Administrative Package Cover Page

This file contains the following documents:

1. Summary of application (in plain language)
   - English
   - Alternative Language (Spanish)
2. First Notice (NORI-Notice of Receipt of Application and Intent to Obtain a Permit)
   - English
   - Alternative Language (Spanish)
3. Application materials

Portada de Paquete Administrativo

Este archivo contiene los siguientes documentos:

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

ENGLISH PLS

Plum Creek Utility Company LLC (CN 605447341) proposes to operate PCU-WRRF3 a Membrane Bioreactor (MBR) system that combines the activated sludge process with advanced membrane technology. The facility will be located at 345 Misty Lane Maxwell, in Caldwell County, Texas 78656.This application request is for a minor amendment and renewal of a Texas Pollution Discharge Elimination System permit with a 1.55 MGD proposed final phase.

Discharges from the facility are expected to contain five-day biochemical oxygen demand (BOD-5), total suspended solids (TSS), and E.Coli. Domesic wastewater will be treated by an activated sludge process combined with advanced MBR technology and the treatment units include an influent screening system, Anoxic/EQ basin, aeration basin, membrane train, and a chlorination chamber.

SPANISH PLS

Plum Creek Utility Company LLC (CN 605447341) propone operar PCU-WRRF3, una Sistema de biorreactor de membrana (MBR) que combina el proceso de lodos activados con tecnología avanzada de membranas. La instalación estará ubicado en 345 Misty Lane Maxwell, en el condado de Caldwell, Texas 78656. Esta solicitud es para modificaciónes menores y renovación de permiso del Sistema de Eliminación de Descargas Contaminantes de Texas con una fase final propuesta de 1.55 MGD.

Se espera que las descargas de la instalación contengan demanda bioquímica de oxígeno (DBO-5) de cinco días, sólidos suspendidos totales (SST) y E. Coli. Aguas residuales domésticas. están tratado por un proceso de lodos activados combinado con tecnología MBR avanzada y las unidades de tratamiento incluyen un sistema de cribado de afluentes, una cuenca anóxica/EQ, una balsa de aireación, un tren de membranas y una cámara decloración.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

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

PERMIT NO. WQ0015064001

APPLICATION. Plum Creek Utility Company LLC, P.O. Box 701201, San Antonio, Texas 78270, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0015064001 (EPA I.D. No. TX0133892) to authorize the discharge of treated wastewater at a volume not to exceed an annual average flow of 1,550,000 gallons per day. The domestic wastewater treatment facility is located at 345 Misty Lane, approximately 2,300 feet northwest of the intersection of County Road 229 and County Road 230, near the city of Maxwell, in Caldwell County, Texas 78656. The discharge route is from the plant site to Clear Fork Plum Creek, thence to Plum Creek. TCEQ received this application on April 18, 2025. The permit application will be available for viewing and copying at Dr. Eugene Clark Library, 217 South Main Street, Lockhart, in Caldwell County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/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=-97.763888,29.900555&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 Plum Creek Utility Company LLC at the address stated above or by calling Mr. Jeremiah Mecham, General Manager, at 210-209-8029.

Issuance Date: May 13, 2025

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. WQ0015064001

SOLICITUD. Plum Creek Utility Company LLC. P.O Box 701201 San Antonio TX 78270**,** ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para renovar el Permiso No. WQ0015064001 (EPA I.D. No. TX0133892 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 anual de 1,550,000 por día. La planta está ubicada en 345 Misty Lane, aproximadamente 2,300 pies al noroeste de la intersección de County Road 229 y County Road 230, en el Condado de Caldwell, Texas 78656. La ruta de descarga es del sitio de la planta a Clear Fork Plum Creek, y de alli hacia Plum Creek. La TCEQ recibió esta solicitud el 18 Abril 2025. La solicitud para el permiso estará disponible para leerla y copiarla en Dr. Eugene Clark Library, 217 South Main Street, Lockhart en el Condado de Caldwell, Texas antes de la fecha de publicación de este aviso en el periódico. 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=-97.763888,29.900555&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.

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 especifico. Si desea que se agrega su nombre en una de las listas designe cual lista(s) y envía por correo su pedido a la Oficina del Secretario Principal de la TCEQ.

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

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

También se puede obtener información adicional del Plum Creek Utility Company LLC a la dirección indicada arriba o llamando a Jeremiah Mecham, Gerente General, al 210-209-8029.

Fecha de emisión: 13 de mayo de 2025

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
EPAY • ONLINE PAYMENT APPLICATION

Your transaction is complete. Thank you for using TCEQ ePay.

Note: It may take up to 3 working days for this electronic payment to be processed and be reflected in the TCEQ ePay system. Print this receipt and the vouchers for your records. An email receipt has also been sent.

Transaction Information

Trace Number:	582EA000663358
Date:	04/10/2025 02:21 PM
Payment Method:	ACH - Authorization 0099221874
ePay Actor:	SAMANTHA MARIN
Actor Email:	samantham@bvrtwater.com
IP:	108.178.113.222
TCEQ Amount:	$2,015.00
Texas.gov Price:	$2,015.00*

* 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.

Payment Contact Information

Name:	SAMANTHA MARIN
Company:	PLUM CREEK UTILITY COMPANY LLC
Address:	P O BOX 701201, SAN ANTONIO, TX 78270
Phone:	210-632-8645

Cart Items

Click on the voucher number to see the voucher details.

Voucher	Fee Description	AR Number	Amount
761825	WW PERMIT - FACILITY WITH FLOW >= 1.0 MGD - RENEWAL		$2,000.00
761826	30 TAC 305.53B WQ RENEWAL NOTIFICATION FEE		$15.00
		TCEQ Amount:	$2,015.00

ePay Again | Exit ePay

Note: It may take up to 3 working days for this electronic payment to be processed and be reflected in the TCEQ ePay system. Print this receipt for your records.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION CHECKLIST

Complete and submit this checklist with the application.

APPLICANT NAME: Plum Creek Utility Company LLC

PERMIT NUMBER (If new, leave blank): WQ0015064001

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

	Y	N		Y	N
Administrative Report 1.0	☒	☐	Original USGS Map	☒	☐
Administrative Report 1.1	☐	☐	Affected Landowners Map	☒	☐
SPIF	☒	☐	Landowner Disk or Labels	☒	☐
Core Data Form	☒	☐	Buffer Zone Map	☒	☐
Summary of Application (PLS)	☒	☐	Flow Diagram	☒	☐
Public Involvement Plan Form	☐	☐	Site Drawing	☒	☐
Technical Report 1.0	☒	☐	Original Photographs	☒	☐
Technical Report 1.1	☐	☐	Design Calculations	☒	☐
Worksheet 2.0	☒	☐	Solids Management Plan	☐	☒
Worksheet 2.1	☐	☒	Water Balance	☐	☒
Worksheet 3.0	☐	☒			
Worksheet 3.1	☐	☒			
Worksheet 3.2	☐	☒			
Worksheet 3.3	☐	☒			
Worksheet 4.0	☐	☒			
Worksheet 5.0	☐	☒			
Worksheet 6.0	☐	☒			
Worksheet 7.0	☐	☒			

For TCEQ Use Only

Segment Number _____County _____
Expiration Date _____Region_____
Permit Number _____

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION ADMINISTRATIVE REPORT 1.0

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

Section 1. Application Fees (Instructions Page 26)

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

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

Minor Amendment (for any flow) $150.00 ☐

Payment Information:

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

Check/Money Order Amount: Click to enter text.

Name Printed on Check: Click to enter text.

EPAY Voucher Number: Click to enter text.

Copy of Payment Voucher enclosed? Yes ☒

Section 2. Type of Application (Instructions Page 26)

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

☐ Publicly Owned Domestic Wastewater

☒ Privately-Owned Domestic Wastewater

☐ Conventional Water 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: Minor amendment to update permitted phases and renew permit.

f. **For existing permits**:

Permit Number: WQ00 15064001

EPA I.D. (TPDES only): TX 0133892

Expiration Date: October 23, 2025

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

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

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

Plum Creek Utility 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: 605447341

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

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

Title: President & CEO 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: Click to enter text.

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

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

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

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

C. Core Data Form

Complete the Core Data Form for each customer and include as an attachment. If the customer type selected on the Core Data Form is **Individual**, complete **Attachment 1** of Administrative Report 1.0. 'Administrative Report 1.0 Attachment 3.C Core Data Form'

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: Click to enter text. Last Name, First Name: Mecham, Jeremiah

Title: General Manager Credential: Click to enter text.

Organization Name: Plum Creek Utility Company

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-209-8029 E-mail Address: jeremiahm@bvrtwater.com

Check one or both: ☒ Administrative Contact ☒ Technical Contact

B. Prefix: Click to enter text. Last Name, First Name: Marin, Samantha

Title: Regulatory Manager Credential: Click to enter text.

Organization Name: Plum Creek Utility Company

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-632-8645 E-mail Address: samantham@bvrtwater.com

Check one or both: ☒ Administrative Contact ☒ Technical Contact

Section 5. Permit Contact Information (Instructions Page 27)

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

A. Prefix: Click to enter text. Last Name, First Name: Mecham, Jeremiah

Title: General Manager Credential: Click to enter text.

Organization Name: Plum Creek Utility Company

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-209-8029 E-mail Address: jeremiahm@bvrtwater.com

B. Prefix: Click to enter text. Last Name, First Name: Marin, Samantha

Title: Regulatory Manager Credential: Click to enter text.

Organization Name: Plum Creek Utility Company LLC

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-632-8645 E-mail Address: samantham@bvrtwater.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: Click to enter text. Last Name, First Name: Diller, Carol

Title: Director of Accounting Credential: Click to enter text.

Organization Name: Plum Creek Utility Company LLC

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-209-8029 E-mail Address: accounting@bvrtwater.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: Click to enter text. Last Name, First Name: Marin, Samantha

Title: Regulatory Manager Credential: Click to enter text.

Organization Name: Plum Creek Utility Company LLC

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-632-8645 E-mail Address: samantham@bvrtwater.com

Section 8. Public Notice Information (Instructions Page 27)

A. Individual Publishing the Notices

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

Title: Regulatory Manager Credential: Click to enter text.

Organization Name: Plum Creek Utility Company LLC

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-632-8645 E-mail Address: samantham@bvrtwater.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: Click to enter text. Last Name, First Name: Mecham, Jeremiah

Title: General Manager Credential: Click to enter text.

Organization Name: Plum Creek Utility Company LLC

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-209-8029 E-mail Address: jeremiahm@bvrtwater.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: Dr. Eugene Clark Library

Location within the building: Click to enter text.

Physical Address of Building: 217 S Main St Lockhart TX 78644

City: Lockhart County: Caldwell

Contact (Last Name, First Name): N/A

Phone No.: 512-398-3223 Ext.: N/A

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. Summary of Application in Plain Language Template

Complete the F. Summary of Application in Plain Language Template (TCEQ Form 20972), also known as the plain language summary or PLS, and include as an attachment.

Attachment: 'Administrative Report 1.0 Attachment 8.F Plain Language Summary'

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** 106525728

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):

PCU-WRRF3

C. Owner of treatment facility: Plum Creek Utility Company LLC

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

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

Prefix: N/A Last Name, First Name: N/A

Title: N/A Credential: N/A

Organization Name: Plum Creek Utility Company LLC

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-209-8029 E-mail Address: jeremiahm@bvrtwater.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: N/A Last Name, First Name: N/A

Title: N/A Credential: N/A

Organization Name: Plum Creek Utility Company

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-209-8029 E-mail Address: jeremiahm@bvrtwater.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: Click to enter text.

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

Organization Name: Click to enter text.

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

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

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

Attachment: Click to enter text.

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): Maxwell

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

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: Click to enter text.

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)

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.

Click to enter text.

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: Click to enter text.

D. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

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

Account number: Click to enter text.

Amount past due: Click to enter text.

E. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

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

Enforcement order number: Click to enter text.

Amount past due: Click to enter text.

Section 13. Attachments (Instructions Page 33)

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

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

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

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

☐ Attachment 1 for Individuals as co-applicants

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

Section 14. Signature Page (Instructions Page 34)

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

Permit Number: WQ0015064001

Applicant: Plum Creek Utility Company LLC

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): Shilen Patel

Signatory title: President & CEO

Signature: _____ Date: 03/13/25

(Use blue ink)

Subscribed and Sworn to before me by the said Shilen Patel

on this 13th day of March, 2025.

My commission expires on the 29th day of September, 2025.

Deborah Smith

Notary Public

DEBORAH SMITH
Notary Public, State of Texas
My Comm. Exp. 09-29-2025
ID No. 866910-3

State of Tx

County, Texas

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: 'SUPPLEMENTAL PERMIT INFORMATION(SPIF) USGS MAP ATTACHMENT'

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

FOR AGENCIES REVIEWING DOMESTIC OR INDUSTRIAL 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)

Complete this form as a separate document. TCEQ will mail a copy to each agency as required by our agreement with EPA. If any of the items are not completely addressed or further information is needed, we will contact you to provide the information before issuing the permit. Address each item completely.

Do not refer to your response to any item in the permit application form. Provide each attachment for this form separately from the Administrative Report of the application. The application will not be declared administratively complete without this SPIF form being completed in its entirety including all attachments. Questions or comments concerning this form may be directed to the Water Quality Division's Application Review and Processing Team by email at WQ-ARPTeam@tceq.texas.gov or by phone at (512) 239-4671.

The following applies to all applications:

1. Permittee: Plum Creek Utility Company LLC

   Permit No. WQ00 15064001 EPA ID No. TX 0133892

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

   345 Misty Ln Maxwell, TX 78656

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): Mr.

First and Last Name: Jeremiah Mecham

Credential (P.E, P.G., Ph.D., etc.): Click here to enter text

Title: General Manager

Mailing Address: PO Box 701201

City, State, Zip Code: San Antonio, TX 78270

Phone No.: 210-209-8029 Ext.: Click here to enter text Fax No.: Click here to enter text

E-mail Address: jeremiahm@bvrtwater.com

2. List the county in which the facility is located: Caldwell
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.

to Clear Fork Plum Creek, thence to Plum Creek in Segment No. 1810 of the Guadalupe 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

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

Construction of this wastewater treatment facility will impact roughly 3 acres of land. There will be some surface excavation (approx. 4' in depth) for the installation of the necessary piping, driveways, fencing, equipment pads, and support building. Deeper excavation (up to approx. 35') will be necessary for the influent lift station and treatment tankage.

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

The property is currently undeveloped, with normal grass and brush cover.

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

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

N/A

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

N/A

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION TECHNICAL REPORT 1.0

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

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

Section 1. Permitted or Proposed Flows (Instructions Page 42)

A. Existing/Interim I Phase

Design Flow (MGD): 0.15 MGD

2-Hr Peak Flow (MGD): 0.6 MGD

Estimated construction start date: December 2024

Estimated waste disposal start date: November 2025

B. Interim II Phase

Design Flow (MGD): 0.30 MGD

2-Hr Peak Flow (MGD): 1.2 MGD

Estimated construction start date: September 2026

Estimated waste disposal start date: March 2027

C. Interim II Phase

Design Flow (MGD): 0.60 MGD

2-Hr Peak Flow (MGD): 2.4 MGD

Estimated construction start date: November 2027

Estimated waste disposal start date: July 2028

D. Final Phase

Design Flow (MGD): 1.55 MGD

2-Hr Peak Flow (MGD): 6.2 MGD

Estimated construction start date: April 2029

Estimated waste disposal start date: December 2029

E. Current Operating Phase

Provide the startup date of the facility: N/A

Section 2. Treatment Process (Instructions Page 42)

A. Current Operating Phase

Provide a detailed description of the treatment process. **Include the type of treatment plant, mode of operation, and all treatment units.** Start with the plant's head works and finish with the point of discharge. Include all sludge processing and drying units. **If more than one phase exists or is proposed, a description of *each phase* must be provided**.

Please see 'Technical Report 1.0 Attachment 2.B Treatment Process Design Summary'

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)
Please see 'Technical Report 1.0 Attachment 2.B Treatment Process Design Summary'		

C. Process Flow Diagram

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

Attachment: 'Technical Report 1.0 Attachment 2.C Process Flow Diagrams'

Section 3. Site Information and Drawing (Instructions Page 43)

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

- Latitude: 29.900587
- Longitude: -97.763888

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

- Latitude: N/A
- Longitude: N/A

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

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

disposal site.

Attachment: 'Technical Report 1.0 Attachment 3 Site Drawing'
Provide the name **and** a description of the area served by the treatment facility.

PCU-WRRF3 will provide wastewater service for numerous planned and future developments in Caldwell County, that are mostly located South of SH-21, North of Jolly Road, West of FM-2720 and East of Misty Lane. Several properties along FM-150 in Hays County may also be served by this facility.

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

Collection System Information

Collection System Name	Owner Name	Owner Type	Population Served
PCU-WRRF3 Collection System	Count Line SUD	Publicly Owned	20,000
N/A		Choose an item.	
N/A		Choose an item.	
N/A		Choose an item.	

Section 4. Unbuilt Phases (Instructions Page 44)

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**.

Plum Creek Utility LLC acquired ownership of this permit on August 10, 2023 from Walton Texas LP. This minor amendment and renewal application will adjust the authorized phases to reflect the planned phases currently in design.

Section 5. Closure Plans (Instructions Page 44)

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.

Click to enter text.

Section 6. Permit Specific Requirements (Instructions Page 44)

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: Click to enter text.

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**.

Phase 1 was approved by TCEQ on October 24, 2024 (WWPR Log No. 1024/054. Please see 'Technical Report 1.0 Attachment 6.A Summary Transmittal Letter'

B. Buffer zones

Have the buffer zone requirements been met?

☒ Yes ☐ No

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

N/A

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*.

Notice of Completion will be submitted according to the permit requirements. Biomonitoring tests will be conducted according to the permit requirements. The facility will comply with the updated terms for the Mediation Agreement with Mr. Dana Garrett. Please see 'Technical Report 1.0 Attachment 6.C Other Requirements.'

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.

Click to enter text.

3. Grit disposal

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

☐ Yes ☐ No

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

Describe the method of grit disposal.

Click to enter text.

4. Grease and decanted liquid disposal

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

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

Click to enter text.

E. Stormwater management

1. Applicability

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

☒ Yes ☐ No

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

☐ Yes ☒ No

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

2. MSGP coverage

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

☐ Yes ☒ No

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

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

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

☐ Yes ☒ No

3. *Conditional exclusion*

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

☒ Yes ☐ No

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

No industrial activities or materials are expected to come into contact with stormwater within the next 5 years.

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.

N/A

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.

N/A

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.

N/A

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

F. Discharges to the Lake Houston Watershed

Does the facility discharge in the Lake Houston watershed?

☐ Yes ☒ No

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

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

1. Acceptance of sludge from other WWTPs

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

☐ Yes ☒ No

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

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

Click to enter text.

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

2. Acceptance of septic waste

Is the facility accepting or will it accept septic waste?

☐ Yes ☒ No

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

☐ Yes ☐ No

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

☐ Yes ☐ No

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

Click to enter text.

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

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

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

☐ Yes ☒ No

If yes, provide the date that the plant started accepting the waste, an estimate how much waste is accepted on a monthly basis (gallons or millions of gallons), a description of the entities generating the waste, and any distinguishing chemical or other physical characteristic of the waste. Also note if this information has or has not changed since the last permit action.

Click to enter text.

Section 7. Pollutant Analysis of Treated Effluent (Instructions Page 49)

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). W***ater treatment facilities*** discharging filter backwash water, complete Table 1.0(3). Provide copies of the laboratory results sheets. **These tables are not applicable for a minor amendment without renewal.** See the instructions for guidance.

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

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

Pollutant	Average Conc.	Max Conc.	No. of Samples	Sample Type	Sample Date/Time
$CBOD_5$, mg/l					
Total Suspended Solids, mg/l					
Ammonia Nitrogen, mg/l					
Nitrate Nitrogen, mg/l					
Total Kjeldahl Nitrogen, mg/l					
Sulfate, mg/l					
Chloride, mg/l					
Total Phosphorus, mg/l					
pH, standard units					
Dissolved Oxygen*, mg/l					
Chlorine Residual, mg/l					
E.coli (CFU/100ml) freshwater					
Entercocci (CFU/100ml) saltwater					
Total Dissolved Solids, mg/l					
Electrical Conductivity, µmohs/cm, †					
Oil & Grease, mg/l					
Alkalinity ($CaCO_3$)*, mg/l					

*TPDES permits only
†TLAP permits only

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

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

Section 8. Facility Operator (Instructions Page 49)

Facility Operator Name: Scott Manuel

Facility Operator's License Classification and Level: Class A Wastewater Treatment Operator

Facility Operator's License Number: WW0056927

Section 9. Sludge and Biosolids Management and Disposal (Instructions Page 50)

A. WWTP's Sewage Sludge or Biosolids Management Facility Type

Check all that apply. See instructions for guidance

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

B. WWTP's Sewage Sludge or Biosolids Treatment Process

Check all that apply. See instructions for guidance.

- ☒ Aerobic Digestion
- ☐ Air Drying (or sludge drying beds)
- ☐ Lower Temperature Composting
- ☐ Lime Stabilization
- ☐ Higher Temperature Composting
- ☐ Heat Drying
- ☐ Thermophilic Aerobic Digestion
- ☐ Beta Ray Irradiation
- ☐ Gamma Ray Irradiation
- ☐ Pasteurization
- ☐ Preliminary Operation (e.g. grinding, de-gritting, blending)
- ☒ Thickening (e.g. gravity thickening, centrifugation, filter press, vacuum filter)
- ☐ Sludge Lagoon
- ☐ Temporary Storage (< 2 years)
- ☐ Long Term Storage (>= 2 years)
- ☐ Methane or Biogas Recovery

☐ Other Treatment Process: Click to enter text.

C. Sewage Sludge or Biosolids Management

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

Biosolids Management

Management Practice	Handler or Preparer Type	Bulk or Bag Container	Amount (dry metric tons)	Pathogen Reduction Options	Vector Attraction Reduction Option
Other	Off-site Third-Party Handler or Preparer	Not Applicable	±22.9 Dry Metric Tons Annually	N/A: Transported to another facility for further processing	N/A: Trasporrted to another facility for further processing
Choose an item.	Choose an item.	Choose an item.		Choose an item.	Choose an item.
Choose an item.	Choose an item.	Choose an item.		Choose an item.	Choose an item.

If "Other" is selected for Management Practice, please explain (e.g. monofill or transport to another WWTP): Biosolids are transported to another facility for further processing.

D. Disposal site

Disposal site name: Wastewater Residuals Management LLC

TCEQ permit or registration number: 2384

County where disposal site is located: Travis

E. Transportation method

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

Name of the hauler: Wastewater Transport Services

Hauler registration number: 24343

Sludge is transported as a:

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

Section 10. Permit Authorization for Sewage Sludge Disposal (Instructions Page 52)

A. Beneficial use authorization

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

☐ Yes ☒ No

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

☐ Yes ☐ No

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

☐ Yes ☐ No

B. Sludge processing authorization

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

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

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

☐ Yes ☐ No

Section 11. Sewage Sludge Lagoons (Instructions Page 53)

Does this facility include sewage sludge lagoons?

☐ Yes ☒ No

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

A. Location information

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

- Original General Highway (County) Map:

  Attachment: Click to enter text.
- USDA Natural Resources Conservation Service Soil Map:

  Attachment: Click to enter text.
- Federal Emergency Management Map:

  Attachment: Click to enter text.
- Site map:

  Attachment: Click to enter text.

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: Click to enter text.

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:

Click to enter text.

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: Click to enter text.

Total Kjeldahl Nitrogen, mg/kg: Click to enter text.

Total Nitrogen (=nitrate nitrogen + TKN), mg/kg: Click to enter text.

Phosphorus, mg/kg: Click to enter text.

Potassium, mg/kg: Click to enter text.

pH, standard units: Click to enter text.

Ammonia Nitrogen mg/kg: Click to enter text.

Arsenic: Click to enter text.

Cadmium: Click to enter text.

Chromium: Click to enter text.

Copper: Click to enter text.

Lead: Click to enter text.

Mercury: Click to enter text.

Molybdenum: Click to enter text.

Nickel: Click to enter text.

Selenium: Click to enter text.

Zinc: Click to enter text.

Total PCBs: Click to enter text.

Provide the following information:

Volume and frequency of sludge to the lagoon(s): Click to enter text.

Total dry tons stored in the lagoons(s) per 365-day period: Click to enter text.

Total dry tons stored in the lagoons(s) over the life of the unit: Click to enter text.

C. Liner information

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

☐ Yes ☐ No

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

Click to enter text.

D. Site development plan

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

Click to enter text.

Attach the following documents to the application.

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

  Attachment: Click to enter text.
- Copy of the closure plan

  Attachment: Click to enter text.
- Copy of deed recordation for the site

  Attachment: Click to enter text.
- Size of the sludge lagoon(s) in surface acres and capacity in cubic feet and gallons

  Attachment: Click to enter text.
- Description of the method of controlling infiltration of groundwater and surface water from entering the site

  Attachment: Click to enter text.
- Procedures to prevent the occurrence of nuisance conditions

  Attachment: Click to enter text.

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: Click to enter text.

Section 12. Authorizations/Compliance/Enforcement (Instructions Page 54)

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:

Click to enter text.

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:

Click to enter text.

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

A. RCRA hazardous wastes

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

☐ Yes ☒ No

B. Remediation activity wastewater

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

☐ Yes ☒ No

C. Details about wastes received

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

Attachment: N/A

Section 14. Laboratory Accreditation (Instructions Page 56)

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

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

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

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

CERTIFICATION:

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

Printed Name: Shilen Patel

Title: President & CEO

Signature: _____

Date: 03/13/25

DOMESTIC WASTEWATER PERMIT APPLICATION WORKSHEET 2.0: RECEIVING WATERS

The following information is required for all TPDES permit applications.

Section 1. Domestic Drinking Water Supply (Instructions Page 63)

Is there a surface water intake for domestic drinking water supply located within 5 miles downstream from the point or proposed point of discharge?

☐ Yes ☒ No

If **no**, proceed it Section 2. **If yes**, provide the following:

Owner of the drinking water supply: Click to enter text.

Distance and direction to the intake: Click to enter text.

Attach a USGS map that identifies the location of the intake.

Attachment: Click to enter text.

Section 2. Discharge into Tidally Affected Waters (Instructions Page 63)

Does the facility discharge into tidally affected waters?

☐ Yes ☒ No

If **no**, proceed to Section 3. **If yes**, complete the remainder of this section. If no, proceed to Section 3.

A. Receiving water outfall

Width of the receiving water at the outfall, in feet: Click to enter text.

B. Oyster waters

Are there oyster waters in the vicinity of the discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from outfall(s).

Click to enter text.

C. Sea grasses

Are there any sea grasses within the vicinity of the point of discharge?

☐ Yes ☐ No

If yes, provide the distance and direction from the outfall(s).

Click to enter text.

Section 3. Classified Segments (Instructions Page 63)

Is the discharge directly into (or within 300 feet of) a classified segment?

☐ Yes ☒ No

If yes, this Worksheet is complete.

If no, complete Sections 4 and 5 of this Worksheet.

Section 4. Description of Immediate Receiving Waters (Instructions Page 63)

Name of the immediate receiving waters: Clear Fork Plum Creek

A. Receiving water type

Identify the appropriate description of the receiving waters.

☒ Stream

☐ Freshwater Swamp or Marsh

☐ Lake or Pond

Surface area, in acres: Click to enter text.

Average depth of the entire water body, in feet: Click to enter text.

Average depth of water body within a 500-foot radius of discharge point, in feet: Click to enter text.

☐ Man-made Channel or Ditch

☐ Open Bay

☐ Tidal Stream, Bayou, or Marsh

☐ Other, specify: Click to enter text.

B. Flow characteristics

If a stream, man-made channel or ditch was checked above, provide the following. For existing discharges, check one of the following that best characterizes the area *upstream* of the discharge. For new discharges, characterize the area *downstream* of the discharge (check one).

☐ Intermittent - dry for at least one week during most years

☐ Intermittent with Perennial Pools - enduring pools with sufficient habitat to maintain significant aquatic life uses

☒ Perennial - normally flowing

Check the method used to characterize the area upstream (or downstream for new dischargers).

☐ USGS flow records

☐ Historical observation by adjacent landowners

☐ Personal observation

☒ Other, specify: 2024 Texas Integrated Report – Waterbodies Evaluated

C. Downstream perennial confluences

List the names of all perennial streams that join the receiving water within three miles downstream of the discharge point.

N/A – No perennial streams within three miles downstream of discharge point.

D. Downstream characteristics

Do the receiving water characteristics change within three miles downstream of the discharge (e.g., natural or man-made dams, ponds, reservoirs, etc.)?

☐ Yes ☒ No

If yes, discuss how.

E. Normal dry weather characteristics

Provide general observations of the water body during normal dry weather conditions.

The Creek had some water (roughly 10' wide) with minimal velocity.

Date and time of observation: December 16, 2024

Was the water body influenced by stormwater runoff during observations?

☐ Yes ☒ No

Section 5. General Characteristics of the Waterbody (Instructions Page 65)

A. Upstream influences

Is the immediate receiving water upstream of the discharge or proposed discharge site influenced by any of the following? Check all that apply.

☐ Oil field activities
☐ Upstream discharges
☐ Septic tanks
☐ Urban runoff
☒ Agricultural runoff
☐ Other(s), specify: Click to enter text.

B. Waterbody uses

Observed or evidences of the following uses. Check all that apply.

- ☒ Livestock watering
- ☐ Irrigation withdrawal
- ☐ Fishing
- ☐ Domestic water supply
- ☐ Park activities
- ☐ Contact recreation
- ☐ Non-contact recreation
- ☐ Navigation
- ☐ Industrial water supply
- ☐ Other(s), specify: Click to enter text.

C. Waterbody aesthetics

Check one of the following that best describes the aesthetics of the receiving water and the surrounding area.

- ☐ Wilderness: outstanding natural beauty; usually wooded or unpastured area; water clarity exceptional
- ☒ Natural Area: trees and/or native vegetation; some development evident (from fields, pastures, dwellings); water clarity discolored
- ☐ Common Setting: not offensive; developed but uncluttered; water may be colored or turbid
- ☐ Offensive: stream does not enhance aesthetics; cluttered; highly developed; dumping areas; water discolored

Rainee Trevino

From: Samantha Marin <samantham@bvrtwater.com>
Sent: Wednesday, May 7, 2025 6:08 PM
To: Rainee Trevino
Cc: Jeremiah Mecham
Subject: RE: Application to Renew Permit No. WQ0015064001-Notice of Deficiency Letter
Attachments: PCU3 NOD Response 250507.pdf; PCU-WRRF3 TPDES EXHIBITS 250507.pdf; PCU3 Spanish NORI.docx

Categories: NOD Response Review

Hi Rainee – Attached is the NOD response. Apologies for the incomplete application. It seems I must have forgot to consolidate the exhibits with the application and there is more information provided than your original request related to the technical portion of the application as it was originally intended to be filed. I have also re-uploaded the file to the FTPS share file.

Samantha Marin, **Regulatory Manager**
BVRT Utility Holding Company, LLC
P.O. Box 701201, San Antonio, TX 78270
Office: 210.209.8029 Mobile: 210.632.8645

From: Rainee Trevino <Rainee.Trevino@tceq.texas.gov>
Sent: Friday, April 25, 2025 3:08 PM
To: Jeremiah Mecham <jeremiahm@bvrtwater.com>
Cc: Samantha Marin <samantham@bvrtwater.com>
Subject: Application to Renew Permit No. WQ0015064001-Notice of Deficiency Letter

Dear Mr. Mecham,

The attached Notice of Deficiency letter sent on April 25, 2025, requests additional information needed to declare the application administratively complete. Please send the complete response to my attention by May 9, 2025.

Please note that the portions in the NORI that state “pending applicant response” is referring to the submission of the Core Data Form.

Regards,

Rainee Trevino
Water Quality Division | ARP Team
Texas Commission on Environmental Quality
512-239-4324

PLUM CREEK
UTILITY COMPANY LLC

Rainee Trevino
Applications Review and Processing Team
Water Quality Division
Texas Commission of Environmental Quality
rainee.trevino@tceq.texas.gov

May 7, 2025

Re: NOD Response to Renew Permit No.: WQ0015064001
Applicant Name: Plum Creek Utility Company LLC (CN605447341)
Site Name: PCU-WRRF3 (RN106525728)
Type of Application: Renewal

Dear Rainee,

We have received the notice of deficiency for the for the above referenced permit application that is currently under review. Please see responses below:

1. The Texas Commission on Environmental Quality (TCEQ) requires that a Core Data Form (Form 10400) be submitted on all incoming application. Please submit a complete Core Data Form.

   Please see attached.

2. All application submissions require a USGS Topographic map. For renewal applications, provide an 8 ½ x 11 USGS Topographic map to include the following items:
   - Applicant's property boundary
   - Wastewater treatment facility boundary
   - Point of discharge (ex. X or a dot) – TPDES Only
   - The highlighted (yellow or light-colored highlighter) discharge route for three stream miles or until the effluent reaches a classified segment. – TPDES Only
   - One-mile radius
   - The boundaries of the effluent disposal site (ex. Irrigation tract or subsurface drain field)– TLAP only

   Please see attached.

3. Plain Language Summary (PLS):
   Title 30, Texas Administrative Code (30 TAC), Chapter 30, Subchapter H, requires applicants to develop a Plain Language Summary in English and any other alternative language (if applicable). Please submit summaries both in English and Spanish. For instructions and a template, please refer to form number TCEQ-20972.

   Please see attached.

4. Administrative Report 1.0, Section 8, Item E:
Questions 3 and 4 under this section are incomplete. Please submit an updated application with the completed questions. Only the section with this information is needed. A completely new application is not required.

This information is not available.

5. Administrative Report 1.0, Section 9, Item B:
The name of the site does not match the name of the site listed in the current permit. Please submit an updated application with the correct site name. Only the section with this information is needed. A completely new application is not required.

This is intentional. The site name should be changed from Caldwell Valley WWTP to PCU-WRRF3.

6. Technical Report 1.0, Section 1:
The application indicates a minor amendment to update the permitted phases and flows. The Interim I Phase flow in the Technical Report 1.0 is less than the permitted flow. Also, there are two Interim II Phases listed in the report. Please confirm if this application for renewal with a minor amendment is to decrease the flow in the Interim I Phase and to add an Interim II and III Phase. Please correct and submit an updated Technical Report 1.0 accordingly.

Please see attached.

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

APPLICATION. Plum Creek Utility Company LLC, ~~"pending applicant response", "pending applicant response",~~ PO Box 701201 San Antonio TX 78270, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0015064001 (EPA I.D. No. TX0133892) to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 1,550,000 gallons per day. The domestic wastewater treatment facility is located at ~~"pending applicant response",~~ 345 Misty Lane near the city of Maxwell, in Caldwell County, Texas 78656. The discharge route is from the plant site to Clear Fork Plum Creek, thence to Plum Creek. TCEQ received this application on April 18, 2025. The permit application will be available for viewing and copying at Dr. Eugene Clark Library, 217 South Main Street, Lockhart, in Caldwell County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdesapplications 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=-97.763888,29.900555&level=18
Further information may also be obtained from Plum Creek Utility Company LLC at the address stated above or by calling Mr. Jeremiah Mecham, General Manager, at 210-209-8029.

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

Please see attached.

Respectfully,

Samantha Marin
Regulatory Manager
210-632-8645
samantham@bvrtwater.com

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

DOMESTIC WASTEWATER PERMIT APPLICATION TECHNICAL REPORT 1.0

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

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

Section 1. Permitted or Proposed Flows (Instructions Page 42)

A. Existing/Interim I Phase

Design Flow (MGD): 0.15 MGD

2-Hr Peak Flow (MGD): 0.6 MGD

Estimated construction start date: December 2024

Estimated waste disposal start date: November 2025

B. Interim II Phase

Design Flow (MGD): 0.30 MGD

2-Hr Peak Flow (MGD): 1.2 MGD

Estimated construction start date: September 2026

Estimated waste disposal start date: March 2027

C. Interim III Phase

Design Flow (MGD): 0.60 MGD

2-Hr Peak Flow (MGD): 2.4 MGD

Estimated construction start date: November 2027

Estimated waste disposal start date: July 2028

D. Final Phase

Design Flow (MGD): 1.55 MGD

2-Hr Peak Flow (MGD): 6.2 MGD

Estimated construction start date: April 2029

Estimated waste disposal start date: December 2029

E. Current Operating Phase

Provide the startup date of the facility: N/A

Section 2. Treatment Process (Instructions Page 42)

A. Current Operating Phase

TCEQ Use Only

TCEQ Core Data Form

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

SECTION I: General Information

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

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

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

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 605447341		RN 106525728

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	4/1/2025

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

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

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

Plum Creek Utility Company LLC

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0802341614	32058952840		

11. Type of Customer:

☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☒ Other: Limited Liability Company

12. Number of Employees

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

13. Independently Owned and Operated?

☐ **Yes** ☒ **No**

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

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

15. Mailing Address:

P.O. Box 701201

City	State	ZIP	ZIP + 4
San Antonio	TX	78270	

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

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

(210) 209-8029		( ) -

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.)*

PCU-WRRF3

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	345 Misty Lane							
	City	Maxwell	**State**	TX	**ZIP**	78656	**ZIP + 4**	
24. County	Caldwell							

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

25. Description to Physical Location:	N/A				
26. Nearest City			**State**		**Nearest ZIP Code**
Maxwell			TX		78656

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:	29.900587		**28. Longitude (W) In Decimal:**	-97.763888	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	54	02.1	97	45	50

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		22132	

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

Treatment of wastewater

34. Mailing Address:	**P.O. Box 701201**							
	City	**San Antonio**	**State**	**TX**	**ZIP**	**78270**	**ZIP + 4**	
35. E-Mail Address:	**jeremiahm@bvrtwater.com**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(210) 209-8029		( ) -

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

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

SECTION IV: Preparer Information

40. Name:	Samantha Marin	41. Title:	Regulatory Manager

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(210) 632-8645		( ) -	samantham@bvrtwater.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:	Plum Creek Utility Company LLC	Job Title:	President & CEO
Name *(In Print)*:	Shilen Patel	Phone:	(210) 209- 8029
Signature:		Date:	03/13/25

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: Click to enter text. Last Name, First Name: Mecham, Jeremiah

Title: General Manager Credential: Click to enter text.

Organization Name: Plum Creek Utility Company LLC

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-209-8029 E-mail Address: jeremiahm@bvrtwater.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: Dr. Eugene Clark Library

Location within the building: Click to enter text.

Physical Address of Building: 217 S Main St Lockhart TX 78644

City: Lockhart County: Caldwell

Contact (Last Name, First Name): N/A

Phone No.: 512-398-3223 Ext.: N/A

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. Summary of Application in Plain Language Template

Complete the F. Summary of Application in Plain Language Template (TCEQ Form 20972), also known as the plain language summary or PLS, and include as an attachment.

Attachment: 'Administrative Report 1.0 Attachment 8.F Plain Language Summary'

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** 106525728

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):

PCU-WRRF3

C. Owner of treatment facility: Plum Creek Utility Company LLC

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

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

Prefix: N/A Last Name, First Name: N/A

Title: N/A Credential: N/A

Organization Name: Plum Creek Utility Company LLC

Mailing Address: P.O. Box 701201 City, State, Zip Code: San Antonio TX 78270

Phone No.: 210-209-8029 E-mail Address: jeremiahm@bvrtwater.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

ENGLISH PLS

Plum Creek Utility Company LLC (CN 605447341) proposes to operate PCU-WRRF3 a Membrane Bioreactor (MBR) system that combines the activated sludge process with advanced membrane technology. The facility will be located at 345 Misty Lane Maxwell, in Caldwell County, Texas 78656.This application request is for a minor amendment and renewal of a Texas Pollution Discharge Elimination System permit with a 1.55 MGD proposed final phase.

Discharges from the facility are expected to contain five-day biochemical oxygen demand (BOD-5), total suspended solids (TSS), and E.Coli. Domesic wastewater will be treated by an activated sludge process combined with advanced MBR technology and the treatment units include an influent screening system, Anoxic/EQ basin, aeration basin, membrane train, and a chlorination chamber.

SPANISH PLS

Plum Creek Utility Company LLC (CN 605447341) propone operar PCU-WRRF3, una Sistema de biorreactor de membrana (MBR) que combina el proceso de lodos activados con tecnología avanzada de membranas. La instalación estará ubicado en 345 Misty Lane Maxwell, en el condado de Caldwell, Texas 78656. Esta solicitud es para modificaciónes menores y renovación de permiso del Sistema de Eliminación de Descargas Contaminantes de Texas con una fase final propuesta de 1.55 MGD.

Se espera que las descargas de la instalación contengan demanda bioquímica de oxígeno (DBO-5) de cinco días, sólidos suspendidos totales (SST) y E. Coli. Aguas residuales domésticas. están tratado por un proceso de lodos activados combinado con tecnología MBR avanzada y las unidades de tratamiento incluyen un sistema de cribado de afluentes, una cuenca anóxica/EQ, una balsa de aireación, un tren de membranas y una cámara decloración.

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

LOCKHART NORTH QUADRANGLE
TEXAS
7.5-MINUTE SERIES

-97.7500° 30.0000° 621000mE 22 23 24 25 26 27 28 29 30 31 32 -97.6250° 30.0000°

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Niederwald
HAYS CO
CALDWELL CO
FIRE LN
DOVE HILL DR
CO RD 222
HOLZ RD
FM 2001
Elm Cr
Cowpen Cr
Withers Hollow
ROGERS RANCH RD
CO RD 223
CO RD 224
SIMMONS FAMILY RANCH RD
HOMANVILLE TRL
CO RD 178
CO RD 97
SPOTTED HORSE TRL
MAVERICK DR
HAZELNUT COVE
ROSEWOOD DR
RIVER GARDEN TRL
FORRESTER RANCH DR
FM 1854
FM 1185
BRIDGESTONE CT
GOODWIN CT
Dry Cr
183
130
HEIDEMEYER LN
CO RD 227
Brushy Cr
HOBBY HORSE RD
ROLLING RIDGE RD
Ohlendorf Cem
ELM CREEK RD
Polonia Cem
POLONIA RD
Rabbit Br
Site Number Twenty
Site Number Twentyone
FM 1185
ALAMO DR
OAK TRAIL DR
OLD LYTTON SPRINGS RD
EVANS RD
A AND P DR
CO RD 221
CO RD 152
CO RD 179
SADDLEBRED DR
MORNING MIST
AMANECER DR
Cottonwood Cr
BOBWHITE RD
CYPRESS RD
Soil Conservation Service Site 15 Reservoir
Plum Cr
State Highway 3-A Bridge
N COLORADO ST
Segler Lake
CO RD 181
HIDDEN PATH
Barth Lake
MEADOW LAKE DR
San Pablo Cem
FM 672
PEGASUS RD
DRY CREEK RD
CO RD 185
JERRYS CREEK
JOLLY RD
CO RD 235
FM 2720
Boggy Cr
CO RD 236
CO RD 237
HORSE SHOE RD
SILENT VALLEY RD
Guadalupe Cem
N PECOS ST
N BLANCO ST
N COMMERCE ST
FLORES ST
CANYON ST
Town Br
MONTE VISTA DR
STUEVE LN
N MEDINA ST
PEACH ST
BOIS DARC ST
FIR ST
N MOCKINGBIRD LN
S MOCKINGBIRD LN
W MARKET ST
W PRAIRIE LEA ST
MAPLE
LEONA ST
NAVIDAD ST
SAN JACINTO ST
S BLANCO ST
S CHURCH ST
S MAIN ST
S COMMERCE ST
S FRIO ST
S GUADALUPE
PLUM
E LIVE OAK ST
BRAZOS
TRINITY ST
NECHES ST
CHIHUAHUA ST
E MARKET ST
LOVERS LN
CO RD 186
CO RD 188
Hooks Cem
KELLY RD
CO RD 217
LOCKHART
1 MILE RADIUS
DISCHARGE ROUTE
SAN ANTONIO ST
W SAN ANTONIO ST
SAN ANTONIO
BORCHERT LOOP
CITY LINE RD
Clear Fork Plum Cr
142

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North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 14R

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Imagery.....NAIP, September 2016 - November 2016
Roads.....U.S. Census Bureau, 2015
Names.....GNIS, 1979 - 2018
Hydrography.....National Hydrography Dataset, 2000 - 2018
Contours.....National Elevation Dataset, 2004
Boundaries.....Multiple sources; see metadata file 2016 - 2017

Wetlands.....FWS National Wetlands Inventory Not Available

MN
GN
3°39'
65 MILS
0°39'
12 MILS
UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
PU
Grid Zone Designation
14R

SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

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A metadata file associated with this product is draft version 0.6.18

TEXAS
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 Buda
2 Creedmoor
3 Lytton Springs
4 Uhland
5 Dale
6 Martindale
7 Lockhart South
8 McMahan
ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

LOCKHART NORTH, TX
2019

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U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

UHLAND QUADRANGLE
TEXAS
7.5-MINUTE SERIES

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3319000mN 18 17 16 15 14 13 12 11 10 09 08 07 06 3306000mN
29.8750° -97.8750° 09 10 11 12 13 14 15 16 17 18 19 620000mE -97.7500° 29.8750°

KYLE
Uhland
SAN MARCOS
Reedville
Maxwell
Soil Conservation Service Site 2 Reservoir
Soil Conservation Service Site 3 Reservoir
Soil Conservation Service Site 7 Reservoir
Soil Conservation Service Site 4 Reservoir
M D Heath Reservoir
Soil Conservation Service Site 8 Reservoir
Alexander Lake
Plum Cr
Porter Cr
Burton Br
Brushy Cr
Clear Fork Plum Cr
Hemphill Cr
Dry Br
Boggy Cr
Morrison Cr
Koeglar Hill
Live Oak Cem
Doyle Cem
Koeglar Hill Cem
San Juan Cem
Schawe Cem
Maxwell Cem
San Marcos Regional Airport
HAYS CO
CALDWELL CO
CAM REAL
N CAM REAL
S CAM REAL
DASHELLE RUN
BRANDI CIR
BRITNI LOOP
GOLDENROD ST
CARRIAGE WAY
PRIMROSE BLVD
MASONWOOD DR
LEHMAN RD
WHISPERING HOLLOW DR
GOFORTH RD
CREEKS LNDG
JOE ROBINSON DR
BUNTON LN
TWIN CV
CO RD 129
DOGWOOD TRL
LAWNSDALE RD
CRESTHILL CSWY
SUMMIT DR
LILAC WAY
STAG HORN PASS
RAILYARD DR
DUCHESS PATH
SMADY OAKS DR
EWALD DR
SANTA FE RUN
GREAT NORTHERN
CO RD 128
ROLLING MEADOWS LN
CO RD 127
CO RD 126
FRIAR CT
MISTY DR
DUSTINS DR
SUMMER SUM COVE
S PLUM CREEK RD
CO RD 227
OTOWI LOOP
KNOTT ARBOR DR
CREEKSIDE TRL
OLD POST RD
E FM 150
ATLANTIS
STENNIS
UNITY
ENTERPRISE
LANGELY
HARVEST MOON PKWY
BUGGY WHIP DR
NEW COUNTRY RD
TOWER DR
ABUNDANCE LN
NEW BRIDGE DR
WATERLEAF BLVD
APRICOT DR
EVENING STAR
STAR MEADOW
WOODLANDS DR
TRANNOR DR
SIEBERT DR
DRUE DR
QUAIL RIDGE DR
HIGH MEADOWS LN
CRESTMONT LN
GRASSLAND LN
CO RD 202
CO RD 158
CO RD 159
CO RD 160
CO RD 140
CO RD 152
CO RD 153
CO RD 151
CO RD 156
CO RD 129
CO RD 228
CO RD 229
CO RD 238
CO RD 239
CO RD 37
FARM FIELD RD
SUNSET RIDGE
TURNERS TRL
FARMERS RD
COW TRL
KOEGLER DR
GARRETT TRL
JACKSON DR
MISTY LN
WILLIAM BETTUS RD
LANTANA LN
CO RD 2284
FM 2770
FM 1984
FM 1966
RAILROAD ST
KANE AVE W
LUKE AVE
KELLY AVE
CRAW AVE
BONG AVE
ARNOLD AVE
ELM ST
PECAN ST
VALLEY VIEW
MARY LN
GERMER LN
JOLLY RD
SAN ANTONIO
CO RD 1098
5TH ST
N OLD HIGHWAY 81
S OLD HIGHWAY 81
T M 150
I 35
21
142

PROPERTY & FACILITY BOUNDARY
DISCHARGE POINT
DISCHARGE ROUTE
1 MILE DOWNSTREAM
1 MILE RADIUS

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U.S. National Grid
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UHLAND, TX
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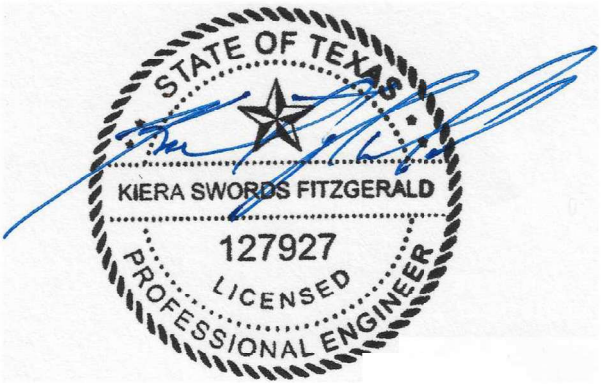
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

UHLAND, TX
2019

Plum Creek Utility WRRF3
MEMBRANE BIOREACTOR
DESIGN SUBMITTAL

Prepared by:



Kiera S. Fitzgerald, P.E.
2008 South Central Avenue
Flagler Beach, FL 32136
Kiera@blucoastwater.com

For:
TEXAS AQUASTORE

Design-Construct Wastewater Treatment

1422 West Houston Street
Sherman, TX 75092
John Haddox, Territory Manager
Johnh@texas-aquastore.com
(713) 494-0854

Table of Contents

1.0 INTRODUCTION

The following report provides a summary of the process design used for the Membrane Bioreactor (MBR) wastewater treatment system to be supplied for the new Plum Creek Utility WRRF3 (PCU-WRRF3). The proposed Wastewater Treatment Plant is a state-of-the-art Membrane Bioreactor (MBR) system, employing the most advanced membrane technology, and providing a cost-efficient and user-friendly wastewater treatment solution. The system is designed to biodegrade high strength domestic waste into simple compounds, resulting in a high-quality effluent suitable for stream discharge or reuse.

The MBR system is a bioreactor that combines the activated sludge process with advanced membrane technology. The process utilizes naturally occurring microorganisms in an environment where they can biodegrade the organic material present in the wastewater into carbon dioxide and water. The steps in our simple process include:

1. Pre-treatment and Equalization
2. Biological Reduction
3. Membrane Filtration
4. 2 Stage Nutrient Removal
5. Effluent Disinfection

The following document includes a discussion about each unit process in the plant, the controls logic being applied with the permissives, and alarms associated with the controls.

Following the process logic discussion are detailed calculations showing influent and effluent loadings, flows and unit process sizes for this phased MBR plant.

2.0 PROCESS DESCRIPTION AND CONTROL LOGIC

2.1 PROCESS DESCRIPTION OVERVIEW

The following outlines the key design parameters for the Membrane Bioreactor (MBR) wastewater treatment system to be supplied at the PCU-WRRF3. It is intended to be used in combination with process and instrumentation diagrams (P&ID) and layout drawings attached.

For design purposes the following influent characteristics have been assumed along with the listed effluent requirements:

Parameter	Phase 1		Phase 2		Phase 3		Phase 3	
	Raw Influent	Effluent	Raw Influent	Raw Influent	Raw Influent	Effluent	Raw Influent	Effluent
Design Flow – Max. Month ADF (USGPD)	150,000	150,000	300,000	300,000	600,000	600,000	1,550,000	1,550,000
Maximum Daily Flow (USGPD)	300,000	300,000	600,000	600,000	1,200,000	1,200,000	3,100,000	3,100,000
Maximum Instantaneous Flow (USgpm)	312	208	625	417	1,249	833	3,224	2,149
BOD (mg/L)	450	< 5	450	< 5	450	< 5	450	< 5
TSS (mg/L)	400	< 5	400	< 5	400	< 5	400	< 5
TKN (mg/L)	60		60		60		60	
NH^3-N (mg/L)	43	<3	43	<3	43	<3	43	<3
TP (mg/L)	20	<1	20	<1	20	<1	20	<1
FOG (mg/L)	<50	< 5	<50	< 5	<50	< 5	<50	< 5
Chlorine Residual		>1 mg/L		>1 mg/L		>1 mg/L		>1 mg/L
Turbidity		<3 NTU		<3 NTU		<3 NTU		<3 NTU
Minimum Water Temperature (°C)	18		18		18		18	

There are multiple expansion phases planned for this plant. Phase 1 will provide 150,000 gpd of equipment and membrane capacity with concrete tankage sized to provide 300,000 gpd of capacity in Phase 2. A parallel plant will be added in Phase 3 to achieve a total of 600,000 gpd of capacity.

Ultimately, the plant will consist of four 300,000 gpd trains and one 350,000 gpd train for a total capacity of 1.55 MGD. This report is intended to document the three increments used in the various phases of the plant: 150,000 gpd, 300,000 gpd and 350,000 gpd.

Process calculations were prepared using these design parameters to size the tanks and equipment. And the calculations are provided in Attachment 1.

As illustrated in Figure 2 below, Phases 1 and 2 will be constructed in concrete tankage. Phase 1 will utilize 6 membrane racks. Additional membranes will be added for Phase 2. Stub walls are provided to accommodate a parallel plant for Phase 3 to bring the combined capacity to 600,000 gpd.

As noted, ultimately, the plant will consist of four 300,000 gpd trains and one 350,000 gpd train for a total capacity of 1.55 MGD. The 350,000 gpd increment will be slightly wider to accommodate 12 membrane cassettes, compared with the 10 cassettes provided at 300,000 gpd.

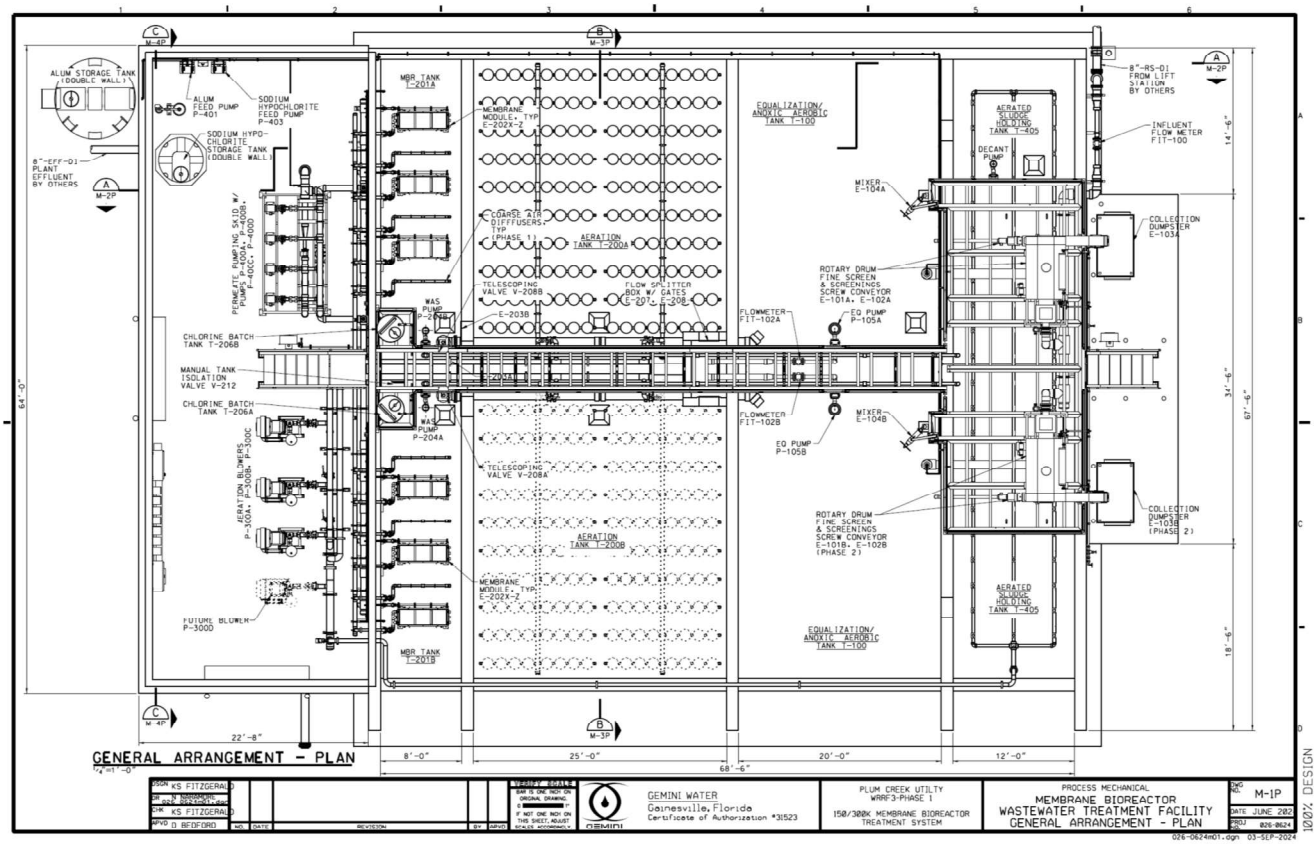


Figure 2 – Overall Plant Layout for Phase 1-2

The process is shown schematically in the attached Process and Instrumentation Diagrams (P&ID)s. The reader is referred to these drawings for identification of specific components.

Each of these MBR plants consist of the following unit operations:

- Influent screening system
- Anoxic/EQ Basin
- Pre-aeration Treatment Basin

- Membrane Trains
- Effluent Disinfection
- Chemical Addition
- Plant Control, Instrumentation, and Monitoring System

The major treatment plant tankage is listed below.

Phase 1 – 150,000 GPD Treatment Units		
Treatment Unit Type	TOTAL Number of Units	Internal Dimensions (L x W x H)
Anoxic/Equalization Tank	1	20'0" x 61'2" x 12'0"
Aeration Tank	2	25'0" x 30'0" x 12'0"
MBR Tank	2	8'0" x 30'0" x 12'0"
Sludge Holding Tank	1	12'0" x 61'2" x 12'0"
Chlorine Contact Tank	1	32'0" x 5'0" x 10'0"
Chlorine Storage Tank	1	360 Gal. Double Walled
Alum Storage Tank	1	1,550 Gal. Double Walled
Phase 2 – 300,000 GPD Treatment Units		
Treatment Unit Type	TOTAL Number of Units	Internal Dimensions (L x W x D)
Anoxic/Equalization Tank	1	20'0" x 61'2" x 12'0"
Aeration Tank	2	25'0" x 30'0" x 12'0"
MBR Tank	2	8'0" x 30'0" x 12'0"
Sludge Holding Tank	1	12'0" x 61'2" x 12'0"
Chlorine Contact Tank	1	32'0" x 5'0" x 10'0"
Chlorine Storage Tank	1	360 Gal. Double Walled
Alum Storage Tank	1	1,550 Gal. Double Walled

Phase 3 – 600,000 GPD Treatment Units		
Treatment Unit Type	TOTAL Number of Units	Internal Dimensions (L x W x D)
Anoxic/Equalization Tank	2	20'0" x 61'2" x 12'0"
Aeration Tank	4	25'0" x 30'0" x 12'0"
MBR Tank	4	8'0" x 30'0" x 12'0"
Sludge Holding Tank	2	12'0" x 61'2" x 12'0"
Chlorine Contact Tank	2	32'0" x 5'0" x 10'0"
Chlorine Storage Tank	2	360 Gal. Double Walled
Alum Storage Tank	2	1,550 Gal. Double Walled

Buildout 1,550,000 GPD Treatment Units		
Treatment Unit Type	TOTAL Number of Units	Internal Dimensions (L x W x D)
Anoxic/Equalization Tank	4	20'0" x 61'2" x 12'0"

Anoxic/Equalization Tank	1	20'0" x 69'2" x 12'0"
Aeration Tank	8	25'0" x 30'0" x 12'0"
Aeration Tank	2	25'0" x 34'0" x 12'0"
MBR Tank	8	8'0" x 30'0" x 12'0"
MBR Tank	2	8'0" x 34'0" x 12'0"
Sludge Holding Tank	4	12'0" x 61'2" x 12'0"
Sludge Holding Tank	1	12'0" x 69'2" x 12'0"
Chlorine Contact Tank	4	32'0" x 5'0" x 10'0"
Chlorine Contact Tank	1	32'0" x 6'0" x 10'0"
Chlorine Storage Tank	5	360 Gal. Double Walled
Alum Storage Tank	5	1,550 Gal. Double Walled

The following discussion describes how the unit processes are integrated into an overall treatment process. The process flow for the Phase 1 and Phase 2 plants are discussed. Phase 3 and beyond will be parallel process trains that will mirror the Phase 2 plant.

2.2 PROCESS FLOW

Raw sewage flows to the WWTP through an influent forcemain with magnetic flow meter, FIT 100, prior to flow splitting to feed two influent fine screens, E-101A, E-101B. Each influent screen has a rated capacity of 1000 gpm for raw sewage, which provides full redundancy.

These screens have 2 mm perforations that remove debris and direct it by gravity to two dewatering conveyors, E-102A, E102B, where the debris is dewatered and conveyed to a bin for disposal. These screens and conveyors have high pressure wash systems that are controlled by the local control panel (LP-100) when the motors are engaged.

Screened wastewater will discharge by gravity from E-101A and E-101B into the EQ/Anoxic Tank, T-100. Mixed Liquor from the Membrane Bioreactor Tanks also flows into this tank by gravity. This allows the raw sewage to be incorporated into the mixed liquor and mixed by two mixers, E-104A & B, to create an anoxic treatment zone as well as provide influent equalization.

The proposed wastewater plant is designed to provide nitrification, a process that converts ammonia to nitrate/nitrite, and this process consumes alkalinity and decreases the pH. The anoxic treatment process provided in T-100 will convert the nitrate/nitrite to nitrogen gas, which removes nitrogen from the plant and recovers some of the alkalinity. If there is excess ammonia or insufficient alkalinity in the influent, pH adjustment may be required. However, with a small plant, periodic addition of lime to the EQ tank is often the most cost-effective means to enhance alkalinity, if it is ever required.

The mixed liquor is pumped from the EQ/Anoxic tank T-100 to a splitter box at the head of aeration tanks T-200A and T-200B by submersible pumps (P-105A and P-105B). 4" flow meters (FIT 102A and FIT 102B) are provided in each pump discharge forcemain. Isolation gates E-207 and E208 are provided in the splitter box to facilitate flow splitting and will allow isolation of either aeration basin for periodic maintenance. Since these pumps provide feed forward mixed liquor recycle, at least one of these pumps should always be in service. These pumps are controlled based by liquid level controller LT101. LT101 also controls the permeate pumps.

The EQ pumps are sized for 521 gpm each, as needed for Phase 2. The pumps are provided with VFDs.

There will be two aeration blowers, P-300C, and P-300D used to introduce air into T-200A and T-200B via a fine bubble diffused aeration grid in order to maintain an aerobic condition. These same blowers are used to provide air to the sludge holding tank, T-405. Two additional blowers, P-300A, P-300B, provide scour air

for the membranes in MBR tanks, T-201A, T-201B. The blowers are manifolded so that P-300B provides redundancy to both the scour aeration and process aeration.

In Phase 1 only 3 blowers will be installed. In Phase 2, a fourth blower will be provided that can meet the added air demands.

Air flow meters FIT 200 and 203 are provided to assure that the appropriate amount of scour air is being sent to the membranes when permeating.

The mixed liquor flows by gravity from the aeration basin to the MBR basins T-201A, T-201B over preset weirs (E-203A, E-203B). These weirs facilitate flow splitting to the MBR chambers and will allow isolation of either MBR chamber for periodic maintenance. Ultimately, ten (10) racks of MBR Membranes are provided, five in T-201A and five in T-201B. In Phase 1 – six (6) racks will be provided, in Phase 2, ten (10) racks will be provided. Room is provided for two additional membrane racks if desired to reduce cleaning frequency.

The membranes provide a physical solids-liquid separation barrier to any solids larger than the pore size of the membrane, which for the Toray membranes being provided is 0.08 micron (0.08 µm).

Telescoping valves (V-209A, V-209B) in the MBR basins are used to return mixed liquor to the EQ/anoxic tank at a flow of approximately 2-5 times the Average Daily Flow. This is necessary to move solids away from the membranes. The EQ pumps are sized to accommodate this recycle rate as well as the peak equalized flow from EQ to the balance of the plant.

The MBR basins are connected to allow equalization of the mixed liquor between the MBR basins to provide even head over all membranes. Valve V-212 is provided between the MBR tanks to allow isolation of the MBR basins for maintenance purposes.
In the MBR basins, mixed liquor is recirculated by passively overflowing through telescoping valves V-209A & V209B back to the EQ/Anoxic basin while clear permeate is drawn through the membranes, disinfected and sent to the chlorine contact tank.

As noted previously, under level control from LT-101 (located in the EQ/Anoxic tank – T-100), treated and solids-free effluent will be drawn through the membranes under suction by permeate pumps (P-302A. P-302B, P-302C and P-302D) and be pumped to the chlorine contact chamber.

Each permeate pump is rated at 208 gpm. The permeate pump suction and discharge headers are manifolded, but each header is provided with isolation valves (V-203X -308 and V-313). In Phases 1 and 2, this allows each MBR chamber to have independent permeate pumping systems with full redundancy and control.

The pumps have VFDs to reduce the flow to allow the membranes to be operated at lower flux rates during lower flow periods. Maintaining lower flux rates will reduce the wear on the membranes and reduce the frequency of cleaning.

To provide disinfection, liquid sodium hypochlorite will be pumped from 360-gallon, double walled storage tanks into the permeate discharge pipe using P-403A and P-403B. A single storage tank will suffice for Phase 1 and 2. The pumps will be flow paced based on FQIT-400A and B, the flow meters on the discharge of the permeate pumps.

Effluent from the chlorine contact chamber will overflow at the end of the chlorine contact chamber and be discharged to the owner's effluent disposal system. A final v-notch effluent weir with a level transmitter (LT-401) is provided for monitoring the discharge.

When the effluent from this facility is discharged to surface water, there is a phosphorus limit of 1 mg/L. To meet this limit requires chemical addition. Two Alum feed pumps, P-401A and P-401B and a 1,550 gallon, double walled storage tank, T-400 is provided for Phase 1. An additional tank can be added for Phase 2 if desired. Alum will be fed into the EQ/Anoxic tank to maximize the contact time and the feed rate will be flow paced based on the influent flow meter.

The biomass in the aeration tank, termed Mixed Liquor, will generally be operated at a strength of 7,000-10,000 mg/L. It should be recognized that when the Mixed Liquor is 10,000 mg/L in the aeration basin, depending on the recycle rate, the Mixed Liquor could be as high as 18,000 in the MBR tank, nearing the upper limit for the membranes. Sludge should be routinely removed from the MBR tank to always keep the mixed liquor in MBR <15,000 mg/L.

Two waste activated sludge (WAS) pumps, P-204A, P-204B, will be used to waste sludge from the MBR tanks to the sludge holding tank, T-405. The WAS pumps are sized to waste sludge at 120 gpm to the sludge holding tank.

On a regular basis, excess sludge from the system will be removed from the sludge holding tank by a liquid sludge hauler. To thicken the sludge in the sludge holding tank, a submersible Decant Pump, P-411, will be provided to allow operators to settle and decant clear liquid back to the EQ tank.

Membranes do need to be periodically cleaned. To facilitate this, two Clean-in-Place (CIP) tanks, T-206A and T-206B, are used to provide diluted chlorine (or citric acid) to clean the membranes. When cleaning, typically one rack of membranes will be cleaned at a time. The CIP tanks will be filled with water and bleach or acid to achieve the manufacturer's recommended concentrations. The permeate suction valve associated with the rack (V-204X) will be closed and the cleaning valves V-203X and V-205A or B will be opened, and the CIP tank will drain by gravity to fill the membranes with the selected chemical.

Due to the location of the cleaning valves, V-203X and V-204X are motorized. However, V-205A and B are manually operated requiring the operator to be at the CIP tank in order to visually confirm the tank has cleaning solution in it and the motorized valves are in the correct position, before opening to avoid introducing air into the permeate suction header.

To keep the tanks clean and avoid freezing, motorized drain valves, V-209 and V-211 have been added to drain the CIP tanks.

2.3 OVERALL SYSTEM CONTROL

Each plant will have one main control panel, CP-100, which houses the PLC and the HMI. It monitors key system operating parameters, control key process equipment (permeate pump(s), air scour blower(s), chemical feed systems and motorized valves) and alarms on critical events.

A local panel, LP-100 provides operations and control of the influent fine screens E-101A and E-101B and the associated screenings conveyors E-102A and E-102B and their associated water spray valves.

Power Panel PP-100 provides power to all equipment including all required motor starters and power to the wall mounted VFDs and local panels. And includes a low voltage transformer for instrumentation and ancillary facilities.

The membrane bioreactor (MBR) system has been arranged as per the P&ID in the attached Drawings section, these drawings should be reviewed and updated as plant modifications occur.

2.4 MAJOR EQUIPMENT

The core equipment provided for each train in the system is outlined in the table below.

Tag	Process Step/Module	Description
FIT 100	Influent Flow Measurement	Measure all flow into the plant and record for permitting and use to adjust Alum Feed.
V-100A/B, 101A/B	Influent Screening Wash	Solenoid valves activated by LP-100A/B, part of vendor supplied screening system.
V-106A/B6	Influent Screening Isolation	Plug valves provided to allow selection of in-service screen.
P-105A -105B	EQ/Anoxic	Submersible sewage pumps used to transfer mixed liquor from the Anoxic/EQ tank to the aeration basins and provide feed-forward recycle for the overall plant process.
LT 101	EQ/Anoxic	Level sensor installed in the Anoxic/EQ tank to start/stop the EQ pumps and alarm when wastewater in that tank reaches a high or low-level set point, and to start/stop and adjust the speed on the Permeate pumps.
E-101A -101B	Influent Screening	Influent fine screen with automated motorized perforated drum screen with screen wash and high level and drum failure alarm. Controlled by LP-100A and LP-100B
FIT 102A/B	ML Recycle Flow Measurement	Measure flow from recycled from the EQ tank to the ML splitter box and record for plant operational monitoring.
E-102A -102B	Screenings Conveyor/Compactor	Influent fine screen conveyor to dewater and convey screenings to dumpster.
E-104A/B	EQ/Anoxic	Submersible mixers provided to keep mixed liquor in suspension without inducing air.
FIT 200/203	MBR Scour	Airflow meters installed in the scour airline to each MBR train to detect/measure airflow and alarm and discontinue permeating if no air is getting to the membrane diffusers.
E-202X-Z	MBR	Ten (10) Membrane filtration racks.
LT 201A/B	MBR	Level sensors installed in the MBR tanks to track the level in the MBR tanks and increase permeate pumping to max setpoint if HH level occurs.
LSLL 202A/B	MBR	Level sensors installed in the MBR tanks to alarm on low level and stop permeate pumping.
P-204A/B	WAS	Waste sludge pumps for moving excess biomass from the MBR chamber to the sludge holding tank.
T-206A/B	MBR	Clean in place (CIP) tanks provided for manual cleaning of membranes.
V-203A/B, V-204A/B, V-205A/B	MBR	Valves provided to allow isolation of the permeate piping for cleaning.
V-209, V-211	MBR	Valves provided to allow draining of the CIP cleaning lines.
V-206A/B	MBR	Air relief for permeate header.
V-207	MBR	Valve in the permeate suction header to allow isolation of the membrane trains and prevent syphoning when membranes are not permeating.
AE 204A/B - AIT 204	MBR	MBR Mixed Liquor Total Suspended Solids Analyzer, one element per MBR chamber.

P-300A/B/C/D	Aeration	Positive displacement blowers that scour the membranes with air to prevent fouling and provide air to mix and oxygenate the biomass in the aeration basin, sludge holding tank, and MBR.
PI-300A/B/C/D	Aeration	Pressure sensors on the Aeration Blowers.
PT 301A/B	MBR	In-line pressure sensors that monitor the trans-membrane pressure (TMP) during the Service (filtration) step.
PI-302/303	MBR	Pressure sensor on the suction and discharge of the permeate pumps.
P-302A/B/C/D	MBR	Permeate pumps (centrifugal) used to draw treated water through the permeate line and discharge to the chlorine contact tank
TT-304	MBR	Temperature Transmitter that limits permeate pumping setpoint during cold weather.
V-305	EQ/Anoxic	Motorized valve on the air supply to the sludge holding tank to provide cyclical air scour.
FQIT 400A/B	Effluent	Measures permeate flow and used to adjust chlorine feed.
LT 401	Effluent	Measure level over weir E-401 to record all flow leaving the plant and record for permitting.
P-401A/B	Phosphorus control	Alum feed pump for phosphorus control. Paced by FIT 100.
P-403A/B	Disinfection	Chlorine feed pumps for effluent disinfection. Paced by FQIT 400.
LIT 403	Disinfection	Level element in Sodium Hypochlorite Tank T-402A set to alarm for high and low levels.
LIT 404	Phosphorus control	Level elements in Tank T-400 set to alarm for high and low levels
P-406	Sludge holding	Submersible sewage pump used to allow decanting of sludge holding tank into the EQ/Anoxic tank.
LIT 405	Sludge holding	Level elements in Tank T-405 alarm for high and low levels and shut off decant pump at LL.

2.5 PLANT CONTROL LOGIC

Influent Fine Screens & Conveyors
The screens operate when they receive an input flow signal from FIT 100.

There are two fine screens, each of which have an associated screenings conveyor. The screens operate when they receive an input flow signal from FIT 100. The system includes a cleaning cycle for both the screens and the conveyors, which calls a solenoid valve to open and supply water to the wash system.

There is one Basic Local Control Panel to operate two JWCE - IPEC Model IFM 3648 / PLB 9120 systems. Enclosure is a NEMA 4X stainless steel panel box with hinged door.

Equalization Transfer Pumps (P-105A & P105B)
Pumps P-105A & P105B may be operated in either Auto or Manual modes. In Auto mode, CP-100 will control the transfer of wastewater from T-100 to the aeration basin splitter box, in a lead-lag configuration.

LT 101, the submersible sensor in T-100, will monitor liquid level in that tank. When the level reaches the "Lead Pump – On" set-point, the Lead pump will begin to transfer wastewater until the level reaches the "Lead Pump – Off" set-point. If the level in the tank reaches the "High- Lag Pump - On" set-point, the lag pump will turn on and will transfer wastewater until the level in the tank reaches the "High- Lag Pump - Off" set-point.

The pumps will also be provided with VFDs, which will also allow the operators to set a target recycle flow rates based on FIT 102A and B.

The goal is to set the levels so that these pumps will continually pump flow through the plant, but shut off if the influent level gets too low so as not to run the pumps dry. If the level reaches the High-High level it will alarm.

The submersible sensors in T-100 also drive the permeate pumps.

Anoxic Mixers (E-104A/B)
The anoxic mixers can be operated in either Auto or Manual modes. In Auto mode, CP-100 will turn the mixers off if the EQ tank gets to a preset low level and turn them back on when they get to a preset high level.

Permeate Pumps (P302A/B/C/D)
Pumps P302A/B/C/D may be operated in either Auto or Manual modes. When in Auto mode, LT 101 will monitor the liquid level in that tank and initiates the permeate cycle at the "Permeate Cycle – On" set-point and terminates the permeate cycle at the "Permeate Cycle – Off" set-point.

In the Permeate Cycle, the system filters wastewater through the membranes in a two-step process:

Step 1: Service

During the Service step, pumps P302A, B, C or D will be energized, and water drawn through the membranes for the duration of the Service step. Once the Service step is complete, the system will enter the relaxation step.

The flow rate of the permeate pumps will be regulated by Variable Frequency Drives (VFDs), located adjacent to the MCP and the pumps will be operated in a step/lead lag mode based on the level in the

EQ/Anoxic tank. The operator will designate how many racks are in service for each membrane chamber, and this will set the flow rates for each chamber based on the number of racks in service.

Level 1 - the pumps will both be off.
Level 2 - the lead pump initiated at a preset VFD value (say 35%). Pumps cycle lead/lag during relax.
Level 3 - Speed increases to a preset VFD value (say 95%). Pumps cycle lead/lag during relax.
Level 4 - Pump 2 is initiated at preset % for both pumps (Say 65%).
Level 5 - both pumps ramp up to a preset % (say 85%)
Level 6 - all pumps ramp up to a preset % (say 100%) and a high flow alarm is initiated.

As pumps back down to level 4, the lag pump will stay on the and the pumps will cycle lead lag during relax until Level 1 is reached and both pumps turn off.

Step 2: Relaxation

During the Relaxation step, the permeate pumps will be turned off and no wastewater is filtered through the membranes.

The duration of both the Service step and the Relaxation step is set by the operator via the HMI on the CP-100.

The manual ball valves are provided to isolate the pumps during maintenance.

Step 3: IDLE

When in auto, the MBR system has an idle mode. If the permeate pumps are not being called to run and are not in a "relaxation" step, the scour blower(s) should be off. If turned off for longer than a preset period (typically 60-90 minutes) the blowers will be initiated to mix and aerate the MBR tank for a preset period to keep the MBR contents mixed (typically <10 minutes.)

Aeration Blowers (P-300A/B/C/D)
For this plant, the aeration blowers are designed to service both the membrane cassettes and provide air to the treatment process. There are 3 blowers in Phase 1, there are 4 blowers in Phase 2, one of which is redundant in each phase.

The scour blowers need to continually provide a set amount of air to the membranes whenever the permeate pumps are pumping. And scour air is the most critical air demand, therefore, in the automatic mode, the swing blower will be set to operate in a lead-lag configuration for scour and the third and fourth blowers will be set to provide air to the pre-aeration tank and sludge holding tank.

FIT 200 and FIT 203 will be linked to the VFD on blowers P-300A and P-300B to provide scour air. These blowers will cycle with the permeate pumps. Valve V-304 can be set to allow excess air to be sent to the process aeration system if needed.

There are two membrane trains, but they are served by the common scour blowers. The scour aeration rate will be pre-programed to be adjusted to match the number of MBR trains and racks in service.

Blowers P-300C and D will be set to feed the balance of the plant. They also have a VFD and operators can set that VFD to provide optimal balance of air to the plant. There will also be a process aeration cycle that will allow operators to cycle the process blowers based on a 24/7 timer to minimize excess aeration during low flow periods.

Since this blower provides air to the aeration basin and the sludge holding tank, the sludge tank aeration valves should be set when the tanks are at a low level to avoid starving air from the aeration basins. The air line to the sludge holding tank is equipped with an automated valve, V-305, to allow operators to cycle the air to this tank based on a 24/7 timer. This helps operators program a preset time for sludge settling before decanting, as well as to cycle the aeration to encourage denitrification.

WAS Pumps (P-204A/B)

A waste activated sludge pump is provided in each MBR tank. These pumps can be operated in manual or in auto. In Auto, the pumps will pump to the sludge holding tank for a pre-set number of minutes when manually initiated by the operator. LSLL 202A/B in the MBR tank(s) will disable these pumps if the level in the MBR tank gets too low.

Each MBR chamber is provided with a Total Suspended Solids Element (AE 204A/B) and an Analyzer (AIT 204) to assist operators in assessing the concentration of Mixed Liquor in the MBR chambers to help them determine when they need to waste sludge.

Sludge Holding Tank

The aerobic sludge holding tank has no automation or control other than the aforementioned motorized air valve and a submersible pump (P-406) to allow manual decanting to the EQ/Anoxic tank to allow the operator to thicken sludge. Liquid sludge will be removed by pump trucks. LT 405 is provided to monitor the level in the sludge tank.

Chlorine Feed

Two chlorine pumps will be provided and operated in manual or in auto. In auto they will be in a lead lag mode and will be flow paced based on the flow from the permeate pumps as measured by FQIT 400A and B.

Alum Feed

Two chemical feed pumps will be operated in auto or manual to allow alum to be added for phosphorus removal. In auto it will be flow paced based on the influent flow as measured by FIT 100.

Permissives

- ✓ Air flow switch must indicate air (after a preset time delay) to permit permeate pumps.
- ✓ EQ tank level must be above a preset level to permit EQ pumps.
- ✓ EQ tank level must be above another preset level to permit permeate pumps.
- ✓ MBR tank level must be above a preset level to permit permeate pumps and WAS pumps.
- ✓ Chlorine tank must be above a preset level to permit chlorine pumps.
- ✓ Alum tanks must be above a preset level to permit alum pumps

Alarms

- ➢ Failure of the influent screens/conveyors system
- ➢ LL EQ/Anoxic
- ➢ LL MBR
- ➢ LL chlorine tank
- ➢ LL alum tank
- ➢ HH level EQ/Anoxic
- ➢ HH MBR tank
- ➢ HH ludge holding
- ➢ LL sludge holding
- ➢ Low air flow to MBR basin 201A
- ➢ Low air flow to MBR basin 201B

- Failure for EQ pump 105A/B to start
- Failure for WAS pump 204A/B to start
- Failure for Mixer E-104A/B to start
- Failure for blower P-300A to start
- Failure for blower P-300B to start
- Failure for blower P-300C to start
- Failure for blower P-300D to start
- Failure for permeate pump P-302A to start
- Failure for permeate pump P-302B to start
- Failure for permeate pump P-302C to start
- Failure for permeate pump P-302D to start
- Failure for chlorine pump P-403A/B to start
- Failure for alum pump P-101A/B to start

ATTACHMENTS

3.0 PROCESS CALCULATIONS – MAIN PLANT PHASE 1 – 150,000 GPD

PROJECT DESCRIPTION		PROJECT NOTES
Project Name:	**150-300,000 GPD MBR**	PHASE 1 - 150,000 GPD
Project Location:	**Texas**	
Engineer:	**Kiera S. Fitzgerald, P.E.**	
	BluCoast Water Solutions, Inc.	
	Kiera@blucoastwater.com	

Design Criteria

PARAMETER	VALUE	UNIT	NOTES
Operation Type	**Suction**		Gravity or Suction
Equalized Flow	**Yes**		Yes or No
MBR ADF	681	m3/d	
MBR PDF	1362	m3/d	
Plant PHF	85.1	m3/hr	
MBR AADF	0.150	MGD	
MBR MMADF	**0.1800**	**MGD**	
MBR PDF	0.300	MGD	
Plant PHF	312	GPM	
MBR Peaking Factor	**2.0**		Factor is calculated from PDF/ADF.
Plant PHF Factor	**3.0**		
Min WW Temp	**15**	°C	
Max WW Temp	**35**	°C	
Yield	0.811	lbTSS/lbBOD5	
% Nitrogen in WAS	6.5%		
Residual DO	**2.0**	mg/L	
Plant Max F:M Ratio	**0.135**		Adjust for plant sludge age.

Influent Wastewater Characteristics at Average Design Flow

PARAMETER	CONC	UNIT	LOAD	UNIT	NOTES
CBOD5:	**450**	mg/L	675.5	lb/day	if BOD:TKN < 4, then add methanol
TSS:	**400**	mg/L	600.5	lb/day	
TKN:	**60**	mg/L	90.1	lb/day	Should be roughly 1.4 * NH_3
NH3:	**43**	mg/L	64.3	lb/day	
NO3:	**0**	mg/L	0.0	lb/day	Usually 0
TN:	**60**	mg/L	90.1	lb/day	
Total -P:	**20**	mg/L	30.0	lb/day	

Target Effluent Wastewater Limits

PARAMETER	CONC	UNIT	LOAD	UNIT	NOTES
CBOD5:	**5**	mg/L	7.5	lb/day	
TSS:	**5**	mg/L	7.5	lb/day	
TKN:	**5**	mg/L	7.5	lb/day	
NH3:	**1**	mg/L	1.5	lb/day	
NO3:	**10**	mg/L	15.0	lb/day	
TN	15	mg/L	22.5	lb/day	
Total -P:	**1**	mg/L	1.5	lb/day	

MBR Design

PARAMETER	VALUE	UNIT	NOTES
Effective Membrane Area	**7.53**	ft^2	NHP210-300S
Target Flux	**14.0**	gfd	Fixed based on temperature.
Number of Membranes	1,706		
Membranes Per Unit	**300**	**NPH**	NHP210-300S
Required Number of Membrane Units	5.69		28.7w 67.7l 57.9h
Actual Number of Membrane Units	**6**		
Actual (Design) Flux	11.1	gfd	Actual design flux at MGD = 0.150
Distance Between Units	**4.08**	ft	

End Unit to Wall Distance	**2.65**	ft	
Basin Length	**8.0**	ft	8.0 NEEDED TORAY
Number of Basins	**2**		Max width is 1 m from end to wall.
Basin Width	30.0	ft	13.4 NEEDED
Side Water Depth	**10.5**	ft	3.2 meters
Basin Volume	18,751	gal	
Total MBR Volume	37,501	gal	
Volume Displaced By Membranes	4,521	gal	2"/PLATE x 2
Volume Available for Nitrification	32,981	gal	
Nitrification Process Calculations			
MBR MLSS	**11,000**	mg/L	Fixed for sizing of reactors.
MLVSS/MLSS	**0.80**		Fixed at average value.
Nitrification Rate	0.029	lbN/lbSS*day	
Recommended Safety Factor	**25%**		Fixed for sizing of reactors.
Net Nitrification Load	54.5	lb/day	
Required Nitrification Volume	25,870	gal	Biomass required for cell respiration.
Required Nitrification Aeration Volume	0	gal	Required if MBR volume is insufficient.
Required BOD Process Mass	5,004	lb	Overall Plant F:M 0.135
Available BOD Process Mass	3,021	lb	
Required BOD Aeration Volume	33,839	gal	Required if MBR volume is insufficient.
Required Aeration Volume	33,839	gal	Largest vol. based nit. or BOD loading.
Actual Aeration Volume	**117,810**	gal	18.8 hrs
Denitrification Process Calculations			
Theoretical Recycle Rate (MBR to AX)	2.6		$R_{Minimum}$ (if RR > 6, then set to 6)
Selected Recycle Rate (MBR to AX)	**4.0**		$R_{Selected}$
Selected Recycle Rate (AER to AX)	**0.0**		$R_{Selected}$
Anoxic MLSS	8,800	mg/L	
Denitrification Rate	0.050	lbNO3/lbSS*day	
Recommended Safety Factor	**25%**		Fixed for sizing of reactors.
Required Denit Process Volume	13,386	gal	for complete denitrification
Minimum Denit Volume for Stabilization	37,698	gal	20% of Aerobic Volume
Actual Denitrification Volume	**38,432**	gal	Actual DT= 5.1 hrs
Pre-Anoxic Volume	**38,432**	gal	
Post-Anoxic Volume	**0**	gal	
Denitrification Capacity	156.4	lb/day	amount of nitrogen removed by denitrification
Nitrogen Load in Waste Sludge	35.6	lb/day	
Effluent Nitrate Load	15.0	lb/day	
Effluent Nitrate Concentration	10.0	mg/L	
Anaerobic Process Calculations			
Selected Recycle Rate (AX to AN)	**0.0**		N/A
Anaerobic MLSS	0	mg/L	
Min. Anaerobic Volume	**7,500**	gal	Typically => 1 hr HRT
Actual Anaerobic Volume	**0**	gal	
Plant HRT and SRT			
Anaerobic HRT	0.0	hr	
Pre-Anoxic HRT	5.1	hr	
Aeration HRT	15.7	hr	
Post-Anoxic HRT	0.0	hr	
MBR HRT	4.4	hr	
Plant F:M	0.05	1/day	Typically 0.1
Plant HRT	25.2	hr	Typically => 5.0 hr
Plant SRT	27	day	
Aerobic SRT	**15.9**	day	
Actual Oxygen Requirements (AOR)			
Denitrification BOD Demand	**2.86**	lbBOD/lbN	
Nitrification Oxygen Demand	**4.57**	lbO2/lbN	

BOD Demand:	**0.8**	lbO2/lbBOD	
Endogenous Demand:	**0.07**	lbO2/lbVSS	
Oxygen Demand Calculations			
CBOD Requirement	534	lbO2/day	
NBOD Requirement	249	lbO2/day	
Endogenous Decay Requirement	653	lbO2/day	
(DN credit)	90	(lbO2/day)	$(TKN_{IN} - NO_{3,OUT} - N_{SLUDGE})*2.86*0.8$
Actual Oxygen Required (AOR)	1,346	lbO2/day	
MBR Basin Air Requirements			
Operating Conditions			
Ambient Air Temperature	**35**	°C	
Max. Wastewater Temperature (T)	35	°C	
Residual Dissolved Oxygen Conc.	2.0	mg/L	
Diffuser Submergence	9.5	ft	
Blower Inlet/Outlet Pressures			
Distribution Losses	**0.7**	psig	Assumed losses.
Inlet Losses	**0.4**	psig	Assumed losses.
Total Discharge Head	4.8	psig	
Site Conditions			
Site Elevation	**50**	ft	Assumed Elevation.
Oxygen Transfer Correction Factors			
Kinetic Correction Factor (α)	**0.543**		Med. bubble diffusers. Calculated based on Operating MLSS
Thermo Correction Factor (β)	**0.95**		Fixed.
Temperature Correction Factor (θ)	**1.024**		Fixed.
Equipment Efficiencies			
Standard Oxygen Transfer Eff. (SOTE)	**14.3%**		Medium bubble diffusers. Fixed at 15% per foot submergence.
Cleaning Air Calculations			
Min. Cleaning Air Required	360	SCFM	Per TORAY Scour 1000-2000 NL/min/Mod=35.3-70.6 cfm/mod
Min. Available Cleaning Air, AOR	489	lbO2/day	after site corrections
Site Correction Data			
Ambient Pressure Corrected for Elev.	14.7	psi	
Ambient Pressure Corrected for Elev.	759	mm Hg	
Average Pressure	1.3	psig	
Oxygen Saturation Conc. at 20oC	**9.08**	mg/L	At standard temp and pressure.
Oxygen Saturation Conc. at T	6.81	mg/L	
Oxygen Saturation Conc. at Elev.	6.80	mg/L	
Air Requirement Calculations			
% of Min. Cleaning Air Utilized	**75%**		Add credit for temp diffusers
Maximum Cleaning Air Available	270	SCFM	
Actual Maximum Air Requirement	292	ICFM	Used for sizing MBR Blowers.
Actual AOR to Process From Scour	367	lbO2/day	
Required AOR	1,346	lbO2/day	
Supplemental Air Required	979	lbO2/day	
(Supplemental) Aeration Basin Air Requirements			
Operating Conditions			
Max. Wastewater Temperature (T)	35	°C	
Residual Dissolved Oxygen Conc.	2.0	mg/L	
Diffuser Submergence	9.5	ft	
Blower Inlet/Outlet Pressures			
Distribution Losses	**1.5**	psig	Assumed pipe losses + diffusers
Inlet Losses	**0.4**	psig	Assumed losses.
Total Discharge Head	5.6	psig	
Site Conditions			
Site Elevation	50	ft	
Oxygen Transfer Correction Factors			
Kinetic Correction Factor (α)	**0.59**		SSI fine bubble diffusers. Calculated based on Operating MLSS
Thermo Correction Factor (β)	**0.95**		

Temperature Correction Factor (θ)	**1.03**		
Equipment Efficiencies			
Standard Oxygen Transfer Eff. (SOTE)	**19.0%**		SSI fine bubble diffusers. At 2% per foot submergence.
Site Correction Data			
Ambient Pressure Corrected for Elev.	14.7	psi	
Ambient Pressure Corrected for Elev.	759	mm Hg	
Average Pressure	1.4	psig	
Oxygen Saturation Conc. at 20oC	**9.08**	mg/L	At standard temp and pressure.
Oxygen Saturation Conc. at T	6.81	mg/L	
Oxygen Saturation Conc. at Elev.	6.8	mg/L	
Air Requirement Calculations			
Actual Oxygen Requirement (AOR)	979	lbO2/day	Air not supplied by MBR diffuser.
Standard Oxygen Requirement (SOR)	2,187	lbO2/day	
AOR/SOR	45%		
Aeration Requirement	459	SCFM	
Mixing Requirement	315	SCFM	Assume mixing reqmt of 20 SCFM per 1000 cf
Actual Aeration Flowrate as MMADF	497	ICFM	PF 1.2 Used for sizing Aeration Blowers.
Chemical Addition for Nitrogen Removal			
Nitrate to be removed with Methanol	**0**	mg/l	Suggested 10% of influent TKN (If TKN<=40)
Total Nitrate loading for Methanol	0	lb/day	Check for BOD:TKN ratio (Should be > 4)
Amount to be added (actual dosage)	0	mg/l	3.5*Nitrate concentration
Amount to be added (actual dosage)	0	gallons/day	100% solution has 792000 mg/l methanol
Design Capacity (Safety Factor:2)	0	gallons/day	Pure Methanol
Chemical Addition for Phosphorous Removal			
Total P to be removed with chemicals	**13.5**	mg/l	4% P in sludge w/ EBPR (1.5% w/o EBPR)
Total P loading	20	lb/day	
Chemical to be added	**ALUM**		Enter Ferric Chloride or Alum
Ferric Chloride Mass loading	319	lb/day	3:1 Fe:P Molar Ratio
Ferric Chloride Design mass loading	997	lb/day	Actual dosage with 32% solution by weight
Ferric Chloride Design volumetric loadin	85.4	gallons/day	solution has specific gravity of 1.4
Ferric Chloride Design Storage capacity	1,708	gallons	Peaking factor of 2 and 10 days detention
$FePO_4$ sludge (actual dosage)	98.9	lb/day	
$Fe(OH)_3$ sludge (actual dosage)	35.0	lb/day	
Alum Mass loading	656	lb/day	3:1 Al:P Molar Ratio
Alum Design mass loading	1,366	lb/day	Actual dosage with 48% solution by weight
Alum Design volumetric loading	137	gallons/day	solution has specific gravity of 1.2
Alum Design Storage capacity	1,365	gallons	10 days detention
$AlPO_4$ sludge (actual dosage)	80	lb/day	
$Al(OH)_3$ sludge (actual dosage)	26	lb/day	
Chemical Addition for Disinfection			
MBR effluent total coliform count	**1,000**	MPN/100mL	(Metcalf & Eddy, 2003, Table 12-13)
Required effluent total coliform count	**200.0**	MPN/100mL	(Metcalf & Eddy, 2003, Table 12-13)
Combined chlorine dose	**4**	mg/L	(Metcalf & Eddy, 2003, Table 12-13)
Required free chlorine residual	**1**	mg/L	
Total chlorine dose	5	mg/L	
% weight available chlorine in NaOCl	**95.4%**		
NaOCl dose	5.2	mg/L	100% solution
NaOCl mass loading	7.9	lb/day	100% solution
% weight stock NaOCl	**12.5%**		
Stock NaOCl mass loading	63	lb/day	
Design volumetric loading	7	gallons/day	Specific gravity is 1.11
Peak volumetric loading	14	gallons/day	Peaking factor of 2
Design Storage capacity	408	gallons	30 days detention@design
Chlorine Contact Basin Design			
Detention Time =	**20.00**	Minutes	Based on Peak Flow
Required Basin Size =	4,166.67	gallons	

Required Basin Size =	556.97	cubic feet	
Digestion Design Parameters			
BOD Removed	668	lb/day	
WAS Sludge Production	542	lb sludge/day	
Chemical Sludge Production	106	lb sludge/day	
Total Sludge Production	647	lb sludge/day	
Sludge Concentration	2.0%	lb dry solids/lb sludge	
Sludge Flow	3,880	gal sludge/day	
WAS Volatile Fraction	65%		
Desired final sludge concentration	**4.0%**		NOTE - NOT CORRECTED FOR AADF
Selected Digester Design	**TRAD**		Type NONE, TRAD, PATH, PADK, PADM
Actual Plant Discharge Sludge Flow	1,532	gal sludge/day	
Actual Digester Volume	38,151	gal	
Table 31: Traditional Digester Design	(Class B Sludge using single-stage digestion)		
PARAMETER	VALUE	UNIT	NOTES
Goal of Digestion	Class B		Per 40CFR503
Minimum Sludge Temperature	18	°C	Temperature between 15°C-20°C
SRT	25	days	
Total Volatile Solids Reduction	39%		Estimated from data in MOP-8
Decanting used to thicken sludge?	Yes		Yes or No
Digested Sludge Concentration	4.0%	lb dry solids/lb sludge	
Digested Solids	511	lb dry solids/day	
Digested Sludge Flow	1,532	gal sludge/day	
Total Digester Tank Volume	38,151	gal	
Total Digester Tank Volume	29,347	gal	AT AADF - Gal. provided = 57,648

4.0 PROCES CALCULATIONS – MAIN PLANT PHASE 2 – 300,000 GPD

PROJECT DESCRIPTION		PROJECT NOTES
Project Name:	**300,000 GPD MBR**	
Project Location:	**Texas**	
Engineer:	**Kiera S. Fitzgerald, P.E.**	
	BluCoast Water Solutions, Inc.	
	Kiera@blucoastwater.com	

Design Criteria

PARAMETER	VALUE	UNIT	NOTES
Operation Type	**Suction**		Gravity or Suction
Equalized Flow	**Yes**		Yes or No
MBR ADF	1363	m3/d	
MBR PDF	2726	m3/d	
Plant PHF	170.4	m3/hr	
MBR AADF	0.300	MGD	
MBR MMADF	**0.3600**	**MGD**	
MBR PDF	0.600	MGD	
Plant PHF	625	GPM	
MBR Peaking Factor	**2.0**		Factor is calculated from PDF/ADF.
Plant PHF Factor	**3.0**		
Min WW Temp	**15**	°C	
Max WW Temp	**35**	°C	
Yield	0.811	lbTSS/lbBOD5	
% Nitrogen in WAS	6.5%		
Residual DO	**2.0**	mg/L	
Plant Max F:M Ratio	**0.135**		Adjust for plant sludge age.

Influent Wastewater Characteristics at Average Design Flow

PARAMETER	CONC	UNIT	LOAD	UNIT	NOTES
CBOD5:	**450**	mg/L	1,351.1	lb/day	if BOD:TKN < 4, then add methanol
TSS:	**400**	mg/L	1,201.0	lb/day	
TKN:	**60**	mg/L	180.1	lb/day	Should be roughly 1.4 * NH_3
NH3:	**43**	mg/L	128.7	lb/day	
NO3:	**0**	mg/L	0.0	lb/day	Usually 0
TN:	**60**	mg/L	180.1	lb/day	
Total -P:	**20**	mg/L	60.0	lb/day	

Target Effluent Wastewater Limits

PARAMETER	CONC	UNIT	LOAD	UNIT	NOTES
CBOD5:	**5**	mg/L	15.0	lb/day	
TSS:	**5**	mg/L	15.0	lb/day	
TKN:	**5**	mg/L	15.0	lb/day	
NH3:	**1**	mg/L	3.0	lb/day	
NO3:	**10**	mg/L	30.0	lb/day	
TN	15	mg/L	45.0	lb/day	
Total -P:	**1**	mg/L	3.0	lb/day	

MBR Design

PARAMETER	VALUE	UNIT	NOTES
Effective Membrane Area	**7.53**	ft^2	NHP210-300S
Target Flux	**14.0**	gfd	Fixed based on temperature.
Number of Membranes	3,413		
Membranes Per Unit	**300**	**NPH**	NHP210-300S
Required Number of Membrane Units	11.38		28.7w 67.7l 57.9h
Actual Number of Membrane Units	**10**		
Actual (Design) Flux	13.3	gfd	Actual design flux at MGD = 0.300
Distance Between Units	**4.08**	ft	

End Unit to Wall Distance	**2.65**	ft	
Basin Length	**8.0**	ft	8.0 NEEDED TORAY
Number of Basins	**2**		Max width is 1 m from end to wall.
Basin Width	30.0	ft	21.6 NEEDED
Side Water Depth	**10.5**	ft	3.2 meters
Basin Volume	18,751	gal	
Total MBR Volume	37,501	gal	
Volume Displaced By Membranes	7,535	gal	2"/PLATE x 2
Volume Available for Nitrification	29,967	gal	
Nitrification Process Calculations			
MBR MLSS	**11,000**	mg/L	Fixed for sizing of reactors.
MLVSS/MLSS	**0.80**		Fixed at average value.
Nitrification Rate	0.029	lbN/lbSS*day	
Recommended Safety Factor	**25%**		Fixed for sizing of reactors.
Net Nitrification Load	108.9	lb/day	
Required Nitrification Volume	51,740	gal	Biomass required for cell respiration.
Required Nitrification Aeration Volume	21,773	gal	Required if MBR volume is insufficient.
Required BOD Process Mass	10,008	lb	Overall Plant F:M 0.135
Available BOD Process Mass	2,745	lb	
Required BOD Aeration Volume	123,918	gal	Required if MBR volume is insufficient.
Required Aeration Volume	123,918	gal	Largest vol. based nit. or BOD loading.
Actual Aeration Volume	**117,810**	gal	9.4 hrs
Denitrification Process Calculations			
Theoretical Recycle Rate (MBR to AX)	2.6		$R_{Minimum}$ (if RR > 6, then set to 6)
Selected Recycle Rate (MBR to AX)	**4.0**		$R_{Selected}$
Selected Recycle Rate (AER to AX)	**0.0**		$R_{Selected}$
Anoxic MLSS	8,800	mg/L	
Denitrification Rate	0.050	lbNO3/lbSS*day	
Recommended Safety Factor	**25%**		Fixed for sizing of reactors.
Required Denit Process Volume	26,773	gal	for complete denitrification
Minimum Denit Volume for Stabilization	36,944	gal	20% of Aerobic Volume
Actual Denitrification Volume	**38,432**	gal	Actual DT= 2.6 hrs
Pre-Anoxic Volume	**38,432**	gal	
Post-Anoxic Volume	**0**	gal	
Denitrification Capacity	156.4	lb/day	amount of nitrogen removed by denitrification
Nitrogen Load in Waste Sludge	71.2	lb/day	
Effluent Nitrate Load	30.0	lb/day	
Effluent Nitrate Concentration	10.0	mg/L	
Anaerobic Process Calculations			
Selected Recycle Rate (AX to AN)	**0.0**		N/A
Anaerobic MLSS	0	mg/L	
Min. Anaerobic Volume	**15,000**	gal	Typically => 1 hr HRT
Actual Anaerobic Volume	**0**	gal	
Plant HRT and SRT			
Anaerobic HRT	0.0	hr	
Pre-Anoxic HRT	2.6	hr	
Aeration HRT	7.9	hr	
Post-Anoxic HRT	0.0	hr	
MBR HRT	2.0	hr	
Plant F:M	0.09	1/day	Typically 0.1
Plant HRT	12.4	hr	Typically => 5.0 hr
Plant SRT	13	day	
Aerobic SRT	**8.0**	day	
Actual Oxygen Requirements (AOR)			
Denitrification BOD Demand	**2.86**	lbBOD/lbN	
Nitrification Oxygen Demand	**4.57**	lbO2/lbN	

BOD Demand:	**0.8**	lbO2/lbBOD	
Endogenous Demand:	**0.07**	lbO2/lbVSS	
Oxygen Demand Calculations			
CBOD Requirement	1,069	lbO2/day	
NBOD Requirement	498	lbO2/day	
Endogenous Decay Requirement	637	lbO2/day	
(DN credit)	181	(lbO2/day)	$(TKN_{IN} - NO_{3,OUT} - N_{SLUDGE})*2.86*0.8$
Actual Oxygen Required (AOR)	2,023	lbO2/day	
MBR Basin Air Requirements			
Operating Conditions			
Ambient Air Temperature	**35**	°C	
Max. Wastewater Temperature (T)	35	°C	
Residual Dissolved Oxygen Conc.	2.0	mg/L	
Diffuser Submergence	9.5	ft	
Blower Inlet/Outlet Pressures			
Distribution Losses	**0.7**	psig	Assumed losses.
Inlet Losses	**0.4**	psig	Assumed losses.
Total Discharge Head	4.8	psig	
Site Conditions			
Site Elevation	**50**	ft	Assumed Elevation.
Oxygen Transfer Correction Factors			
Kinetic Correction Factor (α)	**0.543**		Med. bubble diffusers. Calculated based on Operating MLSS
Thermo Correction Factor (β)	**0.95**		Fixed.
Temperature Correction Factor (θ)	**1.024**		Fixed.
Equipment Efficiencies			
Standard Oxygen Transfer Eff. (SOTE)	**14.3%**		Medium bubble diffusers. Fixed at 15% per foot submergence.
Cleaning Air Calculations			
Min. Cleaning Air Required	600	SCFM	Per TORAY Scour 1000-2000 NL/min/Mod=35.3-70.6 cfm/mod
Min. Available Cleaning Air, AOR	815	lbO2/day	after site corrections
Site Correction Data			
Ambient Pressure Corrected for Elev.	14.7	psi	
Ambient Pressure Corrected for Elev.	759	mm Hg	
Average Pressure	1.3	psig	
Oxygen Saturation Conc. at 20oC	**9.08**	mg/L	At standard temp and pressure.
Oxygen Saturation Conc. at T	6.81	mg/L	
Oxygen Saturation Conc. at Elev.	6.80	mg/L	
Air Requirement Calculations			
% of Min. Cleaning Air Utilized	**60%**		Add credit for temp diffusers
Maximum Cleaning Air Available	360	SCFM	
Actual Maximum Air Requirement	390	ICFM	Used for sizing MBR Blowers.
Actual AOR to Process From Scour	489	lbO2/day	
Required AOR	2,023	lbO2/day	
Supplemental Air Required	1,534	lbO2/day	
(Supplemental) Aeration Basin Air Requirements			
Operating Conditions			
Max. Wastewater Temperature (T)	35	°C	
Residual Dissolved Oxygen Conc.	2.0	mg/L	
Diffuser Submergence	9.5	ft	
Blower Inlet/Outlet Pressures			
Distribution Losses	**1.5**	psig	Assumed pipe losses + diffusers
Inlet Losses	**0.4**	psig	Assumed losses.
Total Discharge Head	5.6	psig	
Site Conditions			
Site Elevation	50	ft	
Oxygen Transfer Correction Factors			
Kinetic Correction Factor (α)	**0.59**		SSI fine bubble diffusers. Calculated based on Operating MLSS
Thermo Correction Factor (β)	**0.95**		

Temperature Correction Factor (θ)	**1.03**		
Equipment Efficiencies			
Standard Oxygen Transfer Eff. (SOTE)	**19.0%**		SSI fine bubble diffusers. At 2% per foot submergence.
Site Correction Data			
Ambient Pressure Corrected for Elev.	14.7	psi	
Ambient Pressure Corrected for Elev.	759	mm Hg	
Average Pressure	1.4	psig	
Oxygen Saturation Conc. at 20oC	**9.08**	mg/L	At standard temp and pressure.
Oxygen Saturation Conc. at T	6.81	mg/L	
Oxygen Saturation Conc. at Elev.	6.8	mg/L	
Air Requirement Calculations			
Actual Oxygen Requirement (AOR)	1,534	lbO2/day	Air not supplied by MBR diffuser.
Standard Oxygen Requirement (SOR)	3,427	lbO2/day	
AOR/SOR	45%		
Aeration Requirement	720	SCFM	
Mixing Requirement	315	SCFM	Assume mixing reqmt of 20 SCFM per 1000 cf
Actual Aeration Flowrate as MMADF	779	ICFM	PF 1.2 Used for sizing Aeration Blowers.
Chemical Addition for Nitrogen Removal			
Nitrate to be removed with Methanol	**0**	mg/l	Suggested 10% of influent TKN (If TKN<=40)
Total Nitrate loading for Methanol	0	lb/day	Check for BOD:TKN ratio (Should be > 4)
Amount to be added (actual dosage)	0	mg/l	3.5*Nitrate concentration
Amount to be added (actual dosage)	0	gallons/day	100% solution has 792000 mg/l methanol
Design Capacity (Safety Factor:2)	0	gallons/day	Pure Methanol
Chemical Addition for Phosphorous Removal			
Total P to be removed with chemicals	**13.5**	mg/l	4% P in sludge w/ EBPR (1.5% w/o EBPR)
Total P loading	41	lb/day	
Chemical to be added	**Alum**		Enter Ferric Chloride or Alum
Ferric Chloride Mass loading	638	lb/day	3:1 Fe:P Molar Ratio
Ferric Chloride Design mass loading	1,994	lb/day	Actual dosage with 32% solution by weight
Ferric Chloride Design volumetric loadin	170.8	gallons/day	solution has specific gravity of 1.4
Ferric Chloride Design Storage capacity	3,416	gallons	Peaking factor of 2 and 10 days detention
$FePO_4$ sludge (actual dosage)	197.8	lb/day	
$Fe(OH)_3$ sludge (actual dosage)	70.1	lb/day	
Alum Mass loading	1,311	lb/day	3:1 Al:P Molar Ratio
Alum Design mass loading	2,732	lb/day	Actual dosage with 48% solution by weight
Alum Design volumetric loading	273	gallons/day	solution has specific gravity of 1.2
Alum Design Storage capacity	2,730	gallons	10 days detention
$AlPO_4$ sludge (actual dosage)	160	lb/day	
$Al(OH)_3$ sludge (actual dosage)	51	lb/day	
Chemical Addition for Disinfection			
MBR effluent total coliform count	**1,000**	MPN/100mL	(Metcalf & Eddy, 2003, Table 12-13)
Required effluent total coliform count	**200.0**	MPN/100mL	(Metcalf & Eddy, 2003, Table 12-13)
Combined chlorine dose	**4**	mg/L	(Metcalf & Eddy, 2003, Table 12-13)
Required free chlorine residual	**1**	mg/L	
Total chlorine dose	5	mg/L	
% weight available chlorine in NaOCl	**95.4%**		
NaOCl dose	5.2	mg/L	100% solution
NaOCl mass loading	15.7	lb/day	100% solution
% weight stock NaOCl	**12.5%**		
Stock NaOCl mass loading	126	lb/day	
Design volumetric loading	14	gallons/day	Specific gravity is 1.11
Peak volumetric loading	27	gallons/day	Peaking factor of 2
Design Storage capacity	816	gallons	30 days detention@design
Chlorine Contact Basin Design			
Detention Time =	**20.00**	Minutes	Based on Peak Flow
Required Basin Size =	8,333.33	gallons	

Required Basin Size =	1,113.93	cubic feet	
Digestion Design Parameters			
BOD Removed	1,336	lb/day	
WAS Sludge Production	1,083	lb sludge/day	
Chemical Sludge Production	211	lb sludge/day	
Total Sludge Production	1,294	lb sludge/day	
Sludge Concentration	2.0%	lb dry solids/lb sludge	
Sludge Flow	7,760	gal sludge/day	
WAS Volatile Fraction	65%		
Desired final sludge concentration	**4.0%**		NOTE - NOT CORRECTED FOR AADF
Selected Digester Design	**TRAD**		Type NONE, TRAD, PATH, PADK, PADM
Actual Plant Discharge Sludge Flow	3,064	gal sludge/day	
Actual Digester Volume	73,544	gal	
Table 31: Traditional Digester Design	(Class B Sludge using single-stage digestion)		
PARAMETER	VALUE	UNIT	NOTES
Goal of Digestion	Class B		Per 40CFR503
Minimum Sludge Temperature	18	°C	Temperature between 15°C-20°C
SRT	24	days	
Total Volatile Solids Reduction	39%		Estimated from data in MOP-8
Decanting used to thicken sludge?	Yes		Yes or No
Digested Sludge Concentration	4.0%	lb dry solids/lb sludge	
Digested Solids	1,022	lb dry solids/day	
Digested Sludge Flow	3,064	gal sludge/day	
Total Digester Tank Volume	73,544	gal	
Total Digester Tank Volume	56,572	gal	AT AADF - Gal. provided = 57,648

5.0 PROCES CALCULATIONS – MAIN PLANT – 350,000 GPD Train

PROJECT DESCRIPTION		PROJECT NOTES
Project Name:	**350,000 GPD MBR**	
Project Location:	**Texas**	
Engineer:	**Kiera S. Fitzgerald, P.E.**	
	BluCoast Water Solutions, Inc.	
	Kiera@blucoastwater.com	

Design Criteria

PARAMETER	VALUE	UNIT	NOTES
Operation Type	**Suction**		Gravity or Suction
Equalized Flow	**Yes**		Yes or No
MBR ADF	1590	m3/d	
MBR PDF	3180	m3/d	
Plant PHF	198.8	m3/hr	
MBR AADF	0.350	MGD	
MBR MMADF	**0.4200**	**MGD**	
MBR PDF	0.700	MGD	
Plant PHF	729	GPM	
MBR Peaking Factor	**2.0**		Factor is calculated from PDF/ADF.
Plant PHF Factor	**3.0**		
Min WW Temp	**15**	°C	
Max WW Temp	**35**	°C	
Yield	0.811	lbTSS/lbBOD5	
% Nitrogen in WAS	6.5%		
Residual DO	**2.0**	mg/L	
Plant Max F:M Ratio	**0.15**		Adjust for plant sludge age.

Influent Wastewater Characteristics at Average Design Flow

PARAMETER	CONC	UNIT	LOAD	UNIT	NOTES
CBOD5:	**450**	mg/L	1,576.3	lb/day	if BOD:TKN < 4, then add methanol
TSS:	**400**	mg/L	1,401.1	lb/day	
TKN:	**60**	mg/L	210.2	lb/day	Should be roughly 1.4 * NH_3
NH3:	**43**	mg/L	150.1	lb/day	
NO3:	**0**	mg/L	0.0	lb/day	Usually 0
TN:	**60**	mg/L	210.2	lb/day	
Total -P:	**20**	mg/L	70.1	lb/day	

Target Effluent Wastewater Limits

PARAMETER	CONC	UNIT	LOAD	UNIT	NOTES
CBOD5:	**5**	mg/L	17.5	lb/day	
TSS:	**5**	mg/L	17.5	lb/day	
TKN:	**5**	mg/L	17.5	lb/day	
NH3:	**1**	mg/L	3.5	lb/day	
NO3:	**10**	mg/L	35.0	lb/day	
TN	15	mg/L	52.5	lb/day	
Total -P:	**1**	mg/L	3.5	lb/day	

MBR Design

PARAMETER	VALUE	UNIT	NOTES
Effective Membrane Area	**7.53**	ft^2	NHP210-300S
Target Flux	**14.0**	gfd	Fixed based on temperature.
Number of Membranes	3,982		
Membranes Per Unit	**300**	**NPH**	NHP210-300S
Required Number of Membrane Units	13.27		28.7w 67.7l 57.9h
Actual Number of Membrane Units	**12**		
Actual (Design) Flux	12.9	gfd	Actual design flux at MGD = 0.350
Distance Between Units	**4.08**	ft	

End Unit to Wall Distance	**2.65**	ft	
Basin Length	**8.0**	ft	8.0 NEEDED TORAY
Number of Basins	**2**		Max width is 1 m from end to wall.
Basin Width	34.0	ft	25.7 NEEDED
Side Water Depth	**10.5**	ft	3.2 meters
Basin Volume	21,251	gal	
Total MBR Volume	42,501	gal	
Volume Displaced By Membranes	9,042	gal	2"/PLATE x 2
Volume Available for Nitrification	33,460	gal	
Nitrification Process Calculations			
MBR MLSS	**11,000**	mg/L	Fixed for sizing of reactors.
MLVSS/MLSS	**0.80**		Fixed at average value.
Nitrification Rate	0.029	lbN/lbSS*day	
Recommended Safety Factor	**25%**		Fixed for sizing of reactors.
Net Nitrification Load	127.1	lb/day	
Required Nitrification Volume	60,363	gal	Biomass required for cell respiration.
Required Nitrification Aeration Volume	26,904	gal	Required if MBR volume is insufficient.
Required BOD Process Mass	10,508	lb	Overall Plant F:M 0.15
Available BOD Process Mass	3,064	lb	
Required BOD Aeration Volume	126,997	gal	Required if MBR volume is insufficient.
Required Aeration Volume	126,997	gal	Largest vol. based nit. or BOD loading.
Actual Aeration Volume	**133,518**	gal	9.2 hrs
Denitrification Process Calculations			
Theoretical Recycle Rate (MBR to AX)	2.6		$R_{Minimum}$ (if RR > 6, then set to 6)
Selected Recycle Rate (MBR to AX)	**4.0**		$R_{Selected}$
Selected Recycle Rate (AER to AX)	**0.0**		$R_{Selected}$
Anoxic MLSS	8,800	mg/L	
Denitrification Rate	0.050	lbNO3/lbSS*day	
Recommended Safety Factor	**25%**		Fixed for sizing of reactors.
Required Denit Process Volume	31,235	gal	for complete denitrification
Minimum Denit Volume for Stabilization	41,744	gal	20% of Aerobic Volume
Actual Denitrification Volume	**43,459**	gal	Actual DT= 2.5 hrs
Pre-Anoxic Volume	**43,459**	gal	
Post-Anoxic Volume	**0**	gal	
Denitrification Capacity	176.8	lb/day	amount of nitrogen removed by denitrification
Nitrogen Load in Waste Sludge	83.1	lb/day	
Effluent Nitrate Load	35.0	lb/day	
Effluent Nitrate Concentration	10.0	mg/L	
Anaerobic Process Calculations			
Selected Recycle Rate (AX to AN)	**0.0**		N/A
Anaerobic MLSS	0	mg/L	
Min. Anaerobic Volume	**17,500**	gal	Typically => 1 hr HRT
Actual Anaerobic Volume	**0**	gal	
Plant HRT and SRT			
Anaerobic HRT	0.0	hr	
Pre-Anoxic HRT	2.5	hr	
Aeration HRT	7.6	hr	
Post-Anoxic HRT	0.0	hr	
MBR HRT	1.9	hr	
Plant F:M	0.10	1/day	Typically 0.1
Plant HRT	12.0	hr	Typically => 5.0 hr
Plant SRT	13	day	
Aerobic SRT	**7.7**	day	
Actual Oxygen Requirements (AOR)			
Denitrification BOD Demand	**2.86**	lbBOD/lbN	
Nitrification Oxygen Demand	**4.57**	lbO2/lbN	

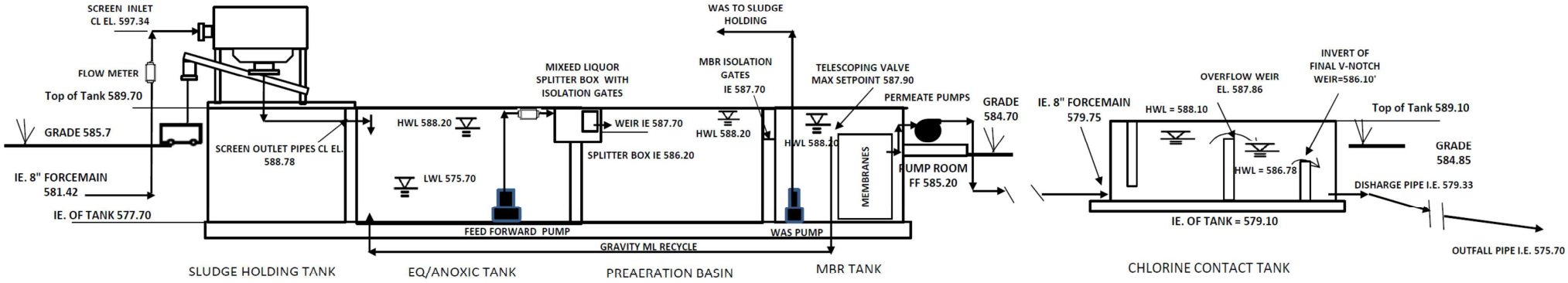
BOD Demand:	**0.8**	lbO2/lbBOD	
Endogenous Demand:	**0.07**	lbO2/lbVSS	
Oxygen Demand Calculations			
CBOD Requirement	1,247	lbO2/day	
NBOD Requirement	581	lbO2/day	
Endogenous Decay Requirement	719	lbO2/day	
(DN credit)	211	(lbO2/day)	$(TKN_{IN} - NO_{3,OUT} - N_{SLUDGE})*2.86*0.8$
Actual Oxygen Required (AOR)	2,337	lbO2/day	
MBR Basin Air Requirements			
Operating Conditions			
Ambient Air Temperature	**35**	°C	
Max. Wastewater Temperature (T)	35	°C	
Residual Dissolved Oxygen Conc.	2.0	mg/L	
Diffuser Submergence	9.5	ft	
Blower Inlet/Outlet Pressures			
Distribution Losses	**0.7**	psig	Assumed losses.
Inlet Losses	**0.4**	psig	Assumed losses.
Total Discharge Head	4.8	psig	
Site Conditions			
Site Elevation	**50**	ft	Assumed Elevation.
Oxygen Transfer Correction Factors			
Kinetic Correction Factor (α)	**0.543**		Med. bubble diffusers. Calculated based on Operating MLSS
Thermo Correction Factor (β)	**0.95**		Fixed.
Temperature Correction Factor (θ)	**1.024**		Fixed.
Equipment Efficiencies			
Standard Oxygen Transfer Eff. (SOTE)	**14.3%**		Medium bubble diffusers. Fixed at 15% per foot submergence.
Cleaning Air Calculations			
Min. Cleaning Air Required	720	SCFM	Per TORAY Scour 1000-2000 NL/min/Mod=35.3-70.6 cfm/mod
Min. Available Cleaning Air, AOR	978	lbO2/day	after site corrections
Site Correction Data			
Ambient Pressure Corrected for Elev.	14.7	psi	
Ambient Pressure Corrected for Elev.	759	mm Hg	
Average Pressure	1.3	psig	
Oxygen Saturation Conc. at 20oC	**9.08**	mg/L	At standard temp and pressure.
Oxygen Saturation Conc. at T	6.81	mg/L	
Oxygen Saturation Conc. at Elev.	6.80	mg/L	
Air Requirement Calculations			
% of Min. Cleaning Air Utilized	**60%**		Add credit for temp diffusers
Maximum Cleaning Air Available	432	SCFM	
Actual Maximum Air Requirement	468	ICFM	Used for sizing MBR Blowers.
Actual AOR to Process From Scour	587	lbO2/day	
Required AOR	2,337	lbO2/day	
Supplemental Air Required	1,750	lbO2/day	
(Supplemental) Aeration Basin Air Requirements			
Operating Conditions			
Max. Wastewater Temperature (T)	35	°C	
Residual Dissolved Oxygen Conc.	2.0	mg/L	
Diffuser Submergence	9.5	ft	
Blower Inlet/Outlet Pressures			
Distribution Losses	**1.5**	psig	Assumed pipe losses + diffusers
Inlet Losses	**0.4**	psig	Assumed losses.
Total Discharge Head	5.6	psig	
Site Conditions			
Site Elevation	50	ft	
Oxygen Transfer Correction Factors			
Kinetic Correction Factor (α)	**0.59**		SSI fine bubble diffusers. Calculated based on Operating MLSS
Thermo Correction Factor (β)	**0.95**		

Temperature Correction Factor (θ)	**1.03**		
Equipment Efficiencies			
Standard Oxygen Transfer Eff. (SOTE)	**19.0%**		SSI fine bubble diffusers. At 2% per foot submergence.
Site Correction Data			
Ambient Pressure Corrected for Elev.	14.7	psi	
Ambient Pressure Corrected for Elev.	759	mm Hg	
Average Pressure	1.4	psig	
Oxygen Saturation Conc. at 20oC	**9.08**	mg/L	At standard temp and pressure.
Oxygen Saturation Conc. at T	6.81	mg/L	
Oxygen Saturation Conc. at Elev.	6.8	mg/L	
Air Requirement Calculations			
Actual Oxygen Requirement (AOR)	1,750	lbO2/day	Air not supplied by MBR diffuser.
Standard Oxygen Requirement (SOR)	3,909	lbO2/day	
AOR/SOR	45%		
Aeration Requirement	821	SCFM	
Mixing Requirement	357	SCFM	Assume mixing reqmt of 20 SCFM per 1000 cf
Actual Aeration Flowrate as MMADF	889	ICFM	PF 1.2 Used for sizing Aeration Blowers.
Chemical Addition for Nitrogen Removal			
Nitrate to be removed with Methanol	**0**	mg/l	Suggested 10% of influent TKN (If TKN<=40)
Total Nitrate loading for Methanol	0	lb/day	Check for BOD:TKN ratio (Should be > 4)
Amount to be added (actual dosage)	0	mg/l	3.5*Nitrate concentration
Amount to be added (actual dosage)	0	gallons/day	100% solution has 792000 mg/l methanol
Design Capacity (Safety Factor:2)	0	gallons/day	Pure Methanol
Chemical Addition for Phosphorous Removal			
Total P to be removed with chemicals	**13.5**	mg/l	4% P in sludge w/ EBPR (1.5% w/o EBPR)
Total P loading	47	lb/day	
Chemical to be added	**Alum**		Enter Ferric Chloride or Alum
Ferric Chloride Mass loading	745	lb/day	3:1 Fe:P Molar Ratio
Ferric Chloride Design mass loading	2,327	lb/day	Actual dosage with 32% solution by weight
Ferric Chloride Design volumetric loadin	199.3	gallons/day	solution has specific gravity of 1.4
Ferric Chloride Design Storage capacity	3,985	gallons	Peaking factor of 2 and 10 days detention
$FePO_4$ sludge (actual dosage)	230.7	lb/day	
$Fe(OH)_3$ sludge (actual dosage)	81.7	lb/day	
Alum Mass loading	1,530	lb/day	3:1 Al:P Molar Ratio
Alum Design mass loading	3,188	lb/day	Actual dosage with 48% solution by weight
Alum Design volumetric loading	319	gallons/day	solution has specific gravity of 1.2
Alum Design Storage capacity	3,185	gallons	10 days detention
$AlPO_4$ sludge (actual dosage)	187	lb/day	
$Al(OH)_3$ sludge (actual dosage)	60	lb/day	
Chemical Addition for Disinfection			
MBR effluent total coliform count	**1,000**	MPN/100mL	(Metcalf & Eddy, 2003, Table 12-13)
Required effluent total coliform count	**200.0**	MPN/100mL	(Metcalf & Eddy, 2003, Table 12-13)
Combined chlorine dose	**4**	mg/L	(Metcalf & Eddy, 2003, Table 12-13)
Required free chlorine residual	**1**	mg/L	
Total chlorine dose	5	mg/L	
% weight available chlorine in NaOCl	**95.4%**		
NaOCl dose	5.2	mg/L	100% solution
NaOCl mass loading	18.4	lb/day	100% solution
% weight stock NaOCl	**12.5%**		
Stock NaOCl mass loading	147	lb/day	
Design volumetric loading	16	gallons/day	Specific gravity is 1.11
Peak volumetric loading	32	gallons/day	Peaking factor of 2
Design Storage capacity	952	gallons	30 days detention@design
Chlorine Contact Basin Design			
Detention Time =	**20.00**	Minutes	Based on Peak Flow
Required Basin Size =	9,722.22	gallons	

Required Basin Size =	1,299.59	cubic feet	
Digestion Design Parameters			
BOD Removed	1,559	lb/day	
WAS Sludge Production	1,264	lb sludge/day	
Chemical Sludge Production	246	lb sludge/day	
Total Sludge Production	1,510	lb sludge/day	
Sludge Concentration	2.0%	lb dry solids/lb sludge	
Sludge Flow	9,053	gal sludge/day	
WAS Volatile Fraction	65%		
Desired final sludge concentration	**4.0%**		NOTE - NOT CORRECTED FOR AADF
Selected Digester Design	**TRAD**		Type NONE, TRAD, PATH, PADK, PADM
Actual Plant Discharge Sludge Flow	3,575	gal sludge/day	
Actual Digester Volume	82,226	gal	
Table 31: Traditional Digester Design	(Class B Sludge using single-stage digestion)		
PARAMETER	VALUE	UNIT	NOTES
Goal of Digestion	Class B		Per 40CFR503
Minimum Sludge Temperature	18	°C	Temperature between 15°C-20°C
SRT	23	days	
Total Volatile Solids Reduction	39%		Estimated from data in MOP-8
Decanting used to thicken sludge?	Yes		Yes or No
Digested Sludge Concentration	4.0%	lb dry solids/lb sludge	
Digested Solids	1,193	lb dry solids/day	
Digested Sludge Flow	3,575	gal sludge/day	
Total Digester Tank Volume	82,226	gal	
Total Digester Tank Volume	63,251	gal	AT AADF - Gal. provided = 65,188

6.0 DRAWINGS

PLUM CREEK UTILITY
PCU-WRRF3

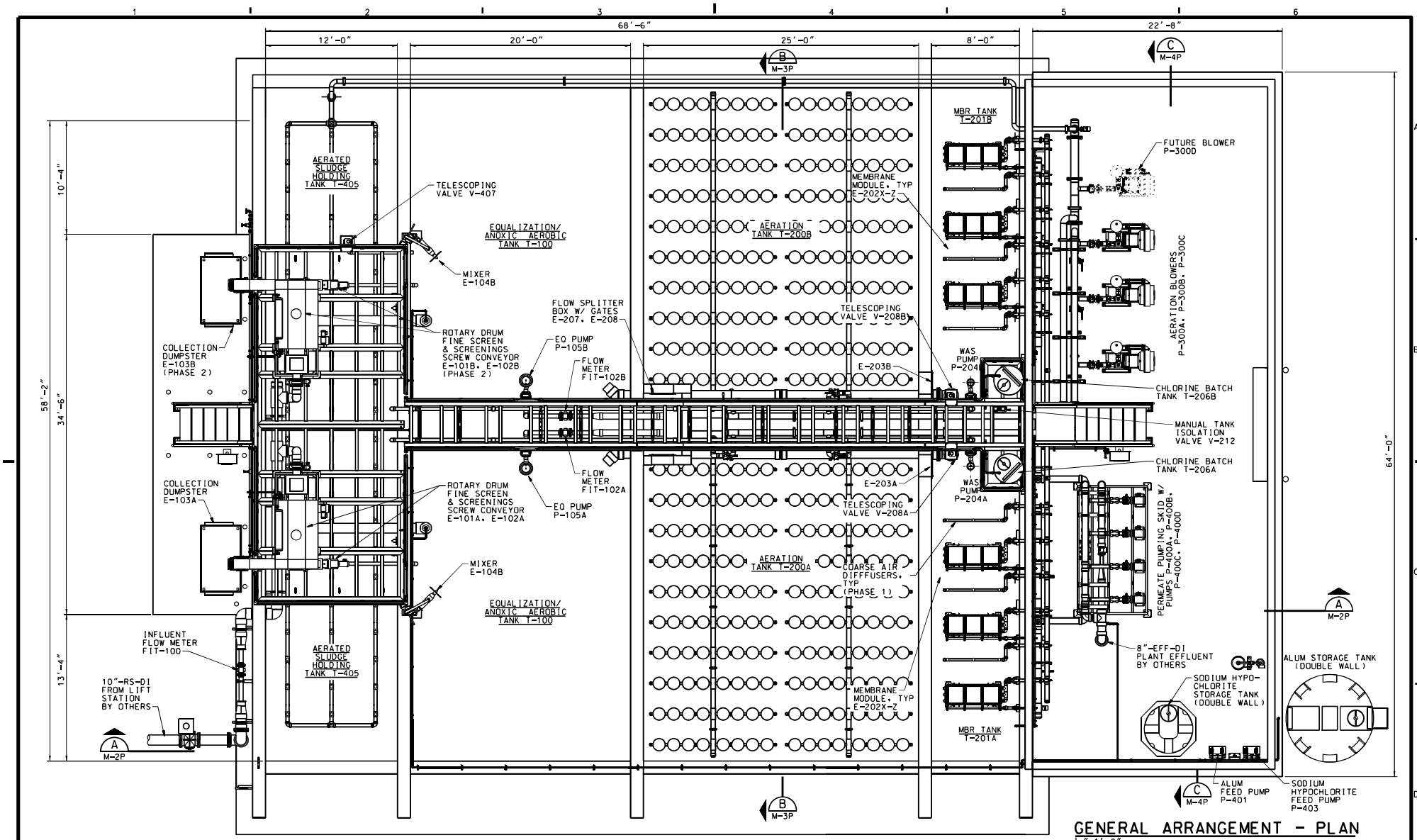


KEY:

DESIGN FLOW	300,000 GPD
PEAK INFLUENT FLOW	833 GPM
PEAK EQUALIZED FLOW	417 GPM

300,000 GPD MBR
HYDRAULIC PROFILE

TEXAS AQUASTORE®
Design-Construct Wastewater Treatment



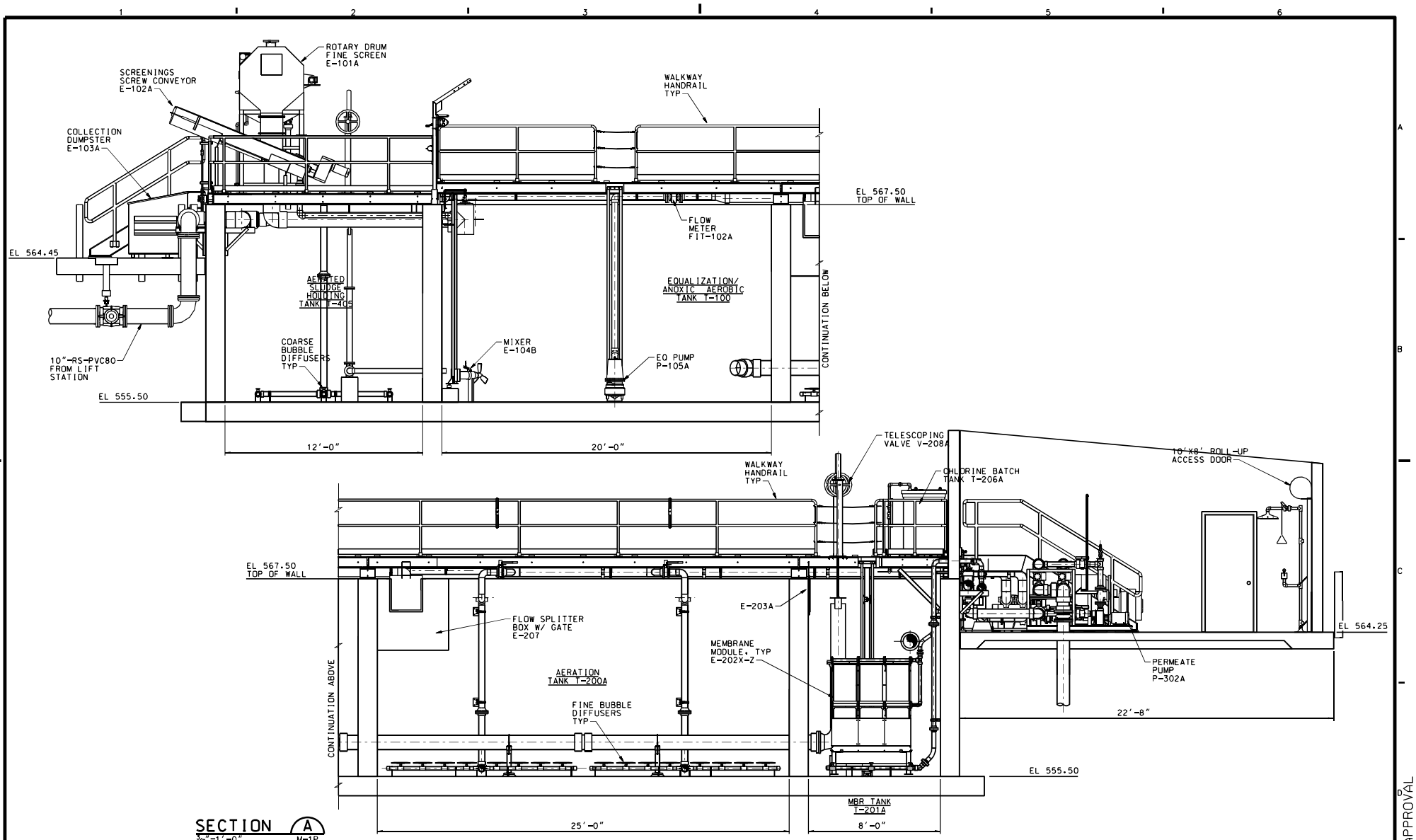
GENERAL ARRANGEMENT - PLAN

1/4"=1'-0"

DSGN KS FITZGERALD				VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	GEMINI WATER Gainesville, Florida Certificate of Authorization #31523	PLUM CREEK UTILTY 3 WRRF2-PHASE 1 150/300K MEMBRANE BIOREACTOR TREATMENT SYSTEM	PROCESS MECHANICAL MEMBRANE BIOREACTOR WASTEWATER TREATMENT FACILITY GENERAL ARRANGEMENT - PLAN	DWG NO. M-1P
DR N NARAMORE 026-0624m01.dgn								DATE DEC 2022
CHK KS FITZGERALD								PROJ NO. 026-0624
APVD D BEDFORD	NO.	DATE	REVISION	BY	APVD			

026-0624m01.dgn 14-DEC-2022

CLIENT APPROVAL

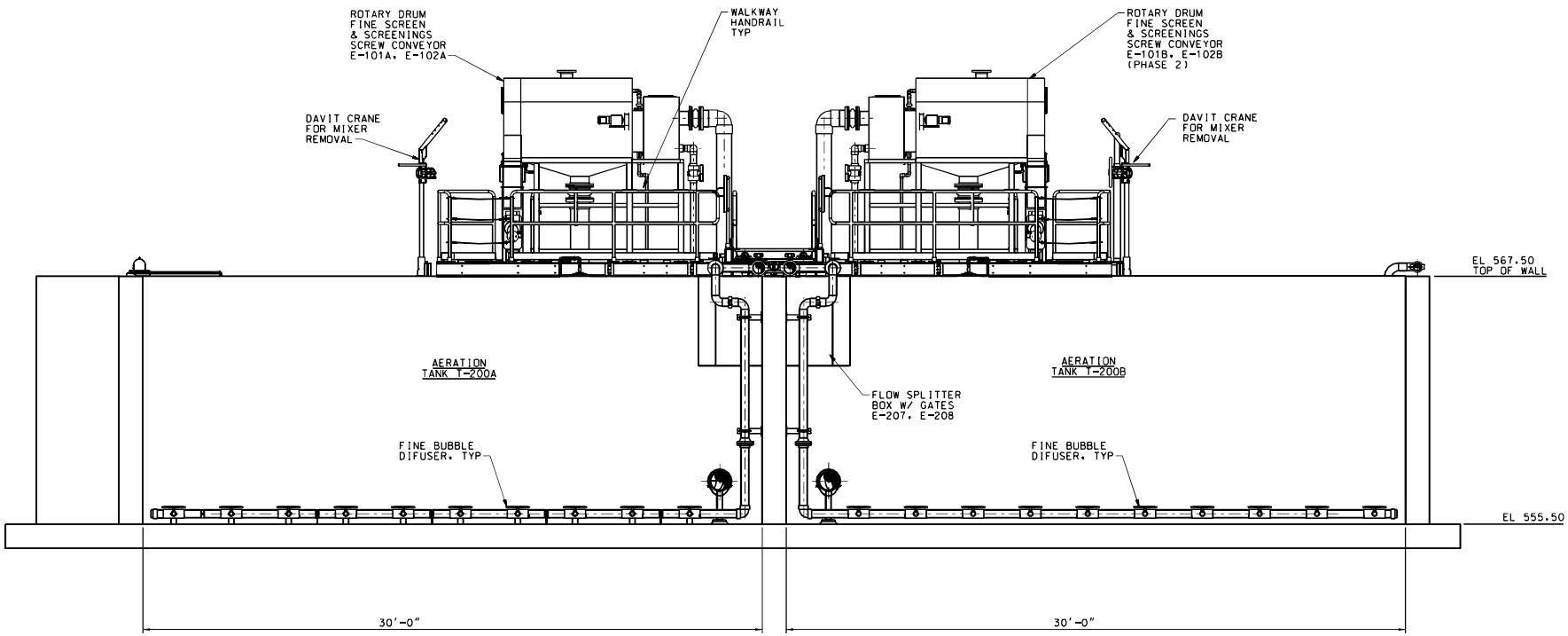


SECTION A
3/8"=1'-0" M-1P

DSGN KS FITZGERALD					VERIFY SCALE	GEMINI WATER	PLUM CREEK UTILTY WRRF3-PHASE 1	PROCESS MECHANICAL	DWG NO. M-2P
DR N NARAMORE 026-0624m02.dgn					BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	Gainesville, Florida Certificate of Authorization #31523	150/300K MEMBRANE BIOREACTOR TREATMENT SYSTEM	MEMBRANE BIOREACTOR WASTEWATER TREATMENT FACILITY SECTION	DATE JUNE 2024
CHK KS FITZGERALD									PROJ NO. 026-0624
APVD D BEDFORD	NO.	DATE	REVISION	BY	APVD				

026-0624m02.dgn 20-JUNE-2024

CLIENT APPROVAL

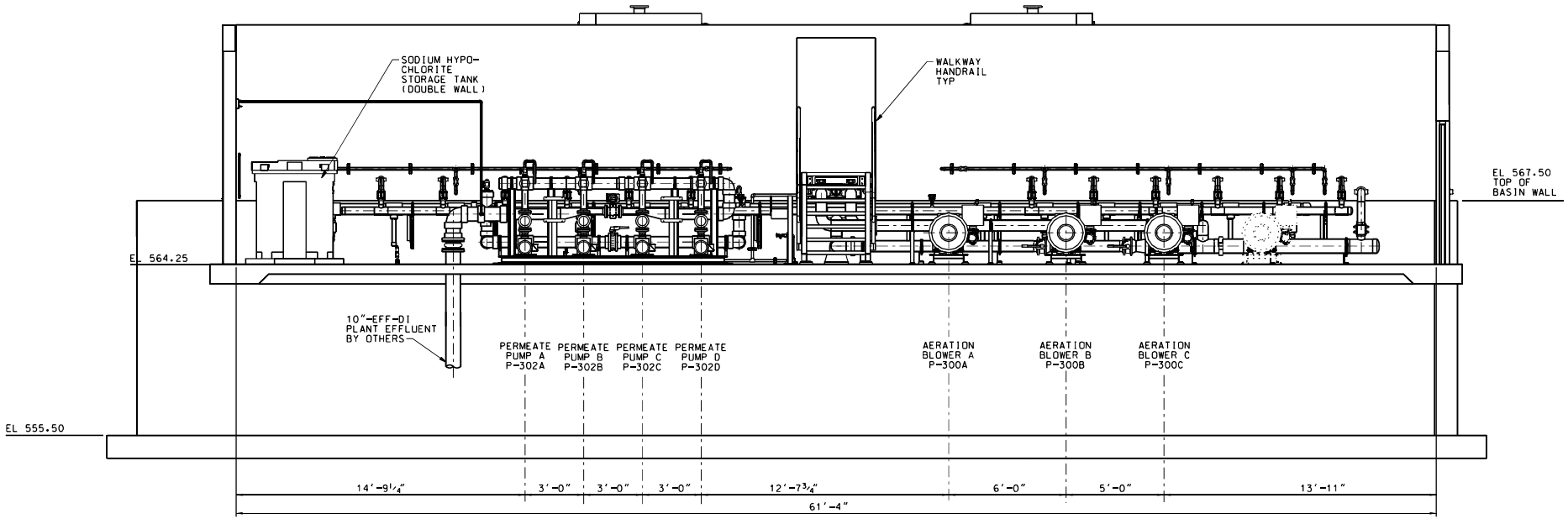


SECTION B
3/8"=1'-0" M-1P

DSGN KS FITZGERALD DR N NARAMORE 026-0624m03.dgn CHK KS FITZGERALD APVD D BEDFORD	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	GEMINI WATER Gainesville, Florida Certificate of Authorization #31523	PLUM CREEK UTILTY 3 WRRF2-PHASE 1 150/300K MEMBRANE BIOREACTOR TREATMENT SYSTEM	PROCESS MECHANICAL MEMBRANE BIOREACTOR WASTEWATER TREATMENT FACILITY SECTION	DWG NO. M-3P DATE DEC 2022 PROJ NO. 026-0624

026-0624m03.dgn 20-JUNE-2024

CLIENT APPROVAL



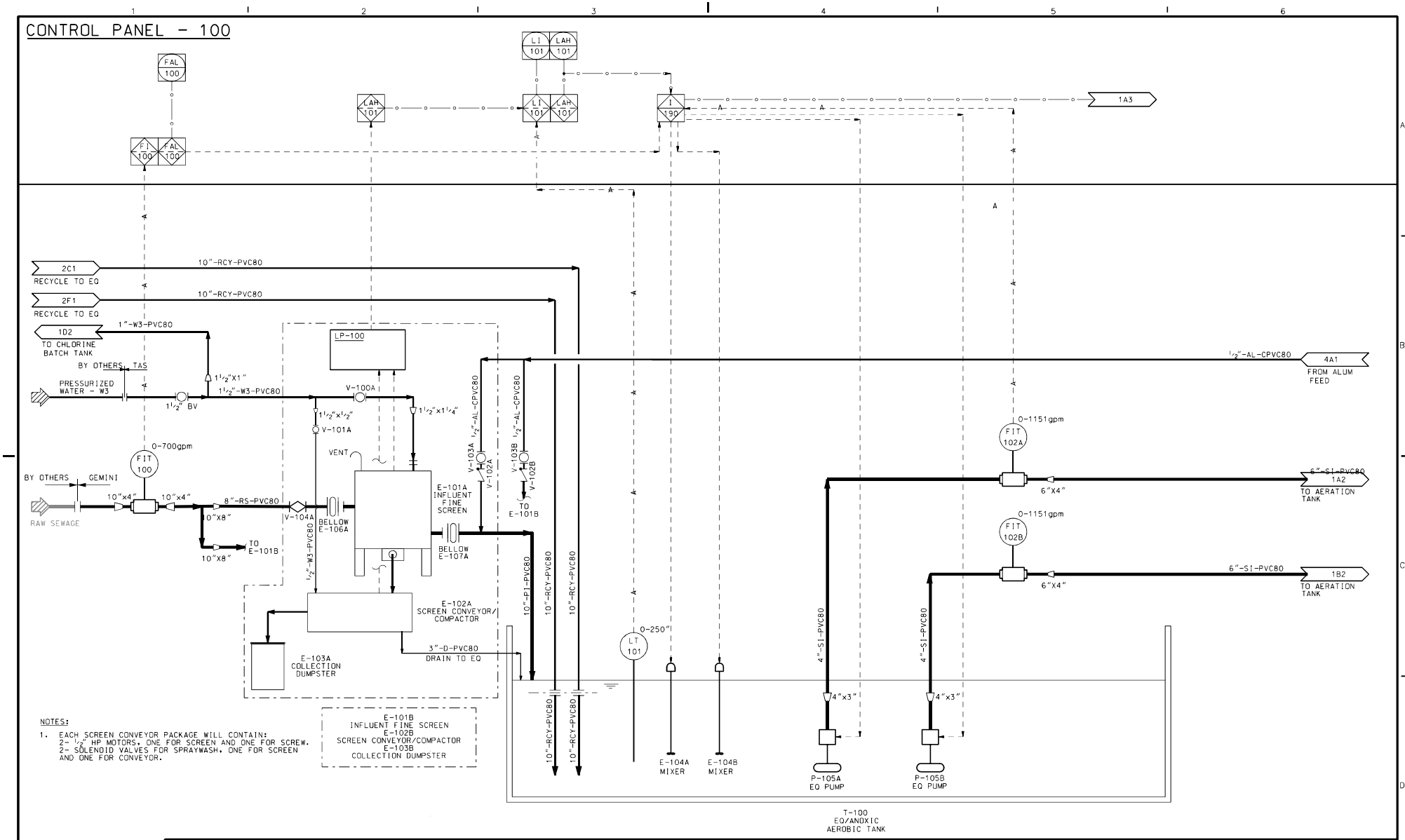
SECTION C

3/8"=1'-0" M-1P

DSGN KS FITZGERALD DR WL CLOUGH 26222pcr2m4.dlv CHK KS FITZGERALD APVD C SULLIVAN	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	GEMINI	GEMINI WATER Gainesville, Florida Certificate of Authorization #31523	PLUM CREEK UTILTY 3 WRRF2-PHASE 1 150/300K MEMBRANE BIOREACTOR TREATMENT SYSTEM	PROCESS MECHANICAL MEMBRANE BIOREACTOR WASTEWATER TREATMENT FACILITY SECTION	DWG NO. M-4P DATE DEC 2022 PROJ NO. 026-0624

26222pcr2m4.dlv 14-DEC-2022

CLIENT APPROVAL



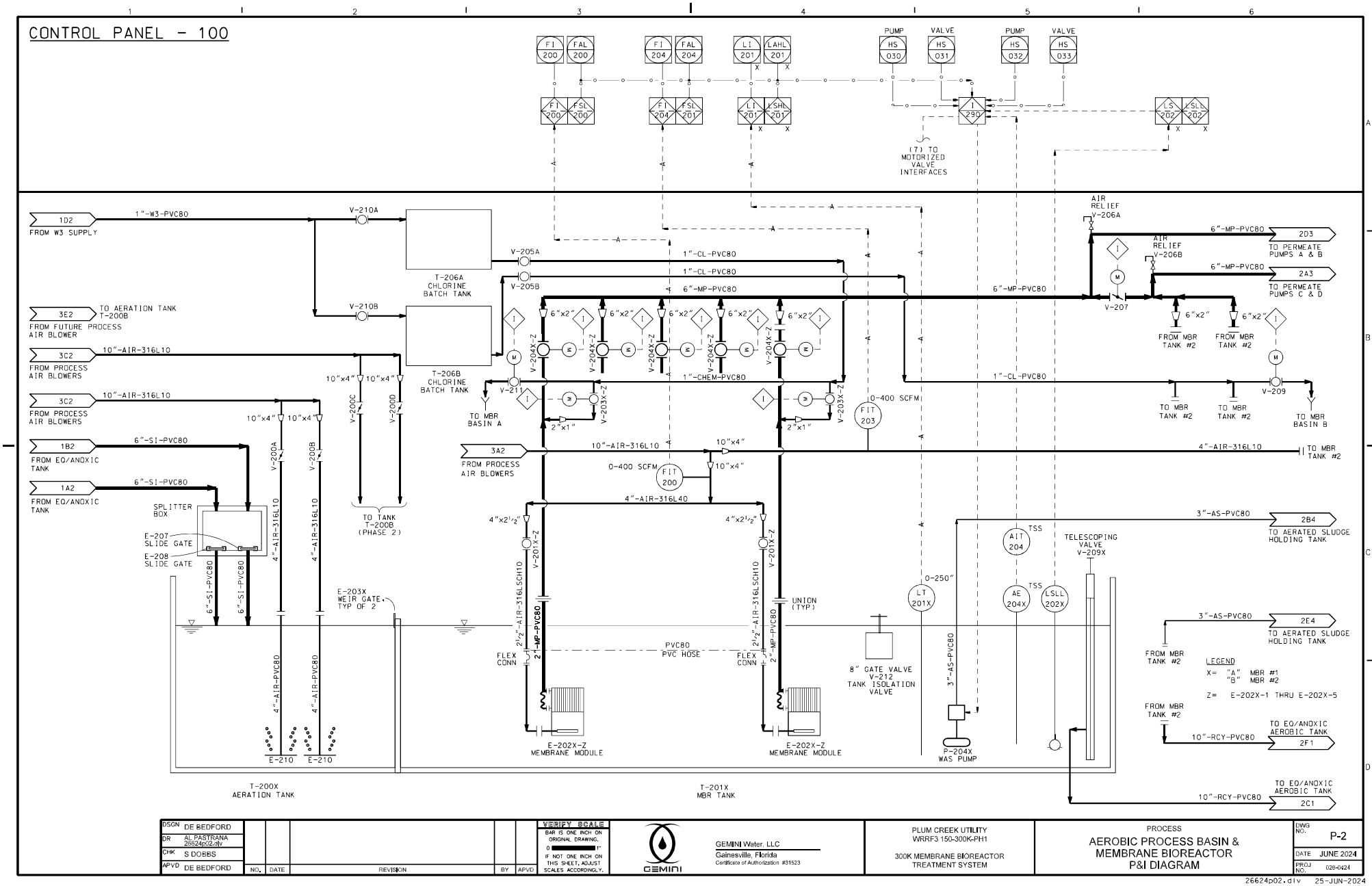
DSGN	DE BEDFORD				VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1". IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	GEMINI Water, LLC Gainesville, Florida Certificate of Authorization #31523	PLUM CREEK UTILITY WRRF3 150-300K-PH1 300K MEMBRANE BIOREACTOR TREATMENT SYSTEM
DR	AL PASTRANA 26624p01.dlv						
CHK	S DOBBS						
APVD	DE BEDFORD	NO.	DATE	REVISION	BY	APVD	

PROCESS
HEADWORKS AND EQUALIZATION/ANOXIC BASIN P&I DIAGRAM

DWG NO. P-1
DATE JUNE 2024
PROJ NO. 026-0424

26624p01.dlv 25-JUN-2024

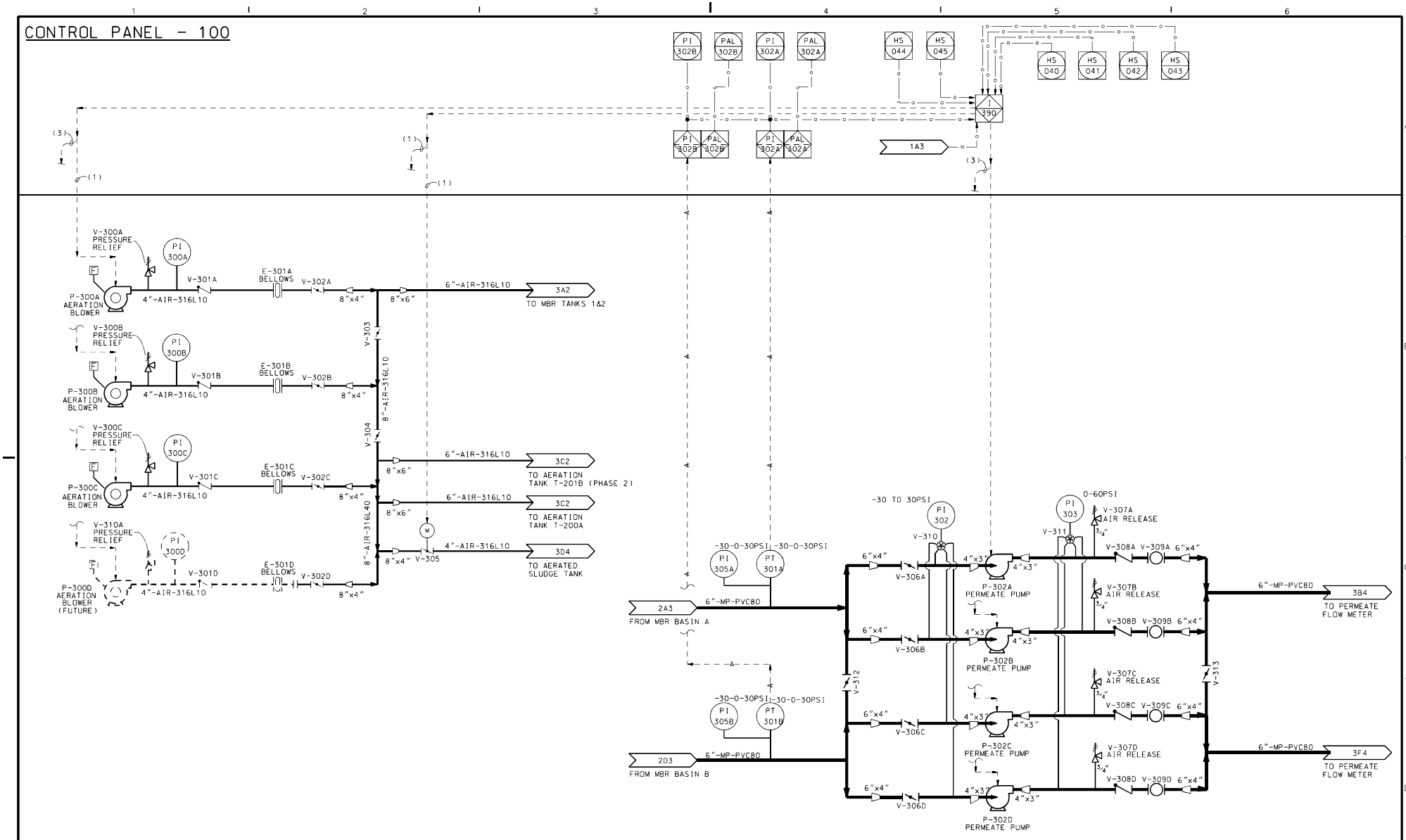
CLIENT APPROVAL



DSGN DE BEDFORD	NO.	DATE	REVISION	BY	APVD	VERIFY SCALE: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.	GEMINI Water, LLC Gainesville, Florida Certificate of Authorization #31523	PLUM CREEK UTILITY WRRF3 150-300K-PH1 300K MEMBRANE BIOREACTOR TREATMENT SYSTEM	PROCESS AEROBIC PROCESS BASIN & MEMBRANE BIOREACTOR P&I DIAGRAM	DWG NO. P-2
DR AL PASTRANA 26624c02.dlv										DATE JUNE 2024
CHK S DOBBS										PROJ NO. 026-0424
APVD DE BEDFORD										

26624p02.dlv 25-JUN-2024

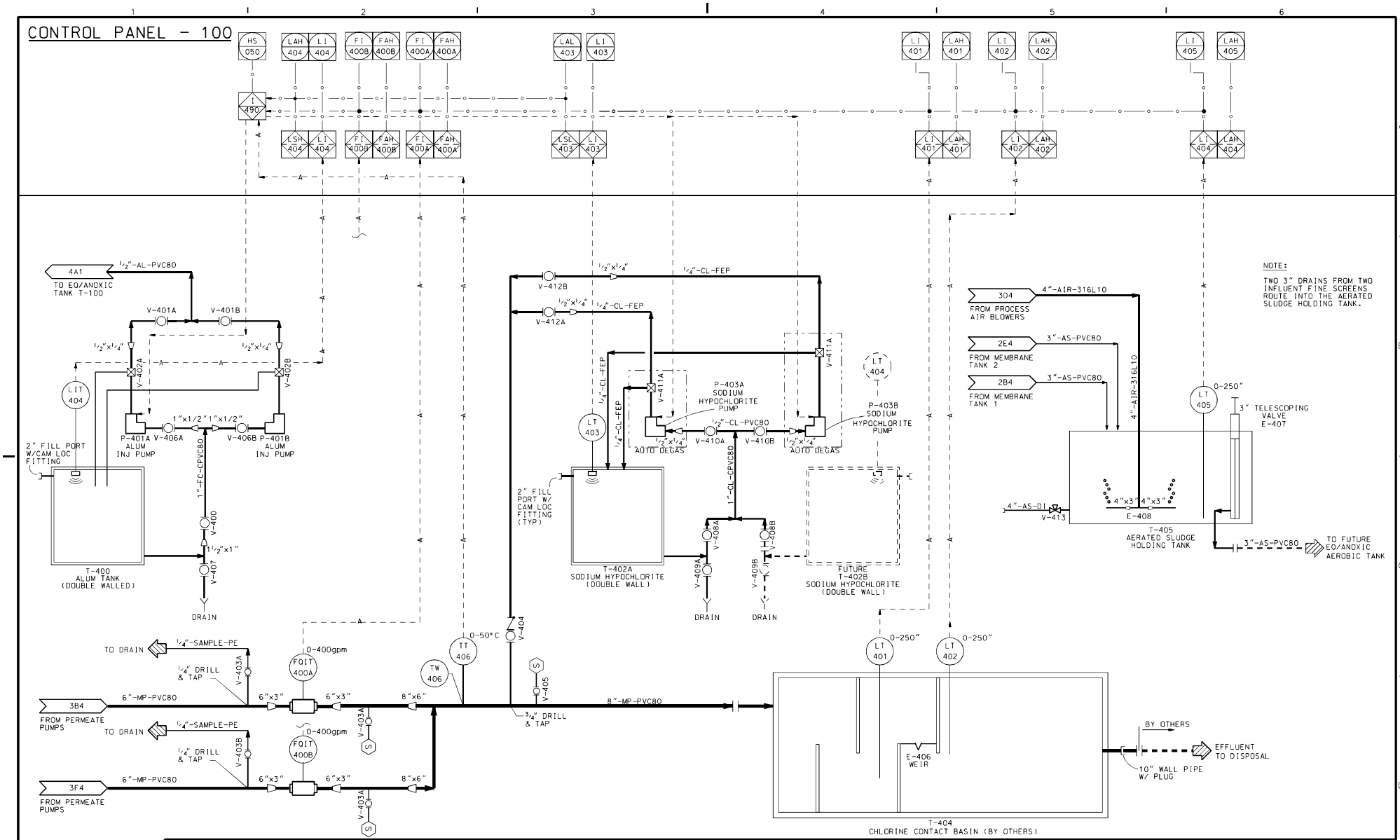
CLIENT APPROVAL



DSGN DE BEDFORD						VERIFY SCALE	GEMINI Water, LLC Gainesville, Florida Certificate of Authorization #31523	PLUM CREEK UTILITY WRRF3 150-300K-PH1 300K MEMBRANE BIOREACTOR TREATMENT SYSTEM	PROCESS AERATION BLOWERS AND PERMEATE PUMPING P&I DIAGRAM	DWG NO. P-3
DR AL PASTRANA 26624p03.dlv						BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.				DATE JUNE 2024
CHK S DOBBS										PROJ NO. 026-0424
APVD DE BEDFORD	1	4/1/21	RECORD DRAWING PER AS-BUILT CONDITIONS	WLC	CS					
	NO.	DATE	REVISION	BY	APVD					

26624p03.dlv 25-JUN-2024

CLIENT APPROVAL

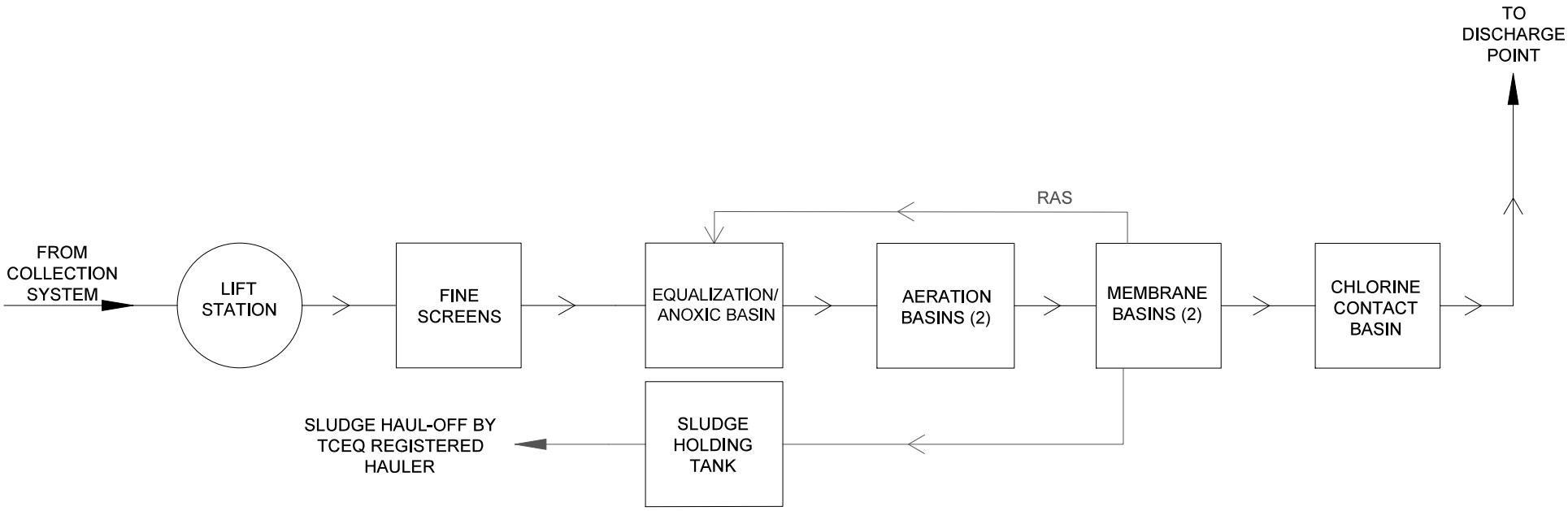


DSGN	DE BEDFORD					VERIFY SCALE	GEMINI Water, LLC Gainesville, Florida Certificate of Authorization #31523	PLUM CREEK UTILITY WRRF3 150-300K-PH1 300K MEMBRANE BIOREACTOR TREATMENT SYSTEM	PROCESS CHEMICAL FEED, CCB AND AERATED SLUDGE HOLDING TANK P&I DIAGRAM	DWG NO. P-4 DATE JUNE 2024 PROJ NO. 026-0424
DR	AL PASTRANA 26624p04.dlv					BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.				
CHK	S DOBBS									
APVD	DE BEDFORD	NO.	DATE	REVISION	BY	APVD				

26624p04.dlv 25-JUN-2024

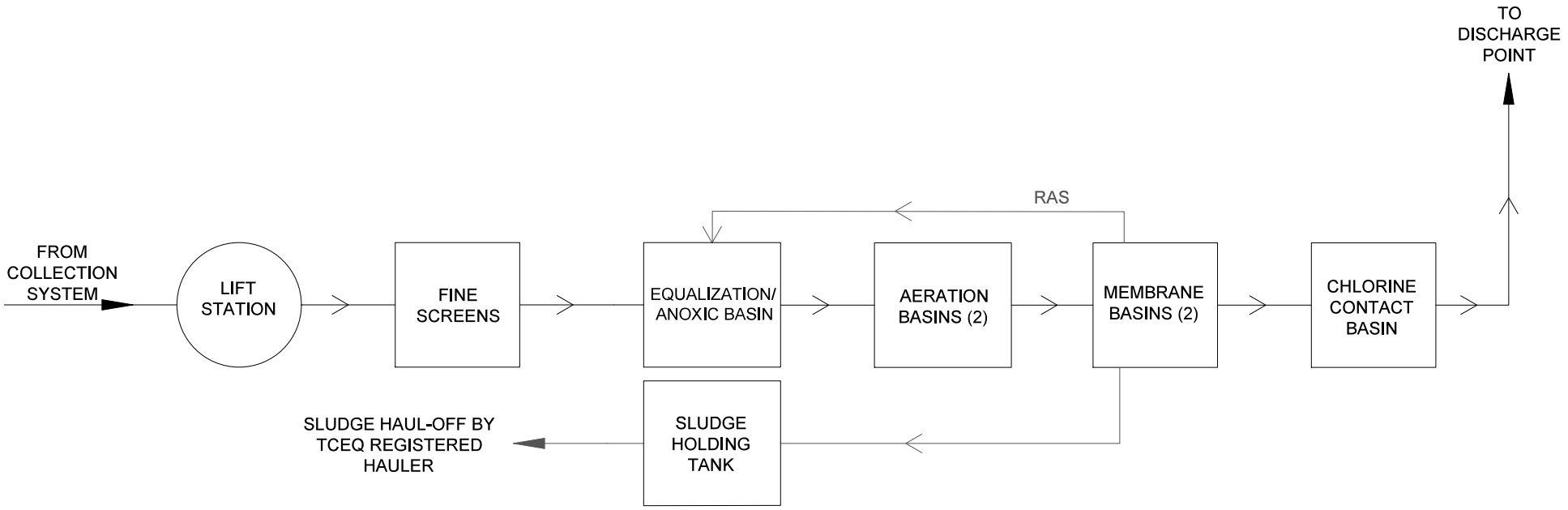
CLIENT APPROVAL

DOMESTIC TECHNICAL REPORT 1.0
ATTACHMENT 2.C
PROCESS FLOW DIAGRAM



PCU WRRF 3
FLOW DIAGRAM - PHASE 1 (0.15 MGD)
DECEMBER 2024

Southwest Engineers
307 Saint Lawrence St.
Gonzales, TX 78629
p: 830.672.7546 f: 830.672.2034
www.swengineers.com
TBPELS #F-1909
Gonzales • Buda • Bastrop • Round Rock



PCU WRRF 3
FLOW DIAGRAM - PHASE 2 (0.30 MGD)
DECEMBER 2024

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Gonzales, TX 78629
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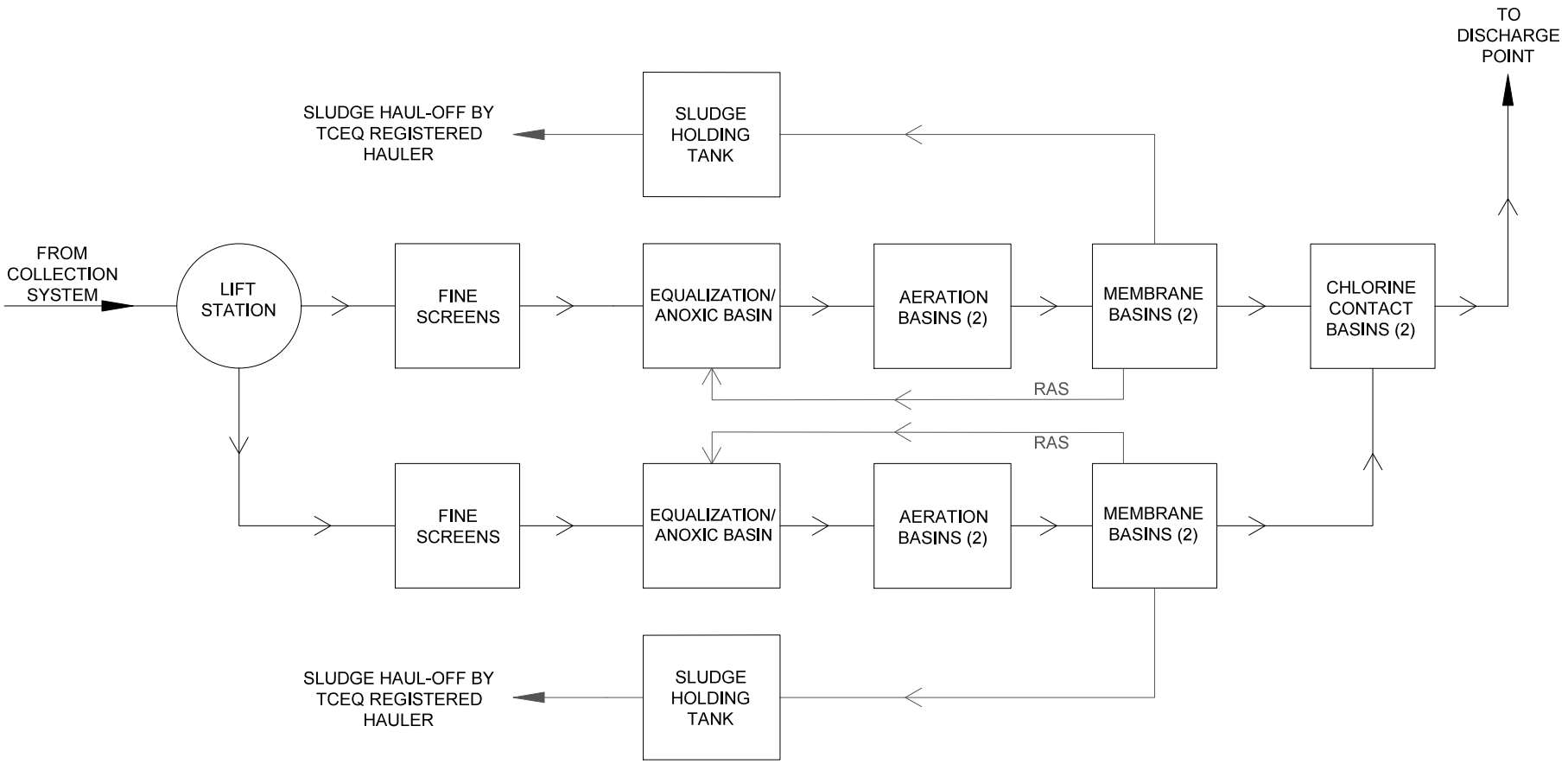

PCU WRRF 3
FLOW DIAGRAM - PHASE 3 (0.60 MGD)
DECEMBER 2024

Southwest Engineers
307 Saint Lawrence St.
Gonzales, TX 78629
p: 830.672.7546 f: 830.672.2034
www.swengineers.com
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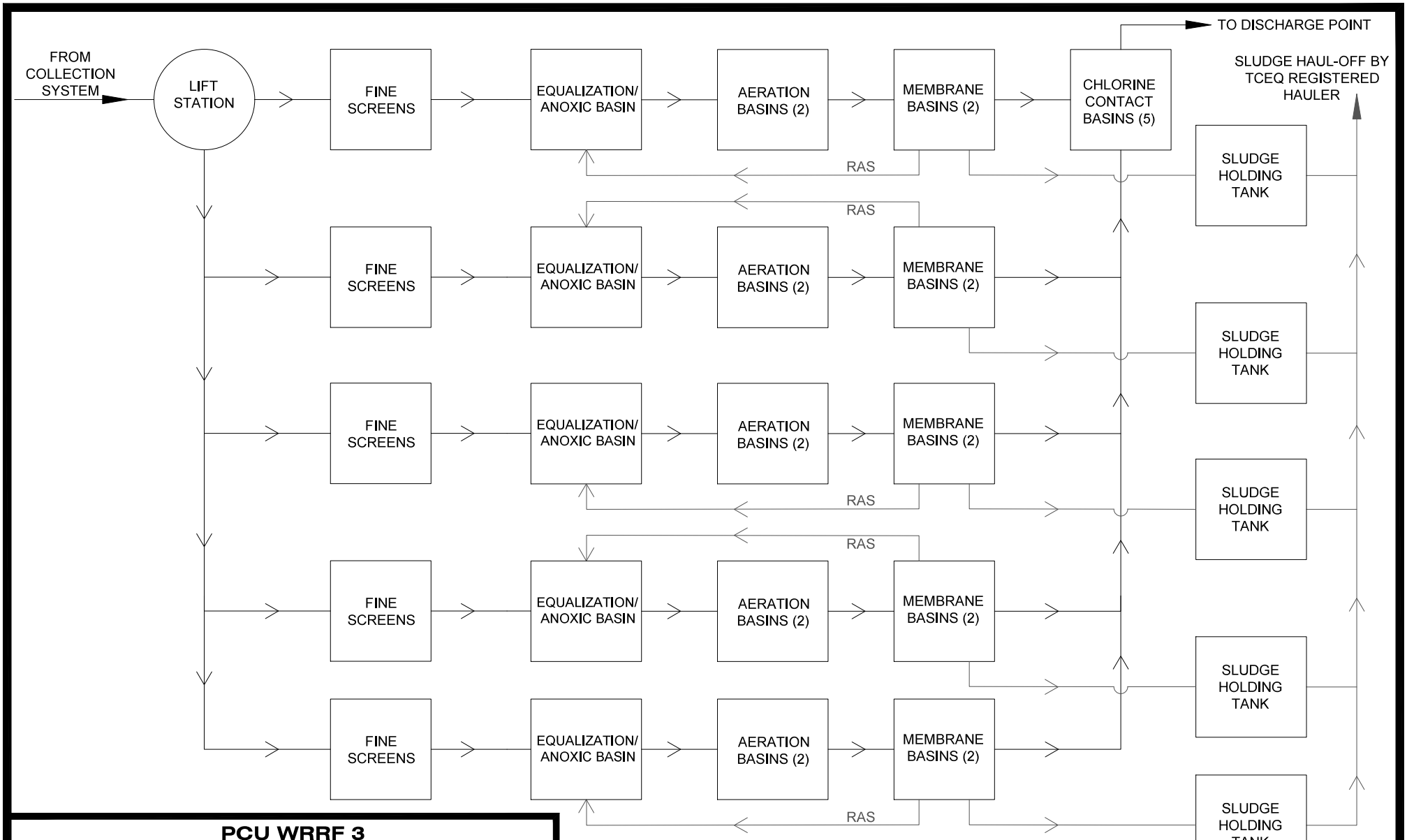

PCU WRRF 3
FLOW DIAGRAM - PHASE 4 (1.55 MGD)
DECEMBER 2024

Southwest Engineers
307 Saint Lawrence St.
Gonzales, TX 78629
p: 830.672.7546 f: 830.672.2034
www.swengineers.com
TBPELS #F-1909
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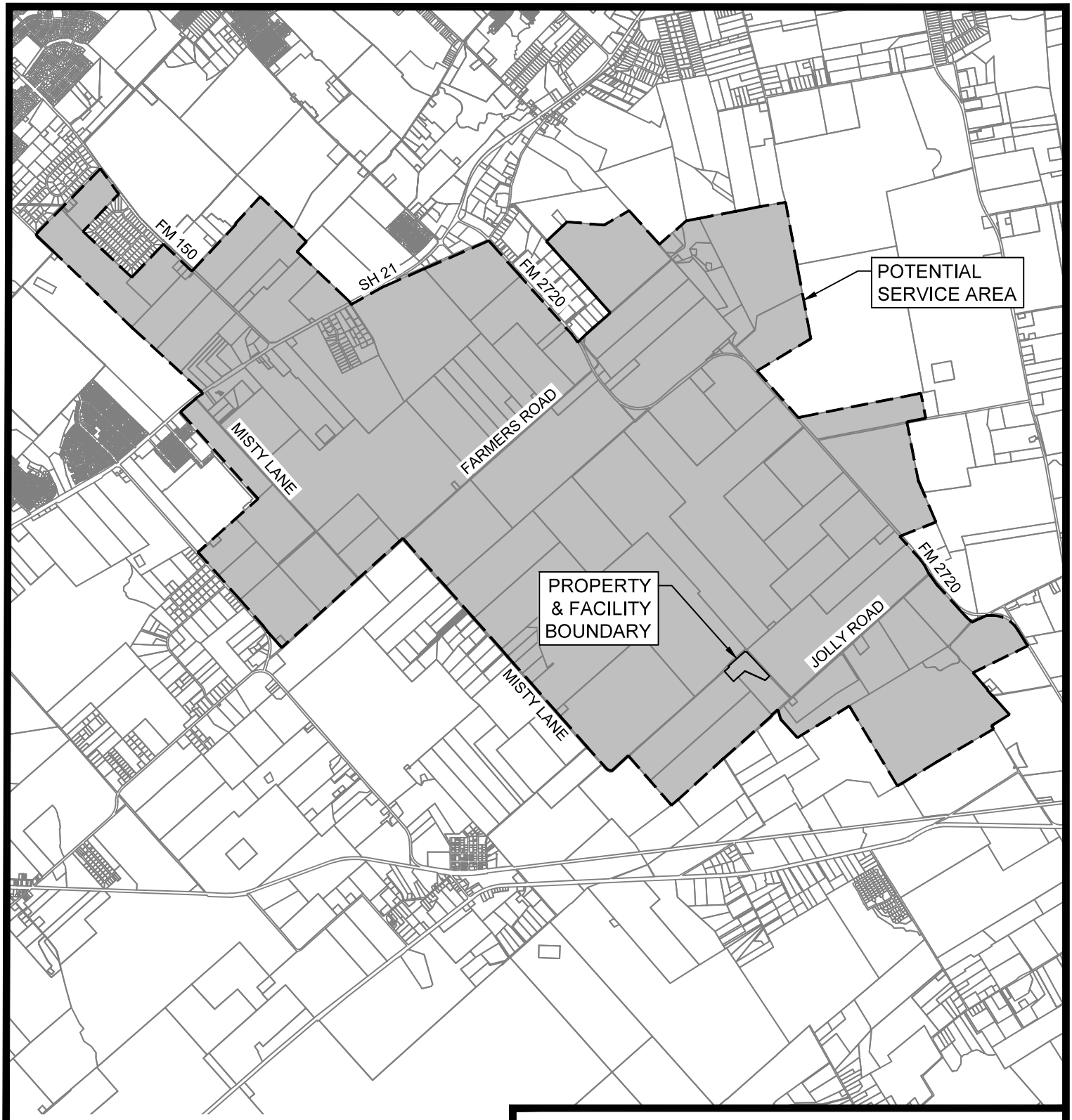
DOMESTIC TECHNICAL REPORT 1.0
ATTACHMENT 3
SITE DRAWING



N

5,000' 2,500' 0 5,000' 10,000'

SCALE: 1" = 5000'

PCU WRRF 3 - SITE DRAWING

DECEMBER 2024

PLUM CREEK UTILITY COMPANY

Southwest Engineers

307 Saint Lawrence St.
Gonzales, TX 78629
p: 830.672.7546 f: 830.672.2034
www.swengineers.com
TBPELS #F-1909
Gonzales • Buda • Bastrop • Round Rock

O:\CompanyData\Clients\0762 - BVRT Water Resources, LP\0762-160-24 - PCU WRRF 3 Minor Amendment\Work in Progress\Permit Exhibits.dwg

DOMESTIC TECHNICAL REPORT 1.0
ATTACHMENT 6.A
SUMMARY TRANSMITTAL LETTER

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 24, 2024

Allison M. Nieto, P.E.
SOUTHWEST ENGINEERS, INC.
307 Saint Lawrence Street
Gonzales, TX 78629

Re: Plum Creek Utility Company LLC
PCU WRRF 3 - Phase 1
Permit No. WQ0015635-002
WWPR Log No. 1024/054
CN605447341, RN110716727
Caldwell County

Dear Ms. Nieto:

We received the project summary transmittal letter dated 10/7/2024.

The Texas Commission on Environmental Quality (TCEQ) rules which regulate the design, installation, and testing of domestic wastewater treatment projects are found in 30 TAC, Chapter 217, titled Design Criteria for Wastewater Systems.

Section 217.6(d), relating to case-by-case reviews, states in part that upon receipt of a summary transmittal letter, the executive director may approve of the project without reviewing a complete set of plans and specifications.

Under the authority of 30 TAC §217.6(e), a technical review of complete plans and specifications for this project is not required, and **the project proposed in the summary transmittal letter is approved for construction. Please note that this conditional approval does not relieve the applicant of any responsibilities to obtain all other necessary permits or authorizations, such as a wastewater treatment permit or any other authorization as required by Chapter 26 of the Texas Water Code.** Below are provisional requirements in 30 TAC Chapter 217, which must be met as a condition of approval. These items are provided as a reminder. If you have already met these requirements, please disregard this additional notice.

- You must keep records of certain materials for the life of the project and be prepared to 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 30 TAC Chapter 217. All plans and specifications must conform to any wastewater discharge requirements authorized in a permit issued by TCEQ. Specific items that must be addressed in the engineering report are discussed in 30 TAC §217.6(d). Additionally, the engineering report must include all constants, graphs, equations, and calculations needed to show substantial compliance with 30 TAC Chapter 217. The items which shall be included in the summary transmittal letter are addressed in 30 TAC §217.6(d)(1)-(9).

- Any deviations from 30 TAC Chapter 217 shall be disclosed in the summary transmittal letter, and the technical justifications for those deviations shall be provided in the engineering report. Any deviations from 30 TAC Chapter 217 shall be based on the best professional judgement of the licensed professional engineer sealing the materials and the engineer's judgement that the design would not result in a threat to public health or the environment.

- Any variance from a 30 TAC Chapter 217 requirement disclosed in your summary transmittal letter is approved. If in the future, additional variances from the requirements in 30 TAC Chapter 217 are desired for the project, each variance must be requested in writing by the design engineer. TCEQ will then consider granting a written approval to the additional variance requests for the specific project and the specific circumstances.

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

This approval does not mean that future projects will be approved without a complete plans and specifications review. TCEQ will provide notification whenever a project is to undergo a complete plans and specifications review. Please note 30 TAC §217.7(a) 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 me at (512) 239-4552.

Sincerely,

Louis C. Herrin, III, P.E.
Water Quality Division (MC 148)
Texas Commission on Environmental Quality

LCHIII/ec/tc

cc: TCEQ, Region 11 Office

DOMESTIC TECHNICAL REPORT 1.0
ATTACHMENT 6.C
OTHER REQUIREMENTS

Dana Garrett
111 S. Church St.
Lockhart TX 78644
danagarrett@post-register.com

PCU PLUM CREEK

April 1, 2025

Re: Plum Creek Utility LLC
PCU-WRRF3 Mediated Settlement Agreement Updates
TPDES Permit No. WQ0015064001

Dear Dana,

Thank you for taking the time to meet with us to discuss operations at the Plum Creek wastewater treatment facility (the "Facility") and the follow up to the January 10, 2014, Mediated Settlement Agreement. As we discussed, there have been some changes to what was originally planned for the Facility by Walton Texas when the wastewater discharge permit was acquired by Plum Creek Utility. The following is a summary of the elements of the Mediated Settlement Agreement that have been changed as we have agreed:

1. Plum Creek Utility has made a commitment to recycling treated effluent as beneficial reuse water and to seek reuse customers including farmers, ranchers, construction, etc.

2. In lieu of a retention pond to capture any unexpected releases from the Facility, Plum Creek will install an elevated berm to capture any unexpected releases of wastewater from the Facility. In addition, the berm will protect the flood plain and floodway (see 'Grading Plan with Berm' drawing attached). The elimination of the retention pond also eliminates any impact to or disruption of the local waterfowl population, leaving intact their pre-existing migration patterns. The berm would have the capacity of 133% of the daily average flow, up to a maximum of 500,000 gallons.

3. Commitment to producing a higher quality of wastewater effluent that meets the more stringent 5/5/2/0.5 standards in contrast to the 10/15/2/0.5 limits authorized in the original discharge permit.

Plum Creek would appreciate your acknowledgement of the changes outlined above and your concurrence that these changes are acceptable to you as being consistent with the intent of the Mediated Settlement Agreement. Please acknowledge your consent by providing your signature below:

X _____ 4/3/2025

Dana Garrett

PLUM CREEK
UTILITY COMPANY LLC

Plum Creek appreciates your cooperation and we look forward to working with you in the future.

Respectfully,

Bill Fry

Bill Fry
VP of Operations
billf@bvrtwater.com