile Comparator" or the "Testex Press-O-Film".
 - e. Compliance of blast-cleaned surface preparation work will be based upon comparison of the blasted surfaces with SSPC-VIS-1 pictorial standards or NACE Visual Standards TM-01-70 or TM-01-75. These standards shall be provided by the CONTRACTOR and shall be made available at the work site.
 - f. Should discrepancies arise regarding interpretation of surface profile and/or surface preparation, the CONTRACTOR shall provide a minimum of two (12"x12") comparable (as to existing surface) steel squares to be abrasive blast cleaned to the approval of the ENGINEER. These squares shall then be wrapped in clear plastic and used as representative samples throughout the project.

E. Manufacturer's Field Services

1. The protective coating manufacturer shall furnish a qualified technical representative to visit the project site for technical support as may be necessary to resolve field problems attributable or associated with manufacturer's products.
2. For submerged and severe service coating systems, the manufacturer shall furnish the following services:
 - a. At least six (6) hours of on-site instruction on the proper surface preparation use, mixing, application, and curing of the coating systems.
 - b. Observation of the start of surface preparation, mixing, and application of the coating materials for each coating system by the manufacturer's representative.

F. Clean-up

1. Waste Materials: After final acceptance of all protective coating, CONTRACTOR shall remove all coating debris, blasting media, and other waste materials from the work site.
2. CONTRACTOR shall be responsible for proper, legal disposal of all waste materials.
3. Site Restoration: The work site shall be restored to original or better condition.

3.12 COATING SCHEDULES

A. Ferrous Metal Surfaces - Not Galvanized

SCHEDULE NO. AND APPLICATION	SURFACE PREPARATION	SYSTEM NO.	DESCRIPTION
FM-1: Surfaces indoors and outdoors, exposed or covered, except as listed below.	Near white metal blast cleaning SSPC-SP10	2	Inorganic zinc / polyurethane
FM-2: Surfaces in chlorination room, chlorine storage room, sodium hypochlorite storage room.	Commercial blast cleaning SSPC-SP6	100	Amine-cured epoxy
FM-3: Surfaces of pumps and equipment and other ferrous surfaces submerged or intermittently submerged in potable water, utility water, and wastewater, including surfaces lower than 2 feet above high-water level in hydraulic structures, and surfaces inside enclosed hydraulic structures, pump station wet wells, and vents (excluding shop-coated valves, couplings, and pumps).	White metal blast cleaning SSPC-SP5	100	Amine-cured epoxy
FM-4: Surfaces exposed to high temperature between 150 and 600° F.	Near white metal blast cleaning SSPC-SP10	3	Inorganic zinc, water-based
FM-5: Surfaces exposed to high temperature between 600 and 1000° F.	Near white metal blast cleaning SSPC-SP10	9	Aluminum silicon resin
FM-6: Where indicated, ferrous surfaces in water passages of valves 4-inch size and larger, exterior surfaces of submerged valves.	White metal blast cleaning SSPC-SP5	101	Polyamide-cured epoxy
FM-7: Where indicated, ferrous surfaces in water passages of pumps which have discharge size of 4 inches or larger; exterior, submerged surfaces of pumps.	White metal blast cleaning SSPC-SP5	100	Amine-cured epoxy
FM-8: Ferrous surfaces of sleeve-couplings.	White metal blast cleaning SSPC-SP5	103	Fusion-bonded epoxy
FM-9: Ferrous surfaces of sluice gates, flap gates, and shear gates, including wall thimbles.	White metal blast cleaning SSPC-SP5	101	Polyamide-cured epoxy
FM-10: Structural steel, miscellaneous metal work, and supports for prefabricated metal buildings or roof and fascia support systems for buildings, not exposed to view in finished building.	Commercial blast cleaning SSPC-SP6	3	Inorganic zinc, water-based
FM-12: Ferrous metal exposed to view, inside and outside of buildings.	Commercial blast cleaning SSPC-SP6	2	Inorganic zinc / polyurethane
FM-13: Surfaces of indoor equipment, not submerged.	Commercial blast cleaning SSPC-SP6	5	Epoxy, equipment
FM-14: Exterior (exposed) surfaces shop-coated with fusion-bonded epoxy.	Light sandblast to roughen surface	6	Aliphatic polyurethane, fiberglass

- B. Nonferrous Metal, Plastic, and Fiberglass: Where isolated nonferrous parts are associated with equipment or piping, use the coating system for the adjacent connected surfaces. Do not coat handrails, gratings, frames, or hatches. Use primers, pretreatment coatings, barrier coatings, or washes as recommended by the coating manufacturer.

SCHEDULE NO. AND APPLICATION	SURFACE PREPARATION	SYSTEM NO.	DESCRIPTION
NFM-1: Exposed surfaces, indoors and outdoors, except those listed below.	Solvent cleaning SSPC-SP1	1	Aliphatic polyurethane
NFM-2: Chlorination room, chlorine storage room, sodium hypochlorite storage room.	Solvent cleaning SSPC-SP1	100	Amine-cured epoxy
NFM-3: Aluminum surfaces in contact with concrete, or with any other metal except galvanized ferrous metal.	Solvent cleaning SSPC-SP1 followed by Brush-Off Blast Cleaning SSPC-SP7	8	Aluminum metal isolation
NFM-4: Polyvinyl chloride plastic piping, indoors and outdoors, or in structures, not submerged.	Solvent cleaning SSPC-SP1, Hand Sand	4	Acrylic latex
NFM-5: Fiberglass surfaces.	Solvent cleaning SSPC-SP1, Hand Sand	6	Aliphatic polyurethane fiberglass

3.13 IDENTIFICATION OF PIPING

- A. Use colors and signs to identify all piping which is exposed to view in buildings or tunnels, above suspended ceilings, or exposed above grade, and all outdoor piping.
- B. Identify each pipe by a color complying with the following schedule of colors and by applied markers.
- C. Coat pipes in the number of coats and type of material specified. Base coats for pipeline painting may be the same neutral color. Make each succeeding coat a slightly different color. For the final coat, comply with the pipe identification color schedule.

3.14 PIPE IDENTIFICATION MARKERS

- A. Identify all pipes with applied signs or markers at fifteen foot (15') centers, at both sides of penetrated walls or floors, adjacent to valves, at connected equipment, at branch fittings, and in congested pipe layouts.
- B. Apply markers consisting of signs with legends as follows:

Outside diameter of pipe or covering (inches)	Length of color field (inches)	Height of letters (inches)
3/4 to 1-1/4	8	1/2
1-1/2 to 2-3/8	8	3/4
2-1/2 to 5-7/8	12	1-1/4
6 to 7-7/8	12	1-1/4
8 to 10	24	2-1/2
Over 10	32	3-1/2

- C. As pipe markers use semi-rigid outdoor grade acrylic plastic, Seton Name Plate Corp. "SetMark," or equal. Use Type SNA for outside diameters 3/4 through 5-7/8 inches and Type STR for six inch (6") outside diameter or larger. For pipes or pipe coverings less than 3/4-inch in diameter, use applied marker or brass identification tags 1-1/2-inches square with depressed letters 1/4-inch high, black-filled. Apply tightly to pipeline with metal or plastic straps.

D. Apply pipe identification markers to exposed piping as described above, except for the following pipe at wastewater lift stations:

1. Discharge piping for wastewater pumps.
2. Vent piping.
3. Any piping inside wet wells.
4. Pipe Identification Color Schedule - For pipe coatings use the colors listed in the following pipe identification color schedule:

3.15 PIPE IDENTIFICATION COLOR SCHEDULE

Piping System	Color	Federal Std. No.
Fire Mains	Red	11105
Oxygen	Orange	12246
Sodium Hypochlorite	Yellow	13655
Raw Polymer	Pink	11156
Diluted Polymer	Purple	17142
Natural Gas	Yellow	13655
Heating Water Supply (HWS)	Pink	11158
Heating Water Return (HWR)	Pink	11158
Domestic Hot Water Supply (Dom-HWS)	Lt. Pink	11668
Domestic Hot Water Return (Dom-HWR)	Lt. Pink	11668
Potable Water	Blue	15102
Nonpotable Water	White	17875
Instrument Air	Green	14187
Plant Air	Dark. Green	14110
Raw Sewage	Gray	16473
Grit	Dark. Gray	16187
Cyclone Return	Gray	16473
Classifier Return	Gray	16473
Heavy Solids	Dark. Brown	10080
Return Sludge	Brown	10091
Waste Sludge	Yellow-Brown	10266
Scum	Lt. Brown	10334
Chilled Water Supply (CWS)	Blue-Green	14329
Chilled Water Return (CWR)	Blue-Green	14325
Condensing Water Supply (Cond-WS)	Lt. Green	14533
Condensing Water Return (Cond-WR)	Lt. Green	14533
De-ionized Water (DW)	Lt. Blue	15526
Vacuum (Vac)	White	17875
Vent	Lt. Gray	16492

- A. Use colors for the applied signs and markers in accordance with the color schedule, except for brass identification tags, which are colored as indicated in paragraph 3.08.C.
- B. Final colors shall conform to Federal Standard 595A.
- C. For pipe identification colors not listed above, follow the American National Standard (ANSI A13.1) Color Schedule:

Materials inherently hazardous, flammable, explosive, chemically active, toxic; extreme temperature or pressure; radioactive	Yellow field Black letters.
Material of inherently low hazard – Liquid or liquid admixture	Green field White letters
Material of inherently low hazard – Gas or gaseous admixture	Blue field White letters.
Fire quenching materials, water, foam, carbon dioxide, Halon, etc.	Red field White letters.

PART 4 MEASUREMENT AND PAYMENT

No separate payment will be made for Protective Coatings under this section. Include payment for Protective Coatings in unit prices for items to which coatings are applied.

END OF SECTION

311003 SITE WORK FOR UNDERGROUND UTILITIES

PART 1 GENERAL

1.01 GENERAL

Work under this Section includes the furnishing of all plant, labor, equipment, and materials, and the performance of all operations required for the proper completion of excavation, backfill, trenching, shoring, and bracing as required, dewatering of excavations as required, rough grading, compacting, and disposal of surplus earth, together with the performance of all other miscellaneous site work and earthwork operations required to complete the project as shown on the drawings and specified herein.

1.02 EXCAVATION

Trench excavation for this project may be made with any suitable excavation means which meets the following requirements:

- A. The trench is to have uniform, vertical sidewalls.
- B. The distance between trenching and sheeting operations is sufficiently small as to ensure that the sidewalls of the trench will not cave before sheeting can be applied.
- C. No cavities are created in the trench sidewalls due to trenching operations.
- D. The equipment for trenching can maintain a uniform grade on the trench floor.
- E. The trench width is uniform and conforms to the appropriate section.

If, in the opinion of the Engineer, any or all of these requirements are not met, the Contractor shall, at the direction of the Engineer, immediately remove the excavating equipment being used and replace it with another type trenching machine.

1.03 CONTROLLED EARTHEN BACKFILL

The earthen backfill for all trenches on this project shall be compacted in a maximum 8-inch (loose measure) lifts to a uniform density of at least ninety-five (95%) percent of the maximum dry density at approximately two (2%) percent of the optimum moisture (OM) content as determined by the Proctor Compaction Test (ATSM D-698). Laboratory samples will be taken at the direction of the Engineer, and any backfill not meeting this requirement will be removed and recompacted.

1.04 BANK AND SAND BACKFILL

All waterline trenches under existing, proposed and future pavement or within one (1) foot of pavement or curbs shall be backfilled with bank sand and compacted to a one (1) foot below bottom of pavement.

1.05 CEMENT STABILIZED SAND BEDDING AND BACKFILL

- A. Cement stabilized sand bedding shall be 1 ½ sack Portland Cement per ton in accordance with the City of Houston Specifications for Sewer Construction, or as modified.

- B. A representative sample of cement-stabilized sand will be obtained prior to placement and compacted into a 3-inch by 6-inch cylindrical mold in 4 layers with 14 blows per layer using the drop hammer specified by ASTM D698.
- C. Compacted samples will be wrapped in plastic and allowed to cure for 24 hours. Samples may be removed from the cylindrical mold at any time during the 24-hour period and maintained in a wrapped condition.
- D. After 48 hours the cylindrical sample will be sheared in uniaxial, unconfined compression with a controlled strain rate testing machine after ASTM D1633.
- E. A cement-stabilized sand specimen must yield a 48-hour compressive strength of 100 psi or more to be considered stabilized.
- F. All sewer trenches, including trenches for lead and stubs, under existing, proposed and future pavement or within one (1) foot of pavement or curbs shall be backfilled with 1.1 sack per ton cement stabilized sand. Cement ad stabilized backfill shall be used to one (1) foot below the top of subgrade on piping 48-inch and smaller.
- G. The remaining one (1) foot depth of trench shall be backfilled with suitable earth material in six (6) inch (measured loose) layers and compacted to a dry density at approximately two (2%) percent optimum moisture (OM) content of not less than ninety-five (95%) percent of the maximum dry density of samples of the material as determined by the Proctor Compaction Test (ASTM Designation: D-698-79).
- H. Cement stabilized sand backfill shall be used to four (4) feet below top of subgrade and controlled earthen backfill may be used from four (4) feet below subgrade to one (1) foot below the top of subgrade on piping or culverts larger than 48-inch, in lieu of cement stabilized sand.

1.06 DISPOSAL OF EXCESS AND UNSUITABLE MATERIALS

- A. Excess material from all trench excavation shall be spread evenly within designated areas.
- B. Unsuitable material shall be disposed of as directed by the Engineer.

1.07 WORK AREAS

The work areas will be restricted to street rights-of-way and easements. Areas for employees parking, concrete truck wash out, construction trailers, and material storage and soil stockpile will be designated by the Engineer.

1.08 COMPACTION CERIFICATION

All compaction shall be certified to by an accepted laboratory. Said certification shall be received by the Engineer prior to payment for the facility installed. The cost of Certification shall be borne by the Owner.

1.09 PERMITS

Contractor shall obtain and pay for all construction permits required to work within the County rights-of-way. All County requirements and/or specifications included in the said permits shall become a part of the Technical Specifications.

1.10 PAYMENT

No separate payment will be made for any work described in the above items. The cost of all work shall be included in the price for sewer/water pipe, sewer manholes, and other structures and appurtenances. Contractor shall provide Engineer with delivery tickets showing actual tons delivered.

END OF SECTION

311010 EARTHWORK

PART 1 GENERAL

1.01 SCOPE

This section covers furnishing of materials, equipment, tools, labor, superintendence, incidentals, and the performance of all operations required to complete structural excavation, preparations of structural subgrade, fill and backfill, shoring, bracing, dewatering of excavation, trenching, grading, and preparation of pavement subgrade, with grading and preparation of unpaved areas and other earthwork operations necessary to complete all construction and grading as indicated on the Drawings and specified herein.

1.02 REFERENCES

- A. SECTION 014529 - TESTING LABORATORY SERVICES
- B. SECTION 329213 - HYDRO MULCH SEEDING

PART 2 PRODUCTS

2.01 BANK SAND

Ordinary bank sand with not more than twenty five percent (25%) passing a two hundred (200) sieve and plasticity index not exceeding twelve (12), when tested by standard laboratory methods. Bank sand shall be reasonably clean, and free of clay and clay lumps, loam, shale, organic matter, rubbish, and other deleterious material, and shall meet approval of ENGINEER.

2.02 EXCAVATED MATERIAL FOR FILL OR BACKFILL

- A. Suitable materials for the fill and backfill shall consist of material approved by the ENGINEER and may be obtained from the excavation. The material used shall be free of rocks or lumps of greater dimensions than six inches (6") in the top eighteen inches (18") and shall not contain debris (paper, wood, glass, tin, metal, cardboard, concrete, bricks, tires, etc.), vegetation (roots, stumps, limbs, etc.) or any other objectionable or deleterious substance.
- B. Objectionable material that may be encountered such as silt, muck, topsoil, organic material, or other unsuitable material will be rejected.

PART 3 EXECUTION

3.01 STRIPPING

All areas to be excavated and filled are to be stripped of all vegetation, organics, and topsoil to a minimum depth of four (4) inches below natural ground.

3.02 FILL AREAS

All fill areas to be mucked and cleaned out of all wet and unsuitable soil, vegetation, organic, and deleterious material.

3.03 PROOF ROLL TESTING

All areas to be filled are to be proof-roll tested, utilizing a fully loaded scraper, a fully loaded wheeled front-end loader, a fully loaded, street legal, tandem axle dump truck or a fully loaded off-road dump truck for soil stability prior to placement of fill material (all proof-roll testing is to be witnessed by a representative from the Engineer or by a representative from the Construction Materials Testing Service Provider).

3.04 SOFT OR WEAK AREAS

All soft or weak areas are to be excavated to a depth of stable and suitable material, proof roll tested for soil stability and backfilled with suitable material, back to the original natural ground elevation (in 8-inch maximum loose lifts and compacted to ninety-five (95%) percent standard proctor density (SPD), at or two (2%) percent above optimum moisture (OM), prior to the placement, grading and compaction of any fill material.

3.05 COMPACTION

All fill material is to be placed in 8-inch maximum loose lifts and compacted to ninety-five (95%) percent standard proctor density (SPD), at or two (2%) percent above optimum moisture (OM) utilizing a minimum 6-foot wide vibratory sheep foot compactor.

3.06 COMPACTION TESTING

All fill material placed, graded, and compacted is to be tested for compaction effort and moisture content on every other lot (alternating lots), each lift, for lots fronting straight streets and every lot, each lift, for lots fronting cul-de-sac streets.

3.07 STRIPPING PLACEMENT AND GRADING

All stripping is to be placed and evenly graded on filled lots, and other filled areas, and on the side slopes, bottoms, maintenance berms, backslope swales, etc. of all borrow pits, detention basins, lakes, drainage channels, drainage swales, etc.

3.08 TURF ESTABLISHMENT

All borrow pit, detention basin, lake, drainage swales, etc. side slopes, backslopes, swales, maintenance berms, etc. are to be Dry Straw Hydro Mulch Seeded or Drill Seeded. The Contractor is to guarantee a "stand" of Bermuda grass and that complete turf establishment has been achieved.

3.09 FINAL GRADE ELEVATIONS

- A. Final grade elevations indicated in the fill areas on the spoil and/or grading plans are to the top of the final placed and graded spoil/fill material and stripping.
- B. Contractor to place, grade, and compact all spoil/fill material to the elevations or grades as indicated on the spoil/fill placement or grading plans in the approved construction drawings as a minimum. Contractor can exceed these elevations or grades by two percent (2%) of a foot without prior authorization by the Engineer. Contractor must obtain Engineer's written authorization or approval before placing and grading any spoil/fill material in excess of a two percent (2%) of a foot of the planned final grade elevation. On no occasion shall the Contractor place and grade spoil/fill material to elevations or grades below the minimum elevations or grades as indicated in the approved construction drawings unless the Contractor has received prior authorization to do so by the Engineer.

- C. The finished appearance shall be reasonably smooth and abrupt changes in slope will not be acceptable. The degree of finish for grading slopes shall be that ordinarily obtainable for either blade-grader operations, or by hand-shovel operations, as CONTRACTOR may elect, subject to the approval of ENGINEER.
- D. During construction, areas shall be maintained to prevent the ponding of water and ensure proper drainage at all times.
- E. Where existing grade is disturbed by the CONTRACTOR, in areas not marked to be graded, the CONTRACTOR shall grade disturbed area to original grade at no additional cost to the OWNER.

3.10 DE-MUCKING, SOIL STRIPPING, AND STOCKPILING

- A. Within the limits indicated, or in areas where existing grade is altered, de-muck all wet and unsuitable soil organics, vegetation, and deleterious material and stock-pile in designated areas or haul off and dispose of in a legal manner, as directed by ENGINEER. This shall include the removal of all grasses and the like and other debris.
- B. Within the limits indicated, or in areas where existing grade is altered, strip existing topsoil, organics, and vegetation to a minimum six inch (6") depth below natural ground and stock-pile in designated areas or haul off and dispose of in a legal manner, as directed by ENGINEER. This shall include the removal of all grasses and the like and other debris.
- C. All other unsatisfactory material shall be excavated, removed, and placed in designated spoil banks or shall otherwise be disposed of as directed and in such a manner as not to create an unsightly or objectionable condition.

3.11 SUBGRADE PREPARATION

- A. Ground surfaces underlying concrete pavement, compacted fill, or compacted sand fill shall be scarified to a minimum depth of eight inches (8") and shaped and compacted as specified for the layer of fill.
- B. In fill areas, the fill shall be placed in layers not exceeding eight inches (8") in depth and compacted and shaped in accordance with typical sections shown on Drawings.

3.12 STRUCTURAL EXCAVATION

- A. Excavation will be unclassified and includes removal of all materials encountered which may be deemed by ENGINEER as unsuitable for construction. Excavate to lines and grades as shown on the Drawings. Extend excavation sufficient distance from proposed structures to allow for placing and removing of forms, installation of equipment and materials, and for inspection. No excavation beyond lines indicated unless specifically authorized by ENGINEER.
- B. Clean foundation materials of loose material to form firm lines and grades as shown on the Drawings before foundations are placed.
- C. After completion of excavation and immediately prior to commencement of structural work, allow inspection by ENGINEER to ensure that structural excavation is suitable, adequate, and properly prepared as foundation for all structures.
- D. Protect excavation from rainfall and surface water.
- E. Deposit all suitable excavated materials that are to be used for backfilling in storage piles convenient for re-handling and to avoid interference with other work.

3.13 TESTING LABORATORY SERVICES

- A. All fill material placed, graded, and compacted shall be certified by an independent testing laboratory. Testing shall be conducted in compliance with the applicable governing authority requirements.
- B. The ENGINEER shall receive the compaction certification prior to payment for the work completed.
- C. Refer to SECTION 014529 - TESTING LABORATORY SERVICES for additional information regarding measurement and payment, the testing laboratory, and the CONTRACTOR's responsibilities.

3.14 DISPOSAL OF EXCESS AND UNSUITABLE MATERIAL

- A. Surplus material shall be disposed of in a designated area, as directed by the ENGINEER. Disposal of the surplus material will be performed in such a manner to control and prevent the ponding of water and changes to the site drainage.
- B. Unsuitable material shall be disposed of off-site and as directed by the ENGINEER and shall become property of the CONTRACTOR.
- C. No trash or construction debris may be dumped or disposed of on-site.

3.15 SURVEYING

CONTRACTOR s to provide the ENGINEER an as-built topographical survey by a registered professional land surveyor after the completion of earthwork operations to verify site and lot grading. The survey shall provide elevations along the right-of-way centerline, every fifty feet (50') and along the center of the lots at the lot lines and middle of lot.

3.16 SITE CONDITION AND CLEANUP

CONTRACTOR shall keep the Site and structures free from accumulations of waste materials, debris, etc. caused by the Work or his/her employees. CONTRACTOR shall "police" the Site after each day's operation and remove any and all objectionable debris from the Site. Upon completion of the Project and before requesting Final Inspection, the Site and his/her Work shall be "broom-cleaned" or its equivalent.

PART 4 MEASUREMENT AND PAYMENT

4.01 PAYMENT

The CONTRACTOR is responsible for verifying all earthwork quantities, as shown on the Bid Proposal, prior to bidding the project. There will be no adjustments made to the earthwork quantities other than those required by modification of the design and subsequent revisions to the construction drawings.

4.02 MEASUREMENT

There will be no separate measurement and payment for Work performed under this Section. Cost of this Work will be included in contract price bid for the various items that require work applicable to this Section.

END OF SECTION

311100 CLEARING AND GRUBBING

PART 1 GENERAL

1.01 SCOPE

This Section consists of clearing the ground of all trees, brush, rubbish, and all other objectionable material, and of grubbing the roadway or outfall ditch right-of-way or other easements within the limits of the full width and length of the road, outfall ditch, other easements or right-of-way specified.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 RIGHTS OF WAY OR EASEMENTS

The right-of-way or easement shall be cleared of stumps, brush, logs, rubbish, trees and shrubs, except such trees and shrubs and certain areas designated by ENGINEER for preservation shall be carefully protected from abuse, marring, or damage during construction operations.

3.02 EQUIPMENT PARKING

Continual parking and/or servicing of equipment under the branches of trees designated for preservation will not be permitted.

3.03 SAVING OF TREES

Trees and shrubs designated for preservation, that must be pruned, shall be trimmed as directed by ENGINEER and all exposed cuts over two inches (2") in diameter shall be treated with an approved material.

3.04 DEPTH OF REMOVAL

- A. On areas required for roadway, channel, or utility excavation, all stumps, roots, etc. shall be removed to a depth of approximately two feet (2') below the lower elevation of the excavation.
- B. On areas required for embankment construction, all stumps, roots, etc. shall be removed to a depth of approximately two feet (2') below the existing ground surface.

3.05 HOLES, BURN PITS, ETC.

All holes, burn pits, and the like remaining after clearing and grubbing shall be backfilled and compacted to 95% of Standard Proctor Density (ASTM method D698) at a moisture content of between optimum and plus % of optimum as directed by ENGINEER and the entire area bladed to prevent ponding of water and to provide drainage; except in areas to be immediately excavated, ENGINEER may direct that the holes not be backfilled. On areas required for borrow sites and material sources, stumps, roots, etc., shall be removed to the complete extent necessary to prevent such objectionable matter becoming mixed with the material to be used in construction.

3.06 DISPOSAL OF MATERIALS

All cleared and grubbed materials shall be disposed of off-site or by on-site burning operations as directed by the Contract. CONTRACTOR shall be responsible for obtaining all necessary disposal permits. CONTRACTOR shall not bury any refuse on the property.

3.07 LIMIT OF OPERATION

- A. No clearing or grubbing shall be done outside the right-of-way/easement lines.
- B. Any clearing done outside the right-of-way limits, for any purpose, shall be done at CONTRACTOR's expense and it shall be CONTRACTOR's responsibility to negotiate and secure the permission of the property owner for such operation. CONTRACTOR shall provide sufficient evidence to OWNER that such permission has been obtained.

3.08 SCHEDULE OF CLEARING

CONTRACTOR shall schedule his clearing operations so that clearing has been completed for a distance of two-thousand feet (2000') ahead of any point where excavation is to be started. After starting excavation, CONTRACTOR shall keep a minimum of one-thousand feet (1000') of cleared right-of-way ahead of the excavation operation.

3.09 SITE DRAINAGE

- A. CONTRACTOR shall maintain adequate site drainage throughout the Contract period.
- B. Swales and the like shall be constructed to prevent ponding of water and to allow access throughout the Project. There shall be no extra pay for swale construction. Include in price bid for the respective item of Work.

3.10 REPAIR TO DAMAGED TREES

Any trees not designated to be cleared and are damaged by clearing operations shall be repaired as directed by ENGINEER. All broken limbs shall be removed by trimming and all exposed area coated with an approved material. There shall be no extra pay for tree repair.

3.11 CONSTRUCTION STAKING

ENGINEER shall place centerline stakes at two-hundred-foot (200') intervals for all areas to be cleared. CONTRACTOR shall be responsible for establishing clearing limits from these stakes. All costs associated with resetting of stakes shall be borne by CONTRACTOR. CONTRACTOR shall be responsible for preserving all stake set by ENGINEER. Include costs for CONTRACTOR staking in each respective item of Work.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT AND PAYMENT

Clearing and Grubbing will be measured and paid for at the unit price bid per acre, as designed in the Bid Proposal and shall be full compensation for furnishing all labor, materials, permits, supervision, equipment, and supplies required to complete all items of Work specified herein.

END OF SECTION

312316 EXCAVATION AND FILL

PART 1 GENERAL

1.01 SCOPE

This Section covers furnishing of materials, equipment, tools, labor, superintendence, incidentals, and the performance of all operations required to complete structural excavation, preparation of structural subgrade, fill and backfill, shoring, bracing, dewatering of excavation, trenching, grading and preparation of pavement subgrade, with grading and preparation of unpaved areas and other earthwork operations necessary to complete all construction and grading as indicated on the Drawings and specified herein.

1.02 REFERENCES (NOT USED)

PART 2 PRODUCTS

- A. Bank Sand: Ordinary bank sand with not more than twenty-five percent (25%) passing a two hundred (200) sieve and plasticity index not exceeding twelve (12), when tested by standard laboratory methods. Bank sand shall be reasonably clean, and free of clay and clay lumps, loam, shale, organic matter, rubbish, and other deleterious material, and shall meet the approval of ENGINEER.
- B. Excavated Material: Suitable materials from excavation operations may be used for fill and backfill except as otherwise specified. Objectionable material that may be encountered such as silt, muck, topsoil, organic material, or other unsuitable material will be rejected.

PART 3 EXECUTION

A. *Subgrade Preparation:*

- 1. Ground surfaces underlying concrete pavement, compacted fill, or compacted sand fill shall be scarified to a minimum depth of six (6) inches and shaped and compacted as specified for the layer of fill.
- 2. In fill areas, the fill shall be placed in layers not exceeding eight (8) inches in depth and compacted and shaped in accordance with typical sections shown on the Drawings.

B. *Structural Excavation:*

- 1. Excavation will be unclassified and includes removal of all materials encountered which may be deemed by ENGINEER as unsuitable for construction. Excavate to lines and grades as shown on the Drawings. Extend excavation sufficient distance from proposed structures to allow for placing and removing of forms, installation of equipment and materials, and for inspection. No excavation beyond lines indicated unless specifically authorized by ENGINEER.
- 2. Clean foundation materials of loose material to form firm lines and grades shown on the Drawings before foundations are placed.
- 3. After completion of excavation and immediately prior to commencement of structural work, allow inspection by ENGINEER to ensure that structural excavation is suitable, adequate, and properly prepared as foundation for all structures.
- 4. Protect excavation from rainfall and surface water.

5. Deposit all suitable excavated materials that are to be used for backfilling in storage piles convenient for re-handling and to avoid interference with other Work.

C. *Fill and Backfill:*

1. Complete all fill and backfill to lines and grades shown on Drawings or as elsewhere specified. Methods and materials used to obtain desired density are the responsibility of CONTRACTOR. Use backfill material free from vegetation, lumps, or other objectional material. Uniform density will be obtained over entire area and depth of fill or backfill.
2. Determine from ENGINEER whether design features of structures will permit proposed backfilling operations. Backfill as soon as practicable without damage to structures. Take care to prevent wedging action of backfill against structures.
3. Perform backfilling operations in presence of ENGINEER to his authorized representative unless otherwise noted.

D. *Shoring and Bracing:*

Provide shoring and bracing as required to complete the Work properly and safely as shown on the Drawings, including the erection of temporary or permanent shoring as necessary to control groundwater conditions and to preclude sliding or caving of walls, and to protect workmen. Remove shoring, bracing, and sheeting as excavations are backfilled unless determined by ENGINEER that all or part will remain in place.

E. *Dewatering:*

Use drainage ditches, pumps, and well points to control groundwater and surface water. Dewatering methods used shall be subject to approval of ENGINEER.

F. *Trenching:*

Excavate for pipe trenches by open-cut methods. Maintain vertical sides of trench when practical. Excavate trench to adequate width to provide working space and to permit thorough tamping of backfill around pipe. Grade bottom of trench to six (6) inches below bottom of pipe at flow lines shown on the Drawings to provide uniform bearing of firm soil along entire length of pipe, reshape and compact as required. Provide bell holes where required for making proper connection at joints.

G. *Concrete Pavement:*

After the subgrade has been prepared and has been accepted by ENGINEER, concrete pavement shall be constructed to the lines and grades as shown on the Drawings.

H. *Site Grading:*

Fill or excavate to elevations shown on the Drawings. Fill for site grading shall be spread and compacted in uniform layers not exceeding eight (8) inches in depth, loose measure. CONTRACTOR shall uniformly grade the entire Project Site to provide a pleasing appearance and shall shape and grade the site to conform to the proposed grade and/or sections shown on the Drawings and as directed by ENGINEER. CONTRACTOR shall grade the site to provide positive drainage away from buildings and toward streets and drainage facilities. The finished appearance shall be reasonably smooth, abrupt changes in slope will not be acceptable. The degree of finish for grading slopes shall be that ordinarily obtainable from either blade-

grader operations, or by hand-shovel operations, as CONTRACTOR may elect, subject to the approval of ENGINEER.

I. *Cement Stabilized Sand Backfill:*

1. Mixing: Use not less than 1.5 sacks of cement per ton of mixture. Use amount of water required to provide mix suitable for mechanical hand tamping. Mix in approved mixer. Stamp tickets at plant with time of loading. Material not placed within 1 ½ hours after loading or material which has obtained an initial set will be rejected and removed from the site. In computing volume from weight, use the weight of sand at one hundred two (102) pounds per cubic foot.
2. Placing: Placing material at optimum moisture content in layers not exceeding eight (8) inches loose measure. Compact with mechanical tampers.

J. *Disposal of Excess and Unsuitable Material:* Remove all excess and unsuitable material from the project site. Such material to become property of CONTRACTOR.

K. *Site Condition and Clean-Up:* CONTRACTOR shall keep the Site and structures free from accumulations of waste materials, debris, etc. caused by the work or his employees. CONTRACTOR shall "police" the Site after each day's operation and remove any and all objectionable debris from the Site. Upon completion of the Project and before requesting final inspection, the Site and CONTRACTOR's Work shall be broom-cleaned or its equivalent.

PART 4 MEASUREMENT AND PAYMENT

No separate payment shall be made for materials furnished or Work performed. Include cost of same in lump sum amount for which this Work is an integral part.

END OF SECTION

313213 CEMENT STABILIZED SAND BACKFILL

PART 1 GENERAL

This section governs furnishing the material, placement, measurement, and basis for payment of cement stabilized sand as shown on plans or as indicated in other sections of the Technical Specifications.

PART 2 PRODUCTS

Cement stabilized sand shall be in conformance with Montgomery County Standard Specifications, latest revision.

PART 3 EXECUTION

3.01 EXECUTION

A. *Delivery Tickets:*

1. CONTRACTOR shall furnish time stamped delivery tickets to the Project Representative on a daily basis as materials are delivered to the project (or upon arrival of the Project Representative on the job site for sand delivered in his absence) if so requested.
2. The stamped delivery tickets shall give the volume, on a per-cubic-yard basis, of material used for the sand and cement. Tickets without such information shall be cause for rejection of the material.

3.02 PLACEMENT

A. *General:*

1. Cement stabilized material shall be placed under structures to the depth shown on the Drawings, or up to the bottom of stabilized sub-grade or to the bottom of concrete pavement as the case may be.
2. Cement stabilized sand must be used within 4 hours of delivery to the Site. Sand more than 4 hours old may not be used and must be legally disposed of at no additional cost to the OWNER.

B. *Approval:*

1. Unless Shown on the Drawings, the CONTRACTOR shall place cement stabilized sand only with prior approval of the ENGINEER.
2. Should the CONTRACTOR place stabilized sand that is not shown on the Drawings, or without ENGINEER's approval, payment for same will not be made and shall not be a basis for Claims for extra Work.
3. The ENGINEER will specify the location or length of line to receive stabilized material, and the depth that the material is to be placed when the excavation is not under paved areas.

C. *Rodding and Tamping:*

Rod or otherwise tamp material to insure complete filling of the area below the pipe horizontal centerline. Place material above the pipe horizontal centerline in lifts not exceeding one-half ($\frac{1}{2}$) the pipe diameter.

D. *Placement Around Structures:*

Place material around abutment backwall, wingwalls, and structures only after they have cured at least four (4) days. Place in layers not greater than eight (8) inches and compact each layer with approved power-driven hand tampers. Compact to 95% Protector Density.

3.03 QUALITY ASSURANCE AND TESTING

Random samples of the delivered product will be taken in the field by the OWNER's Representative and tested at the CONTRACTOR's expense for strength. Samples shall achieve a strength of 100 psi at 48 hours.

PART 4 MEASUREMENT AND PAYMENT

No separate payment shall be made for materials furnished or work performed. Include cost of same in Lump Sum amount for which this work is an integral part.

END OF SECTION

323100 FENCES AND GATES

PART 1 GENERAL

1.01 SCOPE

- A. Fence framework, fabric, and accessories.
- B. Excavation for post bases; concrete foundation for posts.

1.02 RELATED SECTIONS

SECTION 033000 - Cast-In-Place Concrete.

1.03 REFERENCES

- A. ASTM A 121 - Zinc-Coated (Galvanized) Steel Barbed Wire.
- B. ASTM A 123 - Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
- C. ASTM A 153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- D. ASTM A 392 - Zinc-Coated Steel Chain-Link Fence Fabric.
- E. ASTM A 428 - Weight of Coating on Aluminum-Coated Iron or Steel Articles.
- F. ASTM A 446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- G. ASTM A 569 - Steel, Carbon (0.15 Maximum Percent), Hot-Rolled Sheet and Strip Commercial Quality.
- H. ASTM C 94 - Ready-Mixed Concrete.
- I. ASTM F 567 - Installation of Chain-Link Fence.
- J. ASTM F669 - Strength Requirements of Metal Posts and Rails for Industrial Chain Link Fence.
- K. ASTM F 1083 - Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
- L. ASTM F 1234 - Protective Coatings on Steel Framework for Fences.
- M. Chain Link Fence Manufacturers Institute (CLFMI) - Product Manual.

1.04 SUMMARY OF WORK

- A. Fences and gates shall be provided and installed in locations of existing fences which may be damaged or removed during construction of the project. Removal and replacement of fence shall be considered subsidiary to the various work items unless specifically shown in the bid proposal.
- B. Existing fences shall be replaced in kind with new posts, fabric, wire, and supports to match existing fence. CONTRACTOR shall secure new fencing to existing fencing that remains such that there are no gaps or holes in the fence.

1.05 SUBMITTALS FOR REVIEW

- A. *Product Data*: Provide data on gates, fabric, posts, accessories, fittings, and hardware.
- B. *Shop Drawings*: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.

1.06 QUALITY ASSURANCE

Perform Work in accordance with manufacturer's instructions.

1.07 QUALIFICATIONS

Manufacturer: Company specializing in manufacturing the products specified in this section with minimum five (5) years' documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

- A. *Framing (Steel)*: ASTM A 569; hot rolled steel strip, cold formed to pipe configuration, longitudinally welded construction, minimum yield strength of 50 ksi; coating conforming to ASTM F 1234 Type B on pipe exterior and interior.
- B. *Fabric Wire (Steel)*: ASTM A 392 zinc coated wire fabric.
- C. *Barbed Wire*: ASTM A 121 Galvanized steel; 12-gauge thick wire, 3 strands, 4 points at three inches (3") on center.
- D. *Concrete*: Type specified in SECTION 033000 - Cast-In-Place Concrete.

2.02 COMPONENTS

- A. *Chain Link Fence*:
 - 1. Line Posts: Two inches (2") outside diameter steel pipe.
 - 2. Corner and Terminal Posts: three inches (3") outside diameter steel post.
 - 3. Gate Posts: Four inches (4") outside diameter steel pipe.
 - 4. Top and Brace Rail: One inch (1") outside diameter, plain end, sleeve coupled.
 - 5. Gate Frame and Tail: Two inch (2") outside diameter for fittings and truss rod fabrication.
 - 6. Steel Tube Gate: Two inch (2") by Two inch (2") square tube steel.
 - 7. Fabric: Two inch (2") diamond mesh interwoven wire, 9-gauge thick, top selvage knuckle end closed, bottom selvage knuckle end closed.
 - 8. Tension Wire: 7-gauge coiled spring wire.
 - 9. Tension Band: One inch (1") thick steel.

10. Tension Bar: Two inches (2") outside diameter thick steel.

B. *Barbed Wire and Field Fence:*

1. Barbed wire shall be 12 1/2 -gauge, 2-point, round barb, American made.
2. Steel "T" posts shall be 6 1/2 feet long, No. 1 American made with plate. Posts shall be painted and spaced no greater than ten (10) feet. Install posts to minimum of one foot below grade, plumb, and in line with fence row. Provide clips for attaching barbed wire to post.
3. Corner posts and bracing shall be three inch (3") diameter steel pipe set in concrete with three inch (3") bracing post in concrete at a maximum of eight (8) feet in each direction. Brace posts shall be connected with minimum of three (3) 1 1/2- inch diameter tie rods welded to the brace posts and the corner posts. Corner and brace posts shall be set to a minimum of three feet (3') below grade. Install corner and brace posts plumb and in line with fence row.

C. *Tubular Gates:* Gate posts shall be four (4") diameter steel posts set in concrete. Gate posts shall be set to a minimum of three feet below grade. Tubular gate shall be constructed of two inch (2") square tube steel.

D. *Board Fence:*

1. All lumber shall be Grade 2 pressure treated.
2. Posts shall be 4" x 4" square posts of sufficient length to extend from the top of the fence to 2' below the ground surface. Posts shall be spaced no greater than eight (8') feet apart.
3. Fence rails and braces shall be 4" x 2" lumber installed in continuous lengths between posts and shall be installed horizontally. A minimum of three (3) backer rails shall be installed.
4. Pickets shall be 4" x 1/2" lumber installed vertically. A maximum 1/8" gap shall be provided between each picket.

2.03 ACCESSORIES

- A. *Gate Caps:* Cast steel galvanized; finish as determined by OWNER.
- B. *Fence Caps:* Cast steel galvanized; sized to post diameter, set screw retainer.
- C. *Fittings:* Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.
- D. *Extension Arms:* Cast steel galvanized, to accommodate three (3) strands of barbed wire, single arm, sloped to forty-five (45) degrees.
- E. *Laminated Steel Padlock with Grade 30, 1/4" Galvanized Steel Chain:* Masterlock Model No. 5KA-A326. All locks shall be master keyed with the Municipal Utility District.

2.04 FINISHES

- A. *Components and Fabric:* Galvanized to ASTM A 123; 2.0 oz/sf coating.
- B. *Hardware:* Galvanized to ASTM A 153, 2.0 oz/sf coating.
- C. *Accessories:* Same finish as framing.

PART 3 EXECUTION

3.01 INSTALLATION

A. *Post Setting:*

1. Install framework, fabric, barbed wire, accessories, and gates in accordance with ASTM F 567 and manufacturer's instructions.
2. Set all vertical posts plumb, in concrete footings, with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.
3. Line Post Footing Depth Below Finish Grade: ASTM F 567 three feet (3').
4. Corner, Gate, and Terminal Post Footing Depth Below Finish Grade: ASTM F 567 three feet (3').
5. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.

B. *Chain Link Fabric:*

1. Provide top rail though line posts tops and shall be continuous.
2. Do not stretch fabric until concrete foundation has cured seven (7) days.
3. Stretch fabric between terminal posts or at intervals of one hundred feet (100') maximum, whichever is less.
4. Position bottom of fabric no less than one inch (1"), no more than four inches (4") above finished grade.
5. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum fifteen inches (15") on centers.
6. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.
7. Install support arms sloped outward and attached barbed wire, tension and secure.
8. Fence shall be constructed at locations shown on the Plans.

C. *Barbed Wire:*

1. Barbed wire shall be attached to gate corner pull and terminal post by a band clip.
2. Tie wires, bolts, tension wire, and other fastening shall be properly tightened. Erection shall provide a fence firmly secured in proper position.
3. Fence shall be constructed at locations shown on the Plans.

D. *Board Fence:*

1. Rails and braces shall be attached to posts using 6D galvanized nails.

2. Pickets shall be attached to rails using two (2) galvanized nails at each rail.
3. Erection shall provide a fence firmly secured in proper position.
4. Install support arms sloped outward and attach barbed wire, tension and secure.
5. Fence shall be constructed at locations shown on the Plans.

3.02 ERECTION TOLERANCES

- A. Maximum Variation from Plumb: 1/4 inch.
- B. Maximum Offset from True Position: 1 inch.
- C. Components shall not infringe adjacent property lines.

END OF SECTION

331809 Fine Bubble Aeration System

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section provides for furnishing a flexible membrane fine bubble aeration system for the three (3) existing aeration basins. This section includes all air diffusion equipment and appurtenances with all related piping, support structures, valve and fittings. Diffusers shall provide “full-floor” coverage of aeration basins. Manufacturer must include certified shop test as described in this specification.

1.02 REFERENCES

- A. The aeration system shall, as applicable, be up to date to all standards.
- B. Reference all applicable standards for ANSI, ASTM to this section.

1.03 MEASUREMENT AND PAYMENT

- A. Stipulated Price (Lump Sum). If contract is stipulated price contract, payment for Work in this section is included in total Stipulated Price.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013300 — Submittal Procedures and at a minimum include the following:
 - 1. Performance Characteristics
 - 2. Dimensions and Basin Layout
 - 3. Materials of Construction
 - 4. Testing Data for clean water transfer efficiency
 - 5. Shop Oxygen Transfer Test Results

1.05 QUALITY ASSURANCE

- A. Provide highest quality workmanship and materials throughout. Furnish equipment manufactured by a manufacturer with at least five years of experience in the design and building of wastewater aeration equipment as specified herein.
- B. For a period of 12 months from substantial completion, the manufacturer shall warrant that equipment, when properly installed, shall be free of defects in material and workmanship under normal use and service. The manufacturer shall repair or replace such equipment or any part thereof furnished by the manufacturer and found defective after inspection by the manufacturer.
- C. The total aeration system shall be supplied by a single manufacturer and be a complete and functional system with all appurtenances and mounting hardware. The system shall include diffusers, diffuser mounts, drop manifold and distributor pipes, pipe supports, and expansion joints. The aeration system provided shall be of a design to promote uniform air distribution, the required oxygen transfer and total basin mixing without the settling out of any suspended solids.

1.06 ACCEPTABLE MANUFACTURERS

- A. Aquarius
- B. EDI
- C. Sanitaire-Xylem
- D. Pre-approved Equal

PART 2 PRODUCTS

2.01 PERFORMANCE AND DESIGN REQUIREMENTS

- A. The design requirements for the proposed plant are:

Proposed Basin	Depth (Feet)	Submergence (Feet)	Volume (Cu. Ft.)	DO (mg/L)	Pressure* (psig)	Pressure** (psig)	SOTE (%)	Per basin (SCFM)
Aeration Basins	12.0	10.5	5361	2	6.5	7.0	30.0	235

1. Pressure is measured at the top of the drop leg. *Submergence only; assumes no headloss from top of the drop leg through diffusers. **Assumes 0.5 psig headloss from top of the drop leg through diffusers.
2. The aeration systems must be capable of delivering twice the SOR at the maximum air pressure.
3. Minimum Air per Basin Grid is the lowest design air flow rate allowed for compliance with Specifications. Assumes two (2) grids per basin as shown in the drawings.
4. The air distribution and air diffusion equipment must be able to distribute the design and maximum airflows (twice the Standard Oxygenation Rate (SOR) for the aeration basin) for each basin. Air diffusion and piping systems must be capable of handling 200 percent (200%) of design airflows within the maximum pressure and velocity limits.

- B. General Requirements

1. The air diffusion equipment must be capable of supplying maximum air flows to provide “full-floor” coverage void of “dead-zones” within the maximum pressure limitations imposed by the air supply and distribution systems. The intent of these specifications requires that the air diffusion equipment must be capable of meeting the maximum pressure limitations for the lifetime of the project. The equipment manufacturer shall guarantee the integrity of the system including membrane holders and membrane slits for five (5) years of operation. If for any reason in this five (5) year period the membranes are found to have rips or slit enlargement the manufacturer shall provide replacement parts and labor to repair the system.
2. Before the aeration equipment is placed in continuous operation, the equipment manufacturer will determine an initial baseline pressure loss.
3. The equipment manufacturer shall be solely responsible for proper design of the air diffusion orifices to provide air distribution to satisfy the performance requirements with full consideration of the installed (filed) conditions.
4. Each individual grid shall include a purge assembly off the submerged header. The purge assembly shall consist of a one-inch (1") diameter PVC pipe connected to the bottom side of the header, that is routed up the basin wall, secured to the wall with stainless steel clamps, routed above the water line near the walkway and turned back out towards the basin with an accessible ball valve at the end. This shall allow for manual

purging and visual observation of the purge. Refer to the Drawings for additional details and locations of the purge assemblies.

C. Drop Pipes

1. A drop pipe is to be provided for each grid as is indicated on the Drawings. The pipe shall be fabricated from standard weight Schedule 10 or Schedule 40 stainless steel pipe of the diameter indicated on the drawings. The top of the drop shall have a 125 lb. flange with full facing gasket for connecting to the main air lines and be sufficiently supported as to create no stress on the grid piping under all field conditions. The drop pipe is to be connected to the PVC distribution piping with a stainless steel expansion coupling providing for differential axial movement and piping alignment.
2. There shall be no field welding permitted. All welding must be performed at the factory. The interior surface shall be smooth, with no protrusions.
3. Bolts, washers, and other hardware shall be 304 stainless steel. Fittings shall be fabricated to ASTM A304 standards and shall have the same wall thickness as the pipe. All air piping shall have Viton (FKM) gasketing.

D. Air Distribution Piping

1. Arrange the diffusers for "full-floor" coverage to obtain adequate oxygen transfer, mixing, and prevention of solids deposition. Maximum distance between basin walls and adjacent diffusers shall not exceed two feet (2'). Header (lateral) spacing shall not exceed four feet (4').
2. Manifold piping shall be minimum Schedule 40 PVC. Schedule 40 PVC material shall comply with ASTM specifications D1784, D1785, and D2466. Header (lateral) piping shall be minimum 4-inch (4") diameter SDR 33.5 PVC. SDR 33.5 PVC material shall comply with ASTM specifications D3915 and D3034. PVC material shall include titanium dioxide, 2 percent by weight, for protection from degradation from ultraviolet light.
 - a. All solvent welded joints shall be made in the factory. No field solvent welding will be allowed.
3. All new stainless steel surfaces shall be passivated by pickling and neutralization in six percent (6%) nitric acid and three percent (3%) hydrofluoric acid for 15 minutes followed by immersion in a tri-sodium phosphate rinse.
4. All nuts, bolts, and washer, including anchor bolts, shall be 304 stainless steel.
5. Join header sections with joints that allow rotation for alignment during installation. Joint shall be positive fixed threaded union flange type joints to prevent blow apart. All underwater joints shall be positive locking type.
6. Furnish an expansion/contraction system for all headers to allow for 125°F temperature change. Expansion joints shall be provided on all continuous lengths of header between two (2) restraining points.
7. Header joints to manifolds shall be minimum 4-inch (4") diameter fixed joint connections designed to resist thrust generated by expansion or contraction of the header.
8. Furnish a minimum of two (2) manifold supports for each manifold consisting of a two- inch (2") hold-down guide strap, anchor bolts, and supporting structure. Each support shall resist the maximum anticipated bending moment and uplift forces. All components shall be fabricated of 304 stainless steel. Header support shall allow for plus or minus two-inch (2") vertical adjustment in the field.
 - a. Furnish a minimum of two (2) header supports, similar to manifold supports, for each header with eight-feet (8') maximum spacing between supports. Each support shall resist the maximum anticipated bending moment and uplift forces. Supports shall allow for plus or minus two-inch (2")

vertical adjustment in the field. Vertical adjustment shall allow for leveling of the diffuser assemblies to within 1/4-inch (1/4") of a common horizontal plain.

- b. Worm gear clamps are not allowed.
 - c. Attach supports to existing concrete tank floor with a minimum of two (2) stainless steel adhesive anchors to resist anticipated pull out force with a factor of safety of 4.
9. Diffuser element holders and their connections to the headers shall resist a point load of 200 pounds applied vertically at the outermost edge of the diffuser holder.
 10. Air piping shall be sized so that the velocity of the air in the pipe at peak air flow is less than or equal to the values in the table below.

Piping Size	Maximum Velocity*
1" – 2-1/2"	1,800 FPM
3" – 10"	3,000 FPM
12" – 24"	4,000 FPM
Greater than 24"	6,500 FPM

*At Standard Conditions

E. Air Diffusers

1. Diffusers shall be fine bubble, flexible membrane type. Diffuser assemblies shall include an EPDM diffuser membrane, PVC diffuser holder, air flow control orifice, and 304L stainless steel or PVC retaining device.
 - a. Diffusers with ceramic or plastic type media shall not be used.
 - b. The entire diffuser shall be mounted on the air header and held in place by a male adapter of 1" pipe thread. Air shall enter the bottom of the diffuser from the header and pass through the openings in the polypropylene disk, expanding the rubber membrane, opening the pores and allowing fine air bubbles to enter the liquid.
2. Maximum clean water oxygen transfer efficiency at standard conditions (SOTE) shall be 30 percent (30%) for the proposed aeration basins at design conditions. Provide test results demonstrating compliance with SOTE requirements using the exact submergence, diffuser spacing, and other requirements listed in the testing section.
3. Diffusers must incorporate some method of backflow prevention to prevent entry of wastewater into the diffuser and piping when the air flow is off.
4. Cleaning of the diffuser must be possible without dewatering the tank. Air flexing of the diffuser is acceptable.
5. Maximum allowable air flow per diffuser at DESIGN AIRFLOW RATES shall be:

Diffuser Diameter (Inches)	SCFM per Diffuser
9" & 10" in Aeration Basins	2.5

F. Diffuser Mounts

1. The diffuser mount shall be integrally molded Schedule 40 PVC for 9 inch diffuser systems. 13 and 20 inch diffuser systems may be either integrally molded or factory solvent welded to the distribution piping. The weld shall be in accordance with ASTM D2855. The diffuser mount and diffuser base shall be threaded (male/female) and connected to Schedule 40 PVC distribution piping. The pipe thread shall be placed so that the diffuser is level after installation.

G. Pipe Supports

1. Sufficient pipe supports shall be provided to keep the manifold and distribution piping in place, to allow for pipe expansion/contraction, and to level the pipe. Pipe supports shall be provided at the end of all pipe lengths. Intermediate supports shall be provided at intervals not to exceed seven feet.
2. The pipe supports shall consist of a support hold-down mechanism, and pipe clamp. The pipe clamp shall allow for a vertical adjustment of plus or minus two inches. The intermediate supports shall allow for pipe movement caused by the pipe expansion/contraction. The end supports shall be fixed. The pipe supports shall be fabricated from 304 stainless steel. The supports shall be designed for buoyant forces with 2.0 safety factor. Anchor bolts shall be 304 stainless steel, designed for buoyant forces with a 4.0 safety factor.

H. Testing

1. Shop Oxygen Transfer Test

- a. Conduct a performance test to demonstrate capability of the aeration equipment to meet the specified oxygen transfer requirements listed for the two (2) Aeration Basins.
- b. Base all tests on the following criteria:
 - i. A minimum of three (3) tests for the specified conditions in the proposed aeration basin in complete accordance with ASCE Clean Water Test Procedure (1992 or latest edition).
 - ii. Conduct tests by an independent third-party aeration testing firm in a full-scale aeration test tank (minimum of 200 sq. ft.) at the specified submergence and water depth with a diffuser density equivalent to the specified tank configuration. Diffuser density is defined as the ratio of the total tank surface area to the total active diffuser surface area. The testing firm shall have performed at least 10 independent tests within the past five years and shall provide a list of those clients with current phone numbers and addresses.
 - iii. Conduct shop test with air rate and mass rate of oxygen transfer directly proportional to the ratio of the shop test tank volume and the design tank volume.
 - iv. All tests shall be performed in clean water with a total dissolved solids concentration of no more than 1,000 mg/l.
 - v. Plot of standard condition pounds of oxygen transferred per day per 1000 cubic feet of tank volume versus standard condition cubic feet of air per minute per 1000 cubic feet of tank volume. (lbs-O₂ day/1000 cubic feet-tank) vs. (SCFM/l 000 cubic feet-tank).
 - (1) Standard conditions of oxygen transfer are defined as 68 °F, 1 atmosphere ambient pressure, clean water, dissolved oxygen concentration of 0.0 mg/l.
 - (2) Standard air is defined as 68°F, 1 atmosphere, 36% R.H., containing 23% oxygen by weight.
- c. The technique and test procedures shall be submitted to the engineer prior to testing.
- d. Certify and seal all tests by a Professional Engineer having a current, valid license.
- e. Include all costs for testing in the equipment price. All tests may be witnessed at Owner/Engineer option. Cost of travel and living expenses for Owner/Engineer to be paid by the Owner. 10 days advance notice shall be given to the Owner/Engineer prior to performance of the test.
- f. Submit all test data from oxygen transfer tests for approval by the Engineer prior to manufacturing equipment.
- g. By submission of a bid for this project, the manufacturer certifies that it has reviewed the project plans, specifications and schedule and agrees that provision of these tests will in no way delay the delivery of a complete aeration system to the Contractor within its construction schedule.

PART 3 EXECUTION

3.01 Execution

- A. Contractor shall submit all test data from oxygen transfer tests for approval by the Engineer prior to manufacturing equipment.

3.02 Acceptance of Testing and Inspection

- A. Contractor shall notify the Engineer in writing when the installation is ready for inspection. The contractor and Engineer shall agree upon a time for Acceptance Testing and Inspection. The contractor will then carry out the tests and inspections to be witnessed by the Engineer.
- B. The piping shall be inspected for proper joints, supports and tie-downs, end plugs and drain relief valves.
- C. The tanks shall be flooded with clear water to the top of the diffusers. The level of the diffusers shall then be checked to see that they are at the same elevation within $\pm 1/8"$. The tanks will be flooded with clear water to a depth of one (1) foot above the diffusers. The air blowers will be turned on and air supplied evenly to all headers. The surface of the water will then be visually inspected to see that air flow is uniformly distributed across the tanks.

3.03 Manufacturer's Representative

- A. Furnish the services of the manufacturer's technical representative for two (2) start-ups attended. The first start-up shall be a dry start-up and inspection and the second shall be a wet start-up as part of the overall clear water test. The Contractor shall submit approved start-up forms signed by the manufacturer for each of the two (2) start-ups. Additionally, in conjunction with the two (2) start-ups, the manufacturer shall provide a representative for eight (8) on-site hours to inspect equipment after installation and supervise initial operation. Furnish the representative for the additional time required to correct or supervise correction of any defects or malfunctions related to the start-ups and overall system integration during the clear water test.
- B. The equipment manufacturer shall include in the price quotation for the equipment the cost of providing a representative in accordance with the requirements outlined above; however, in no event shall less than three (3) days be provided. The cost of manufacturer's representatives to fulfill the requirements of this Specification shall be included in the Bid Price and requests for extra payment will not be considered, regardless of the time required to provide a satisfactory installation.
- C. The representative shall advise the Owner's operations and plant management personnel as the proper care and operations adjustments to be made to the system.

3.04 Warranty

- A. The manufacturer shall warrant the units being supplied to the Owner against defects in workmanship and material for a period of one (1) year from the date of final project acceptance, under normal use, operation and service. The warranty shall be in printed form and apply to all similar units.

END OF SECTION

331811 Air Diffusion Equipment

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section provides for furnishing the coarse bubble single drop diffused aeration equipment for the existing influent channel. Equipment to be provided shall include all air diffusion equipment and appurtenances with all related piping, support structures, valves, and fittings.

1.02 REFERENCES

- A. The aeration system shall, as applicable, be up to date to all standards.
- B. Reference all applicable standards for ANSI, ASTM to this section.

1.03 MEASUREMENT AND PAYMENT

- A. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013300 — Submittal Procedures and at a minimum include the following:
 - a. Performance Characteristics
 - b. Dimensions and installation locations and elevations
 - c. Materials of Construction
 - d. Testing Data for clean water transfer efficiency

1.05 QUALITY ASSURANCE

- A. Provide highest quality workmanship and materials throughout. Furnish equipment manufactured by a manufacturer with at least five years of experience in the design and building of wastewater aeration equipment as specified herein.
- B. For a period of 12 months from substantial completion, the manufacturer shall warrant that equipment, when properly installed, shall be free of defects in material and workmanship under normal use and service. The manufacturer shall repair or replace such equipment or any part thereof furnished by the manufacturer and found defective after inspection by the manufacturer.

1.06 ACCEPTABLE MANUFACTURERS

- A. Aquarius
- B. EDI
- C. Sanitaire-Xylem
- D. Pre-approved Equal

PART 2 PRODUCTS

2.01 PERFORMANCE AND DESIGN REQUIREMENTS

A. The design requirements are:

Basin	Basin Volume (cf)	Max Airflow (scfm)	Air Release Elevation	Min. Quantity of Drops/Diffusers
Aerated Fixed Biofilm	2,145	365	Maximum of 1' above finished floor	10 drops 100 diffusers

1. The air distribution and air diffusion equipment must be able to distribute the design and maximum airflows for each aerated basin as well as all airflows required for airlift pumps. Air diffusion and piping systems must be capable of handling 150% of design airflows within the maximum pressure limits.
- B. The air diffusion equipment must be capable delivering the design air flow at average water depths without exceeding 7.0 psig pressure in the above water air header.
- C. The air diffusion equipment must generate a minimum orifice pressure loss to insure adequate air distribution at lower airflows.
- D. The equipment manufacturer shall be solely responsible for proper design of the air diffusion orifices to provide:
1. Air distribution to suit Engineer's design requirements for both the fine-bubble and coarse- bubble diffusers.
 2. Minimum pressure losses
- E. No air diffusion equipment using underwater air orificing or restricting devices for air distribution shall be considered for this project. Individual air diffusers must be positively cleaned from above the water surface without being removed or the air supply interrupted.
- F. The air diffuser supplied must have a clean history of efficient operation, free from clogging, back-pressuring or structural failure when applied to service conditions similar to those indicated for this project.
- G. Air Distribution Piping and Equipment:
1. Air supply mains and air headers furnishing air to the diffusers shall be fabricated from Schedule 40 steel pipe and shall be hot dipped galvanized after fabrication. Air supply mains and air headers furnishing air to the diffusers located at the chlorine contact basin shall be 304 stainless steel.
 2. Air piping shall be sized so that the velocity of the air in the pipe at peak air flow (150% of design flow) is less than or equal to the values in the table below.

Pipe Size	Maximum Velocity*
1" – 2'/"	1800 FPM
3" – 10"	3000 FPM
12" – 24"	4000 FPM
Greater than 24"	6500 FPM

* At Standard Conditions

3. Butterfly type and ball type air control valves shall be furnished at the general locations shown on the drawings and shall be installed to be accessible for operators. Air control valves shall be lever operated, with resilient seats made of EPDM, and sized as indicated on the plans.

4. The air headers shall be tapped and provided with a welded-in-horizontal run-out coupling at the location of each individual air diffuser. Couplings shall be welded-in prior to hot dip galvanizing for full protection. All threaded parts shall be retapped after galvanizing.

H. Air Diffusers:

1. Each air diffuser shall be of one piece construction with no moving parts and shall consist of an air release tube and deflector(s) with bubble shearing edges. The diffusers must be of proven structural design without inherent structural deficiencies or weaknesses.
2. The air release tube shall transport air flows from the drop pipe connection at the top of the diffuser, down through the deflector to the air release slots. The tube shall have an inside diameter equal to or greater than that of the drop pipe throughout its length and shall terminate with a full diameter opening. This is to allow positive cleaning of the airway of each diffuser by allowing a brush or rod inserted at the top end of the drop pipe to pass completely through the diffuser.
3. The bottom of the tube shall contain vertical slots at least 1/4-inch (1/4") wide to ensure the distribution of airflow.
4. The deflector portion of the diffuser shall break-up the coarse bubbles generated at the release tube slots into the fine bubbles required for efficient oxygen transfer. The shear edge shall provide sharp discontinuity in the air/water flow, generating high shear forces on the coarse bubbles causing bubble break-up.

I. Corrosion Protection:

1. All headers, pipes, fittings, and supports which are not stainless steel shall be hot dipped galvanized unless otherwise noted on the plans.

PART 3 EXECUTION

3.01 Installation

- A. Install aeration equipment at the location shown on the construction drawings and the manufacturer's installation drawings which have been reviewed by the Engineer.
- B. The tanks shall be flooded with clear water to the top of the diffusers. The level of the diffusers shall then be checked to see that they are at the same elevation within + 1/8".
- C. The tanks will be flooded with clear water to a depth of one (1) foot to five (5) feet above the diffusers as recommended by the manufacturer. The air compressors will be turned on and air supplied evenly to all headers. The surface of the water will then be visually inspected to see that air flow is uniformly distributed across the tanks. Upon completion of diffuser testing, Contractor will be responsible for removing the water from the tanks tested.

3.02 Manufacturer's Representative

- A. Furnish the services of the manufacturer's technical representative for two (2) start-ups attended. The first start-up shall be a dry start-up and inspection and the second shall be a wet start-up as part of the overall clear water test. The Contractor shall submit approved start-up forms signed by the manufacturer for each of the two (2) start-ups. Additionally, in conjunction with the two (2) start-ups, the manufacturer shall provide a representative for eight (8) on-site hours to inspect equipment after installation and supervise initial operation. Furnish the representative for the additional time required to correct or supervise correction of any defects or malfunctions related to the start-ups and overall system integration during the clear water test.

END OF SECTION

331813 Positive Displacement Blowers

PART 1 GENERAL

1.01 SCOPE

- A. This section covers furnishing and installing two rotary positive displacement blower packages at the existing sludge holding basin.

1.02 MEASUREMENT AND PAYMENT

- A. No separate payment will be made for material or labor furnished under this section. All costs shall be included in the lump sums and/or unit prices, as shown in the Bid Proposal.

1.03 RELATED SECTIONS

- A. 013300 Submittal Procedures

1.04 SUBMITTALS

- A. Furnish complete data that will confirm compliance with these specifications to the Engineer for approval. Provide blower and motor data sheets and performance curves conforming to design conditions. Shop drawings shall be certified by equipment supplier as correct, showing all dimensions and details necessary for installation of blowers, motors, auxiliary apparatus, and similar items of equipment to be installed. Literature describing the equipment in sufficient detail, including parts list and materials of construction, to indicate full conformance with the detail specifications.

1.05 OPERATION AND MAINTENANCE MANUALS

- A. Operation, maintenance, and installation manuals shall be provided by the Manufacturer as part of shipment of the positive displacement blower equipment. Each manual shall include but not limited to:
 - a. General arrangement drawings, detail drawings, and erection drawings.
 - b. Cut sheets for all items of equipment.
 - c. Installation and maintenance instructions for the specific equipment.
 - d. Wiring diagrams.
 - e. Recommended sequence of operations.
 - f. A maintenance schedule showing the require maintenance, frequency of maintenance, lubricants, and other items required at each regular preventative maintenance period.
 - g. List of Manufacturer's recommended spare parts.

1.06 QUALITY ASSURANCE

- A. Manufacturer or Packager Qualifications: Supplier shall have minimum ten (10) years' experience in providing similar equipment, and shall show evidence of satisfactorily operating installations, and shall ensure single source accountability.
- B. Blower Packagers shall be an Authorized Distributor of the blower being supplied. Authorized OEM is not acceptable.

- C. Blower Package Supplier shall be Factory Authorized to perform all phases of warranty work locally within 150 miles of the project site.
- D. Blower Package Manufacturers shall provide a statement in letter form from the actual blower manufacturer certifying that their package design and quality of workmanship is factory approved and in no way will affect the new machine warranty provided by the manufacturer.
- E. Contractor shall arrange for the Manufacturer to provide a factory-trained representative as required for the purpose of supervising installation, start-up, final field acceptance testing, and providing instruction to the owner's operating personnel in the proper operation and maintenance of the equipment in this section.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Prior to shipping, all blowers, motors, and materials shall be acceptably packaged and covered to prevent entry of foreign material.
- B. Care shall be taken in loading, transporting, and unloading to protect all blowers, motors, and materials from damage. Contractor shall unload blower material using equipment of sufficient size and design to prevent injury or damage. Immediately after unloading, the Contractor shall inspect all equipment and accessories received to verify condition and ensure that there are no missing parts. Any damage or discrepancy shall be noted immediately. Any damaged equipment shall be marked and stored in a separate location from the other equipment until it can be removed from the site.
- C. All equipment shall be stored in accordance with the manufacturer's instructions. At a minimum, heaters shall be energized and all equipment shall be stored off the ground, covered, and in a manner which prevents damage.

1.08 WARRANTY

- A. Manufacturer shall warrant the equipment and materials furnished under this specification against defects in materials and workmanship and operational failure for a period of one (1) year from the date of Owner's acceptance.

PART 2 PRODUCTS

2.01 ACCEPTABLE PRODUCT

- A. Acceptable product shall be Howden Roots 24 URAI or approved equal.

2.02 ACCEPTABLE PACKAGER

- A. Acceptable packager shall be ACFM, Inc., Houston, TX, or approved equal.

2.03 PERFORMANCE CRITERIA

- A. Blowers shall be capable of meeting the following performance requirements:

1. Number of Blowers..... 2
2. Operating Design Flow Rate 409 CFM
3. Discharge Pressure..... 6 psig
4. Rotative Speed..... 1800 RPM
5. Min. Nameplate Horsepower..... 50 Hp
6. Inlet Temperature 100°F
7. Inlet Connection 12" NPT
8. Discharge Connection 12" NPT

2.04 ROTARY POSITIVE DISPLACEMENT BLOWERS

A. General

Each blower shall be of the horizontal, rotary, positive displacement type. Each assembly shall be rugged in construction and of such design that it may be disassembled and all parts inspected without disturbing the inlet or discharge piping.

B. Casing

Casing shall be of one piece with separate headplates, and shall be made of ASTM A 48 Class 30B close grained gray cast iron suitably ribbed to prevent distortion under the specified service conditions. Casing shall be able to withstand a minimum pressure of 25 psig.

C. Headplates

Fabricate drive end and gear end headplates of close grained cast iron which are precision machined for exact bearings housing fit.

D. Impeller and Shaft

Impeller and shaft shall be made from high strength ASTM A 48 Class 30B iron. Impeller shall be of the straight, two lobe involute type and shall operate without rubbing, liquid seals, or lubrication. Blower shall be positively timed by a pair of accurately machined heat-treated alloy steel, spur tooth, timing gears. Timing gears shall be mounted on the impeller shafts on a tapered or machined fit and properly secured. Timing gears shall be SAE 8620 carburized and steel spur gears hardened to 58-62 Rockwell hardness. Impellers shall be at least 11" in length. Shorter impellers will not be accepted.

E. Bearings

Each impeller and shaft shall be supported by spherical roller bearings sized for a minimum of 100,000 hours of B-10 life.

F. Bearing Seals

Provide a lip type oil seal at each bearing, designed to prevent lubricant from leaking into the airstream. Further provisions shall be made to vent the lubrication system to atmosphere to eliminate any possible carryover of lubricant into the air stream.

G. Lubrication

The bearings shall be splash oil lubricated from oil slingers mounted on the drive line shaft and dipping in the oil. Each bearing housing shall include a positive lip type Viton oil seal. A Buna N lip seal shall be installed on the drive end of the drive shaft. Blower drive side bearings shall be grease lubricated. Sight glass for oil level shall be provided. A synthetic manufacturer lubricating oil shall be provided and rated for outdoor duty and scheduled service conditions.

2.05 ELECTRIC MOTORS

A. Provide TEFC 1800 RPM motor with 1.15 S.F., Premium Efficiency suitable for mounting on slide base and connecting to the blower shaft by V-belts and sheave drive assembly for the blowers. Motor shall have a cast iron frame and brackets.

B. Motor shall meet applicable parts of NEMA MG1.

- C. Each motor shall be horizontal-TEFC; squirrel-cage induction type rated 460 volts, three phase, 60 Hz. Insulation shall be class F or better.
- D. Motor bearings shall be the greaseable antifriction type with L10 life rating of 50,000 hours.

2.06 BLOWER PACKAGE ACCESSORIES

A. Equipment Base

The base shall be built so that the blower and the motor are mounted to provide for tensioning of the V-belt drive. The base shall be carbon steel. The blower package supplier shall submit detailed drawings for review by the engineer prior to manufacture. All welds are to be full penetration. Equipment base shall be Stoddard or approved equal.

B. Drive

Provide V-belt drive assembly consisting of sheaves, quick detachable bushings, V-belts, and sliding motor base. Provide drive assembly with a 1.4 service factor based on motor nameplate horsepower.

C. Guard

Provide OSHA style steel belt guard to enclose drive and belts. Design guard for easy removal. The guard shall be constructed to allow visual inspection of the drive system without removing the guard. Guard shall be Stoddard A42 or approved equal.

D. Intake Filter

Provide each blower with a suitably sized air filter for the flow rates listed under design criteria. Intake filters shall be Stoddard F64 or approved equal.

E. Intake Silencer

Provide a heavy-duty, all-welded noise attenuation unit constructed of carbon steel sheet and plate, and featuring an acoustically-treated outlet for pulse control. Intake silencers shall be Stoddard D13R or approved equal.

F. Discharge Silencer

Provide a heavy-duty, all-welded noise attenuation unit constructed of carbon steel sheet and plate and featuring an acoustically-treated outlet for pulse control. Absorptive silencers are not acceptable. Discharge silencers shall be Stoddard D13H or approved equal.

G. Silencer Support

Provide a vertical silencer support constructed of carbon steel sheet and plate to be mounted on top of the equipment base to properly support the intake silencer. Supports shall be Stoddard A16 or approved equal.

H. Flex Connectors

Provide flexible connectors suitable for connection to the inlet and discharge silencers matching blower inlet and discharge connections. Flex connectors shall be constructed of heavy-duty rubber hose designed for 80 psig at 260°F. Hose clamps shall be included to attach the flex connectors to the inlet and outlet of the silencers. Flex connectors shall be Stoddard A21 or approved equal.

I. Pressure Relief Valve

Provide spring type relief valve, sized to pass 100% of the design flow. Valve shall be made of cast iron body and stainless-steel spring and pull ring. Pressure relief valve shall be Control Devices or approved equal.

J. Discharge Temperature Gauge

Provide a single scale, stem mounted, liquid-filled temperature gauge with 3" dial, 2.5" stem length, and a range of 50 to 550 °F. Gauge shall be Wika Model 30 or approved equal.

K. Discharge Pressure Gauge

Provide a single scale, bourdon tube, liquid-filled pressure gauge with 2.5" dial and a range of 0 to 15 psi. Gauge shall be Wika Type 213.53 or approved equal.

L. High Temperature Switch

Provide an epoxy coated Type 4X enclosure high temperature switch to include: internal adjustment with reference dial; set point range of 0 to 225 °F; 10 °F scale division; and a nickel-plated brass immersion stem. Switch shall be United Electric Controls Type B117 Model 120 or approved equal.

M. High Pressure Switch

Provide an epoxy coated Type 4X enclosure high pressure switch to include: internal adjustment with "High-Low" reference scale; set point range of 3 to 20 psig; and Buna-N diaphragm and O-ring. Switch shall be United Electric Controls Type H117 Model 700 or approved equal.

N. Intake Filter Pressure Drop Indicator

Provide each blower with a pressure drop indicator to measure loss through the intake filter. Indicator shall be Stoddard A40-108 or approved equal.

O. Sound Enclosure

Provide enclosure constructed of galvanized sheet steel construction with aluminum tube frame. Enclosure shall be insulated with at least 2" of acoustic foam and shall provide sound attenuation to 80 dBA estimated free field. The enclosure shall have removable panels on both sides to allow access to regular maintenance items. Panels shall incorporate hand adjustable closure tabs. An installed, integral ventilation fan, sized to provide adequate cooling of the blower assembly inside the enclosure, shall be provided. The ventilation fan shall be provided with its own separate drive motor. Fan drive motor shall be fractional HP maximum total, 120 VAC, single-phase. Enclosures constructed of PVC, fiberglass, plastic, or painted/powder coated steel shall not be considered acceptable.

2.07 ELECTRICAL

- A. Provide a NEMA 4X stainless steel wall mounted enclosure, local control panel for each blower package which shall include: hour meter; EIC rated starter with electronic overloads; circuit breaker; transformer to provide lower voltage output to auxiliary components; 'start', 'stop', and 'emergency stop' push button and pilot light; overload trip pilot light; high temperature switch and alarm pilot light with circuitry to shut down blower; and high pressure switch and alarm pilot light with circuitry to shut down blower. Control panels shall comply with Section 16902, Control Panels.
- B. Contractor shall furnish and install all field wiring required including proper sized wire, conduit, fittings, and supports.
- C. Contractor shall furnish and install all electrical items required, but not specifically called, for as furnished by the equipment Manufacturer.

2.08 COATINGS

- A. Prime paint all components. Finish coat epoxy paint all components before final assembly with industrial slate gray enamel. Field painting of blower equipment is not acceptable.

2.09 SPARE PARTS

- A. Contractor shall provide the following spare parts for each blower:
 - a. One (1) set of seals, bearings, and gaskets
 - b. One (1) set of V-belts
 - c. One (1) case of oil and lubricants
 - d. Four (4) filter elements

PART 3 EXECUTION

3.01 INSTALLATION AND TESTING

- A. Each blower shall be factory tested per ASME PTC-9 Performance test to verify flow and slip at 1 psig. The acceptance criteria are +5% tolerances regardless of the size of the machine. A copy of the test report shall be provided to Owner and Engineer.
- B. Blowers and equipment shall be installed in accordance with the instructions of the Manufacturer and as shown on the drawings.
- C. Contractor shall insure that the blowers, motors, and associated equipment are properly installed and checked for alignment.
- D. Manufacturer's authorized representative shall inspect the installed blower assemblies, charge the units with lubrication, align sheaves, tension belts, and make any necessary adjustments.
- E. Manufacturer's authorized representative shall operate each blower at the specified discharge pressure for a period of not less than one hour.
- F. Manufacturer's authorized representative shall certify proper operation, including no oil leaks, no excessive vibration, proper power consumption, and proper electrical connections.
- G. Certified copies of all field and test reports shall be submitted to the Engineer and Owner.

END OF SECTION

333128 VALVES AND GATES FOR LIFT STATIONS

PART 1 GENERAL

1.01 SCOPE

Section includes valves, gates, and accessories for exposed, submerged, and other types of piping for lift stations.

1.02 REFERENCES

- A. ANSI B16.1 - Cast Iron Pipe Flanges and Flanged Fittings.
- B. AWWA C500 - Gate Valves.
- C. AWWA C508 - Check Valves.
- D. AWWA C509 - Resilient Seated Gate Valves.
- E. ASTM A126 - Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
- F. ASTM A395 - Ductile Iron Castings.
- G. ASTM A48 - Gray Iron Castings.
- H. ASTM A193 - Alloy-Steel and Stainless-Steel Bolting Materials for High Temperature Service.
- I. ASTM A194 - Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service.

1.03 RELATED SECTIONS

SECTION 013300 - SUBMITTAL PROCEDURES

SECTION 013323 – SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

1.04 SUBMITTALS

- A. Supply submittals, shop drawings, product data and samples under provisions of SECTION 013300 - SUBMITTAL PROCEDURES and SECTION 013323 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES/
- B. *Shop Drawings:*
 - 1. Submit for review detailed drawings, data and descriptive literature on valves and appurtenances, including:
 - a. Dimensions.
 - b. Materials of construction.
 - c. Weight.
 - d. Protective coating.
 - e. Actuator weight, where applicable.
 - f. Calculations for actuator torque, where applicable.

g. Wiring diagram, where applicable.

2. Submit manufacturer's valve sizing calculations for verification of sizing for air release valves, air and vacuum valves, and surge relief valves.

C. *Manufacturer's Certifications:*

Submit manufacturer's certificates of compliance with ANSI, AWWA and other listed standards.

D. *Operation and Maintenance Data:*

Submit a detailed operation and maintenance manual for valves and appurtenances provided under this Section.

1.05 QUALITY ASSURANCE

Manufacturer's Qualifications

- A. Valves and appurtenances provided under this Section shall be the standard product in regular production by manufacturers whose products have proven reliable in similar service for at least 5 years.
- B. Insofar as possible all valves of the same specific type shall be the product of one manufacturer.

1.06 DELIVERY STORAGE AND HANDLING

- A. Have products delivered, stored, and protected in accordance with manufacturer's recommendations
- B. Store valves and appurtenances off the ground in enclosed shelter.

PART 2 PRODUCTS

2.01 BASIC REQUIREMENTS

- A. Mark and identify valves in conformance with referenced standards, these SPECIFICATIONS, and/or to the manufacturer's standard.
- B. Bolts, studs, and nuts inside the wet well to be Type 316 stainless-steel.
- C. End connections of valves shall be flanged and drilled to ANSI Class 125 unless otherwise specified.
- D. For handwheel operators on valves four inches (4") or larger where located more than five feet (5') above the operating floor, provide chain and chainwheel or extension operators. Use chainwheels fabricated of malleable cast iron with chain guides. Provide stainless-steel chains of a length to extend to within five feet (5') of the operating floor.
- E. To exterior surfaces of valves, apply a shop coating in accordance with SECTION 33605 - SURFACE PREPARATION AND APPLICATION OF PROTECTIVE COATING SYSTEM FOR WASTEWATER FACILITIES.

2.02 CHECK VALVES

- A. Swing check valves four inches (4") through eight inches (8") regardless of system operating pressure and ten inches (10") through fourteen inches (14") having a system pressure thirty (30) psi or less, shall be air cushioned with side mount lever and weight. The valve shaft shall extend through both sides of the body with minimum shaft diameters equal to APCO Series 6000. The cushion shall be totally enclosed, swivel

mounted at the bottom, and equipped with a micrometer air control valve and air breather filters. Valves shall be similar to APCO Series 6000 or approved equal.

- B. Swing check valves ten inches (10") through fourteen inches (14") having a system pressure greater than thirty (30) and sixteen inches (16") and larger regardless of system operating pressure shall be cushioned with side mount lever and weight. Valves shall be similar to APCO Series 6100 or approved equal.
- C. Check valves of special design utilizing controlled closing of the disc, such as APCO Series 6000B (Bottom-Buffer) and Golden Anderson Fig. #25-DXH or approved equal shall be used when specifically indicated on the DRAWINGS. These valves are special valves used to control the surge pressure in the force main upon multiple pump shutdown during a power failure. Other surge control check valves utilizing ball or cone valve and power cylinder operator may also be used as approved by the ENGINEER.
- D. All check valves shall have three hundred (300) series stainless-steel hinge shafts, stainless-steel body seats and stainless-steel resilient seat retainer rings.
- E. Check valves on small piping shall be as noted on the DRAWINGS or as described in specific sections of these SPECIFICATIONS

2.03 GATE VALVES

- A. Gate valves four inches (4) through fourteen inches (14"): Solid wedge type, with resilient nitrile rubber (Buna- N) tapered seat. Provide valves complying with AWWA C-509. Acceptable manufacturers include Mueller, DeZurik, Stockman, Iowa, or approved equal.
- B. Gate valves sixteen inches (16") and larger: Solid wedge type with bronze to bronze seating surface. Provide valves complying with the AWWA C-500. Acceptable manufacturers include Mueller, DeZurik, Stockman, Iowa, or approved equal.
- C. *Stems*: OS&Y rising type manganese bronze having a minimum tensile strength of 60,000 psi, a minimum yield strength of 20,000 psi for valve sizes through twenty four inches (24"), and a minimum tensile strength of 80,000 psi, a minimum yield strength of 32,000 psi for valve sizes thirty inches (30") and larger.
- D. *Valve Bodies*: Cast iron conforming to ASTM A126 or ASTM A395. Fabricate internal trim parts of three hundred (300) series stainless-steel.
- E. All valves shall be designed to open by turning counterclockwise.

2.04 ECCENTRIC PLUG VALVES

- A. Eccentric plug valves shall be the non-lubricated eccentric type with cast iron bodies, resilient-faced plugs, or replaceable resilient seats in the bodies.
- B. *Operators*: All valves for four inch (4") and larger service shall have worm gear operators, nickel or stainless-steel seats, and ANSI 125 psi flanged ends. Operators shall clearly indicate valve position. Operators on valves in submerged or buried service shall be lubricated and sealed to prevent entry of dirt and water into the operator.
- C. Resilient facing shall be suitable for the intended service.
- D. All shaft bearings shall be of stainless-steel, furnished with permanently lubricated bearing surfaces.
- E. Valves up to and including twenty inches (20") in size shall have an unobstructed port area of no less than eighty percent (80%) of the full pipe area, and not less than seventy percent (70%) for larger valves.

- F. Eccentric plug valves shall be manufactured by Clow, DeZurik, Keystone, Val-Matic, or Victualic.

2.05 SEWAGE AIR RELEASE AND SEWAGE AIR AND VACUUM VALVES

- A. Air Release and Air and Vacuum Valves: Provide when shown on DRAWINGS.
- B. *Sewage Air Release Valve Design*: Single float, single orifice, float operated with a compound lever mechanism to automatically release accumulated air and gases while the system is pressurized and operating.
- C. *Sewage Air and Vacuum Valve Design*:
 - 1. Two (2) floats where the top float shuts off against the seat due to the lifting force of the bottom float as liquid enters the valve body.
 - 2. Once closed and pressurized the air and vacuum valve will not open to release air.
- D. Fabricate valve body, cover, and baffles of cast iron. Fabricate internal metal parts of stainless-steel. Make valve seat of Buna-N nitrile rubber.
- E. Fit valve with blow off valves, quick disconnect couplings and minimum 6-feet of hose to permit back flushing after installation with dismantling valve.
- F. Provide air release valves equal to Series 400/450 SARV by APCO or Figure 925 by G.A. Industries.
- G. Provide air and vacuum valves equal to Series 400 SARV by APCO. Figure 935 as manufactured by GA Industries, or Val-Matic.

2.06 SURGE RELIEF VALVES

- A. *Surge Relief Valves*: Provide when shown on DRAWINGS.
- B. *Operation*: Surge relief valves shall protect piping systems from surges by opening quickly at a set pressure and throttling the flow to maintain line pressure at no more than five percent (5%) to ten percent (10%) above the pressure setting indicated. Provide relief pressure adjustment by changing the tension on a spring holding the valve disc on its seat.
- C. *Valve Closing Control*: By oil dashpots. Oil shall be drawn into the dashpot from a reservoir when the valve opens and return through a flow control valve when the relief valve closes.
- D. *Valve Construction*: Fabricate valve bodies of cast iron with three hundred (300) series stainless-steel seat rings. Provide seats that are renewable and resilient. Fabricate hinge shafts of stainless-steel and the oil system of bronze. Unless otherwise indicated make the pressure setting 5 percent above normal line pressure.
- E. Provide surge relief valves that are ninety-degree (90°) elbow body configuration. Acceptable manufacturers include APCO series 3000, GA Industries 625-D, or approved equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install valves and specialties in accordance with manufacturer's written instructions to permit intended performance.

- B. Support and anchor valves and gates in accordance with SECTION 333131- PIPE HANGARS, SUPPORTS AND RESTRAINTS.
- C. Eccentric plug valves shall be installed according to the following:
 - 1. Position the valves with the stem in the horizontal direction.
 - 2. In horizontal pipelines, position the valves so that the plug swings upward when opening to permit flushing of solids.
 - 3. Orient the valves to prevent the valve bodies from filling up with solids when closed; however, orient the valves such that the pressure differential forces the plug against the seat in cases where the pressure differential across a closed valve will exceed twenty five (25) psi.

3.02 PAINTING

Paint valves and specialties in accordance with applicable AWWA standards.

3.03 FIELD QUALITY CONTROL

Tests

- A. Test valves using a hydrostatic pressure test in accordance with AWWA C-600.
- B. Test valves and specialties in place. Correct defects in valves, specialties, or connections.

PART 4 PAYMENT

No separate payment will be made for items in this specification but shall be considered subsidiary to the items in the bid schedule.

END OF SECTION

333131 PIPE HANGERS, SUPPORTS, AND RESTRAINTS

PART 1 GENERAL

1.01 SCOPE

This Section includes pipe and equipment hangers, supports, and associated anchors, equipment bases and supports, sleeves, and seals.

1.02 REFERENCES

ANSI/ASME B31.1 – Power Piping, Sections 120 and 121 of ASME B31.1.

1.03 SUBMITTALS

- A. Supply submittals, Shop Drawings, product data, and samples under provisions of Section 013300 - Submittal Procedures and Section 013323 - Shop Drawings, Product Data, and Samples.
- B. As a minimum, submit the following items:
 - 1. A layout of the systems including location on fixed and movable joints.
 - 2. Details of design and fabrication of joints.
 - 3. Details of support brackets, cradles, pads, thrust resisting elements, and other supporting elements.
 - 4. Other pertinent elements necessary for a complete installation.
 - 5. Design calculations for submitted items.

PART 2 PRODUCTS

2.01 HANGERS AND SUPPORTS

- A. For uninsulated lines two inches (2") and less and for drainage and downspout lines provide hangers which are adjustable swivel ring type fabricated of malleable iron.
- B. For uninsulated lines larger than two inches (2") and for insulated lines, except drainage and downspout piping, provide adjustable clevis type hangers. Size hangers to allow insulation to extend unbroken through the hanger.
- C. Fabricate hangers installed in valve vaults, wet wells, and other below grade areas of cadmium plated or stainless steel.

2.02 INSERTS

Make inserts for individual hangers of galvanized malleable iron; include removable nuts held in place by V-type teeth on the insert body and nut. Make continuous-slotted channel inserts of galvanized steel with integral anchors at six-inch (6") centers. Provide factory finished steel snap-on cover plates on channel inserts between support attachments.

2.03 EXPANSION BOLTS

Use expansion bolts for support which are stainless steel wedge type. Do not use expansion bolt anchors with lead.

2.04 PIPE SADDLES

Fabricate pipe saddles of hot dip galvanized steel. Saddles for supporting pipe from the floor shall be at least nine inches (9") in length and as wide as the outside diameter of the pipe. Make a bearing support of 120°. Mount saddles on concrete pads at least two inches (2") high.

2.05 FRAMING HANGERS

Use factory fabricated metal framing systems with factory applied primer paint as framing for wall type hangers, trapeze hangers, and tunnel stanchions. Attach supports to structures with inserts for new concrete, with surface mounting methods for masonry or existing concrete, and with welding or clamps for structural steel. Make pipe supports fabricated on the site of structural steel members with raw edges ground and dressed. Rest floor supports in areas with uncovered concrete floors on concrete pads not less than two inches (2") high.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Hang piping inside structures supported from the floor or racked adjacent to walls.
- B. Provide inserts cast in concrete walls or slabs for hanging and supporting pipe. If materials not galvanized or cadmium plated, paint them with primer before installation.
- C. Design fabricate and install support components in general conformance with Sections 120 and 121 of ANSI B31.1, Power Piping, except as modified in this Section.

3.02 PIPE HANGERS AND SUPPORTS

- A. Support, brace, and anchor interior piping to prevent movement in any direction because of pressure, temperature, flow, or water hammer, except at properly located expansion joints and fittings.
- B. Provide two (2) pipe guides on each side of expansion joints at which pipe movement occurs. The first guide shall be not more than four (4) pipe diameters from the joint and the second not more than fourteen (14) diameters. Provide additional guides as required to maintain pipe alignment, spaced as required for the pipe size, fluid pressure and temperature inside the pipe, and as recommended by the expansion joint manufacturer or as shown.
- C. Maximum support spacing and hanger rod sizes for metal pipe containing liquids are as follows:

Nominal Pipe Size (Inches)	Support Spacing (Feet)	Rod Diameter (Inches) One Rod – Two Rods
<1	7	3/8 – 3/8
1-1/4 – 1-1/2	8	3/8 – 3/8
2	10	3/8 – 3/8
2-1/2	11	1/2 – 3/8
3	12	1/2 – 3/8
4 & 5	14	1/2 – 3/8
6 & 8	17	1/2 – 3/8
10	17	5/8 – 1/2
12	17	3/4 – 1/2
14	17	3/4 – 5/8
16	17	7/8 – 5/8

18 & 20	17	1 – 3/4
24	17	1-1/8 – 7/8

- D. For valves four inches (4") and larger in unburied horizontal lines support the valve on both sides when located within eighteen inches (18") of the valve or meter. Provide additional supports where required so that piping loads do not place damaging stresses on supports, valves, and equipment. Where necessary, block up pipe at supports to permit installation of insulation.
- E. Support unburied horizontal runs of rubber hose and non-metallic pipe for the entire length by means of troughs consisting of structural steel channels or angles supported at not more than ten-foot (10') intervals.
- F. Support piping not included in the foregoing tabulation as indicated or in accordance with the pipe manufacturer's recommendations, if not indicated.
- G. Anchor buried pressure pipe at each fitting causing a change in direction of 10° or more. Concrete thrust blocks or other restraining devices in any satisfactory combination may be used. Submit the details of the method proposed for use, together with design calculations, to ENGINEER before installation.

END OF SECTION

333203 AIRLIFT PUMPS

PART 1 GENERAL

1.01 SCOPE

- A. Furnish stainless steel or galvanized steel airlift pumps designed to be installed in the locations shown on the Drawings and specified herein.
- B. Each airlift shall include inlet piping, air diffuser, eductor pipe, outlet box with flow measuring weir, air supply line, stainless steel ball valves, supports, and mounting hardware as required to form a complete single piece unit as shown on the Drawings and specified herein.
- C. Airlifts shall function smoothly without excess surging or splash. Airlifts that are installed and that result in splashing of sludge onto adjacent equipment or walkway shall be removed, repaired, and replaced as necessary until such time as the operation is satisfactory to the ENGINEER, regardless of submittal fabrication drawings being approved.

1.02 SUBMITTALS

- A. Submit information to establish compliance with the specifications in accordance with the procedures set forth in Section 013300 Submittal Procedures. This material shall include a dimensioned drawing showing how the airlift pumps will fit into the required locations.
- B. Furnish engineering hydraulic calculations and nomographs based on actual testing showing hydraulic capacity at required design conditions.

1.03 QUALITY CONTROL

- A. Manufacturer's Qualifications: The airlift pump manufacturer will have five years minimum design and manufacturing experience with stainless steel or galvanized steel airlift pumping units.
- B. The manufacturer shall warrant airlift pumping units to be free from defects for a period of twelve (12) months from initial startup (substantial completion), regardless of the date of shipment to the job site. Any repairs or adjustments required within the warranty period shall be furnished by the manufacturer without labor or material cost to the OWNER.

PART 2 PRODUCTS

2.01 CONSTRUCTION

- A. The eductor pipe shall be a cylinder of uniform diameter of the sized shown on the Drawings. Stiffener rings as required shall be welded to the outside of the eductor pipe.
- B. Support brackets shall be furnished with each airlift as required to properly support each airlift.
- C. The eductor pipe shall be furnished as part of the airlift pump and attached to the air diffuser or the bottom of the eductor pipe as required.
- D. An air diffuser shall be provided to release air in the liquid being pumped. The air diffuser shall be designed to diffuse air uniformly at the design air flow rates with minimum head loss.
- E. All air control valves shall be stainless steel ball valves or nickel plated.

- F. A sludge measuring weir shall be furnished with each sludge airlift as shown on the Drawings. Each unit shall include an inlet connection, inlet energy dissipating area and ninety degree (90°) measuring weir. The exit channel of the weir shall have an open end to prevent solids buildup and facilitate cleaning. A weir calibration chart with flow rates shall be provided by the manufacturer. The inlet piping and sludge measuring boxes shall be fabricated of minimum 3/16" thick 304L stainless steel (HDG accepted as alternate).
- G. All welded parts and assemblies including the eductor pipe, inlet pipe, air diffuser, air supply line, support brackets shall be furnished from sheets and plates of 304L stainless steel with a 2D finish conforming to AISA 304L and ASTM 240 (latest editions). Other non-welded parts and pieces such as bolts, washers, and follower flanges shall be made of 304 stainless steel. All anchor bolts and nuts shall be 303 series stainless steel. All 304L stainless steel material shall conform to the chemical requirements of ASTM A 240 and AISA 304L (latest editions) except that the carbon content shall be limited to 0.030% (HDG accepted as alternate).
- H. All welding on the equipment shall be completed in the factory. Field welding shall not be permitted. All welding shall be done by the shielded arc, inert gas, MIG or TIG method. Filler wire shall be added to all welds to provide for a cross section of weld metal equal to or greater than the parent metal. Both welds shall have full penetration to the interior surface and gas shielding shall be provided to the interior and exterior of the joint. Interior weld beads shall be smooth, evenly distributed, with an interior projection not exceeding 1/16-inch beyond the I.D. of the air header or fitting.
- I. The outside weld area shall be wire brushed. Brushes shall be of stainless steel and used on stainless steel. All discoloration and deposits left by welding shall be removed by pickling.
- J. After fabrication of stainless steel assemblies and parts shall be passivated by immersion in a pickling solution of six percent (6%) nitric acid and three percent (3%) hydrofluoric acid at one hundred forty degrees Fahrenheit (140°F) for a minimum of fifteen (15) minutes. Parts shall be free of iron particles or other foreign material. A complete neutralizing operation shall be required by immersion in tri-sodium phosphate rinse.
- K. In lieu of sludge boxes, measuring weirs, and thermal flow meters, the airlift pumps may be supplied with differential pressure gauges to measure RAS and WAS flows with graph calibrated to the gauges to calculate flow.

2.02 QUANTITIES

- A. Provide two (2) airlifts to pump return sludge from the Clarifier sump to beginning of corresponding Aeration.
- B. Provide airlifts to pump waste sludge from Clarifier sumps to Digester Basins.
- C. Provide scum airlift for each proposed clarifier scum collector Aeration Basin.

PART 3 EXECUTION

3.01 ERECTION

Airlift pumps shall be installed in accordance with the Drawings and approved Shop Drawings.

3.02 FIELD QUALITY CONTROL

The unit will be inspected, operated, and tested after installation.

END OF SECTION

333210 BYPASS PUMPING

PART 1 GENERAL

1.01 SCOPE

This Section includes requirements for installation, operation, and maintenance of bypass pumping systems to facilitate the uninterrupted service of an existing sanitary sewer system and/or a wastewater treatment plant during construction.

1.02 DEFINITIONS

Bypass pumping is the installation and operation of bulkheads, plugs, hoses, piping, and pumps to maintain sewage flow and prevent backup and overflow. Bypass pumping also includes the installation and operation of equipment necessary to transport raw and partially treated wastewater from one basin to another as required during construction.

1.03 SYSTEM DESCRIPTION

- A. Bypass pumping provides continuous sewer service to the users of the sanitary sewer system while maintenance or construction operations are in progress by diverting flow when necessary around the construction location and pumping it to a downstream manhole.
- B. Maintain sewage flow to prevent backup or overflow onto streets, yards, and unpaved areas or into buildings, adjacent ditches, storm sewers, and waterways.
- C. Do not divert sewage outside of the sanitary sewer system.
- D. Any time the bypass pump(s) are operating, an experienced operator shall be on-site to monitor the operation, adjust pump speed, valves, etc., make minor repairs to the system and report problems.

1.04 SUBMITTALS

- A. Make submittals in conformance with SECTION 013300 - SUBMITTAL PROCEDURES.
- B. Bypass pumping systems bypassing line segments with forty-two-inch (42") diameter or greater sewers, require submittal (prior to installation) of a Bypass Pumping Plan with sufficient detail to show the location, number and size of pumps, the number, location, size and type of hoses and/or rigid piping, and the location of the downstream discharge.
- C. Show any special features where pipes or hoses cross roadways, such as temporary trenches, support bridges, etc.

1.05 SCHEDULING

- A. If OWNER is operating or maintaining bypass pumping in the construction area, coordinate with ENGINEER, as necessary.
- B. If CONTRACTOR is operating or maintaining bypass pumping in the construction area, keep OWNER and ENGINEER informed of schedule to install, operate, and remove the system. Forty-eight (48) hour advance notice to ENGINEER of commencement of bypass pumping is required.
- C. Cease bypass pumping operations when directed by Engineer.

PART 2 PRODUCTS

2.01 MATERIALS

Design piping, joints, and accessories to withstand at least twice the maximum system pressure or 50 psi, whichever is greater.

2.02 PUMPS

- A. *Type*: self-priming, submersible electric or diesel powered.
- B. *Quality*: in good working order, with a working pressure gauge on the discharge.
- C. *Noise*: meet the requirements of the local sound ordinance.

PART 3 EXECUTION

3.01 SHORT-TERM ISOLATION

If sewage flow quantities or the time of interruption of flow through the reach do not adversely affect the operation of upstream mains and service lines, install an inflatable, tightly fitting pneumatic plug in the pipe at the manhole at its upper end or use another approved method to isolate the line.

3.02 EXECUTION

- A. Continue bypass pumping as long as is necessary to complete the Work in or on the affected reach.
- B. Discharge diverted sewage into an operating sewer for transportation to the treatment plant.
- C. Do not discharge onto surface areas, into ditches, or storm drains.
- D. Do not allow sewage to be leaked, dumped, or spilled in or onto any area outside of the existing sanitary sewer system.
- E. In case of accidental spill or overflow, immediately stop the discharge, clean up, and disinfect the spill. Promptly notify ENGINEER so that required reporting can be made to the Texas Commission on Environmental Quality (the "TCEQ") and the Environmental Protection Agency (the "EPA") by Engineer.

3.03 CLEANING

When bypass pumping operations are complete, piping shall be drained into the sanitary sewer prior to disassembly.

PART 4 MEASUREMENT AND PAYMENT

Bypass pumping shall be measured by the day at the contract unit prices for the actual number of days which bypass pumping is necessary.

END OF SECTION

333232 PIPE BURSTING/CRUSHING

PART 1 GENERAL

1.01 SCOPE

This Section defines the approved methods and materials for the rehabilitation of existing gravity sewer lines by the pipe bursting or pipe crushing process.

1.02 DEFINITION

The pipe bursting process is defined as the reconstruction of gravity sewer pipe by installing an approved pipe material, using one of the pre-approved methods set forth in Paragraph 2.01 of this Section. Essentially the process involves the use of a static, hydraulic, or pneumatic hammer "moling" device, suitably sized to break out the old pipe or using a modified boring "knife" with a flared plug that implodes and crushes the existing sewer pipe. Forward progress of the "mole" or the "knife" may be aided by the use of hydraulic equipment or other apparatus, as specified in the approved methods. The replacement pipe is either pulled or pushed into the bore. The method allows for replacement pipe size on sizes from eight inches (8") through fifteen inches (15") or up-sizing in varying increments up to fifteen inches (15"). This Section is based on the precedent that the pipe bursting/crushing system used has been approved by ENGINEER.

1.03 PROCESS LIMITATIONS

Though the installation process may be licensed or proprietary in nature, CONTRACTOR shall not change any material, thickness, design values, or procedural matters stated or approved in the submittals, without ENGINEER's prior knowledge and approval. CONTRACTOR shall submit in writing full details about component materials, their properties, and installation procedures and abide by them fully during the entire course of the Project.

1.04 ACCEPTABLE METHODS OF PIPE BURSTING

Acceptable methods for pipe bursting include those used by the PIM Corporation, Piscataway, New Jersey; McLat Construction (McConnell System for Pipe Crushing), Houston, Texas; Trenchless Replacement Systems, (TRS System), Houston, Texas; and Trenchless Replacement Systems, Calgary, Canada, or other approved equal.

1.05 COMPLIANCE WITH SPECIFICATIONS

The minimum required performance criteria and/or standards, physical/structural properties, chemical-resistance tests, and the replacement pipe thickness as given in this Section shall be strictly followed. It shall be the responsibility of CONTRACTOR to comply with the specifications in full without any request for change after the award of the contract.

1.06 RELATED SECTIONS

SECTION 333953 - MISCELLANEOUS WORK IN REHABILITATION OF SANITARY SEWERS

PART 2 MATERIALS

2.01 SOLID WALL POLYETHYLENE PIPE (HDPE)

- A. The replacement pipe shall be manufactured from a high density, high-molecular weight polyethylene resin which conforms to ASTM D-1248 and meets the requirements for Type III, Class B, Grade P34, Category 5, and has a PPI rating of PE 3408, when compounded. The pipe produced from this resin shall have a minimum cell classification of 345434D or E (inner wall shall be light in color) under ASTM D-3350.

1. Before beginning Work, CONTRACTOR shall submit to ENGINEER for approval, the vendor's specific technical data with complete physical properties of pipe and pipe dimensions pertinent to this job.
 2. A certificate of "Compliance with Specification" shall be furnished for all materials to be supplied.
- B. The outside diameter and minimum wall thickness shall conform to dimensions listed in Table I and shall be measured in accordance with ASTM D-2122.

**TABLE I
POLYETHYLENE REPLACEMENT PIPE DIMENSIONS**

IPS NOMINAL OD (INCHES)	MINIMUM OD (INCHES)	MINIMUM WALL THICKNESS (INCHES)			
		SDR 21	SDR 19	SDR 17	SDR 11
7	7.125	.340	.375	.419	.648
8	8.625	.411	.454	.507	.784
10	10.750	.512	.566	.632	.977
12	12.750	.607	.671	.750	1.159
14	14.0	.667	.737	.824	1.273
16	16.0	.762	.842	.941	1.455

- C. *The SDR Classification for various depths shall be as follows:*

The Standard Dimension Ratio (SDR), which is the ration of the outside diameter (OD) of the pipe to its minimum wall thickness, shall be specified for the various depths listed in Table II. Depth shall be measured from the upstream and downstream rim to the invert of the existing sewer in the pipe segment to be replaced. The SDR shall be selected for the deeper of the two manholes for a given pipe segment.

**TABLE II
POLYETHYLENE REPLACEMENT PIPE SDR
(Applicable SDR for Depth Range)**

HDPE PIPE SDR	MAXIMUM DEPTH (FEET)
21	10
19	15
17	20
11	OVER 20

- D. *Use of Clamp and Encasement:* Where excavations for the insertion of the replacement pipe are made between two manholes, the ends of the HDPE will be cut smooth and square to the axis, so that it can be joined so that both ends meet and touch uniformly and continuously. An all stainless steel (including bolts and lugs) full-circle universal clamp coupling with a one-quarter-inch (1/4") minimum thickness grid-type gasket shall be used, JCM Industries Type 108 or equal. Clamps shall be selected to fit the outside diameter of the replacement pipe. Minimum clamp widths shall be provided in accordance with Table III.

**TABLE III
MINIMUM CLAMP WIDTHS**

OUTSIDE DIAMETER OF LINER PIPE (INCHES)	MINIMUM WIDTH OF CLAMP (INCHES)
7.125	15
8.625	18
10.750 Or Greater	30

- E. *Pit Backfill:* In all excavations where the replacement pipe is uncovered (i.e., insertion pits, sag elimination pits), pipe bedding and backfill shall be installed as indicated on the Drawings - Sanitary Sewer Bedding and Backfill Detail. Visual inspection is required for approval of bedding before backfilling is completed.

2.02 CENTRIFUGALLY - CAST FIBERGLASS PIPE

- A. *Reference Specifications:* All replacement pipes, joints, and fittings shall be manufactured in conformance with the requirements of ASTM D-3262 - Standard Specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe," and shall have a standard cell classification of ASTM D-3262-1-2-3. The pipe shall exceed the minimum requirements of ASTM D-2992 and ASTM D-3681. Acceptable manufacturer is Hobas, USA or approved equal.
- B. *Resin Systems:* The manufacturer shall use approved polyester resin systems for which he can provide a proven history of performance in this particular application.
- C. *Glass Reinforcements:* The reinforcing glass fibers used to manufacture the components shall be of the highest quality commercial grade of E-type glass filaments with binder and sizing compatible with impregnating resins.
- D. *Fillers:* Sand shall be minimum 98% silica with a maximum moisture content of 0.2%.
- E. *Joints:* Unless otherwise specified, pipe shall be connected with gravity jacking bell-spigot joints. The joint shall have approximately the same outside diameter as the pipe. Joints must utilize elastomeric sealing gaskets as the sole means to maintain joint water-tightness and must meet the performance requirements of ASTM D-4161.
- F. *Dimensions:*
1. General: The pipe shall be furnished for the sewer diameters specified in the bid proposal and within the tolerances stated. They shall be manufactured by the centrifugal casting process and result in a dense, nonporous, corrosion-resistant, consistent composite structure to meet the required conditions as shown on the Drawings. Pipe shall be supplied in nominal lengths of four feet (4'), when possible. Actual laying length shall be the nominal length +/- two inches (2"). At least 90% of the total footage of each size and class of pipe, excluding special order lengths, shall be furnished in nominal length sections.
 2. Wall Thickness: The outside diameter and minimum average wall thickness shall be as follows:

EXISTING PIPE DIAMETER	LINER O.D.	CL SN72 WALL THICKNESS
12"	13.45"	0.53"
15"	17.40"	0.61"
 3. Pipe Ends: All pipe ends shall be square to the pipe axis plus or minus 0.10 inches, or plus or minus 0.5% of the nominal diameter (whichever is greater).
- G. *Fittings:* Flanges, elbows, reducers, tees, wyes, and other fittings, shall be capable of withstanding all operating conditions. They may be capable of withstanding all operating conditions. They may be contact-molded or manufactured from metered sections of pipe joined by glass fiber-reinforced overlays.
- H. *Stiffness Classes:* Pipes shall be supplied with a minimum stiffness class of 72 psi. The stiffness is to be measured in accordance with ASTM D-2412. Pipes with a stiffness class greater than 72 psi may be used with the approval of ENGINEER.
- I. *Use of Clamp and Encasement:* Where excavations for the insertion of the replacement pipe are made between two manholes, the ends of the pipe will be cut smooth and square to the axis, so that it can be joined so that both ends meet and touch uniformly and continuously. An all-stainless steel (including bolts and lugs) full-circle universal clamp coupling with a one-quarter-inch (1/4") minimum thickness grid-type gasket shall be used, such as JCM Industries Type 108, or equal. Clamps shall be selected to fit the outside diameter of the replacement pipe. Minimum clamp widths shall be thirty inches (30").

- J. *Pit Backfill*: In all excavations where the replacement pipe is uncovered (i.e., insertion pits, sag elimination pits), bedding shall be installed as indicated on the Drawings – Sanitary Sewer Bedding and Backfill Detail. Visual inspection is required for approval of bedding before backfilling is completed.

PART 3 EXECUTION

3.01 GENERAL

This Section specifies the method or process for furnishing all labor, materials, tools, equipment, and incidentals necessary to provide for the complete rehabilitation of deteriorated gravity sewer lines by the pipe bursting/crushing method.

3.02 PRE-INSTALLATION PREPARATIONS

- A. CONTRACTOR shall submit a work plan to ENGINEER for review and acceptance. The work plan shall address the following minimum preparation steps, unless approved otherwise by ENGINEER.
- B. *Safety*: CONTRACTOR shall carry out operations under this section in strict accordance with all applicable OSHA Standards. Particular attention is drawn to those safety requirements involving Work on an elevated platform and entry into a confined space. It shall be CONTRACTOR's responsibility to comply with OSHA standards and regulations pertaining to all aspects of the Work.
- C. *Pre-Installation Television Inspection*: It shall be the responsibility of CONTRACTOR to video (TV) inspect the sewer pipe immediately before the pipe bursting/crushing to ensure that the existing pipe conditions are still acceptable for pipe bursting/crushing. This inspection as well shall be incidental to the installation of the replacement pipe. The television inspections after installation are paid by separate bid item.
- D. *Line Obstructions*: When required for acceptable completion of the pipe bursting/crushing process, CONTRACTOR shall provide for continuous sewage flow around the sections of pipe designated for the installation of replacement pipe. The pump bypass lines shall be of adequate capacity and size to handle the flow in accordance with SECTION 333953 - MISCELLANEOUS WORK IN REHABILITATION OF SANITARY SEWERS.
- E. *Line Obstructions Removal*: If pre-installation video (TV) inspection reveals an obstruction in the existing sewer (heavy solids, dropped joints, protruding service taps, or collapsed pipe) which will prevent completion of the pipe bursting/crushing process, and that cannot be removed by conventional sewer cleaning equipment, then an obstruction removal shall be made by CONTRACTOR, with approval of ENGINEER.
- F. *Sags in Line*: If the pre-installation video (TV) inspection reveals a sag in the existing sewer, CONTRACTOR shall notify ENGINEER immediately with a recommended solution.
- G. *Bypass Pumping*: CONTRACTOR is responsible for making adequate and suitable arrangements for any bypass pumping that may become necessary to prevent any backflow into houses or buildings, or onto the streets between the time the replacement pipe is installed and the service reconnections have been made, and approved by ENGINEER.

3.03 PIPE INSTALLATION PROCEDURES

- A. CONTRACTOR shall submit detailed information of the procedure and the steps to be followed for the installation of the pipe bursting/crushing system selected, even if the process is named in the specification. All such instructions and procedures submitted shall be carefully followed during installation. Any proposed changes in installation procedures shall require submittal of revised procedures and acceptance by ENGINEER.
- B. *Finished Pipe*: The installed replacement pipe shall be continuous over the entire length of each pipe segment from manhole-to-manhole and shall be free from visual defects such as foreign inclusions, concentrated ridges,

discoloration, pitting, varying wall thickness, pipe separation, and other deformities. Replacement pipe with gashes, nicks, abrasions, or any such physical damage which may have occurred during storage and/or handling, which are larger or deeper than 10% of the wall thickness shall not be used and shall be removed from the Site. The replacement pipe passing through or terminating in a manhole shall be carefully cut out in a shape and manner approved by ENGINEER. The invert and benches shall be streamlined and improved for smooth flow. The installed pipe shall meet the leakage requirements of the pressure test specified later.

C. *Pipe Jointing:*

1. Polyethylene Pipe:

- a. General: Sections of polyethylene replacement pipe shall be assembled and joined on the Site. Jointing shall be accomplished by the heating and butt-fusion method in strict conformance with the manufacturer's printed instructions.
- b. Butt-Fusion System: The butt-fusion system for pipe jointing shall be carried out in the field by operators with prior experience in fusing polyethylene pipe with similar equipment using proper jigs and tools per standard procedures outlined by the pipe manufacturer. These joints shall have a smooth, uniform, double rolled back bead made while applying the proper melt, pressure, and alignment. It shall be the sole responsibility of CONTRACTOR to provide an acceptable butt-fusion joint. All joints shall be made available for inspection by ENGINEER before insertion. The replacement pipe shall be joined on the Site in appropriate working lengths near the insertion pit. The maximum length of continuous replacement pipe which shall be assembled above ground and pulled on the Site at one time shall be six hundred (600) linear feet.

2. Centrifugally Cast Fiberglass Pipe:

- a. General: Sections of centrifugally cast fiberglass pipe shall be manufactured with an integral straight bell, gravity jacking bell-spigot joint. This joint shall be affixed to one end of the pipe by the manufacturer.
- b. Gaskets: An elastomeric gasket, supplied by the manufacturer, shall be placed on the groove of the spigot, just prior to installation. The gasket shall be properly seated, then lubricated per manufacturer's instruction. All joints shall be made available for inspection by ENGINEER before insertion. The replacement pipe shall be joined in or near the insertion pit.
- c. The location and number of insertion or access pits shall be planned by CONTRACTOR and submitted in writing for approval by ENGINEER prior to excavation. The pits shall be located such that their total number shall be minimized, and the length of replacement pipe installed in a single pull shall be maximized. Locations of damaged pipe shall be used for insertion pits if directed by ENGINEER.

3.04 SEALING OF PIPE TO MANHOLE

- A. *General:* The replacement pipe shall be installed with a tight-fitting seal with the existing or new manhole. Half-inch (1/2") diameter activated oakum band soaked in Scotch Seal 5600 or equal shall be applied circumferentially on the replacement pipe and encased with a cementitious mortar to prevent inflow at the manhole.
- B. *Completion of Sealing:* The replacement pipe in the manhole shall be sealed as specified above before proceeding to the next manhole section. All manholes shall be individually inspected for replacement pipe cut-offs, benches, and sealing works.

3.05 INSTALLATION OF BENCHES IN MANHOLE

The top half of the pipe within the manhole shall be neatly cut off and not broken or sheared off, at least four inches (4") away from the manhole walls. The channel in the manhole shall be a smooth continuation of the pipes and shall be merged with other lines or channels, if any. Channel cross-section shall be U-shaped with a minimum height of half pipe diameter to

three-fourths of the pipe diameter for fifteen inches (15") and larger. The side of the channels shall be built up with mortar or concrete, as specified, to provide benches at a maximum of 1-in-12 pitch toward the channel.

3.06 POST-CONSTRUCTION TELEVISION OF COMPLETED SECTIONS

- A. *Thirty-Day Test*: It shall be the responsibility of CONTRACTOR to video (TV) inspect the sewer pipe thirty (30) days after the pipe bursting/crushing to ensure the new pipe conditions are acceptable.
- B. *One-Year Test*: CONTRACTOR shall televise the line again at one year after installation, just prior to the expiration of the one year guarantee. If visible deflection of the pipe is discovered as determined by ENGINEER, CONTRACTOR will excavate defect and do a point repair at no additional cost to OWNER.

PART 4 PAYMENT

- A. *Pipe Bursting*: The lump sum bid for each rehabilitation of the sewer main by pipe bursting shall be full compensation for all materials, labor, equipment, and incidentals required to install the replacement pipe within the sewer main. Payment for the replacement pipe shall also include the cost of sealing the replacement pipe in the manholes, reworking the manhole inverts and benches, etc. Payment shall be for actual linear footage for replacement pipe installed in the field and shall be measured between the center-lines of the manholes.
- B. *Television Inspection*: Television inspection before rehabilitation, thirty (30) days after rehabilitation, at one year and relevant submittals shall be incidental to the Project. Include cost in the price per foot of pipe burst.
- C. *Service Reconnections*: Payment for service connections restored by excavation and reconnecting with approved fittings shall be made separately as per bid item. Excavation for a service connection which is found plugged and no longer required shall be left as is and paid as per appropriate bid item for service reconnection.
- D. *Trench Safety Systems*: Separate payment will be made for trench safety system.
- E. *Cement Stabilized Backfill*: Backfill with cement-stabilized sand will be paid per cubic yard installed.
- F. *Diversion Pumping*: The cost of diversion pumping required around an insertion pit, from a manhole upstream to a manhole downstream, shall be lump sum per reach of sewer.
- G. *Excavation of Insertion Pits*: Excavation for insertion pits shall not be paid for separately but shall be included in the unit price bid for pipe bursting/crushing.
- H. *Point Repairs for Line Obstructions*: If line obstructions are found during the pre-construction televising of the line(s), payment will be for the length and size of the point repair as found in the bid items for point repairs.

END OF SECTION

333400 SANITARY SEWER FORCE MAINS

PART 1 GENERAL

1.01 SCOPE

This section includes sanitary sewer force mains and accessories.

1.02 RELATED SECTIONS

SECTION 013300 - Submittal Procedures

SECTION 013323 - Shop Drawings, Product Data and Samples

SECTION 033100 - Structural Concrete

SECTION 315010 - Trench Safety Systems

SECTION 315020 - Trench Dewatering Systems

SECTION 313213 - Cement Stabilized Sand Backfill

1.03 REFERENCES

- A. ASTM A48 - Gray Iron Castings
- B. ASTM C76 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
- C. ASTM C144 - Aggregate for Masonry Mortar
- D. ASTM C270 - Mortar for Unit Masonry
- E. ASTM D2241 - Polyvinyl Chloride (PVC) Pressure-Rated Pipe (SDR Series)
- F. ASTM D3139 - Joints for Plastic Pressure Pipe Using Flexible Elastomeric Seals
- G. AWWA C104 - Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water
- H. AWWA C105 - Polyethylene Encasement for Ductile Iron Pipe Systems
- I. AWWA C110 - Ductile Iron Fittings 3 in. through 48 in., for Water and Other Liquid
- J. AWWA C111 - Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings
- K. AWWA C151 - Ductile Iron Pipe, Centrifugally Cast, for Water or Other Liquids
- L. AWWA C200 - Steel Water Pipe, 6-Inch and Larger

1.04 SUBMITTALS

- A. Submittals shall conform to requirements of Section 013300 - Submittals and SECTION 013323 - Shop Drawings, Product Data and Samples.
- B. Submit manufacturer's data and pipe installation guide, confirming compliance with these specifications.
- C. NO PIPE SHALL BE INSTALLED UNTIL SUBMITTALS ARE APPROVED BY THE ENGINEER.

- D. Submit proposed methods, equipment, materials, and sequence of operations for force main construction. Plan operations to minimize disruption of utilities to occupied facilities or adjacent property.
- E. For installation by boring or auger, submit:
 - 1. Description of mechanized excavating equipment.
 - 2. Method of controlling line and grade.
 - 3. Grouting techniques to be used for filling annular void between pipe and casing, and void between pipe or casing and the ground, including equipment, pumping and injection procedures, pressure grout types, and mixes.
 - 4. Locations and dimensions of pits.
 - 5. Pit design and construction drawings.
 - 6. Identification of casings required and paid under the Contract and casings installed at the CONTRACTOR's option.
 - 7. Design of casings.
 - 8. Prepare pit and casing design submittals that are site specific. Have pit and casing design submittals signed and sealed by a qualified Professional ENGINEER registered in the State of Texas.
- F. Submit shop drawings and design calculations for joint restraint systems.
- G. Submit qualifications, proposed methods, equipment, materials, and sequence for acceptance testing of the pipeline. Submit evidence of experience with pipeline proving by pigging for at least three projects of equal or greater scope; project list shall include dates, size and length of pipe, location, OWNER name, contact person, and telephone number. Provide certificate of training by the manufacturer of the pigging equipment being used.
- H. Submit test reports as specified in Part 3 of this Section.

1.05 CRITERIA FOR DETERMINING CASING INSTALLATION LOADS

- A. Select and design casing pipe and pipe joints to carry the thrust of jacks or loads due to the pulling mechanism in combination with overburden, earth, and hydrostatic loads. Select casings for dry auger to withstand the action of the auger without damage.
- B. Have a Professional Engineer licensed in the State of Texas determine design stresses, design deflections, and factors of safety for design of casing. Present such determination as a part of the design submittal. Submittals shall be sealed by the licensed ENGINEER. Apply the following maximum casing pipe stresses and deflections to casings shown on the DRAWINGS:
 - 1. Design stress in the pipe wall: Fifty percent (50%) of the minimum yield point of the steel or 18,000 psi, whichever is less, when subjected to the applicable loading conditions.
 - 2. Wall thickness: Maximum allowable deflection which does not exceed three percent (3%) of nominal casing diameter.
- C. Use H-20 vehicle loading distributions as criteria for truck loading in accordance with AASHTO.

- D. When not specifically indicated on the DRAWINGS, select casing diameter to permit practical installation (including skids if applicable) and grouting.

PART 2 PRODUCTS

2.01 DUCTILE IRON PIPE AND FITTINGS

- A. *Pipe and Fittings*: push-on type, Pressure Class 150, conforming to AWWA C110 and AWWA C151.
- B. *Joints*: push-on type with rubber gaskets conforming to AWWA C111.
- C. *Interior Lining*: cement mortar lining conforming to AWWA C104.
- D. *Exterior Lining*: polyethylene encasement conforming AWWA C105.

2.02 POLYVINYLCHLORIDE (PVC) PIPE

- A. *Pipe*: SDR 26 (Polyvinyl Chloride) pressure rated pipe conforming to ASTM D2241.
- B. *Cell Class*: PVC 1120 as defined in ASTM D2241 Appendix X1.2.1.
- C. *Integral coupling sockets*: conform to ASTM D3139.
- D. *Fittings*: Provide lined ductile iron fittings conforming to Paragraph 2.01 - Ductile-Iron Pipe and Fittings.

2.03 STEEL CASING PIPE

Provide casing pipe, which is straight, circular in section, uncoated, welded steel pipe, manufactured in accordance with AWWA C200.

2.04 THRUST RESTRAINT

- A. Unless otherwise shown on the DRAWINGS, provide concrete thrust blocking for force mains up to twelve inches (12") in diameter, to prevent movement of buried lines under pressure at bends, tees, caps, valves and hydrants. Blocking shall be Portland cement concrete, as specified in Section 033100 - Structural Concrete. Place concrete in accordance with details on the DRAWINGS. Place thrust blocks between undisturbed ground and the fittings. Anchor fittings to thrust blocks so that pipe and fitting joints are accessible for repairs. Concrete shall extend from 6 inches below the pipe or fitting to twelve inches (12") above.
- B. For force mains larger than twelve inches (12") in diameter, and where indicated on the DRAWINGS, provide restrained joints. Install restrained joints for the length of pipe on both sides of each bend or fitting for the full length shown on the DRAWINGS.
- C. Horizontal and vertical bends between zero and ten degrees (10°) deflection angle will not require thrust blocks or harnessed or restrained joints.
- D. Horizontal and vertical bends between ten degrees (10°) and ninety degrees (90°) deflection angle shall have thrust restraint as shown on the DRAWINGS.
- E. Provide thrust restraint at tees, plugs, blowoff drains, valves, and caps, as indicated.

- F. Reinforced concrete encasement of force main pipe and fittings may be used in lieu of manufactured joint restraint systems. Alternate joint restraint systems using reinforced concrete encasement shall conform to the following design requirements:
1. Design calculations shall be performed and sealed by a Professional ENGINEER licensed in the State of Texas.
 2. Design calculations shall be based upon soil parameters quantified in the geotechnical report for the site where the alternative thrust restraint system is to be installed. If data is not available for the site, use parameters recommended by the geotechnical ENGINEER.
 3. The design system pressure shall be the specified test pressure.
 4. The following safety factors shall be used in sizing the restraint system:
 - a. Apply a factor of safety equal to 1.5 for passive soil resistance.
 - b. Apply a factor of safety equal to 2.0 for soil friction.
 5. The encasement shall be contained entirely within the standard trench width and terminate on both ends at a pipe bell or coupling.
 6. Concrete encasement reinforcement steel shall be designed for all loads, including internal pressure and longitudinal forces. Concrete design shall be in accordance with ACI 318.

2.05 VALVES

- A. *Gate Valves*: Gate valves shall be iron body, Buna-N resilient seated, non-rising stem, O-ring stem seal, with ends as required for connection to adjacent piping. Provide valves with two inch (2") square operating nut. Gate valves shall conform to the latest revision of AWWA C509.
- B. *Sewage Air Release Valves*: Sewage air release valves shall be two inch (2") inlet, 0-150 psi, cast iron body, stainless steel float, stainless steel or bronze trim, viton or delrin seat. Valve shall be equipped with two inch (2") shut-off valve, one inch (1") blow-off valve, 1/2-inch backwash valve with quick disconnect coupling, and 1/2-inch rubber hose with quick disconnect couplings at each end. Provide APCO Model 400WA, Val-Matic Model 48 BWA, or approved equal.
- C. *Flushing Valves*: Provide a quick connect/release valve suitable for connection to a 2 ½ inch fire hose. Valve shall be equipped with a shut-off valve and a check valve suitable for preventing sewage from leaving the force main.

2.06 MANHOLES

- A. *Precast Concrete*: Straight wall sections shall be sixty inch (60") diameter reinforced concrete pipe conforming to ASTM C76, Class III, Wall "C". Transition sections shall be same material but shall taper from forty-eight inch (48") diameter to twenty-four inch (24") diameter.
- B. *Cast Iron*: Manhole frames and covers shall be cast iron conforming to ASTM A48, Class 20, with dimensions as shown on standard detail drawing.
- C. *Concrete*: Class "A" concrete conforming to SECTION 033100 - Structural Concrete.
- D. *Mortar*: Conform to ASTM C270, Type S (A-2) using Portland Cement.
- E. *Mortar Aggregate*: conform to ASTM C144.

2.07 CEMENT STABILIZED SAND BACKFILL

Cement stabilized sand backfill shall conform to SECTION 313213 - Cement Stabilized Sand Backfill.

PART 3 EXECUTION

3.01 PIPE INSTALLATION BY OPEN CUT

A. *Grades shall be determined by:*

1. Batter boards set a minimum of twenty-five foot (25') intervals,
2. String lines set at minimum of twenty-five foot (25'), or
3. Laser beam used in conjunction with batter boards set at five hundred foot (500') intervals.
4. If laser beam is used, furnish certificate from qualified instrument technician showing that laser equipment is correctly calibrated and has been checked for accuracy within ten days prior to use on this project. During course of project, have laser equipment checked for accuracy and proper calibration at least every two (2) weeks or as directed by the ENGINEER, and obtain certificate verifying same from qualified instrument technician.

B. *Excavation of Trench:*

1. Excavation of trenches may be accomplished by ladder type trenching machine or backhoe except where otherwise designated.
2. Trench sides shall be vertical from trench bottom to a point one foot above top of pipe, and may be sloped back on a stable grade above that point.

C. *Trench Safety:* Conform to SECTION 315010 - Trench Safety Systems.

D. *Trench Dewatering:* Conform to SECTION 315020 - Trench Dewatering Systems.

E. *Bedding:*

1. Install pipe on even grade on bedding shaped to fit pipe barrel and bell or coupling and shaped to furnish uniform bearing surface over full pipe length.
2. Provide class "C" bedding unless otherwise designated on DRAWINGS.

F. Install pipe in accordance with the pipe manufacturer's recommendations and as specified in the following paragraphs.

G. Install pipe only after excavation is completed, the bottom of the trench is fine graded, bedding material is installed, and the trench has been approved by the ENGINEER.

H. Install pipe to the line and grade indicated. Place pipe so that it has continuous bearing of barrel on bedding material and is laid in the trench, so the interior surfaces of the pipe follow the grades and alignment indicated. Provide bell holes where necessary. Install pipe with the spigot ends toward the direction of flow. Form a concentric joint with each section of adjoining pipe so as to prevent offsets.

- I. Keep the interior of pipe clean as the installation progresses. Where cleaning after laying the pipe is difficult because of small pipe size, use a suitable swab or drag in the pipe and pull it forward past each joint immediately after the joint has been completed. Remove foreign material and debris from the pipe.
- J. Keep excavations free of water during construction and until final inspection.
- K. When work is not in progress, cover the exposed ends of pipes with an approved plug to prevent foreign material from entering the pipe.
- L. Where sanitary sewer force main is to be installed under an existing water line with a separation distance of less than two feet (2'), install one full joint length of pipe centered on the water line and maintain a minimum six inch (6") separation distance.

3.02 PIPE INSTALLATION BY AUGER OR BORE AND JACK CONSTRUCTION

A. *Location and Size of Pits*

- 1. Show the location of pits on the submitted construction drawings.
- 2. Where possible, locate pits and associated work areas to avoid blocking driveways and cross streets and to minimize disruption to business and commercial interests.
- 3. Avoid pit locations near areas identified as potentially contaminated.
- 4. Make size adequate for construction of any structures indicated on the DRAWINGS.
- 5. Provide adequate room to meet CONTRACTOR's operational requirements.
- 6. Provide a portable concrete traffic barrier around the periphery of the pit, meeting applicable safety standards. Properly maintain the barrier throughout the period the pit remains open. Angle traffic barriers in the direction of the lane flow; do not place barriers perpendicular to on-coming traffic.
- 7. Provide a full cover or other security fencing for each access pit in which there is no construction activity, or which is unattended by CONTRACTOR's personnel.

B. *Dry Auguring of Casing or Pipe*

- 1. Provide jacks, mounted on a frame or against a backstop, of a capacity suitable for forcing the excavating auger and casing or pipe through the soil conditions to be encountered. Operate jacks so that even pressure is applied to the casing or pipe.
- 2. Provide steerable front section of casing to allow vertical grade adjustments. Provide a water level or other means to allow monitoring of the grade elevation of the auger casing.
- 3. Bentonite slurry may be used to lubricate the casing or pipe during installation. The use of water to facilitate removal of spoil is permitted; however, water jetting for excavation of the soil is not allowed when jacking casing or pipe.
- 4. Tolerances from lines and grades shown on the DRAWINGS for the installed pipe are plus or minus six inches (6") in horizontal alignment, and plus or minus 1-1/2 inches in elevation.

C. *Slurry Boring of Casing or Pipe*

1. Drill a small diameter pilot hole and check for line and grade at the receiving end.
2. Re-drill the pilot hole if the bored pipe does not meet specified tolerances.
3. Using the pilot hole as a guide, bore a larger diameter hole of sufficient size for pipe or casing installation.
4. Water jetting is not permitted.
5. Bentonite slurry may be used to maintain a stable hole and furnish lubrication for pipe or casing installation.
6. Tolerances from lines and grades shown on the DRAWINGS for the installed pipe are plus or minus six inches (6") in horizontal alignment and plus or minus 1-1/2 inches in elevation.
7. Completely fill the annular space between the sewer pipe and the surrounding soil or casing with grout, without displacing the pipe during the grouting operation.

3.03 BACKFILLING

- A. Backfill trenches and pits as soon as possible after pipe laying and jointing and in any case, before operations cease for the day. No more than five hundred feet (500') of trench shall be open at any one time.
- B. Above the pipe zone, backfill shall be placed and mechanically compacted to a minimum of ninety-five percent (95%) of Standard Proctor Density, or as otherwise shown on the DRAWINGS, in eight inch (8") layers to within twelve inches (12") of the surface.
- C. For trenches under existing or proposed paved surfaces, unpaved roadways, shoulders, or driveways, and in side-lot easements, trenches shall be backfilled with cement stabilized sand placed and compacted in six inch (6") layers to a minimum of ninety five percent (95%) of Standard Proctor Density.

3.04 RESTORATION OF SURFACES

- A. Replace (or restore to pre-construction condition) pavement, sidewalks, driveways, culverts, inlets, curbing, gutters, shrubbery, trees, fences, improved sod, etc., which are removed or damaged during construction.
- B. Use three thousand (3000) psi concrete for replacement of curbing, gutters, inlets, sidewalks and other concrete construction removed.
- C. Use reasonable care in removal and replacement of shrubbery and trees designated to be replaced at original locations. Where possible, adjust trench alignment to minimize such work. Trees or shrubs deemed sufficiently valuable to save shall be auger, or balled in burlap, set aside in wet sand or in a puddling pit, and later reset as directed.
- D. Restoration of asphalt surfaced flexible base and concrete base streets shall conform to Harris County Specifications 231, 250, and 340.

3.05 HYDROSTATIC TESTING

- A. After the pipe and appurtenance have been installed, test line and drain. Prevent damage to the Work or adjacent areas. Use clean water to perform tests.

- B. ENGINEER may direct tests of relatively short sections of completed lines to minimize traffic problems or potential public hazards.
- C. Test pipe in the presence of ENGINEER.
- D. Test pipe at 150 psig or 1.5 times design pressure of the pipe, whichever is greater. Design pressure of the force main shall be the rated total dynamic head of the lift station pump.
- E. Test pipe at the required pressure for a minimum of two (2) hours according to requirements of Uni-B 3.
- F. Maximum allowable leakage shall be as calculated by the following formula:

$$L = (S) (D) (P^{0.5}) / 133,200$$

Where: L = Leakage in gallons per hour.
 S = Length of pipe in feet.
 D = Inside diameter of pipe in inches.
 P = Pressure in pounds per square inch.

- G. Correct defects, cracks, or leakage by replacement of defective items or by repairs as approved by ENGINEER.
- H. Plug openings in the force main after testing and flushing. Use cast iron plugs or blind flanges to prevent debris from entering the tested pipeline.

3.06 PIGGING TEST

- A. After completion of hydrostatic testing and prior to final acceptance, test force mains longer than two hundred feet (200) by pigging to ensure piping is free of obstructions.
- B. *Pigs*: Provide proving pigs manufactured of an open-cell polyurethane foam body, without any coating or abrasives which would scratch or otherwise damage interior pipe wall surface or lining. Pigs shall be able to pass through reductions of up to sixty five percent (65%) of the nominal cross-sectional area of the pipe. Pigs shall be able to pass through standard fittings such as forty five degree (45°) and ninety degree (90°) elbows, crosses, tees, wyes, gate valves, or plug valves, as applicable to the force main being tested.
- C. *Test Execution*: Pigging test shall be conducted in the presence of the ENGINEER. Provide at least forty eight (48) hours' notice of scheduled pigging of the force main prior to commencing the test.

PART 4 MEASUREMENT AND PAYMENT

4.01 OPEN CUT

- A. Measurement will be taken along the center line of the pipe from end to end.
- B. Payment for open cut installation of force main pipe is on a linear foot basis for each foot of force main installed, complete in place including pipe, excavation, bedding, backfill and special backfill, shoring, earthwork, connections to existing manholes, restraint, and accessories.

4.02 BORE AND JACK OR AUGER

- A. Measurement will be taken along the center line of the pipe from end to end of the auger or bored section.

- B. Payment for bore or auger installation of force main pipe is on a linear foot basis for each foot of force main installed, complete in place including pipe, pit excavation, backfill and special backfill, grouting, shoring, earthwork, and accessories.

4.03 CASING

- A. Measurement will be taken along the center line of the casing pipe from end to end.
- B. Payment for installation of force main casing pipe is on a linear foot basis for each foot of force main casing pipe installed, complete in place.

4.04 FLUSHING OR AIR RELEASE VALVES (INCLUDING MANHOLES)

- A. Flushing or air release valves and manholes will be measured per each.
- B. Payment for flushing or air release valves is on a per each basis for each valve installed in the force main, complete in place, including excavation, manhole, bedding, backfill and special backfill, shoring, earthwork, pipe and accessories.

4.05 VALVES AND FITTINGS

No separate measurement or payment for force main valves and fittings supplied and installed under this Section. Include cost of same in prices bid for items of which they are a component.

4.06 ACCEPTANCE TESTING

- A. Acceptance testing will be measured on a per foot basis for the actual footage of force main tested.
- B. Payment for acceptance testing of force main is on a linear foot basis for force mains tested in accordance with the requirements of Paragraph 3.03, Hydrostatic Testing and Paragraph 3.04, Pigging Test.

END OF SECTION

333423 TELEVISION INSPECTION

PART 1 GENERAL

- A. Television inspection of sanitary sewers shall be performed to confirm cleaning, service connections, point repair locations, pipe condition and type and to locate pipe obstructions.
- B. Immediately upon cleaning the sanitary sewer at one location, it shall be televised to determine the condition of the line. The video with evaluation reports, shall be furnished to the District for review. CONTRACTOR shall submit two (2) color videos in DVD format, recorded in a format compatible with Windows Media Player & any standard DVD Player. Each video shall be permanently labeled with the following information and description:

District: _____ CONTRACTOR's Name: _____
**Video No.: _____ Date Televised: _____ Date Submitted: _____
Street/Easement (Location): _____
*Manhole Station: from _____ to _____
*Video Counter: from _____ to _____ Pipe Size: _____
(*: Note if any missing TV length within the stations)
(**: Videos shall be numbered in an order matching the Work sequence.)

- C. All videos shall become the property of the District. If these videos are of such poor quality that ENGINEER is unable to evaluate the condition of the sanitary sewer main, locations of the sewer service connections, or verify the extent of cleaning, CONTRACTOR shall be required to re-televiser the sanitary sewer and provide a new video of good quality, at no additional cost to the District. No payment shall be made for poor and unacceptable quality videos or for portions of sewer not televised for whatsoever reason.
- D. Each video shall be accompanied by a TV inspection report, which shall give a written/narrated log of all pipe defects, sags, service connection locations and condition, etc., recorded on a footage basis. The pipe defects shall include separate codes for the following: Radial Cracks, Longitudinal Cracks, Misaligned Joints, Broken Joints, Root Intrusion, and Infiltration Points. The size/quantity of the defect shall also be reported. The beginning of all sags of 1/4 pipe, 1/2 pipe and underwater as well as where the camera pulls out of the sag shall be reported. The clock position of each service connection and the condition shall be reported. The condition of each service connection will include the distance protruding when appropriate and the type. All other information required for proper analysis, such as degrees of deterioration, deformation or collapsed pipe shall be reported. This log shall also identify the section being televised, flow and camera direction, type of pipe, pipe condition, weather conditions, type of surface cover, or any other information required by ENGINEER. At each work order location, CONTRACTOR shall provide a summary listing of all TV videos to ENGINEER with log forms. Television inspection shall be done one manhole section at a time, and the flow in the section being televised shall be suitably controlled. The depth of wastewater flow, as measured in the manhole, shall not exceed that shown below:

6"-10" Pipe:	20% of pipe's diameter
12"-24" Pipe:	25% of pipe's diameter
Over 24" Pipe:	30% of pipe's diameter

- E. When the depth of flow at the upstream manhole of the manhole section being worked is above the maximum allowable for television inspection, the flow shall be controlled to allowable levels by temporarily plugging or blocking the flow, or by performing the inspection during minimum flow hours, or with bypass pumping, when required by ENGINEER. No separate payment shall be made for sewer flow control. CONTRACTOR shall be responsible for monitoring the levels of water in the upstream sewer to insure that plugging the sewer does not cause backups on streets, in private home/property, or any waterway. No sewer shall be plugged or diverted for flow control purposes without prior approval and knowledge of ENGINEER.

- F. There may be occasions during the inspection of a manhole section when the camera will be unable to pass an obstruction even though flow is continuing. CONTRACTOR shall then televise the manhole section from the other direction in order to obtain a "full" video of the manhole section.
- G. When the camera is being pulled again from the "other end" and a section obstruction is encountered away from the first obstruction location, ENGINEER shall be informed to review the TV at the site. No payment shall be made for the reverse set-up required due to obstructions. Final TV video(s) shall be submitted in one continuous section from manhole to manhole, and not in broken pieces, unless specifically approved by ENGINEER, in which case payment shall be made only for the approved portion(s) of the videos.
- H. The television inspection equipment shall have an accurate footage counter which displays on the monitor, the exact distance of the camera from the center line of the starting manhole. The camera height shall be adjusted such that the camera lens is always centered (1/2 I.D. or higher) in the pipe being televised. In no case will the television camera be pulled or propelled through the line at a speed greater than thirty (30) feet per minute. Lighting systems shall be adequate for quality pictures. A reflector in front of the camera may be required to enhance lighting effect. It is important that the measurements on the TV monitor be correctly adjusted from the center of the manhole (i.e., correctly delete the manhole depths from the video).

PART 2 PASSAGE OF TV CAMERA

- A. The District makes no guarantee that all of the sanitary sewer mains proposed to be Television inspected after the cleaning, are clear for the passage of the camera set-up. The equipment, tools and method(s) used for securing the passage of the camera are to be at the discretion of CONTRACTOR, with the approval of ENGINEER. When the camera cannot be pulled from one manhole end due to an impending obstruction, it shall be pulled from the other manhole end. Obstructions may not necessarily block the passage of a camera at all times. All such locations shall be identified prior to the camera getting caught due to improper cleaning or careless monitoring. Damage to property, manholes, streets etc. due to equipment or vehicles shall be repaired by CONTRACTOR at no cost to the District.
- B. There may be occasions during the inspection of a manhole section when the camera will be unable to pass an obstruction even though flow is continuing. CONTRACTOR shall then televise the manhole section from the other direction.

PART 3 PAYMENT

- A. The cost for TV inspection for survey lines shall include all labor, tools, equipment, supervision, and submittals of quality videos, so that the condition of the sewer can be readily evaluated. All reverse set-ups on manhole section for one or more point repairs are incidental to TV inspection.
- B. Payment shall be made for all segments of videos from manhole station to station, accepted by the District after their review. The total linear footage of approved Television videos, shall not exceed the linear footage of sanitary sewer main cleaned, and shall be less, if some portion in the section were waived by ENGINEER from further TV. No payment shall be made for TV of sewers through which the camera did not pass, or for TV footage not made and/or rejected.
- C. Payment for TV inspection shall be made once only, for the actual lengths of TV footage, as submitted for the evaluation of the condition of the sewer. The video(s) submitted to ENGINEER, shall show the conditions of the existing sewer line after it has been cleaned, and all the "problem" spots have been identified to facilitate proper and complete evaluation to the satisfaction of ENGINEER.

END OF SECTION

333563 STAINLESS STEEL SLIDE GATES

PART 1 GENERAL

1.01 SCOPE

- A. The CONTRACTOR shall provide all labor, materials, equipment, and incidentals required to furnish and install slide gates, operating stems, and operating floor stands, complete and operational with all necessary accessories as shown on the Contract Drawings, as specified herein, or as required for complete operation.
- B. The CONTRACTOR shall obtain all equipment specified in this Section from one manufacturer to ensure proper coordination and functionality. The manufacturer shall have responsibility for performance and compatibility of the entire system. This does in no way relieve the CONTRACTOR for ultimate responsibility under this Contract for equipment, coordination, installation, operation, and guarantee.
- C. The Contract Drawings are for purpose of guidance and to show functional features and required external connections. They do not necessarily show all components necessary to accomplish the desired results nor do they necessarily show all components required to interface with the equipment. The CONTRACTOR shall provide all parts, equipment, and devices necessary to meet the functional requirements of the system.

1.02 REFERENCES

Comply with all applicable provisions and recommendations of the following, except as otherwise shown or specified.

- A. American Water Works Association (AWWA C 61)
- B. American National Standards Institute (ANSI)
- C. American Society for Testing and Materials (ASTM)

1.03 SYSTEM DESCRIPTION

Design Requirements:

- A. The slide gates shall be manufactured in accordance with the latest version of AWWA C 561, shall be constructed of stainless steel (ASTM 304L or 316L).
- B. Liberal safety factors will be used in the design of all equipment. Gate, frame, and yoke design shall be such that the flexural stress does not exceed 18,750 psi or that the minimum safety factor is 4 to 1 based on the ultimate strength of the material used.
- C. Slide gates shall be provided in accordance with the Schedule below:

LOCATION	TAG	OPERATING HEAD (SEATING/UNSEATING)	DESIGN HEAD	THIMBLE TYPE	OPERATOR TYPE	OTHER
Digester	1	10'	10'		Manual	

1.04 SUBMITTALS

- A. For Approval - Submit the following Shop Drawings for approval:

1. Manufacturer's information, specifications, and data showing dimensions, materials of construction and weight of all major items of equipment.
 2. Installation diagrams showing location, arrangement, and size of all fasteners required for the equipment.
 3. Setting drawings, templates, and instructions for installation of frames, thimbles, etc.
 4. Certification that all components were designed based upon the maximum seating and unseating heads described herein.
- B. Upon completion of installation, submit three (3) copies of the Operation and Maintenance Manual for this equipment. A final copy of this manual shall be approved by the ENGINEER prior to distribution and as a minimum shall contain the following:
1. Operational and maintenance manual shall include all approved Shop Drawings associated with this Section, complete instructions for installation, and parts list for all components.
 2. Include a list and frequency of specific maintenance activities.

PART 2 PRODUCTS

2.01 MANUFACTURERS

Provide slide gates as manufactured by the following:

- A. Hydro Gate
- B. Fontaine
- C. Waterman
- D. Dynamic Water Control Gates
- E. Approved equal

2.02 EQUIPMENT MATERIALS

- A. All slide gates shown on the plans and listed in the specifications shall conform in all respects to the latest version of AWWA C 561, with the noted changes and additions: Materials used in construction of slide gates and appurtenances will be best suited for the application and will conform to the following specifications:
1. Frame, Slide, Yoke, and Reinforcing: Stainless steel, ASTM A 240/A 240M, Type 304L, or ASTM A240/A240M, Type 316L.
 2. Stainless steel for stems: ASTM A 276, Type 304.
 3. Stainless steel for fasteners: F-593/F-594, Alloy Group 1,2 (SS304, SS316).
 4. Invert seals and compression load pad: Neoprene, ASTM D 2000, 60 Durometer, with a stainless steel ASTM A 276, Type 304L, or Type 316L retainer bar.
 5. Side Seal: Ultra High Molecular Weight (UHMW) Polymer, ASTM D 4040.

6. Top Wedges: Type 316 Stainless Steel ASTM A 351-CF8M.

- B. Gate frame shall be flat back, embedded, or channel mount as shown in the "Gate Schedule." Spigot-back frames are not acceptable. The frame shall be an integral unit of brake form and structural shapes, rigidly assembled to form the waterway openings. Holes shall be provided for mounting on anchor bolts. The head channels shall be welded or bolted to the gate frame. The channels are to be sufficiently spaced to allow removal of the gate slide. The primary slot of the frame extrusion shall contain polymer guide liner retained in grooves, to prevent metal-to-metal contact between slide and frame.
- C. Gate slide shall conform to the safety factors stated under "General", but shall, in no case, be less than 1/4" thickness. Deflection under full head shall be limited to 1/720 of the span. The stem connector clips, or stem block pocket shall be welded to the slide. Gates over twenty-four inches (24") wide shall have adjustable top wedges in order to prevent deflection in the slide resulting from over closure.
- D. *Flush Bottom*: Slide gates shall incorporate a flush-bottom seal that is mechanically fastened to the bottom of frame invert member. The seal shall be of the materials shown in "Materials of Construction." Seals attached to the slide or "press fit seals" are not acceptable.
- E. *Side Seals*: UHMW seals shall be provided as specified in "Gate Schedule." Seals shall be securely fastened to the frame with formed stainless steel retainers and shall be replaceable and adjustable without removing the gate from the installed position. A compression load pad shall be set behind the UHMW seal to allow for a self-adjusting seal system. The face of the UHMW guide that is in contact with the cover bar shall have a machined or extruded groove, in order to create a raised surface on each side, to allow for secondary adjustment of the seal clamp force.
- F. The operating stem shall be of a size to safely withstand, without buckling or permanent distortion, the stresses induced by normal operating forces. In addition, the stem shall be designed to transmit in compression at least two (2) times the rated output of the floor stand or bench stand with a forty pound (40lb) effort on the crank or hand-wheel. The threaded portion of the stem shall have cold rolled threads of the double lead Acme type with a minimum surface finish of twenty-four (24) micro-inches. Cut threads shall not be acceptable. Stainless steel couplings, threaded and keyed to the stems, will join stems of more than one section. All threaded and keyed couplings of the same size will be interchangeable. Manually operated, rising stem type gates will be provided with an adjustable stop collar on the stem to prevent over-opening of the gate.
- G. On weir or slide gates, when the width is greater than twice the height and the width is greater than forty-eight inches (48"), a tandem stem arrangement should be used.
- H. Stem guides will be split collar bronze type, mounted on cast iron brackets to allow for installation after the stem is placed. They will be adjustable in two directions and will be spaced at sufficient intervals to adequately support the stem. Stem guide spacing will not exceed an L/r ratio of two-hundred (200).
- I. Gate lifts shall be hand-wheel or geared crank type as shown in the "Gate Schedule." Lifts shall operate the gate with a maximum pull of forty pound (40lb) on the handwheel or crank. Handwheel or crank shall be located approximately thirty-six inches (36") above grating or walkway. All lifts shall have thrust bearings, bronze lifts nuts, and an aluminum stop nut to limit the downward travel of the stem and slide. All geared lifts shall have cast or ductile iron housings and pedestals. All lifts shall be rising stem type. Stem covers made of clear butyrate shall be furnished for all lifts. Lifts shall be grease lubricated and re-greaseable through grease zerks. Oil bath lifts are not acceptable.
- J. Motor-Operated Lift: Shall be ENGINEER's preference.

- K. A clear, polycarbonate plastic stem cover and indicator shall be provided on each slide gate operator. Stem indications shall be provided to denote gate level at quarter, half, three-quarter, and full open. A cast aluminum adaptor shall be used to mount the cover to the lift. The covers shall be capped, vented, and of sufficient length to allow full travel of the gate.

PART 3 EXECUTION

3.01 INSTALLATION

The slide gate equipment and appurtenances shall be installed in accordance with the Installation Manual furnished by the gate manufacturer. Extreme care should be used in handling, storage, and installation of this equipment to prevent damage or distortion of the equipment and to ensure proper performance.

- A. The equipment has been properly installed in accordance with manufacturer's instructions and recommendations.
- B. The equipment has been installed in the specified location and orientation or as shown on the Contract Drawings.
- C. The equipment has been aligned.
- D. There are no mechanical defects in any of the parts.
- E. The slide gates shall undergo a leakage test following installation. The leakage test shall be in accordance with the latest version of AWWA C 561.

END OF SECTION

333605 SURFACE PREPARATION AND APPLICATION OF PROTECTIVE COATING SYSTEM FOR WASTEWATER FACILITIES

PART 1 GENERAL

1.01 SCOPE

This section covers furnishing and applying the protective coating materials for metallic and plastic surfaces, color code painting of piping, and piping identification signs and markers at wastewater facilities.

1.02 RELATED SECTIONS

SECTION 004513 – Bidders Qualifications

SECTION 013229 – Field Project Representative

SECTION 013300 – Submittal Procedures

SECTION 013323 – Shop Drawings, Product Data and Samples

1.03 REFERENCE STANDARDS

- A. ANSI A13.1 - Color Schedule.
- B. ANSI/AWWA C213 - Fusion-bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines.
- C. Federal Specification TT-P-28 - Paint, Aluminum, Heat Resisting (1200 degrees F). Federal Standard 595A - Federal Standard Colors.
- D. Military Specification DOD-P-23236 - Paint Coating Systems, Steel Ship Tank, Fuel and Salt Water Ballast, Class 2.
- E. NACE Standard TM-01-70 - Visual Standard for Surfaces of New Steel Airblast Cleaned with Sand Abrasive.
- F. NSF Standard 61 - Drinking Water System Components - Health Effects. SSPC-PA1 - Paint Application Specification No. 1.
- G. SSPC-PA2 - Paint Application Specification No. 2.
- H. SSPC- Paint 16 - Coal Tar Epoxy-Polyamide Black (or Dark Red) Paint. SSPC-SP1 - Solvent Cleaning.
- I. SSPC-SP2 - Hand Tool Cleaning. SSPC-SP3 - Power Tool Cleaning.
- J. SSPC-SP5 - White Metal Blast Cleaning. SSPC-SP6 - Commercial Blast Cleaning. SSPC-SP7 - Brush-off Blast Cleaning.
- K. SSPC-SP10 - Near-white Blast Cleaning.

1.04 DEFINITIONS

- A. Paint, coatings, or finishes as used in this section include surface treatments, emulsions, enamels, paints, epoxy resins, and other protective coatings, with the exceptions of galvanizing or anodizing, whether used as a pretreatment, primer, intermediate coat, or finish coat.
- B. DFT means minimum dry film thickness.

1.05 PERFORMANCE REQUIREMENTS

- A. See the Drawings and other Specifications to determine how coatings under this section will be applied. Paint or coat new and modified surfaces in conformance with this section.
- B. Coating system schedules summarize surfaces to be coated, required surface preparation, and coating systems to be applied. Coating notes on Drawings are used to show exceptions to schedules, to show or extend limits of coating systems, or to clarify or show details for application of coating systems.
- C. Do not apply protective coatings to the following surfaces unless specifically named or shown to be coated:
 - 1. Concrete.
 - 2. Stainless steel, bronze, or brass.
 - 3. Machined surfaces.
 - 4. Grease fittings.
 - 5. Glass.
 - 6. Equipment nameplates.
 - 7. Platform gratings, stair treads, door thresholds, and other walk surfaces.
 - 8. Galvanized steel electrical conduit and associated galvanized and factory-coated junction boxes and electrical panels.
 - 9. Galvanized surfaces inside buildings and not exposed to view.
 - 10. Manhole and valve covers and rings, storm water inlet gratings, covers, and frames.

1.06 SUBMITTALS

- A. Make submittals in accordance with SECTION 013300 – Submittals and SECTION 013323 – Shop Drawings, Product Data and Samples.
- B. Submit the following information at least 30 days prior to protective coating work:
 - 1. Coating Materials List: Eight copies of a coating materials list naming the manufacturer and the coating number, keyed to the coating systems described in this section. Submit the list prior to or at the time of sample submittal.
 - 2. Paint Manufacturer's Information: For each coating system to be used, submit the following data:
 - a. Paint manufacturer's data sheet for each product proposed, including statements on the suitability of the material for the intended use.
 - b. Technical and performance information that demonstrates compliance with the system performance and material requirements.
 - c. Paint manufacturer's instructions and recommendations on surface preparation and application.
 - d. Colors available for each product, where applicable.

- e. Compatibility of shop and field applied coatings, where applicable.
- f. Material Safety Data Sheet for each product used.

C. Samples

1. Submit color samples of paint, finishes, and other coating materials on 8-1/2- inch by 11-inch sheet metal or heavy cardstock. Have each sheet completely coated over its entire surface with one protective coating material, type, and color.
2. Provide two sets of color samples to match each color selected by the OWNER's Representative from the manufacturer's standard color sheets. If custom-mixed colors are indicated, prepare color samples using color formulations prepared to match the color samples furnished by the OWNER's Representative.
3. Submit one 15-pound sample of each abrasive proposed to be used for surface preparation for submerged and severe service coating systems.

1.07 QUALIFICATIONS

- A. Where protective coatings are to be applied by a subcontractor, employ a subcontractor who possesses a valid state license as required for performance of painting and coating work called for in this section.
- B. Submit 5 references, which show that the painting subcontractor has previous successful experience with the indicated or comparable coating systems. Include the name, address, and the telephone number of the owner of each installation referenced.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Ventilate area where coating is being applied. Post and enforce "NO SMOKING OR OPEN FLAME" signs until coating has cured.
- B. Provide lighting level of 80-foot candles (860 lx) measured mid-height at substrate surface.
- C. Restrict worker access and construction traffic from area where coating is being applied or is curing.

PART 2 PRODUCTS

2.01 COATINGS CRITERIA

- A. Suitability: Use suitable coating materials as recommended by the manufacturer.
- B. Compatibility: In any coating system, use only compatible materials from a single manufacturer. Give particular attention to compatibility of primers and finish coats. If necessary, apply a barrier coat or tie coat between existing prime coat and subsequent field coats to ensure compatibility.
- C. Containers: Supply coating materials in sealed containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, and name of manufacturer, all plainly legible at the time of use.
- D. Colors: Use colors and shades of colors of all coats of paint as indicated on the coating schedules or selected by the OWNER's Representative. Make each coat a slightly different shade to facilitate inspection of surface coverage of each coat. The OWNER's Representative shall select finish colors from the manufacturer's standard color samples.

E. Substitute or Approved Equal Products: To establish equality furnish documentation from the manufacturer of the proposed substitute product that shows the material meets the indicated requirements and is equivalent or better in the following properties:

1. Resistance to abrasion and physical damage.
2. Resistance to chemical attack.
3. Life expectancy.
4. Ability to recoat in future.
5. Solids content by volume.
6. Dry film thickness per coat.
7. Compatibility with other coatings.
8. Suitability for the intended service.
9. Temperature limitations in service and during application.
10. Type and quality of recommended undercoats and topcoats.
11. Ease of application.
12. Ease of repairing damaged areas.
13. Stability of colors.

F. For substitutions submit protective coating materials which are standard products produced by recognized manufacturers who are regularly engaged in production of such materials for essentially identical service conditions. Where requested, provide the OWNER's Representative with the names of not less than 10 successful applications of the proposed manufacturer's products which comply with these requirements.

2.02 INDUSTRIAL COATING SYSTEMS

A. Material Sources: Each of the following manufacturers is capable of supplying many of the specified industrial coating materials. Where manufacturers and paint numbers are listed, it is to show the type and quality of coatings that are required. Proposed substitute materials will be considered as indicated under Paragraphs 2.01.E and 2.01.F above. Provide industrial coating materials that have a record of satisfactory performance in industrial plants, manufacturing facilities, and water and wastewater plants.

1. Ameron
2. Carboline Coatings Company
3. Devoe Coatings Company
4. Glidden Coatings and Resins
5. Inorganic Coatings, Inc.
6. Porter International

7. Tnemec Company

8. Valspar Corporation

9. PPG

- B. Polyamide Epoxy: Two-component, rust inhibitive, polyamide-cured epoxy coating material with a recoatable finish that is available in a wide selection of colors. Minimum solids content of 66 percent by volume. Resistant to severe conditions of condensing moisture, splash and spillage of lubricating oils, and frequent washdown and cleaning.
- C. Amine-Cured Epoxy: High-build, amine-cured, epoxy resin with a solids content of at least 80 percent by volume. Suitable for long-term immersion service in municipal wastewater.
- D. Coal Tar Epoxy: High build 2-component amine or polyamide-cured coal tar epoxy with a solids content of at least 68 percent by volume. Suitable for long term immersion in wastewater and for coating buried surfaces. Conforming to Mil Spec DOD-P-23236, or to SSPC Paint 16. Prime coats are for use as a shop primer only. Omit prime coat when both surface preparation and coating are performed in the field.
- E. Polyurethane: A two part coating system highly resistant to abrasion, wet conditions, corrosive fumes, chemical contact and exterior weathering. Minimum solids content of 70 percent by volume.
- F. Latex: High hiding acrylic blended latex coating specifically formulated to fill; seal, and finish coat a substrate in one spray application. Use on both bare and previously coated siding and trim. Ideal for exterior surfaces such as new or previously painted exterior wood, hardboard siding cured masonry, aluminum and galvanized metal and unglazed brick

2.03 MANUFACTURER'S SERVICES

- A. Require the protective coating manufacturer to furnish a qualified technical representative to visit the project site for technical support as may be necessary to resolve field problems attributable to or associated with manufacturer's products.
- B. For submerged and severe service coating systems, require the paint manufacturer to furnish the following services:
 - 1. At least 6 hours of onsite instruction on the proper surface preparation, use, mixing, application, and curing of the coating systems.
 - 2. On site observation of the start of surface preparation, mixing, and application of the coating materials for each coating system.

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. Use skilled craftsmen and experienced supervision.
- B. Apply coating to produce an even film of uniform thickness. Give special attention to edges, corners, crevices, and joints. Ensure thorough cleaning and an adequate thickness of coating material. Apply coatings to produce finished surfaces free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish. Effect complete hiding so that the addition of another coat would not increase the hiding. Give special attention to ensure that edges, corners, crevices, welds, and similar areas receive a film thickness equivalent to adjacent areas. Protect installations by use of drop cloths or other precautionary measures.

- C. If surfaces are damaged, clean, repair, and refinish to original condition.

3.02 STORAGE, MIXING AND THINNING OF MATERIALS

- A. Manufacturer's Recommendations: Unless otherwise indicated, strictly comply with the coating manufacturer's printed recommendations and instructions for thinning, mixing, handling, applying, and protecting its coating materials, for preparation of surfaces for coating, and for all other procedures relative to coating.
- B. Use protective coating materials within the manufacturer's recommended shelf life.
- C. Storage and Mixing: Store coating materials under conditions recommended by the Material Safety Data Sheets. Keep coating materials thoroughly stirred, strained, and with uniform consistency during application. Do not mix coatings of different manufacturers.

3.03 PREPARATION FOR COATING

- A. Cleaning and Touch-up: Clean surfaces to receive protective coatings. Examine surfaces to be coated. Correct surface defects before application of any coating material. Touch up marred or abraded spots on shop-primed and on factory-finished surfaces prior to coating application. Verify that surfaces to be coated are dry and free of visible dust.
- B. Protection of Surfaces Not to be Coated: Protect surfaces which are not to receive protective coatings during surface preparation, cleaning, and coating operations.
- C. Remove, mask or otherwise protect hardware, lighting fixtures, switchplates, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces to be painted. Provide drop cloths to prevent coating materials from falling on or marring adjacent surfaces. Protect the working parts of mechanical and electrical equipment from damage during surface preparation and coating operations. Mask openings in motors to prevent entry of coating or other materials.
- D. Do not damage adjacent work during blast cleaning operations. Conduct spray painting under carefully controlled conditions. Promptly repair any damage to adjacent work or adjoining property occurring from blast cleaning or coating operations.
- E. Protection of Painted Surfaces: Coordinate cleaning and coating so that dust and other contaminants from the cleaning process will not fall on wet, newly coated surfaces.

3.04 SURFACE PREPARATION STANDARDS

The following referenced surface preparation standards of the Steel Structures Painting Council form a part of this Specification:

- A. Solvent Cleaning (SSPC-SP1): Removal of oil, grease, soil, salts, and other soluble contaminants by cleaning with solvent, vapor, alkali, emulsion, or steam.
- B. Hand Tool Cleaning (SSPC-SP2): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by hand chipping, scraping, sanding, and wire brushing.
- C. Power Tool Cleaning (SSPC-SP3): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by power tool chipping, descaling, sanding, wire brushing, and grinding.
- D. White Metal Blast Cleaning (SSPC-SP5): Removal of visible rust, oil, grease, soil, dust, mill scale, paint, oxides, corrosion products, and foreign matter by blast cleaning.

- E. Commercial Blast Cleaning (SSPC-SP6): Removal of visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining is limited to no more than 33 percent of each square inch of surface area.
- F. Brush-off Blast Cleaning (SSPC-SP7): Removal of all visible oil, grease, soil, dust, loose mill scale, loose rust, and loose paint.
- G. Near-white Blast Cleaning (SSPC-SP10): Removal of visible oil, grease, soil, dust mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining is limited to no more than 5 percent of each square inch of surface area.

3.05 METAL SURFACE PREPARATION (UNGALVANIZED)

- A. Provide SSPC-SP10 – Near White Blast Cleaning surface preparation. Where there is a conflict between these specifications and the coating manufacturer's printed recommendations for the intended service, the higher degree of cleaning applies.
- B. Perform metal surface preparation in conformance with the current SSPC Standards and this section. Blast-clean surfaces match standard samples in NACE Standard TM-01-70.
- C. Remove oil, grease, welding fluxes, and other surface contaminants prior to blast cleaning using solvent cleaning in SSPC-SP1.
- D. Have sharp edges rounded or chamfered and burrs, surface defects and welded splatter ground smooth prior to blast cleaning.
- E. Select the type and size of abrasive to produce a surface profile that meets the coating manufacturer's recommendation for the particular coating and service conditions. As abrasives for submerged and severe service coating systems use clean, hard, sharp-cutting crushed slag. Do not use automated blasting systems for surfaces that will be in submerged service. Do not use metal shot or grit for surfaces that will be in submerged service, even if subsequent abrasive blasting is planned with hard, sharp-cutting crushed slag.
- F. Do not reuse abrasive except when an automated blasting system is used for surfaces that will be in non-submerged service. For automated blasting systems, use clean, oil-free abrasives. In the abrasive mix use at least 50 percent grit.
- G. Comply with the applicable federal, state, and local air pollution control regulations for blast cleaning.
- H. For air-blast cleaning supply compressed air at adequate pressure from well-maintained compressors equipped with oil and moisture separators which remove at least 95 percent of the contaminants.
- I. Clean surfaces of dust and residual particles of the cleaning operation using dry air-blast cleaning, vacuuming, or another approved method prior to painting.
- J. In enclosed areas and other areas where dust may settle, vacuum the surface clean and wipe it with a tack cloth.
- K. Remove damaged or defective coating by the specified blast cleaning to meet the clean surface requirements before recoating.
- L. If the specified abrasive blast cleaning will damage adjacent work, the area to be cleaned is less than 100 square feet, and the coated surface will not be submerged in service, then SSPC-SP2 - Hand Tool Cleaning or SSPC-SP3 - Power Tool Cleaning, may be used.

- M. Completely remove shop-applied coatings of unknown composition before the specified coatings are applied. Examine valves, castings, ductile or cast-iron pipe, and fabricated pipe or equipment for the presence of shop-applied temporary coatings. Completely remove temporary coatings by solvent cleaning per SSPC- SP1 before starting abrasive blast cleaning.
- N. Use the solvent cleaning method to clean shop-primed equipment in the field before finish coats are applied.

3.06 SURFACE PREPARATION OF FERROUS SURFACES WITH EXISTING COATINGS

- A. Preparatory Cleaning: Remove grease, oil, heavy chalk, dirt, or other contaminants by solvent or detergent cleaning prior to abrasive blast cleaning. Determine the generic type of the existing coatings by laboratory testing.
- B. Abrasive Blast Cleaning: Remove deteriorated coatings by abrasive blast cleaning to SSPC-SP6 - Commercial Blast Cleaning. Clean areas of tightly adhering coatings to SSPC-SP7 - Brush-off Blast Cleaning, with the remaining thickness of existing coating not to exceed 3 mils.
- C. Incompatible Coatings: If coatings to be applied are not compatible with existing coatings, apply intermediate coatings conforming to the paint manufacturer's recommendation for the indicated coating system or completely remove the existing coating. Make a small trial application for compatibility prior to painting large areas.
- D. Unknown Coatings: Completely remove coatings of unknown composition prior to application of new coatings.
- E. Water-abrasive or Wet-abrasive Blast Cleaning: Where specified or where job site conditions do not permit dry-abrasive blasting for industrial coating systems due to dust or air pollution considerations, water-abrasive blasting or wet-abrasive blasting may be used. In both methods, use paint-compatible corrosion inhibitors. Begin the coating application as soon as surfaces are dry. Perform water-abrasive blasting using high-pressure water with sand injection. In both methods, use equipment that is commercially produced with a successful service record. Do not use wet-blasting methods for submerged and severe-service coating systems, unless specified.

3.07 APPLICATION OF COATINGS

- A. Apply protective coatings to steel substrates in accordance with SSPC-PA1 - Paint Application Specification No. 1.
- B. Inspect cleaned surfaces and each coat prior to succeeding coats. Schedule inspections with the OWNER's Representative in advance.
- C. Paint blast-cleaned ferrous metal surfaces before rusting or other deterioration of the surface occurs. Limit blast cleaning to only those surfaces that can be coated in the same working day.
- D. Apply coatings in accordance with the manufacturer's instructions and this section, whichever has the most stringent requirements.
- E. Give special attention to edges, angles, weld seams, flanges, nuts and bolts, and other places where insufficient film thickness is likely to occur. Use stripe painting for these areas.
- F. Give special attention to materials which will be joined so closely that proper surface preparation and application are not possible. Coat such contact surfaces prior to assembly or installation.

- G. Apply finish coats, including touch-up and damage repair coats, in a manner which will present a uniform texture and color matched appearance.
- H. Do not apply coatings under the following conditions:
 - 1. Temperature outside of the manufacturer's recommended minimum and maximum range.
 - 2. Dust or smoke laden atmosphere.
 - 3. When the substrate or air temperature is less than 5 degrees F above dew point.
 - 4. When air temperature is expected to drop below 40 degrees F or less than 5 degrees F above the dew point within 8 hours after application of coating.
 - 5. When wind conditions are not calm.
- I. Determine the dew point by use of a sling psychrometer in conjunction with U. S. Department of Commerce, Weather Bureau psychrometric tables.
- J. For steel piping which will not be buried, have the surface abrasive blast cleaned and primed before installation.
- K. Apply finish coats after concrete, masonry, and equipment installation is complete and the work areas are clean and dust free.

3.08 CURING OF COATINGS

- A. Maintain curing conditions in accordance with the recommendations of the coating material manufacturer and this section, whichever is the most stringent. Complete curing before placing the coating systems into service.
- B. In the case of enclosed areas, forced air ventilation using heated air if necessary, may be required until the coatings have fully cured.
- C. Forced Air Ventilation of Enclosed Hydraulic Structures: Forced air ventilation is required for the application and curing of coatings on the interior surfaces of enclosed hydraulic structures. During application and curing periods, continuously exhaust air from the lowest level of the structure using portable ducting. After interior coating operations have been completed, provide a final curing period for a minimum of 10 days, operating the forced air ventilation system continuously.

3.09 COATING SCHEDULE

- A. Coat each item listed below using the coating system specified:

<u>Items to be Coated</u>	<u>Coating System</u>
All interior surfaces	A
All exterior surfaces	B
Bridge	B
Exterior Spot Repair (Alternate No. 1)	C

3.10 COATING SYSTEMS

A. Polyamide Epoxy (Three Coat) – Moisture Exposure Service

- | | |
|--|--|
| 1. Surface Preparation | SSPC SP-10
Near-White Blast, Clean |
| 2. Prime Coat
Polyamide or Amine Adduct Cured Epoxy
3.0 to 5.0 mils DFT | Carboline Carboguard 60
Ameron 38P
Tnemec 69
PPG 97 Series |
| 3. Intermediate Coat
Polyamide or Amine Adduct Cured Epoxy
3.0 to 5.0 mils DFT | Carboline Carboguard 60
Ameron 385
Tnemec 69.
PPG 97 Series |
| 4. Final Coat
Polyamide or Amine Adduct Cured Epoxy
3.0 to 5.0 mils DFT | Carboline Carboguard 60
Ameron 385
Tnemec 69
PPG 97 Series |

Total minimum dry film thickness for the system: 9.0 mils

B. Polyurethane (Three Coat) - Atmospheric Exposure

- | | |
|--|--|
| 1. Surface Preparation | SSPC SP-10
Near-White Blast, Clean |
| 2. Prime Coat
Rust Inhibitive Epoxy Primer
2.0 to 4.0 mils DFT | Carboline Carboguard 60
VyGuard 13F62
Tnemec 65-1211 or 160 Cold Weather
PPG |
| 3. Intermediate Coat
Polyamide or Amine Adduct Cured Epoxy
4.0 to 6.0 mils DFT | Carboline Carboguard 60
VyGuard V89 Series
Tnemec 66 or 161 Cold Weather
PPG |
| 4. Final Coat
Polyurethane
2.0 to 3.0 mils DFT | Carboline 134 Series
Polyurethane
VyGuard V40 Series
Tnemec 73 Endura Shield
PPG |

Total minimum dry film thickness for the system: 8.0 mils

C. Polyurethane (Two Coat) – Atmospheric Exposure

- | | |
|---|--|
| 1. Surface Preparation | Pressure Wash, Hand Tool or
Power Tool Clean |
| 2. Spot Repair
Epoxy Mastic
2.0 to 3.0 mils DFT | Carboline Carboguard 60
VyGuard V75 Series
Tnemec Series 135
PPG |
| 3. Roughen surface with sandpaper | |
| 4. Final Coat
Polyurethane
2.0 to 3.0 mils DFT | Carboline 134 Series
VyGuard V40 Series
Tnemec 73 Endura Shield
PPG |

Total minimum dry film thickness for the system: 4.0 mils

D. Coal Tar - Buried Metal Exterior

- | | |
|--|--|
| 1. Surface Preparation | SSPC SP-10
Near-White Blast, Clean |
| 2. Prime Coat
Zinc-Rich Epoxy Primer
2.0 to 4.0 mils DFT | Kop-Coat 340 Gold
VyGuard 13F4
Tnemec 90-97
PPG 97 Series |
| 3. Intermediate Coat
Coal Tar Epoxy
8.0 to 12.0 mils DFT | Carboline Bitumastic-300M
VyGuard 64J5
Tnemec 46H-413
PPG 97 Series |
| 4. Final Coat
Coal Tar Epoxy
8.0 to 12.0 mils DFT | Carboline Bitumastic-300M
VyGuard 64J5
Tnemec 46H-413
PPG 97 Series |

Total minimum dry film thickness for the system: 18.0 mils

E. Latex - Concrete Block Building

- | | |
|--|---|
| 1. Surface Preparation | Steam Clean, Power Wash or Brush Blast |
| 2. Prime Coat
Latex Block Filler | Santile 100
VyGuard 79W8
Tnemec Series 54-562
Sherwin Williams |
| 3. Final Coat

Water-Based Latex | Carboline 3359 DTM
Acrylic Latex
VyGuard 79 Series
Tnemec Series 6
Sherwin Williams |

3.11 SHOP AND FIELD INSPECTION AND TESTING

- A. Give the OWNER's Representative a minimum of 3 days advance notice of the start of any field surface preparation work or coating application work, and a minimum of 7 days advance notice of the start of any shop surface preparation work.
- B. Perform surface preparation and coating applications in the presence of the OWNER's Representative, unless the OWNER's Representative has granted prior approval to perform such Work in his absence.
- C. Erect and move scaffolding where requested by the OWNER's Representative to facilitate inspection. Provide additional illumination to light areas to be inspected.
- D. Inspection Devices: Until final acceptance of coatings, furnish inspection devices in good working order for the detection of holidays and measurement of dry-film thickness of protective coatings. Make dry-film thickness gauges available for the OWNER's Representative's use while coating is being done, until final acceptance of such coatings. Provide the services of a trained operator of the holiday detection devices until the final acceptance of such coatings. Operate holiday detection devices in the presence of the OWNER's Representative.
- E. Holiday Testing:
 - 1. Perform holiday tests on coated ferrous surfaces inside a steel reservoir, other surfaces which will be submerged in water or other liquids, or surfaces which are enclosed in a vapor space in such structures and surfaces coated with any of the submerged and severe service coating systems. Mark and repair or recoat areas which contain holidays in accordance with the coating manufacturer's printed instructions and then retest.
 - 2. Coatings with Thickness Exceeding 20 Mils: For surfaces having a total dry- film coating thickness exceeding 20 mils, use a pulse-type holiday detector such as Tinker & Razor Model AP-W, D.E. Stearns Co. Model 14/20, or equal. Adjust the unit to operate at the voltage required to cause a spark jump across an air gap equal to twice the specified coating thickness.
 - 3. Coatings with Thickness of 20 Mils or Less: For surfaces having a total dry- film coating thickness of 20 mils or less, use Tinker & Razor Model M1 nondestructive-type holiday detector, K-D Bird Dog, or equal. Use a unit that operates at less than 75 volts. For thickness between 10 and 20 mils, add a non-sudsing-type wetting agent, such as Kodak Photo-Flo, or equal, to the water prior to wetting the detector sponge.
- F. Film Thickness Testing: On ferrous metals, measure the dry-film coating thickness in accordance with the SSPC Paint Application Specification No. 2 using a magnetic- type dry-film thickness gauge such as Mikrotest Model FM, Elcometer Model 111/1EZ, or equal. Test each coat for the correct thickness. Do not take measurements until at least 8 hours after coating application. On non-ferrous metals and other substrates, measure the coating thickness at the time of application using a wet-film gauge.
- G. Surface Preparation: Evaluation of blast-cleaned surface preparation work will be based upon comparison of the blasted surfaces with standard samples using NACE Standard TM-01-70.

3.12 PAINTING AND IDENTIFICATION OF PIPING

- A. Painting and Color Coding
 - 1. Use colors and signs to identify all piping, which is exposed to view in buildings or tunnels, above suspended ceilings, or exposed above grade, and all outdoor piping. Identify each pipe by a color complying with the following schedule of colors and by applied markers.

2. Coat pipes in the number of coats and type of material specified. Base coats for pipeline painting may be the same neutral color. Make each subsequent coat a slightly different color. For the final coat, comply with the pipe identifying color schedule.
3. Apply pipe identification markers to exposed piping, as described above, except for the following pipe at wastewater lift stations:
 - a. Discharge piping for wastewater pumps.
 - b. Vent piping.
 - c. Any piping inside wet wells.

B. Pipe Identification Markers

1. Identify all pipes with applied signs or markers at 15-foot centers, at both sides of penetrated walls or floors, adjacent to valves, at connected equipment, at branch fittings, and in congested pipe layouts.
2. Apply markers consisting of signs with legends as follows:

OUTSIDE DIAMETER OF PIPE OR COVERING (INCHES)	LENGTH OF COLOR FIELD (INCHES)	SIZE OF LETTER S (INCHES)
3/4 to 1-1/4	8	1/2
1-1/2 to 2-3/8	8	3/4
2-1/2 to 5-7/8	12	1-1/4
6 to 7-7/8	12	1-1/4
8 to 10	24	2-1/2
Over 10	32	3-1/2

3. As pipe markers use semi-rigid outdoor grade acrylic plastic, Seton Name Plate Corp. "SetMark," or equal. Use Type SNA for outside diameters 3/4 through 5-7/8 inches and Type STR for 6-inch outside diameter or larger. For pipes or pipe covering less than 3/4-inch in diameter, use applied marker or brass identification tags 1-1/2-inches square with depressed letters 1/4- inch high, black-filled. Apply tightly to pipeline with metal or plastic straps.

C. Pipe Identification Color Schedule

For pipe coatings use the colors listed in the following pipe identification color schedule:

PIPE IDENTIFICATION COLOR SCHEDULE

Piping System	Color	Federal Std. No.
Fire Mains	Red	11105
Oxygen	Orange	12246
Sodium Hypochlorite	Yellow	13655
Raw Polymer	Pink	11156
Diluted Polymer	Purple	17142
Natural Gas	Yellow	13655
Heating Water	Pink	11158
Supply HWR		
Return HWR		
Domestic Hot	Lt. Pink	11668

Water Supply Dom-HWS	Lt. Pink	11668
Domestic Hot		
Water Return Dom-HWS	Lt. Pink	
Potable Water	Blue	15102
Non-potable	White	17875
Water		
Instrument Air	Green	14187
Plant Air	Dark Green	14110
Raw Sewage	Gray	16473
Grit	Dark Gray	16187
Cyclone Return	Gray	16473
Classifier Return	Gray	16473
Heavy Solids	Dark Brown	10080
Return Sludge	Brown	10091
Waste Sludge	Yellow-Brown	10266
Scum	Lt. Brown	10334
Chilled Water Supply	Blue-Green	14329
(CWS)		
Chilled Water Return	Blue-Green	14325
(CWR)		
Condensing Water Supply	Lt. Green	14533
(Cond-WS)		
Condensing Water Return	Lt. Green	14533
(Cond-WR)		
Deionized Water (DW)	Lt. Blue	15526
Vacuum (Vac)	White	17875
Vent	Lt. Gray	16492

- D. Use colors for the applied signs and markers in accordance with the color schedule.
- E. For final colors used for pipe identification conform to Federal Standard 595A.
- F. For pipe identification colors not listed above, follow the American National Standard (ANSI A13.1-81) Color Schedule:
 - 1. Materials inherently hazardous, flammable or explosive; chemically active or toxic; extreme temperature or pressure; radioactive: Yellow field with Black letters.
 - 2. Material of inherently low hazard - Liquid or liquid admixture: Green field with White letters; gas or gaseous admixture: Blue field with White letters.
 - 3. Fire quenching materials, water, foam, carbon dioxide, Halon, etc.: Red field with White letters.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

There shall be no separate measurement for the materials and work covered in this section.

4.02 PAYMENT

Payment for surface preparation and application of protective coating system for wastewater facilities shall be made at the lump sum price bid in the Proposal. The lump sum price shall be full compensation for all coating submittals, coating materials, surface preparation tools and equipment, shrouding, ventilation equipment, testing equipment, surface preparation, coating application, and all other materials, labor equipment and incidentals necessary to complete the work.

END OF SECTION

333913 ADJUSTING MANHOLES AND INLETS

PART 1 GENERAL

1.01 SCOPE

This Section shall govern for the furnishing of materials and for adjusting, abandoning, or capping existing sewer manholes, inlets, or cleanouts where required by the Drawings. Manholes and inlets shall be adjusted to positions and/or elevations as shown on the Drawings or as ordered by ENGINEER and in accordance with these Specifications. Subject to the approval of ENGINEER, prefabricated steel extension rings may be furnished for the adjustment of manholes.

1.02 RELATED SECTIONS

SECTION 330516 - Construction of Underground Utilities

PART 2 MATERIALS

Manholes or inlet rings, plates, grates, and covers and brick in good condition, removed from the manholes and inlets in the process of abandonment, capping or adjustment, may be reused. Additional materials required shall conform to the pertinent provisions for those materials of the Item "Manholes" or the Item "Inlets." When prefabricated, steel rings are furnished, the material shall conform to ASTM A36, or equal.

PART 3 EXECUTION

3.01 PREPARATION

Manholes or inlet rings, covers, plates, and grates shall be removed carefully, and Project Site shall be cleaned of all mortar and grease. Rings, covers, plates or grates broken in the process of removal and cleaning shall be replaced in kind, by CONTRACTOR, at his/her expense.

3.02 PREFABRICATION STEEL EXTENSION RINGS

When prefabricated steel extension rings are furnished, they shall be either of the one-piece or two-piece type, as necessary, for the amount of adjustment. They shall be installed in accordance with the manufacturer's instructions.

3.03 BRICK ADJUSTMENT OR PRECAST RING ADJUSTMENT

- A. *Selection:* Brick adjustment may only be used for storm sewers. Precast adjustment rings are required for sanitary sewers.
- B. *Lowering:* If the adjustment involves lowering the top of the manhole or inlet, a sufficient depth of concrete or brick courses shall be removed to permit reconstruction on a batter not exceeding one-inch (1") horizontal to two inches (2") vertical. In the case of brickwork, the mortar shall be cleaned from the top course of brick remaining in place and from all brick to be re-used and the manhole or inlet rebuilt to the original top dimensions. The manhole or inlet ring, cover, plate, or grate shall then be installed with the top conforming to the proposed new surface of street or grading as the case may be.
- C. *Raising:* If the adjustment involves raising the elevation of the top of manhole or inlet, the top course of brick shall be cleaned of mortar and built up vertically to the new elevation using new brick, brick salvaged from other manhole or inlet adjustments, or Class "C" concrete, and the ring, cover, plate or grate installed with top conforming to the proposed new surface of street or grading as the case may be.

3.04 ABANDONMENT

If abandonment of an inlet or manhole is required, it shall be removed to an elevation of a minimum of one foot (1') below subgrade elevation, or as otherwise indicated on the Drawings and capped or backfilled from the flow line to subgrade with special sewer backfill.

3.05 EXCAVATION AND BACKFILL

Excavation and backfill shall conform to SECTION 330516 – Construction of Underground Utilities.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

Manholes or inlets completely adjusted, abandoned, or capped as prescribed above, will be measured by the unit of each manhole or inlet adjusted.

4.02 PAYMENT

Each manhole or inlet adjusted, measured as prescribed above, complete in accordance with these Specifications, will be paid for at the unit price bid for "Adjusting Manholes," "Adjusting Inlets," or "Adjusting Manholes and Inlets," as the case may be, which price shall be full compensation for furnishing all required materials, including backfill as required, excavation, tools, labor, equipment and incidentals required to complete the Work as described in this Section.

END OF SECTION

333923 SANITARY SEWER LINE CLEANING

PART 1 GENERAL

The purpose of cleaning the sewer line is to remove all debris, solids, sands, grits etc. from the manholes and the sanitary sewer lines. This will permit a quality television inspection of the line for evaluation purposes and to determine the condition of the line.

PART 2 MATERIALS

2.01 EQUIPMENT

- A. *General:* The designated sanitary sewer manhole sections and the manholes shall be cleaned using mechanical, hydraulically propelled, and/or high velocity sewer cleaning equipment.
- B. *Required Capacity:* Cleaning equipment that uses a high velocity water jet for moving debris, shall have a minimum volume of fifty (50) gpm at a pressure of 1,500 psi, at the pump unless approved otherwise by ENGINEER, at the request of CONTRACTOR. Mechanical cleaning, in addition to normal cleaning when required by ENGINEER, shall be done by approved equipment and accessories driven by power winching devices. CONTRACTOR shall submit the equipment manufacturer's operational manual and guidelines to ENGINEER, which shall be followed strictly, unless modified by ENGINEER.
- C. *Cleaning Devices:* All equipment and devices shall be operated by experienced operators, so they do not damage the pipe in the process of cleaning. Buckets, scrapers, scooters, porcupines, kites, heavy duty brushes, metal pigs and other debris removing equipment/accessories shall be used as appropriate and necessary in field, in conjunction with the approved power machine(s). The use of cleaning devices such as rods, metal pigs, porcupines, root saws, snakes, scooters, sewer balls, kites, and other approved equipment, in conjunction with hand winching device, and/or, hydraulically propelled devices, shall be considered normal cleaning equipment.
- D. *Demonstration of Capabilities:* CONTRACTOR, upon request of ENGINEER, shall demonstrate to ENGINEER the performance capabilities of the cleaning equipment proposed for use on the Project prior to its use at the Site. If the results obtained by the proposed sanitary sewer cleaning equipment are not satisfactory in ENGINEER's opinion, CONTRACTOR shall use different equipment and/or attachments until satisfactory results are obtained. More than one type of equipment/attachments may be required in one project.

PART 3 EXECUTION

3.01 CLEANING

The cleaning process shall remove all grease, sand, silt, solids, rags, debris, etc., from each sewer segment, including the manhole(s). Selection of cleaning equipment and the method for cleaning, shall be based on the condition of the sanitary sewer mains at the time the actual work begins and shall be subject to ENGINEER's approval and recommendations.

3.02 POINT REPAIRS

All point repair(s) shall be performed by OWNER.

3.03 DISPOSAL OF DEBRIS

- A. *General:* All sludge, dirt, sand, rocks, grease, and other solid or semi-solid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing of debris from

upstream manhole section to downstream manhole section will not be allowed, especially to sections that are not going to be cleaned. All debris from the manholes shall be removed either manually or mechanically, prior to completion of final cleaning of the sewer. When hydraulic or high velocity cleaning equipment is used, a suitable sand trap, weir, or dam shall be constructed in the downstream manhole in such a manner that all the solids and debris as above, shall be trapped for removal.

B. *Movement:* CONTRACTOR shall operate the equipment so that the pressurized nozzle continues to move at all times.

C. *Disposal:*

1. Solids: All solids or semi-solids resulting from the cleaning operations shall be removed from the Site at least once each workday and disposed of at no additional cost to OWNER. It is the responsibility of CONTRACTOR to secure legal disposal site(s) for these materials. CONTRACTOR shall not be allowed to accumulate debris and/or liquid waste, sludge, etc. on the site, except in totally enclosed containers, as approved by ENGINEER.
2. Liquids: All liquid waste shall be hauled to OWNER's Wastewater Treatment Plant and pumped into the Digester.
3. UNDER NO CIRCUMSTANCES SHALL SEWAGE OR SOLIDS REMOVED THEREFROM BE DUMPED ONTO STREETS OR INTO DITCHES, CATCH BASINS, STORM DRAINS, OR SANITARY SEWER MANHOLES.

3.04 SAFETY PRECAUTIONS

- A. *General:* Satisfactory precautions shall always be taken to protect the sanitary sewer mains from damage that might be inflicted by the improper use of cleaning process and equipment. Any new damage found inflicted upon the sewer, regardless of the cleaning equipment used, shall be repaired by CONTRACTOR at no additional cost to OWNER, and to the satisfaction of ENGINEER.
- B. *Use of Collapsible Dams:* Hydraulically propelled devices which require a head of water to operate, must utilize a collapsible dam to obtain the head, so that the dam may be easily collapsed to prevent damage to the sewer, property etc., in the event of a sudden surcharge on the line. When using hydraulically propelled devices, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to public or private property being served by the manhole section involved. Furthermore, CONTRACTOR shall not increase the hydraulic gradient of the upstream sewers beyond the elevation that could, in the opinion of ENGINEER, cause overflow of sewage into the area waterways. The flow of wastewater present in the sanitary sewer main shall be utilized to provide necessary fluid for hydraulic cleaning devices whenever possible.

3.05 WATER USAGE

- A. *General:* When additional quantity of water from OWNER fire hydrants are necessary to meet the requirements of the equipment and the sewer in question, water shall not be wasted on streets or hydrants left opened. Care shall be exercised to prevent contamination of the potable water system. As a general rule, CONTRACTOR does not need prior written approval from OWNER to use any particular fire hydrant located within OWNER.
- B. *Metering:* Metering of water used is required. CONTRACTOR must pay a deposit to the Operator to obtain a temporary portable meter to connect to a two-and-one-half-inch (2-1/2") fire hydrant connection. All water used by CONTRACTOR for this Project shall pass through that meter. OWNER will not charge for water used as long as CONTRACTOR notifies the Operator when location of temporary meter is changed.
- C. *Coordination:* CONTRACTOR shall coordinate all Work with ENGINEER and the Operator.
- D. *Sanitation:* Backflow preventers and/or an eighteen-inch (18") air gap shall be provided by CONTRACTOR when drawing water from a public hydrant.

- E. *Use of Premises by OWNER*: No fire hydrant shall be obstructed or used when there is a fire in the area.

PART 4 PAYMENT

4.01 UNIT PRICE PAYMENT

No payment shall be made for Work covered under this Section. Include costs in related bid items.

4.02 INCIDENTALS

- A. *Locating and Opening Manholes*: Locating, exposing, and opening the manholes on the sewers to be cleaned shall be incidental to "Cleaning."
- B. *Reverse Set Up*: If cleaning of an entire manhole section cannot be successfully performed from one manhole, the equipment shall be set up on other manhole and cleaning attempt shall be made again. If cleaning cannot be performed from the other manhole or the equipment fails to travel the entire length of manhole section, it shall be assumed that a blockage exists, and point repair(s) shall be necessary prior to continuing cleaning and television operation. Point repair will be made by OWNER separately to CONTRACTOR.
- C. *Additional Set Up*: All additional set-ups for equipment and re-cleaning(s) of the sewer line shall be incidental to cleaning of sewer line. Only one payment for cleaning shall be made for a line section. ENGINEER shall delete payment for section or segment of line for which no TV is produced.

PART 5 ACCEPTANCE

Acceptance of sewer cleaning Work shall be made upon the successful completion of the television inspection and shall be to the satisfaction of OWNER. If the television inspection shows the cleaning to be unsatisfactory, CONTRACTOR shall be required to re-clean and reinspect (TV) the sewer line until the cleaning is satisfactory. All such re-cleaning and reinspection shall be done by CONTRACTOR at no additional cost to OWNER. OWNER intends to leave the sewer clean if no repairs are evident/necessary.

END OF SECTION

334913 STORM SEWER FACILITIES

PART 1 GENERAL

1.01 SCOPE

Work under this Section includes furnishing all labor, materials, equipment, incidentals, and the performance of all Work necessary to complete all storm sewers, and appurtenant drainage structures as shown on the Drawings and herein specified.

1.02 RELATED SECTIONS

SECTION 033100 – STRUCTURAL CONCRETE

SECTION 313213 – CEMENT STABILIZED SAND AND BACKFILL

SECTION 330516 – CONSTRUCTION OF UNDERGROUND UTILITIES

PART 2 METALS

2.01 REINFORCED CONCRETE PIPE

- A. *General:* Except as modified herein, pre-cast reinforced concrete pipe and joint material shall conform to the design shown in the Drawings and to the following ASTM standards:

Type	ASTM Pipe Standard	ASTM Joint Standard
Circular Pipe	C76, Class III	C443
Arch Pipe	C506	C877
Elliptical Pipe	C507	C877
D-Load Pipe	C655	C443

- B. *Manufacturer:*

1. All pipe shall be machine made or cast by a process which will provide for uniform placement of the concrete in the form and compaction by mechanical devices which will assure a dense concrete.
2. Concrete shall be mixed in a central batch plant or other approved batching facility from which the quality and uniformity of the concrete can be assured. Transit mixed concrete will not be acceptable for use in pre-cast pipe.
3. The supplier has the option of using Portland cement or Portland cement plus fly ash, as defined herein. Portland cement plus fly ash shall be composed of Portland cement and twenty to thirty percent (20-30%) fly ash, by absolute volume. Fly ash shall be class C, conforming to the requirements of ASTM C618. Fly ash shall have a minimum Calcium Oxide (CaO) content of twenty percent (20%).

- C. *Lifting Holes:* Unless otherwise shown on the Drawings, not more than two (2) holes may be placed in the top section of the pipe for lifting and placing. The holes may be cast, cut, or drilled in the wall of the pipe. The holes shall not exceed three inches (3") in diameter at the inside surface of the pipe wall. Not more than one (1) longitudinal wire or two (2) circumferential wires may be cut per layer of reinforcing steel when locating lifting holes in the pipe wall. After the pipe is in place, lift holes shall be filled with concrete plug, tapered so as not to fall through the lift hole, and a mastic seal, to the satisfaction of ENGINEER.

- D. *Variations:* Variations in diameter, size, shape, wall thickness, reinforcement placing, laying length, and permissible underrun of length shall be in accordance with the applicable ASTM specification for each type of pipe as referred to previously.

- E. *Curing*: Pipe shall be cured in accordance with the applicable ASTM specification for each type of pipe as referred to previously.
- F. *Marking*: The following information shall be clearly marked on each section of pipe using waterproof paint or indentions cast into the pipe wall:
 - 1. The class
 - 2. The date of manufacture
 - 3. The name or trademark of the manufacturer
 - 4. "Top" or "Bottom" shall be marked on the inside and outside of opposite walls to show the proper installation orientation for all pipe with elliptical reinforcement, unless the external shape of the pipe is such that the correct orientation is obvious, and
 - 5. The identification mark of the firm providing inspection services
- G. *Rejection*: Pipe shall be subject to rejection for failure to conform to any of these Specification requirements. Individual sections of the pipe may be rejected because of any of the following:
 - 1. Fractures or cracks
 - 2. Defects indicating imperfect proportioning, mixing, or molding
 - 3. Surface defects indicating honeycombed or open texture
 - 4. Damaged ends when such damage would prevent making a satisfactory joint
 - 5. Painting the pipe prior to delivery on the project

2.02 CORRUGATED METAL PIPE

- A. *General*: Corrugated metal pipe shall be full circle or arch pipe conforming to AASHTO M36, or AASHTO M196, Type I or Type II as specified on the Drawings. Zinc coated sheets shall conform to AASHTO M218, aluminum coated sheets shall conform to AASHTO M274 and aluminum sheets shall conform to AASHTO M197. Structural plate material shall meet either AASHTO M167 or M219.
- B. *Fabrication*:
 - 1. Circumferential corrugated pipe shall have lap joint construction with riveted or spot welded seams.
 - 2. Helical corrugated pipe shall have continuous helical lock seam or ultra-high frequency resistance butt welded seams.
- C. *Pre-Coated Pipe*: Pre-coated galvanized steel pipe shall be full circle or arch pipe conforming to AASHTO Designation M245, Type I or Type II as specified on the Drawings. Pre-coated pipe may not be fabricated with welded seams. Unless otherwise noted on the Drawings, both the inside and outside coating shall be a minimum of ten (10) mils.
- D. *Gaskets*: Gaskets shall be O-ring type. Gasket material shall meet the requirements of ASTM C361. Diameter shall be 13/16" for 1/2" deep corrugations (pipe size twelve inches (12") through fifty-four inches (54")), and 1-3/8" for one-inch (1") corrugations (sixty inches (60") and larger). Gasket lengths shall be in accordance with the pipe manufacturer's recommendations.

- E. *Coupling Bands*: Coupling bands shall conform to the requirements of AASHTO M36. Width of connecting bands in inches shall be in accordance with the following table. Dimple bands will not be accepted.

Nominal Corrugation Size*	Nominal Pipe Inside Diameter**	Coupling Band Width			with Projections
		Annular Bands	Helical Bands		
2-2/3 by 1/2	12 to 36	7	12		10.5
	42 to 72	10.5	12		10.5
	78 to 84***	10.5	12		16.25
3 by 1	36 to 72	12	14		10.5
	78 to 120	12	14		16.25
5 by 1	36 to 72	20	22		12
	78 to 120	20	22		22

*For helically corrugated pipe with rerolled ends, the nominal size refers to the dimensions of the end corrugations in the pipe.

**Equivalent circular diameter for Type II pipe.

***Diameter through 120 inch for annular corrugated bands used on rerolled ends of helically corrugated pipe.

F. *Coating*:

1. Bituminous coated circular pipe or pipe arch shall conform to this Section both as to base metal fabrication and in addition shall be coated inside and out with a bituminous coating which shall meet the performance requirements of AASHTO M-190. The pipe shall be uniformly coated inside and out to a minimum thickness of 5/100 inch, measured on the crests of the corrugation.
2. When a paved invert is specified, the pipe or pipe arch, in addition to the fully coated treatment described above, shall receive additional bituminous material, of the same specifications as above, applied to the bottom quarter of the circumference to form a smooth pavement with a minimum thickness of 1/8" above the crests of the corrugations.
3. Fully lined (either asphalt or concrete linings) corrugated metal pipe shall be in conformance with AASHTO M190, Type D or ASTM A849.
4. Field coating of pipe shall be in conformance with AASHTO M243 if specified. Field coating shall not be allowed as an alternative to hot dip asphalt coating per AASHTO M190.

2.03 HDPE PIPE

- A. *General*: The pipe material supplied shall be Type N-12 Pro Link WT pipe as manufactured by Advanced Drainage Systems, Inc. or an approved equal. The pipe shall be constructed with a corrugated exterior and have an integrated formed smooth interior waterway. The pipe and fittings shall be made from virgin polyethylene and comply with the requirements for test methods, dimensions, and markings found in AASHTO Designations M252, M294, and MP7-97. The pipe shall use a bell and spigot joint design with an elastomeric rubber gasket meeting ASTM F-477. The joint shall be capable of passing a laboratory pressure test of ten (10) psi and provide a seal that is watertight.
- B. *Rejection*: Pipe shall be subject to rejection for failure to conform to any of the specification requirements. Individual sections of the pipe may be rejected because of any of the following:
1. Fractures or cracks.
 2. Defects indicating imperfect proportioning, or molding.

3. Damaged ends when such damage would prevent making a satisfactory joint.
4. Sections exhibiting creased or crushed areas.

2.04 SAFETY END TREATMENTS (SET)

- A. Concrete shall conform to the pertinent requirements of SECTION 033100 - STRUCTURAL CONCRETE.
- B. *Pipe Runners*: When required, pipe runners shall conform to the requirements of ASTM A53, Grade B or equivalent strength pipe.
- C. *Plates and Angles*: When required, plates and angles shall conform to the requirements of ASTM A36.
- D. *Bolts and Nuts*: When required, bolts and nuts shall conform to the requirements of ASTM A307.
- E. *Galvanizing*: Unless otherwise shown on the Drawings, all metal pipe, plates, angles, nuts, and bolts shall be galvanized in accordance with ASTM A123 and ASTM A153, as appropriate.
- F. *Types of SET*:
 1. Type I: Provide Type I SET consisting of reinforced concrete headwalls or wingwalls and pipe runners in accordance with the details shown on the Drawings when required.
 2. Type II: Provide corrugated metal pipe (CMP), or reinforced concrete pipe (RCP), or multiple CMP or RCP with the ends mitered to the proper slope as shown in the Drawings. Unless otherwise shown on the Drawings, when CMP or RCP is specified for the pipe structure, CONTRACTOR shall have the option of providing prefabricated metal end sections or pre-cast SET units in place of mitered CMP or RCP.
- G. The Type of SET shall be designated on the Drawings by the following description:

SET (Type [I or II])
Pipe Size: [Diameter or Design]
Pipe Material: [RCP or CMP]
Slope (Horizontal: Vertical)
Orientation: [Parallel or Cross]

2.05 PRE-CAST CONCRETE MANHOLES

- A. *Loads*: Design loads shall consist of dead load, live load, impact loads and loads due to water table and any other load which may be imposed on the structure. Live load shall be H-20-S16 per the AASHTO Standard Specifications for Highway Bridges, with revisions. Design wheel loads shall be sixteen (16) kips. The live load shall be that loading which produces the maximum shears and bending moments in the Structure.
- B. *Cement*: All cement shall be Portland cement conforming to ASTM C150. Cement content shall be sufficient to produce minimum compression strengths of three thousand five hundred (3,500) psi in twenty eight (28) days.
- C. *Concrete*: Concrete for pre-cast concrete manholes shall be in accordance with ASTM C478, "Pre-Cast Reinforced Concrete Manhole Sections."
- D. *Reinforcement*: Reinforcing steel shall be in accordance with SECTION 033100 - STRUCTURAL CONCRETE. Reinforcing steel shall be Grade 60. The minimum steel requirement in the walls and cone of a cast-in-place manhole will be one or two lines of steel, the total area per vertical foot shall be not less than 0.0025 times the inside diameter in inches. The steel requirement in the base section shall have a minimum area of 12/100 square inches per linear foot in both directions.

- E. *Mortar*: Mortar shall conform to the requirements of ASTM C270, Type S using Portland cement.
- F. *Manufacture*: Pre-cast concrete manholes shall be manufactured in accordance with ASTM C478, "Pre-cast Reinforced Concrete Manhole Sections."

2.06 CAST-IN-PLACE CONCRETE MANHOLES

- A. *Cement*: All cement shall be Portland cement conforming to ASTM C150. Cement content shall be sufficient to produce minimum compression strengths of three thousand five hundred (3,500) psi in twenty eight (28) days.
- B. *Concrete*: Concrete for Cast-in-Place concrete manholes shall be in accordance with SECTION 033100 - STRUCTURAL CONCRETE.
- C. *Reinforcement*: Reinforcing steel shall be in accordance with SECTION 033100 - STRUCTURAL CONCRETE. Reinforcing steel shall be Grade 60.
- D. *Mortar*: Mortar shall conform to the requirements of ASTM C270, Type S using Portland cement.

2.07 INLETS

- A. *Concrete*: Concrete shall be in accordance with SECTION 033100 - STRUCTURAL CONCRETE. Pre-cast concrete inlets shall be manufactured in accordance with 2.05: Pre-Cast Concrete Manholes above.
- B. *Reinforcement*: Reinforcing steel shall be in accordance with SECTION 03 31 00 – Structural Concrete. Reinforcing steel shall be Grade 60.
- C. *Mortar*: Mortar shall conform to the requirements of ASTM C270, Type M using Portland cement. Aggregate for mortar shall conform to ASTM C144.

2.08 FRAMES, GRATES, RINGS, AND COVERS

- A. Cast iron shall conform to ASTM A48, Class No. 30. Provide locking covers if indicated on the Drawings.
- B. Castings shall be capable of withstanding the application of an AASHTO H-20 Loading without permanent deformation.
- C. Cast iron manhole frames grates, rings and covers shall be manufactured to the shapes, dimensions and with wordings or logos shown on the Drawings.
- D. Casting shall be free from sand or blow holes and other defects. Holes in cover shall be free from plugs and burrs.
- E. The machined bearing surface of manhole frames and covers shall obtain even bearing.
- F. Unless otherwise specified, coat iron castings with the manufacture's standard asphaltic paint.

PART 3 EXECUTION

3.01 GENERAL

- A. *Excavation and Trench Preparation*: Shall comply with SECTION 330516 - CONSTRUCTION OF UNDERGROUND UTILITIES.
- B. *Pipe Laying*: comply with SECTION 330516 - CONSTRUCTION OF UNDERGROUND UTILITIES.

- C. *Backfilling*: comply with SECTION 330516 - CONSTRUCTION OF UNDERGROUND UTILITIES.
- D. *Restoration of Surfaces*: comply with SECTION 330516 - CONSTRUCTION OF UNDERGROUND UTILITIES.
- E. *Safety End Treatments*: Construct safety end treatments in accordance with the details shown on the Drawings and in accordance with the construction methods required herein for the type and size of pipe specified.
- F. *Extension*: Where new structures are constructed as extensions to structures in place or as jointed to existing structures, the construction shall include all Work necessary to provide a proper connection between the new structure and the old as indicated on the Drawings.
- G. *Multiple Installations*: Multiple installations of RCP and CMP shall be laid with the center lines of the individual barrels parallel. Unless otherwise shown on the Drawings, the clear distance between outer surfaces of adjacent pipes shall be maintained as follows:

CLEAR DISTANCE BETWEEN PIPES		
PIPE DIAMETER	RCP	CMP
18"	0'-9"	1'-2"
24"	0'-11"	1'-5"
30"	1'-1"	1'-8"
36"	1'-3"	1'-11"
42"	1'-5"	2'-2"
48"	1'-7"	2'-5"
54"	1'-11"	2'-10"
60" to 84"	2'-0"	3'-2"

3.02 MANHOLES AND INLETS

A. *General*:

1. Construct manholes and inlets to dimensions shown on Drawings. Commence construction as soon as possible after pipes are laid.
2. Pipe Connections: Where inlet leads, main or lateral pipe storm sewers enter manholes or inlets the pipe shall be connected by using one of the following methods:
 - a. Install approved resilient connectors in accordance with manufacturer's instructions, or
 - b. Pipes shall be cut off flush with inside of manhole and any irregularities shall be pointed up with mortar.
3. Inverts: Construct invert channels to provide a smooth flow transition with no disruption of flow at pipe connections. Construct the invert with concrete and top with one inch (1") of mortar. Shape inverts for smooth flow across floor of manhole and slope the side as shown in the Drawings to obtain proper contour.
 - a. Where the main storm sewer (lowest line) passes straight through the manhole or the degree of deflection of the main storm sewer is less than five degrees (5°), and no other line or stub out is shown entering the manhole below the centerline of the main storm sewer, lay the storm sewer continuously through the manhole. After the manhole walls have been completed above the top of the storm sewer, breakout and remove the top half of the barrel of the storm sewer pipe that was previously laid through the manhole. Pre-cast manholes and inlets shall use a pre-cast invert integral with the manhole or inlet base.
 - b. Where the main storm sewer (lowest line) alignment deflects greater than five degrees (5°) at manhole or where another storm sewer or stub out enters at or below the centerline of the main storm sewer, connect the main storm sewer pipe as specified in Pipe Connections above.

4. **Manhole Cover and Frame:** After the manhole has been completed to the proper elevation, the cast iron manhole cover frame shall be set in a full mortar bed and adjusted to the elevation established by ENGINEER. For manholes less than four feet (4') in depth (shallow manholes), set pre-cast manhole cover slab in full mortar bed and adjust to the required elevation. Unless otherwise shown on the Drawings, the top of cast iron casting is to be flush with adjacent finished surface. For manholes in unpaved areas, top of frame shall be set a minimum of six inches (6") above existing ground line unless otherwise indicated on the Drawings. In unpaved areas encase the manhole frame in mortar or non-shrink grout placed flush with the face of the manhole ring and the top edge of the frame. Provide a rounded corner around the perimeter.
5. **Stub Outs:** Stub outs shall be installed, where shown, to the lines and grades shown. Use one full joint of pipe, of the size indicated, for stub out. Seal stub out with plug. Install the plug in such a manner as to prevent seepage or leakage through stub outs. The plugs shall be installed so that they may be easily removed in the future, without damaging the end of the stub out.

B. *Pre-Cast Concrete Manholes:*

1. Prior to setting, CONTRACTOR shall provide a cement stabilized sand base eight inches (8") in thickness suitable to receive the manhole. The base material shall be compacted and graded level at proper elevation to receive the manhole in relation to the conduit grade.
2. Sealants used between the joints of the manhole, and to fill lifting holes are at CONTRACTOR's discretion. If grout is used, it shall consist of two parts plaster sand to one part cement, with sufficient water added to make the grout flow under its own weight. The grout shall be poured in a water soaked groove and filled to the top of the groove in the previously set section. If mastic joint compound is used, it shall be placed along the walls of the groove.

C. *Cast-in-Place Concrete Manholes:*

1. Cast manhole foundations and walls monolithically. A cold joint with approved water stops will be allowed when the manhole flow line depth exceeds twelve feet (12'). No other joints will be allowed unless shown on the drawings or approved by the ENGINEER.
2. Place, finish, and cure concrete for manholes in accordance with the provisions of SECTION 033100 - STRUCTURAL CONCRETE.

D. *Inlets:*

1. **Stage 1:** Wall box section of inlets may be constructed of pre-cast concrete, cast-in-place concrete, or brick, and shall comply with the requirements above for manholes of the same construction. Brick inlets shall be plastered with 1/2" of mortar on the interior and exterior.
2. **Stage 2:** Regardless of materials used for Stage 1, Stage 2 inlet construction shall be of concrete.
3. **Castings:** Install frames, grates, and covers according to approved Shop Drawings and applicable directions from the manufacturer's printed materials. Set castings accurately at required locations to proper alignment and elevation. Brace or anchor frames temporarily in formwork until permanently set.

PART 4 MEASUREMENT AND PAYMENT

- A. **Storm Sewer Pipe:** Storm sewer pipe shall be measured by the linear foot from center of manhole to center of manhole of pipe actually laid, at finished grade, exclusive of pipe installed in tunnel construction, special structures, boxes, manholes or other special sections. Payment for storm sewer pipe, furnished and installed as stated, including excavation and any special material for bedding and backfilling, shall be at the contract unit price bid for the size and type measured.

- B. *Manholes*: Manholes shall be measured per each for the type and size installed. Payment for manholes, furnished and installed as stated, including excavation, pipe openings, plugs, rings, covers, frames and any special material for bedding and backfilling, shall be at the contract unit price bid for the type and size measured complete and in place.
- C. *Inlets*: Inlets shall be measured per each for the type and size installed. Payment for inlets, furnished and installed as stated, including excavation, pipe openings, plugs, grates, covers, frames and any special material for bedding and backfilling, shall be at the contract unit price bid for the type and size measured complete and in place.
- D. *Safety End Treatments*: Safety end treatments shall be measured by each unit of the type and size specified. Payment for safety end treatments shall be at the contract unit price bid for the type and size measured complete and in place. This payment shall be full compensation for the breaking and removing of all concrete, when required, removing a portion of in-place structures and extending concrete structures, when required, for all concrete, reinforcing steel, CMP, RCP, pipe runners, collars, nuts, bolts, plates and angles as may be required, for all structural excavation, galvanizing, for all labor, equipment, for construction or furnishing and installing safety end treatment units and incidentals necessary to complete the Work.

END OF SECTION

SECTION 600 – WWTP PACKAGE PLANT TECHNICAL SPECIFICATIONS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Contractor shall replace the existing wastewater plant with a new plant. This work shall be complete and ready for operation in accordance with the plans and specifications stated herein. The complete system shall include (1) stainless steel bar screen; furnish and install new aeration basin, new clarifier and digester; new chlorine contact basin: tertiary treatment: generator and all necessary equipment for efficient plant operation. Include all labor, materials, supervision, training, inspection, testing, start-up, and related appurtenances for a complete and operational system.
- B. Contractor shall be responsible for any costs associated with coordinating, administration, inspection, loading/unloading, handling, installing, training, startup, testing, etc. Payment shall be full compensation for all materials, equipment, tools, and labor for providing the equipment as shown in the plans and in accordance with contract documents. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- C. The wastewater treatment system shall be of the activated sludge type designed for treating an average of 75,000 gallons per day of domestic sewage based on the average daily flow with the following design characteristics:
- Influent:
- 250 mg/l BOD₅
 - 200 mg/l TSS
- Effluent:
- 20 mg/l BOD₅
 - 20 mg/l TSS
 - 2 mg/l DO
 - 1-4 mg/l CI Residual after 20 minutes
- D. Contractor shall perform and/or make the following arrangements:
1. Field unloading and setting of the wastewater treatment plant unit(s) on foundation pads, in position as shown on the drawings.
 2. Modifications and rehab to existing tie-ins and electrical.
 3. Positioning and assembly of all required equipment and appurtenances.
 4. Interconnection of piping.
 5. SCADA System.

5. Coatings of all metal surfaces as required by TCEQ. Touch up painting of those areas damaged during installation per coating manufacturer's recommended coating repair procedure.
 6. Anchors and fasteners. Field assembly including bolting or welding when required.
 7. Supply Hydrosieve and all tanks as needed.
 8. Supply chlorination, flow measuring, and non-potable water systems.
 9. Site fencing, lighting, and roadways
- E. Contractor to provide structural design of tanks signed and sealed by a Professional Engineer licensed in the State of Texas. All structural requirements specified herein are minimums.

1.2 SUBMITTALS

- A. Shop drawings:
1. Product technical data including:
 - a. Drawings showing layout, dimensions, and recommended spacing.
 - b. A list of manufacturer's recommended spare parts. Includes gaskets, packing, etc. on the list.
 - c. Control details and electrical wiring diagrams.
 - d. Performance data including, when applicable, pump curves, motor data and blower curves.
 - e. All other information necessary to enable the Engineer to determine whether the proposed equipment meets specified requirements.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All equipment shall be stored in accordance with the manufacturer's recommendations prior to installation.

1.4 PROCESS AND OPERATING INSTRUCTIONS

- A. Design shall be based on an organic loading rate without nitrification is 45 lb. BOD5 per day per 1,000 cf.
- B. The plant shall be designed to handle peak hourly flow rates. The peak flow shall be 400% of design flow.

1.5 MANUFACTURER QUALIFICATIONS

- A. All workmanship and materials shall be of the highest quality. The treatment plant shall be the product of a manufacturer with a minimum of five (5) years' experience in the design and building of sewage treatment equipment.

1.6 GUARANTEE

- A. Contractor shall guarantee materials, products, and workmanship for twelve (12) months from the date of acceptance that the structure and equipment be free from faults in materials and workmanship under normal use and service when used and maintained in accordance with instructions from the manufacturer. Manufacturer's obligations under this guarantee shall be limited to repairing or replacing parts and coatings found to be defective.

PART 2 PRODUCTS

2.1 TANK CONSTRUCTION

- A. All tank vessels shall be fabricated of one-fourth inch structural grade steel plate, (ASTM A-36) joined by arc welding with fillets of adequate section for the joint involved. All walls shall be continuous and watertight and shall be supported by structural reinforcing members where required. All welds on the structural members shall be continuous. Fabrication and erection shall conform to the appropriate requirements of "AISC Specifications for Buildings". Connection shall conform to the requirements of the American Welding Society's Code and shall develop the full strength of the member. The aeration tank, aerobic digester and chlorine contact tank shall have reinforcing members on 4'-0" maximum spacing, and reinforcing shall be provided on end walls and partition walls. Box tubing shall not be used as structural members.
- B. Submerged internal tank piping and all piping within the splash zone (i.e., directly above liquid surface up to 2-ft outside the liquid surface) shall be 316 stainless steel. Transitions between dissimilar metals to have dielectric fitting or isolation joint.
- C. All weir plates, baffle plates, butt plates, and related components shall be 316 stainless steel. All anchor bolts, nuts and washers shall be type 316 stainless steel designed and constructed in accordance with ASTM A270 and A276. All caulking compounds shall be an acrylic polymer or a two-part sealant equal or exceeding Federal Specification TT S 227B.

2.2 AIR BRIDGE, SERVICE WALKWAYS, STAIRWAY AND HANDRAILS

- A. Contractor shall furnish and install an air bridge as shown on the drawings. The bridge units, including walkway grating, handrails, toe plates, air distribution system and diffuser drops shall be supplied as complete unit. The number, size and type of diffuser shall be coordinated with Engineer if differing from drawings.
- B. Galvanized service walkways shall be provided for the service area as specified and shown on the plans. The walkways shall be made of 1" x 3/16" galvanized bar grating, support structure, and handrails. Furthermore, the walkways shall be supported as to have a safe uniform load carrying capacity of 100 pounds per square foot with a maximum deflection of 1/360. Handrails shall be provided around the grating walkway by the manufacturer. The handrails shall be constructed of 2 1/2" galvanized fabricated angle. The posts shall not be over 7' apart, and the top rails shall be 42" from the bridge. The kick-plates shall be 4". The walkways shall

sit atop (not inside) the vessels.

- C. Bottom of service walkway/ air bridge to be 1.5-feet above top of basins to allow room for piping going under service walkway. Contractor to adjust walkway higher if needed.
- D. Access to the plant shall be provided by a 45-degree stairway. It shall be 36" in clear width with an upper and intermediate handrail. The steps shall have a maximum 8 ¾" rise and shall be fabricated of bar grating with checkered plate nosing.

2.3 FOUNDATION

- A. WWTP tankage foundation to be crushed stone and 8" reinforced concrete under the Clarifier only. Any and all geotechnical or structural recommendations will be obtained by Contractor. The surrounding soil shall be sloped away from the foundation. Finished floor elevations should match that of natural ground adjacent to the WWTP units.

2.4 YARD PIPING

- A. Contractor shall field verify and measure all parts to be installed for the new wastewater treatment plant components and connections to existing yard piping.
- B. Tracer wire shall be installed on all open-cut pipe installations.
- C. All above grade piping not in the previously defined splash zone shall be coated galvanized steel or ductile iron. All below grade piping shall be PVC. All transitions between above grade and below grade pipe shall be 1-ft above grade.

2.5 PIPE TESTING

- A. All above and below grade piping shall be hydrostatically tested at a pressure of 150 psi for a minimum of 4 hours. A successful test is contingent upon zero (0) allowable leakage over the testing period.

2.6 COATING AND CORROSION CONTROL

- A. All vessels to be painted shall be properly prepared in a workmanlike manner to obtain a smooth, clean and dry surface. All rust, dust, and mill scale as well as other extraneous matter, shall be removed per manufacturer's recommended surface preparation. Interior and exterior coating systems shall be applied per manufacturer recommendations. Contractor to provide below coating system or Owner and Engineer approved equal.
- B. Interior of Basins (Carbon Steel):
 - Surface Prep: SSPC-SP10. Minimum surface profile of 3 mils.
 - 1st Coat – Sherwin Williams Dura-Plate 6000
 - 50 – 60 mils DFT
 - 2nd Coat – Sherwin Williams Sher-Loxane 800 (1-foot below water line to top of tank)
 - 5 – 7 mils DFT
 - Minimum total DFT is 50 mils below the waterline and 55 mils above the waterline.
- C. Exterior of Basins, Piping, Fittings, and Valves (Carbon Steel):

- Surface Prep: SSPC-SP10. Minimum surface profile of 2 mils.
- 1st Coat – Zinc Clad 4100
 - 3-5 mils DFT
- 2nd Coat – Macropoxy 646 FC Epoxy
 - 4-6 mils DFT
- 3rd Coat – Acrolon Ultra Polyurethane
 - 2-3 mils DFT
- Minimum total DFT is 11 mils

- D. Any coated or finished surface damaged during installation shall be recoated per manufacturer's repair procedure at Contractor's expense.
- E. Where previously installed equipment or reused existing equipment is used, prepare surface per coating manufacturer's recommendations and utilize coating system recommended by coating manufacturer for existing equipment.

2.7 INLET BAR SCREEN

- A. The bar screen shall be installed so that it can be easily accessed from the walkway and constructed as shown in the drawings.
- B. Contractor to install a rectangular debris trough constructed of sheet metal attached to the bar screen at the location of solids opening as shown in the drawings. The bottom of the trough is to be sloped towards the central point and connected to a neoprene curtain chute to discharge debris directly into the dumpster below.

2.8 AERATION ZONE

- A. Supply one (1) aeration zone to work in conjunction with the clarifier. The aeration tanks shall be as shown in the drawings. The aeration zone shall be of sufficient capacity to provide a maximum organic loading of 45 lb per day per 1,000 cf at the water level indicated on the plans. The tanks shall be shaped to prevent sludge accumulation, enhance rotation of the tank contents, and to prevent scum and froth accumulation. To ensure maximum retention and eliminate short circuiting of raw sewage particles, the aeration zone shall be constructed with air diffusers placed longitudinally along one side of the chamber to enhance the spiral rotation of the chamber contents. To ensure adequate circulation velocity, the width to depth ratio in the direction of rotation shall not exceed 1.5:1. The velocity of rotation shall be sufficient to scour the bottom and prevent sludge filleting and the escape of minuscule air diffusion bubbles to the surface. Aeration tank shall have a minimum 18-inches of freeboard.
- B. Aeration equipment, including the diffusers, shall be removable without draining and taking the aeration basin out of service. Each assembly shall be safely accessible from the walkway and easily removable from the tank manually by one person.
 - 1. Aeration system to consist of a grid of fine bubble diffusers as shown on plans.
 - 2. Contractor to ensure that minimum air required for each basin is met based on the

chosen diffuser's air flow capacity and amount within basin.

- C. An air distribution manifold shall be installed longitudinally across tank with 316 SS diffuser drop assemblies connected thereto. The manifold shall be continuous to provide for uniform pressure drop and shall be sized for 150% of the required airflow at design pressures. Mount the manifold on a movable pipe (lift pipe).
- D. Each diffuser drop assembly shall be furnished with a tee and plug for clean out purposes and shall have a ball valve and coupling for air regulating purposes. Ball valve to be easily accessible from walkway. The diffusers will be parallel to and near the base of the vessel sidewall. The minimum submergence shall be 10'. With this spacing and submergence, the diffusers shall provide the optimum diffusion and mixing of the tank contents. The oxygen transfer capacity of each diffuser shall be such that an adequate supply of oxygen will be maintained in the aeration tank to meet treatment requirements of the design sewage load.
- E. The diffusers assemblies shall be easily removable for inspection and servicing. The drop pipe assembly and the supports shall be 316 stainless steel. The aeration piping shall be sized to suit the conditions of operation and withstand the stresses, strains, and corrosive conditions of use.
- F. The fine bubble diffusers shall be tube type diffusers, suitable for wastewater treatment applications, and capable of producing a minimum of 3.5 scfm per foot.
- G. Install positive sludge recirculation system, consisting of one 6" (minimum) RAS/WAS air lift pump. The airline supplying air to the pump shall be equipped with a valve varying the capacity of the pump. The air lift pump shall be firmly supported and shall be equipped with a clean-out plug to allow for easy cleaning and maintenance.

2.9 CLARIFIER

A. General:

- 1. The manufacturer shall furnish and install one (1) prefabricated or field erected circular mechanical clarifier, complete and ready for operation in accordance with the plans and specifications stated herein. The clarifier shall be of a size to provide a surface loading not greater than 1,200 gallons/day/square foot and a minimum detention time of 1.8 hours based on peak flow.
- 2. The clarifier shall have a minimum 10' side water depth as shown on the drawings. Clarifier to have minimum 12-inches of freeboard.
- 3. The assembled system shall consist of the following: bridge support, inlet pipe, stilling well, sludge scraper, drive shaft, gear drive, effluent trough, scum trough and surface skimmer.
- 4. Permanent waterline with adjustable spray heads and ball valves shall be attached on opposite side of scum trough to help circulate water/ scum in clarifier.

B. Tank Construction:

1. The clarifier vessel shall be fabricated or erected with 0.25-inch structural grade steel plate (ASTM A-36) joined by arc welding with fillets of adequate section for the joint involved. All walls shall be continuous and watertight and shall be supported by structural-reinforcing members where required.

C. Support Bridge:

1. It shall be designed to support the drive unit, torque tube, sludge rakes, skimmer arms, and all additional dead loads and criteria previously mentioned in this specification. Provide a minimum clear spacing of 3-feet of grated walkway around the drive unit.

D. Inlet Connection:

1. Provide 316 SS pipe for transfer into stilling well. Install pipe near bottom of stilling well and design to mitigate deposition of solids.

E. Inlet Stilling Well:

1. The stilling well will be 4 ft. diameter to slow the influent velocity and prevent short circuiting. The stilling well shall be non-rotating and supported by structural cross members attached to the clarifier side walls.
2. The stilling well shall be fabricated of 3/16" steel plate and coated per coating manufacturer recommendation for wastewater immersion or provide 316 SS.

F. Sludge Scraper Assembly (Rake Arms):

1. The sludge scraper assembly shall consist of two (2) scraping arms fabricated of steel angles and a torque tube.
2. Each scraper arm shall be fabricated from steel angle and have a neoprene squeegee blade attached to each angle to allow for sufficient movement of sludge into the center sludge collector pit.
3. A sump with a 6" diameter 316 stainless steel sludge discharge pipe shall be installed at the bottom of the clarifier.

G. Surface Skimmer Arms:

1. A surface skimmer fabricated from structural steel sections and equipped with 0.25-inch flexible neoprene squeegee shall be provided to move the surface scum to the scum trough.
2. The surface skimmer shall have two (2) arms, each rotating 180° opposite from the center torque tube and to the scum baffle to provide a full surface skimming of both the

clarifier and stilling well. Skimmer to be 316 SS.

H. Scum Trough and Air lift:

1. The settling tank shall be equipped with a manually rotated 6" 316 SS scum trough extending through the stilling well to the scum baffle. The trough shall be easily accessible from the walkway and drain into a drop box at the scum baffle.
2. Attached to the drop box shall be a scum air lift assembly consisting of one 3-inch (minimum) positive scum air lift pump. The scum air lift shall be capable of pumping up to 20 GPM and equipped with easily accessible valve to regulate air flow.

I. Effluent Trough and Weir Assembly:

1. Install steel weir trough with weir plates fabricated from 3/16" steel plate allowing up to and including 2 inches of adjustment. The weirs shall have 4-inch-wide x 2-inch deep "V" notches on 6-inch centers. Attach weir to outer wall of trough. Weir plates coated with same coating as main tank or provided in 316 SS and is to match material/ coating system of trough.
2. The trough shall be made of 0.25-inch steel plate. The inner vertical wall of the trough shall act as a scum baffle with an adequate height above the water surface to prevent overflow. Trough shall be 12-inches wide, coated with same coating as main tank or provided in 316 SS.
3. Final weir plate adjustment shall be performed by the manufacturer after installation of troughs. Adjust weir plates to compensate for designed upward deflection and to bring weir plates to correct crest elevation. Deflection shall be less than or equal to $L/1000$ between supports.

J. Baffles

1. Fabricate the baffle plates in lengths to suit the basin, not to exceed 12-feet.
2. The baffle plates shall have mounting holes on approximately 48-inch centers to attach to support brackets.
3. Provide galvanized steel support brackets with molded gussets on each side that allow for at least 1-inch vertical and horizontal adjustment. Include necessary joint plates and butt plates.
4. Support brackets and baffles to have same interior coating as tankage.
5. Baffle plates with a non-standard length configuration shall have be machined or cut face and resin sealed.

K. Drive Unit:

1. The drive unit provided shall consist of a vertical motorized triple reduction speed reducer equal to a Eurodrive Model RF 97. The motor shall be properly sized for maximum gear box rating without overloading the gear box.
2. A steel torque tube to be bolted to the transfer output shaft of the final reducer. The final reduction and anti-friction bearings shall run in oil bath within the final gear reduction housing. Provide oil filling opening with drain plug.
3. The drive and torque unit shall be designed for a torque rating of no less than 1,352 ft-lbs. Scraper arm peripheral speed not to exceed 8 feet per minute at the tip of the sludge collector.

2.10 DISINFECTION

A. Chlorine Contact Chamber:

1. The tank shall be sized to provide a minimum detention time of 20 minutes at peak flow. Provide baffles to eliminate short circuiting and design so that floating material does not leave the chamber.
2. The tank shall be constructed of 0.25-inch steel plate joined by arc welding with fillets of adequate strength for the joint involved. Walls shall be continuous and watertight.
3. Install flow measuring weir. The weir shall have a 90° “V” notch located at the outlet end of the disinfection tank.
4. Install one or more baffle walls to achieve required detention time. Chamber shall have connection for sludge removal. Install 4-inch valves on both sides of baffles for sludge draw off. Extend overflow baffles a minimum of 6-inch above the maximum water surface elevation with a minimum 2-ft by 2-ft cutout in the upper corner. The bottom of the cutout shall be 3-inch to 6-inch below the apex of the “V” notch weir.
5. In order to provide the required detention time and remove floating scum and other materials, one or more underflow baffle walls shall be installed. The underflow baffles shall have a 2-ft by 2-ft cutout in the bottom corner.
6. Install an outdoor spigot, shut-off valve and associated appurtenances on the exterior of the chlorine contact tank to supply treated effluent water for irrigation. The Red Leaf Photinia shall be planted 4-feet outside the fence line and separated 6-feet between each plant.

B. Disinfection System:

1. Liquid chlorination shall be delivered to the disinfection chamber by use of a peristaltic pump capable of delivering 22 gallons per day of solution. The chlorine will be stored in a separate ventilated room. All bulk storage tanks in excess of 50 gallons shall be dual lined with a spill containment volume of 125% of the solution. Provide liquid chlorine (sodium hypochlorite) system including peristaltic pulse pump, electrical,

instrumentation, controls, liquid depth indicator, and all required supporting systems to constitute a complete TCEQ approved installation.

2. For outdoor installation, Sodium Hypochlorite storage tanks shall have UV inhibitors to protect the contents from direct sunlight per manufacturer recommendation.
3. All personal protective equipment and chemical neutralizers must be immediately accessible from the chemical storage area.
4. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - Peristaltic pulse pump.
5. Emergency Eyewash Bottles
 - ANSI Z358.1 compliant
 - Located inside chemical feed building
 - 16 Oz flushing fluid
 - Open housing style
6. Install personal protection equipment (PPE) near the sodium hypochlorite tank as shown on drawings.

C. Post Aeration:

1. The disinfection basin shall be equipped with an air distribution system to provide 20 scfm per 1,000 cf of basin volume. Locate diffusers in middle chambers and provide baffles as to not interfere with flow measuring system.

FLOW MEASUREMENT

- A. Effluent shall flow over a 90° “V” notch weir located at the outlet end of the disinfection basin. Furnish staff gauge, ultrasonic flow measuring system, and a circular chart recorder. The system shall be housed in a fiberglass NEMA 4X enclosure.

2.11 NON-POTABLE WATER PUMP SYSTEM -

- A. The non-potable water pump system shall have sufficient capacity to provide water for operations throughout the plant

- B. The system shall consist of (1) centrifugal pump and non-frost hose bibs.
 - 1. The centrifugal pump shall be capable of delivering a minimum of 5 gpm at 35 psi.
 - 2. Any exposed non-potable water pipe shall be painted purple with black lettering and label the nozzle "NON-POTABLE WATER, DO NOT DRINK" and "NO BEBA EL AGUA," in accordance with the rules and regulations set forth by the TCEQ.

2.12 AEROBIC DIGESTER

- A. Provide aerobic digester as specified and shown on the plans sized to 20 cf per pound of BOD₅ at design flow with 18-inches of freeboard for fine bubble diffusers in the tank. Sludge density may be as high as 2% solids.
- B. Blowers are to provide sufficient air for mixing in Digester. The air supplied shall be a minimum of 33 scfm per 1,000 cf of digester capacity. The diffusers will be parallel to and near the base of the vessel sidewall and located near the bottom of the tank. Provide means for removing equipment without draining the basins and taking the digester out of service. Each assembly shall be safely accessible from the walkway and easily removable from the tank manually by one person.
 - 1. Aeration system to consist of a grid of fine bubble diffusers as shown on plans.
 - 2. Contractor to ensure that minimum air required for each basin is met based on the chosen diffuser's air flow capacity and amount within basin.
- C. Provide one 4-inch adjustable decant airlift to return supernatant liquor from the digester to the aeration chamber. The airlifts shall be capable of transferring no less than 60 GPM. Airlift intake to be vertically adjustable, not less than 36-inch, to allow supernatant removal from 6-inch to 36-inch below the design water level in the digesters.
- D. Overflow notch shall be provided in the digester to return flow back to the aeration zone in an overflow event. Manufacturer to provide overflow notch size.

2.13 SLUDGE DRAW-OFF

- A. Install a 4-inch sludge draw-off line on the digester basin(s).

2.14 BLOWERS (POSITIVE DISPLACEMENT)

- A. Provide three (3) positive displacement blowers manufactured by Heliflow or engineer approved equivalent to provide air for aeration basin, digester, post-aeration, air lift pumps, and other components of the treatment unit that require air. The total amount of required air shall be provided with one (1) blower out of service.
- B. The blower/motor units shall be complete preassembled units. Blower assembly shall include positive displacement blowers, VFDs provided by same blower supplier, motor manufactured

to NEMA standards, a slide rail motor base, dry-type inlet filter/silencer, a discharge silencer, pressure relief valve, V-Belt Drive Guard, butterfly valve for throttling and check valve. The suction side of blower to have dry-type filter silencer.

- C. Supply motor which meets the voltage, phase, and enclosure requirements. Mount motor on adjustable slide rails to maintain proper belt tension, if applicable. The motor shall drive the blower by means of properly sized sheaves and V-belts. Each unit shall be capable of supplying 500 scfm at 9 psig.

PART 3 EXECUTION

3.1 FIELD ASSEMBLY

- A. The vessel(s) shall be prefabricated and/or field erected. Provide lifting lugs on prefabricated vessels to simplify handling. After setting the vessel(s) in position, the Contractor to check level and position for compliance. Any fabricated equipment shall be installed by the Contractor in the field.

3.2 FIELD SERVICE

- A. At the time the wastewater treatment system is filled with water or sewage by the owner or its operator, and all power connections have been completed, and all equipment is approved for service, the Contractor shall provide the services of a qualified representative who shall instruct the owner's representative in the proper operation and maintenance of the wastewater treatment system, including instructions in conducting all required operational tests. The manufacturer's representative shall furnish at this time, an Operational and Maintenance Manual (O&M) on the equipment installed within the wastewater treatment system.

END OF SECTION 600



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION CHECKLIST

Complete and submit this checklist with the application.

APPLICANT NAME: [Click to enter text.](#)

PERMIT NUMBER (If new, leave blank): WQ00 [Click to enter text.](#)

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

	Y	N		Y	N
Administrative Report 1.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Original USGS Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Administrative Report 1.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Affected Landowners Map	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SPIF	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Landowner Disk or Labels	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Core Data Form	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Buffer Zone Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Public Involvement Plan Form	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Flow Diagram	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Technical Report 1.0	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Drawing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Technical Report 1.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Original Photographs	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 2.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Design Calculations	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 2.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Solids Management Plan	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 3.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Water Balance	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Worksheet 3.1	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 3.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 3.3	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 4.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 5.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 6.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Worksheet 7.0	<input type="checkbox"/>	<input checked="" type="checkbox"/>			

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 <input type="checkbox"/>	\$315.00 <input checked="" type="checkbox"/>
≥0.05 but <0.10 MGD	\$550.00 <input type="checkbox"/>	\$515.00 <input type="checkbox"/>
≥0.10 but <0.25 MGD	\$850.00 <input type="checkbox"/>	\$815.00 <input type="checkbox"/>
≥0.25 but <0.50 MGD	\$1,250.00 <input type="checkbox"/>	\$1,215.00 <input type="checkbox"/>
≥0.50 but <1.0 MGD	\$1,650.00 <input type="checkbox"/>	\$1,615.00 <input type="checkbox"/>
≥1.0 MGD	\$2,050.00 <input type="checkbox"/>	\$2,015.00 <input type="checkbox"/>

Minor Amendment (for any flow) \$150.00 ☐

Payment Information:

Mailed Check/Money Order Number:

Check/Money Order Amount:

Name Printed on Check:

EPAY Voucher Number:

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: WQ00 15010001

EPA I.D. (TPDES only): TX 0133116

Expiration Date: 2/11/2025

Section 3. Facility Owner (Applicant) and Co-Applcant 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?

CSWR – Texas Utility Operating Company, LLC

(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: 605844786

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: Cox, Josiah

Title: 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?

N/A

(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: N/A

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: N/A

Last Name, First Name: N/A

Title: N/A

Credential: N/A

Provide a brief description of the need for a co-permittee: N/A

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. Core Data Form Only

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: Ms.

Last Name, First Name: Dobbins, April

Title: EHS Compliance Coordinator Credential: Click to enter text.

Organization Name: CSWR

Mailing Address: 1630 Des Peres Rd., Ste 140 City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-380-9508

E-mail Address: adobbins@cswrgroup.com

Check one or both: ☒ Administrative Contact ☐ Technical Contact

B. Prefix: Ms.

Last Name, First Name: Schultz, Amberly

Title: Compliance Specialist Credential: Click to enter text.

Organization Name: TRC

Mailing Address: 1000 Clark Ave, 4th Floor City, State, Zip Code: St. Louis, MO 63102

Phone No.: 573-214-1075

E-mail Address: Click to enter text.

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: Ms.

Last Name, First Name: Dobbins, April

Title: EHS Compliance Coordinator Credential: Click to enter text.

Organization Name: CSWR

Mailing Address: 1630 Des Peres Rd., Ste 140 City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-380-9508

E-mail Address: adobbins@cswrgroup.com

B. Prefix: Mr. Last Name, First Name: Wittwer, Clarence
Title: Regional Manager of Operations Credential: Click to enter text.
Organization Name: CSWR
Mailing Address: 1630 Des Peres Rd., Ste 140 City, State, Zip Code: Des Peres, MO 63131
Phone No.: 254-355-9124 E-mail Address: cwittwer@cswrgroup.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: Ms. Last Name, First Name: Oberneufemann, Krista
Title: Accounts Payable and Treasury Manager Credential: Click to enter text.
Organization Name: CSWR
Mailing Address: 1630 Des Peres Rd., Ste 140 City, State, Zip Code: Des Peres, MO 63131
Phone No.: 314-380-8515 E-mail Address: ap@cswrgroup.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: Ms. Last Name, First Name: Dobbins, April
Title: EHS Compliance Coordinator Credential: Click to enter text.
Organization Name: CSWR
Mailing Address: 1630 Des Peres Rd., Ste 140 City, State, Zip Code: Des Peres, MO 63131
Phone No.: 314-380-9508 E-mail Address: adobbins@cswrgroup.com

Section 8. Public Notice Information (Instructions Page 27)

A. Individual Publishing the Notices

Prefix: Ms. Last Name, First Name: Dobbins, April
Title: EHS Compliance Coordinator Credential: Click to enter text.
Organization Name: CSWR
Mailing Address: 1630 Des Peres Rd., Ste 140 City, State, Zip Code: Des Peres, MO 63131
Phone No.: 314-380-9508 E-mail Address: adobbins@cswrgroup.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: Ms.Z Last Name, First Name: Dobbins, April

Title: HS Compliance Coordinator Credential: Click to enter text.

Organization Name: CSWR

Mailing Address: 1630 Des Peres Rd., Ste 140 City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-380-9508 E-mail Address: adobbins@cswrgroup.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: East Parker County Library

Location within the building: Back/Circulation Desk

Physical Address of Building: 201 N. FM 1187

City: Aledo County: Parker

Contact (Last Name, First Name): Gorman, Beck

Phone No.: 817-441-6545 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: Attached

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 101521391

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):

Abraxas WWTF

C. Owner of treatment facility: CSWR

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

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

Prefix: Mr.

Last Name, First Name: Cox, Josiah

Title: President

Credential: Click to enter text.

Organization Name: CSWR

Mailing Address: 1630 Des Peres Rd., Ste 140 City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-736-4672

E-mail Address: jcox@cswrgroup.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: Mr.

Last Name, First Name: Cox, Josiah

Title: President

Credential: Click to enter text.

Organization Name: CSWR

Mailing Address: 1630 Des Peres Rd., Ste 140 City, State, Zip Code: Des Peres, MO 63131

Phone No.: 314-736-4672

E-mail Address: jcox@cswrgroup.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: N/A

Last Name, First Name: N/A

Title: N/A

Credential: N/A

Organization Name: N/A

Mailing Address: N/A

City, State, Zip Code: N/A

Phone No.: N/A

E-mail Address: N/A

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

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

City nearest the outfall(s): Fort Worth

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

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

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:

N/A

- B. City nearest the disposal site: N/A

- C. County in which the disposal site is located: N/A

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

N/A

- E. For **TLAPs**, please identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained: N/A

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: N/A

Amount past due: N/A

E. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If yes, please provide the following information:

Enforcement order number: N/A

Amount past due: N/A

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: 8x12 Reproduced Topo Map

Section 14. Signature Page (Instructions Page 34)

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

Permit Number: _____

Applicant: _____

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): Click to enter text.

Signatory title: Click to enter text.

Signature: _____

(Use blue ink)

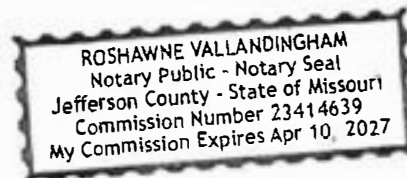
Date: 09/05/2024

Subscribed and Sworn to before me by the said Josiah Cox
on this 5th day of September, 2024.
My commission expires on the 10th day of April, 2027.

Roshawne Vallandigham
Notary Public

[SEAL]

ST. LOUIS
County, Texas MISSOURI



DOMESTIC WASTEWATER PERMIT APPLICATION

ADMINISTRATIVE REPORT 1.0

The following information is required for new and amendment applications.

Section 1. Affected Landowner Information (Instructions Page 36)

- A. Indicate by a check mark that the landowners map or drawing, with scale, includes the following information, as applicable:
- ☐ The applicant's property boundaries
 - ☐ The facility site boundaries within the applicant's property boundaries
 - ☐ The distance the buffer zone falls into adjacent properties and the property boundaries of the landowners located within the buffer zone
 - ☐ The property boundaries of all landowners surrounding the applicant's property (Note: if the application is a major amendment for a lignite mine, the map must include the property boundaries of all landowners adjacent to the new facility (ponds).)
 - ☐ The point(s) of discharge and highlighted discharge route(s) clearly shown for one mile downstream
 - ☐ The property boundaries of the landowners located on both sides of the discharge route for one full stream mile downstream of the point of discharge
 - ☐ The property boundaries of the landowners along the watercourse for a one-half mile radius from the point of discharge if the point of discharge is into a lake, bay, estuary, or affected by tides
 - ☐ The boundaries of the effluent disposal site (for example, irrigation area or subsurface drainfield site) and all evaporation/holding ponds within the applicant's property
 - ☐ The property boundaries of all landowners surrounding the effluent disposal site
 - ☐ The boundaries of the sludge land application site (for land application of sewage sludge for beneficial use) and the property boundaries of landowners surrounding the applicant's property boundaries where the sewage sludge land application site is located
 - ☐ The property boundaries of landowners within one-half mile in all directions from the applicant's property boundaries where the sewage sludge disposal site (for example, sludge surface disposal site or sludge monofill) is located
- B. ☐ Indicate by a check mark that a separate list with the landowners' names and mailing addresses cross-referenced to the landowner's map has been provided.
- C. Indicate by a check mark in which format the landowners list is submitted:
- ☐ USB Drive
 - ☐ Four sets of labels
- D. Provide the source of the landowners' names and mailing addresses: [Click to enter text.](#)
- E. As required by *Texas Water Code § 5.115*, is any permanent school fund land affected by this application?
- ☐ Yes
 - ☐ No

If **yes**, provide the location and foreseeable impacts and effects this application has on the land(s):

Click to enter text.

Section 2. Original Photographs (Instructions Page 38)

Provide original ground level photographs. Indicate with checkmarks that the following information is provided.

- ☐ At least one original photograph of the new or expanded treatment unit location
- ☐ At least two photographs of the existing/proposed point of discharge and as much area downstream (photo 1) and upstream (photo 2) as can be captured. If the discharge is to an open water body (e.g., lake, bay), the point of discharge should be in the right or left edge of each photograph showing the open water and with as much area on each respective side of the discharge as can be captured.
- ☐ At least one photograph of the existing/proposed effluent disposal site
- ☐ A plot plan or map showing the location and direction of each photograph

Section 3. Buffer Zone Map (Instructions Page 38)

A. Buffer zone map. Provide a buffer zone map on 8.5 x 11-inch paper with all of the following information. The applicant's property line and the buffer zone line may be distinguished by using dashes or symbols and appropriate labels.

- The applicant's property boundary;
- The required buffer zone; and
- Each treatment unit; and
- The distance from each treatment unit to the property boundaries.

B. Buffer zone compliance method. Indicate how the buffer zone requirements will be met. Check all that apply.

- ☐ Ownership
- ☐ Restrictive easement
- ☐ Nuisance odor control
- ☐ Variance

C. Unsuitable site characteristics. Does the facility comply with the requirements regarding unsuitable site characteristic found in 30 TAC § 309.13(a) through (d)?

- ☐ Yes
- ☐ No

DOMESTIC WASTEWATER PERMIT APPLICATION

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

This form applies to TPDES permit applications only. Complete and attach the Supplemental Permit information Form (SPIF) (TCEQ Form 20971).

Attachment: Attached

WATER QUALITY PERMIT

PAYMENT SUBMITTAL FORM

Use this form to submit the Application Fee, if the mailing the payment.

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

Mail this form and the check or money order to:

BY REGULAR U.S. MAIL

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

BY OVERNIGHT/EXPRESS MAIL

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, Texas 78753

Fee Code: WQP Waste Permit No: WQ001510001

1. Check or Money Order Number: [Click to enter text.](#)
2. Check or Money Order Amount: [Click to enter text.](#)
3. Date of Check or Money Order: [Click to enter text.](#)
4. Name on Check or Money Order: [Click to enter text.](#)
5. APPLICATION INFORMATION

Name of Project or Site: Abraxas

Physical Address of Project or Site: 3301 Castlebaron Rd., Ft Worth, Parker Co

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

Staple Check or Money Order in This Space

ATTACHMENT 1

INDIVIDUAL INFORMATION

Section 1. Individual Information (Instructions Page 41)

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

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

Full legal name (Last Name, First Name, Middle Initial): N/A

Driver's License or State Identification Number: N/A

Date of Birth: N/A

Mailing Address: N/A

City, State, and Zip Code: N/A

Phone Number: N/A Fax Number: [Click to enter text.](#)

E-mail Address: N/A

CN: N/A

For Commission Use Only:

Customer Number:

Regulated Entity Number:

Permit Number:

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

Francesca Findlay

From: April Dobbins <adobbins@cswrgroup.com>
Sent: Friday, September 6, 2024 11:13 AM
To: Francesca Findlay
Cc: aschulz@trccompanies.com; Rachel Ellis
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC - Amended Application
Attachments: Municipal Discharge Renewal Spanish NORI.docx; 24.09.05 Abraxas Permit Renewal Signed-compressed.pdf; Municipal TPDES and TLAP PLS Form (Spanish) - Abraxas.docx; 503581.0011.0003.0002-01-FIGURE 5.pdf

Good morning, Francesca,

Attached to this email are items requested by the Notice of Deficiency (NOD) regarding Abraxas WWTP in Parker Co., TX, which include TCEQ Form 10053, the plain language summary in Spanish, the 7.5-minute USGS map, and the Spanish NORI.

The transfer permit application and payment will be mailed today, September 6, 2024, with an estimated arrival of Monday, September 9th.

Please feel free to reach out to me with any questions or concerns regarding this application and/or accompanying documentation.

Best regards,



April Dobbins

Environmental Health & Safety Compliance Coordinator

Email: adobbins@cswrgroup.com

O: (314) 380 - 9508

1630 Des Peres Rd., Ste. 140, Des Peres, MO 63131

www.centralstateswaterresources.com

From: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Sent: Wednesday, September 4, 2024 2:04 PM
To: April Dobbins <adobbins@cswrgroup.com>
Cc: aschulz@trccompanies.com; Isabel Sassen <isassen@cswrgroup.com>
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Sounds great, thank you!

Thank you,

Francesca Findlay
License & Permit Specialist
ARP Team | Water Quality Division
512-239-2441
Texas Commission on Environmental Quality



Please consider whether it is necessary to print this e-mail

How is our customer service? Fill out our online customer satisfaction survey at <http://www.tceq.texas.gov/customersurvey>.

From: April Dobbins <adobbins@cswrgroup.com>
Sent: Wednesday, September 4, 2024 2:01 PM
To: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Cc: aschulz@trccompanies.com; Isabel Sassen <isassen@cswrgroup.com>
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Great, thank you, Francesca. As soon as he signs the application, I will make sure to email all the documents back to you.



April Dobbins

Environmental Health & Safety Compliance Coordinator

Email: adobbins@cswrgroup.com

O: (314) 380 - 9508

1630 Des Peres Rd., Ste. 140, Des Peres, MO 63131

www.centralstateswaterresources.com

From: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Sent: Wednesday, September 4, 2024 1:58 PM
To: April Dobbins <adobbins@cswrgroup.com>
Cc: aschulz@trccompanies.com
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Good afternoon,

I will let my Team Lead know and we will get the 30-day extension for you.
Please let me know if you need anything else.

Thank you,

Francesca Findlay
License & Permit Specialist
ARP Team | Water Quality Division
512-239-2441
Texas Commission on Environmental Quality



Please consider whether it is necessary to print this e-mail

How is our customer service? Fill out our online customer satisfaction survey at <http://www.tceq.texas.gov/customersurvey>.

From: April Dobbins <adobbins@cswrgroup.com>
Sent: Wednesday, September 4, 2024 12:18 PM
To: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Cc: aschulz@trccompanies.com
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Good afternoon, Francesca,

Our company president is not in the office to sign the application. I kindly request an extension of 14 days from today to submit the revised application form, the USGS map, and Spanish plain language summary as requested in the Notice of Deficiency letter.



April Dobbins

Environmental Health & Safety Compliance Coordinator

Email: adobbins@cswrgroup.com

O: (314) 380 - 9508

1630 Des Peres Rd., Ste. 140, Des Peres, MO 63131

www.centralstateswaterresources.com

From: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Sent: Monday, August 26, 2024 4:23 PM
To: April Dobbins <adobbins@cswrgroup.com>
Cc: aschulz@trccompanies.com
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Thanks, I appreciate it.

Thank you,

Francesca Findlay

License & Permit Specialist
ARP Team | Water Quality Division
512-239-2441
Texas Commission on Environmental Quality



Please consider whether it is necessary to print this e-mail

How is our customer service? Fill out our online customer satisfaction survey at <http://www.tceq.texas.gov/customersurvey>.

From: April Dobbins <adobbins@cswrgroup.com>
Sent: Monday, August 26, 2024 4:16 PM
To: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Cc: aschulz@trccompanies.com
Subject: Re: WQ0015010001 CSWR Texas Utility Operating Company, LLC

I'll give it a try. Thanks, Fran!

April Dobbins

Environmental Health & Safety Compliance Coordinator

Email: adobbins@cswrgroup.com

O: (314) 380 - 9508

1630 Des Peres Rd., Ste. 140, Des Peres, MO 63131

www.centralstateswaterresources.com

From: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Sent: Monday, August 26, 2024 4:13:58 PM
To: April Dobbins <adobbins@cswrgroup.com>
Cc: aschulz@trccompanies.com <aschulz@trccompanies.com>
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Good afternoon,

I have attached the template for the PLS Spanish. I tried to input some information, and it worked for me, hopefully it works for you. Please let me know if you need anything else.

Thank you,

Francesca Findlay
License & Permit Specialist
ARP Team | Water Quality Division
512-239-2441
Texas Commission on Environmental Quality



Please consider whether it is necessary to print this e-mail

How is our customer service? Fill out our online customer satisfaction survey at <http://www.tceq.texas.gov/customersurvey>.

From: April Dobbins <adobbins@cswrgroup.com>
Sent: Monday, August 26, 2024 1:12 PM
To: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Cc: aschulz@trccompanies.com
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Good afternoon, Francesca,

Thank you for sending the Notice of Deficiency (NOD) letter regarding Abraxas WWTF.

I will work to ensure the accuracy of the ownership information in Section 2.0 of the Administrative Review, use the appropriate form, TCEQ 10053, and include the 7.5-minute USGS map.

I was not able to successfully edit the template, and I spoke to Krista Urea from TCEQ - see attached – who advised to include the Spanish plain language summary I drafted. Please advise on how I should proceed pertaining to this aspect of the NOD.

Best regards,



April Dobbins

Environmental Health & Safety Compliance Coordinator

Email: adobbins@cswrgroup.com

O: (314) 380 - 9508

1630 Des Peres Rd., Ste. 140, Des Peres, MO 63131

www.centralstateswaterresources.com

From: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Sent: Wednesday, August 21, 2024 3:16 PM
To: April Dobbins <adobbins@cswrgroup.com>
Cc: aschulz@trccompanies.com
Subject: FW: WQ0015010001 CSWR Texas Utility Operating Company, LLC

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. WQ0015010001

SOLICITUD. CSWR – Texas, 1630 Des Peres Rd., Ste 140 in Des Peres, MO 63131 ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para renovar el Permiso No. WQ0015010001 (EPA I.D. No. TX 0133116) 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 20,000 galones por día. La planta está ubicada 3301 Cattlebaron Dr. en el Condado de Parker, Texas 76108. La ruta de descarga es del sitio de la planta a una laguna artificial, de allí a un canal sin nombre, de allí a un afluente sin nombre, de allí al Lago Haywire #2, de allí a un embalse sin nombre, de allí a un afluente sin nombre, de allí al Lago Haywire #1, de allí a un afluente sin nombre, de allí a Silver Creek, de allí al Lago Worth en el Segmento No. 0807 de la Cuenca del Río Trinity. La TCEQ recibió esta solicitud el August 15, 2024. La solicitud para el permiso estará disponible para leerla y copiarla en 201 N. FM 1187, Aledo, TX 76008 antes de la fecha de publicación de este aviso en el periódico. 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=-97.5499,32.7897&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. Además, puede pedir que la TCEQ ponga su nombre en una o más de las listas correos siguientes (1) la lista de correo permanente para recibir los avisos del solicitante indicado por nombre y número del permiso específico y/o (2) la lista de correo de todas las solicitudes en un condado específico. Si desea que se agregue su nombre en una de las listas designe cual lista(s) y envía por correo su pedido a la Oficina del Secretario Principal de la TCEQ.

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.

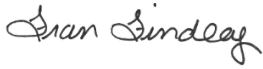
También se puede obtener información adicional del CSWR - Texas a la dirección indicada arriba o llamando a April Dobbins al 314-380-9508.

Fecha de emisión: 15 de Agosto

Dear Ms. Dobbins:

The attached Notice of Deficiency letter sent on August 21, 2024, requesting additional information needed to declare the application administratively complete. Please send the complete response to my attention September 4, 2024.

Thank you,



Francesca Findlay
License & Permit Specialist
ARP Team | Water Quality Division
512-239-2441
Texas Commission on Environmental Quality



Please consider whether it is necessary to print this e-mail

Francesca Findlay

From: WWTP <wwtp@banderatx.gov>
Sent: Friday, August 23, 2024 11:45 AM
To: Francesca Findlay; stan.farmer@bandera.gov
Subject: Re: WQ0015010001 WQ0010121001 City of Bandera
Attachments: 2024 Core Data Form.docx; City of Bandera Payment Voucher.jpeg; Administrative Report 1.0 Signature Page.jpeg; Core Data Form Signature Page.jpeg

Dear Ms. Findlay

Attached is the corrected Core Data Form that includes the county our treatment plant is located in. I also attached scanned copies of the signature pages that were included as part of the original permit application.

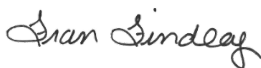
John Hegemier
830-688-1990

From: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Sent: Friday, August 23, 2024 11:08 AM
To: stan.farmer@bandera.gov <stan.farmer@bandera.gov>
Cc: WWTP <wwtp@banderatx.gov>
Subject: RE: WQ0015010001 WQ0010121001 City of Bandera

Dear Mr. Farmer

The attached Notice of Deficiency letter sent on August 23, 2024, requesting additional information needed to declare the application administratively complete. Please send the complete response to my attention September 6, 2024.

Thank you,



Francesca Findlay
License & Permit Specialist
ARP Team | Water Quality Division
512-239-2441
Texas Commission on Environmental Quality



Please consider whether it is necessary to print this e-mail

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

AGUAS RESIDUALES DOMÉSTICAS

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 son representaciones federales exigibles de la solicitud de permiso.

1. CSWR-Texas Utility Operating Company, LLC (CN605844786) opera Abraxas WWTF RN1015213916, una Planta de tratamiento de aguas residuales domésticas. La instalación es ubicada 3301 Cattlebaron Rd., en White Settlement, Condado de Parker, Texas 76108.

Renovación para descargar no más de 0.020 millones de galones por día de aguas residuales domésticas a través del Vertedero 001.

Se espera que las descargas de la instalación contengan Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), E. coli, pH, and Total Residual Chlorine. Las aguas residuales descargadas aquí incluyen aguas residuales domésticas. Las aguas son tratadas por una rejilla de barras, un tanque de aireación, un clarificador final, aireación post-tratamiento, un digestor de lodos aeróbicos y una cámara de contacto con cloro.

Francesca Findlay

From: April Dobbins <adobbins@cswrgroup.com>
Sent: Wednesday, September 4, 2024 12:18 PM
To: Francesca Findlay
Cc: aschulz@trccompanies.com
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Good afternoon, Francesca,

Our company president is not in the office to sign the application. I kindly request an extension of 14 days from today to submit the revised application form, the USGS map, and Spanish plain language summary as requested in the Notice of Deficiency letter.



April Dobbins

Environmental Health & Safety Compliance Coordinator

Email: adobbins@cswrgroup.com

O: (314) 380 - 9508

1630 Des Peres Rd., Ste. 140, Des Peres, MO 63131

www.centralstateswaterresources.com

From: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Sent: Monday, August 26, 2024 4:23 PM
To: April Dobbins <adobbins@cswrgroup.com>
Cc: aschulz@trccompanies.com
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Thanks, I appreciate it.

Thank you,

Francesca Findlay
License & Permit Specialist
ARP Team | Water Quality Division
512-239-2441
Texas Commission on Environmental Quality



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How is our customer service? Fill out our online customer satisfaction survey at <http://www.tceq.texas.gov/customersurvey>.

From: April Dobbins <adobbins@cswrgroup.com>
Sent: Monday, August 26, 2024 4:16 PM
To: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Cc: aschulz@trccompanies.com
Subject: Re: WQ0015010001 CSWR Texas Utility Operating Company, LLC

I'll give it a try. Thanks, Fran!

April Dobbins

Environmental Health & Safety Compliance Coordinator

Email: adobbins@cswrgroup.com

O: (314) 380 - 9508

1630 Des Peres Rd., Ste. 140, Des Peres, MO 63131

www.centralstateswaterresources.com

From: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>
Sent: Monday, August 26, 2024 4:13:58 PM
To: April Dobbins <adobbins@cswrgroup.com>
Cc: aschulz@trccompanies.com <aschulz@trccompanies.com>
Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Good afternoon,

I have attached the template for the PLS Spanish. I tried to input some information, and it worked for me, hopefully it works for you. Please let me know if you need anything else.

Thank you,

Francesca Findlay
License & Permit Specialist
ARP Team | Water Quality Division
512-239-2441
Texas Commission on Environmental Quality



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How is our customer service? Fill out our online customer satisfaction survey at <http://www.tceq.texas.gov/customersurvey>.

From: April Dobbins <adobbins@cswrgroup.com>
Sent: Monday, August 26, 2024 1:12 PM
To: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>

Cc: aschulz@trccompanies.com

Subject: RE: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Good afternoon, Francesca,

Thank you for sending the Notice of Deficiency (NOD) letter regarding Abraxas WWTF.

I will work to ensure the accuracy of the ownership information in Section 2.0 of the Administrative Review, use the appropriate form, TCEQ 10053, and include the 7.5-minute USGS map.

I was not able to successfully edit the template, and I spoke to Krista Urea from TCEQ - see attached – who advised to include the Spanish plain language summary I drafted. Please advise on how I should proceed pertaining to this aspect of the NOD.

Best regards,



April Dobbins

Environmental Health & Safety Compliance Coordinator

Email: adobbins@cswrgroup.com

O: (314) 380 - 9508

1630 Des Peres Rd., Ste. 140, Des Peres, MO 63131

www.centralstateswaterresources.com

From: Francesca Findlay <Francesca.Findlay@tceq.texas.gov>

Sent: Wednesday, August 21, 2024 3:16 PM

To: April Dobbins <adobbins@cswrgroup.com>

Cc: aschulz@trccompanies.com

Subject: FW: WQ0015010001 CSWR Texas Utility Operating Company, LLC

Dear Ms. Dobbins:

The attached Notice of Deficiency letter sent on August 21, 2024, requesting additional information needed to declare the application administratively complete. Please send the complete response to my attention September 4, 2024.

Thank you,

Dan Sindorf

Francesca Findlay
License & Permit Specialist
ARP Team | Water Quality Division
512-239-2441
Texas Commission on Environmental Quality



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