How to Handle Wastewater Treatment at a Remote Glamping Venue

Hugh B. Mickel, P.E.

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Hugh B. Mickel, P.E.

Engineered Systems Sales Director

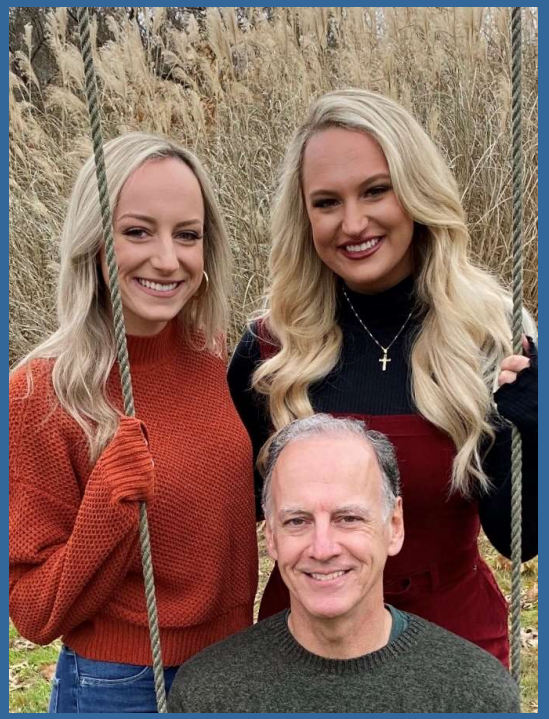
B.S. Civil Engineering, Purdue University

Registered Professional Engineer since 1990

Reside in Columbus, IN

“Girl dad”

INFILTRATOR®
water technologies



Agenda

- Intro to Onsite Wastewater Treatment Systems

- What to do if you can’t reach a municipal sewer connection?

Company Background

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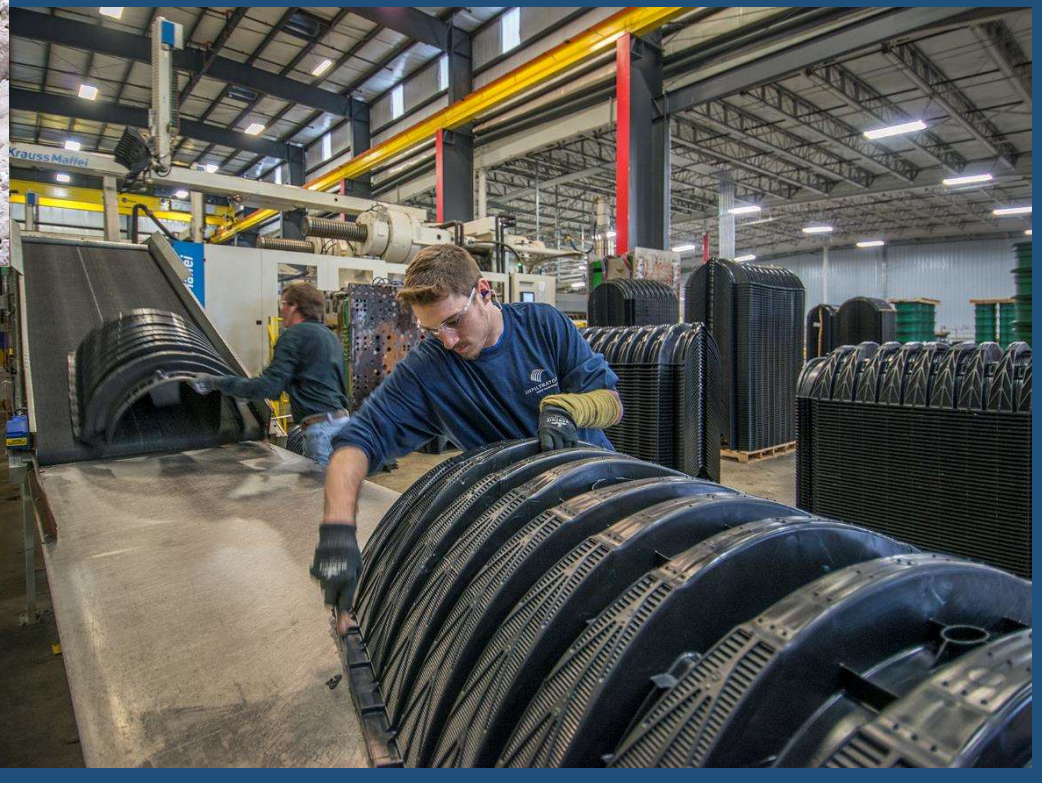
water technologies



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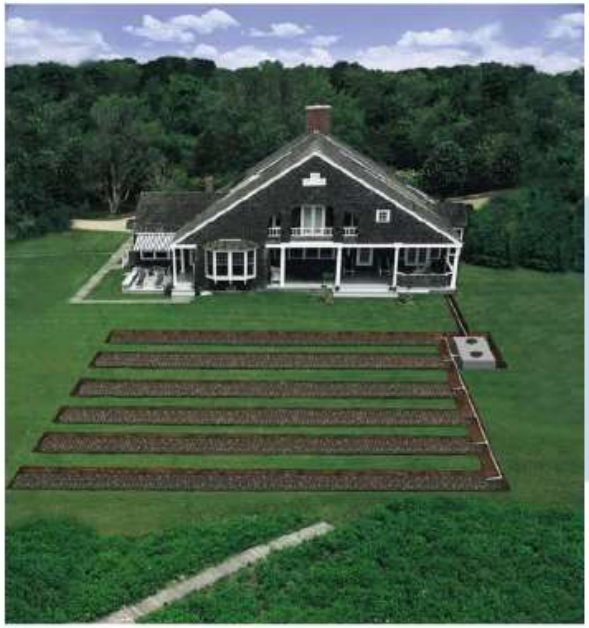
water technologies


One-third of
new homes
built in the U.S.
use onsite wastewater
treatment systems


Traditional Gravel
and Pipe System

Traditional vs. Infiltrator Chambers

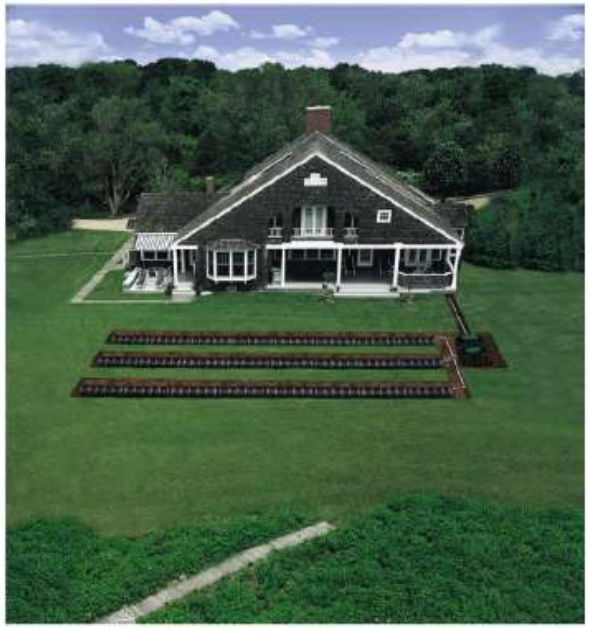
Traditional Leachfield System



Key Benefits Driving Conversion

- ✓ Improved infiltration performance and volume capacity results in footprint reductions of up to 40%
- ✓ Significant benefits to contractor – rapid installation time, lower labor and machinery cost, and more control on timing
- ✓ Increased regulatory acceptance
- ✓ Environmental and cost benefits

Infiltrator Leachfield System



Significant Environmental Benefits of Decentralized vs. Centralized Systems

Wastewater Treatment Approaches

Centralized (Municipal WWTP)

Onsite Individual Septic

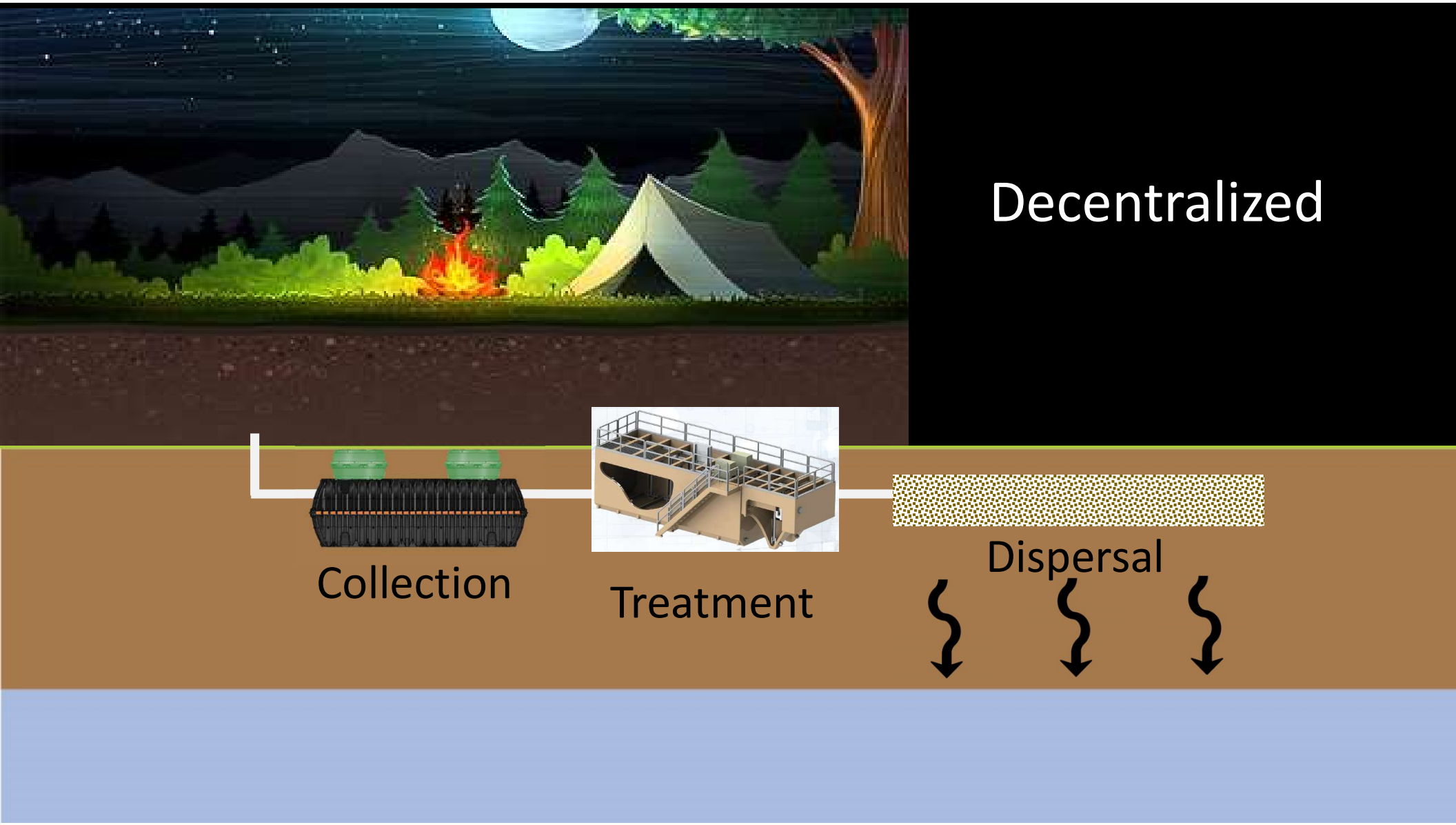
Decentralized

Decentralized Wastewater Treatment

- The collection, treatment, and dispersal of wastewater at or near its point of origin
- An alternative to conventional gravity sewers, force mains, lift stations and Wastewater Treatment Plants

Decentralized Benefits:

- Water reuse
- Lower life-cycle cost
- Build on land not accessible to public sewer infrastructure
- Phased construction


Decentralized
Collection
Treatment
Dispersal

1. Collection

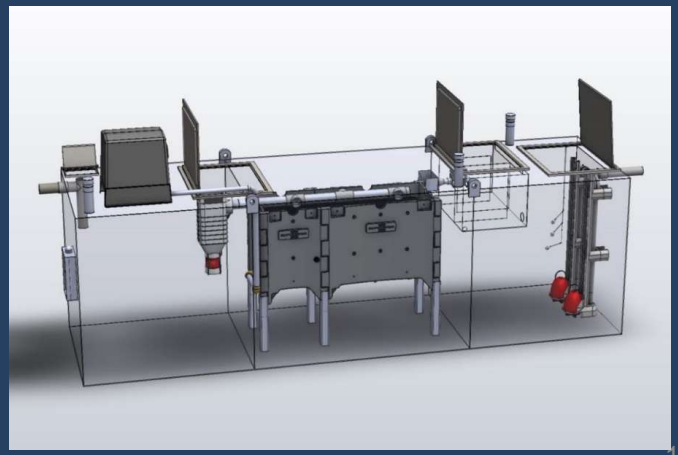
- **Gravity, shallow pressure sewer or vacuum system**

- **System must be watertight**

2. Onsite Treatment:

- -Primary Treatment & Dispersal?

- -Advanced Treatment with FBBR, MBR, MBBR, Extended Aeration, Sand Filters, Etc



Decentralized System design may include septic tanks

The septic tank offers primary treatment:

- Reduces BOD
- Reduces TSS
- Reduces FOG

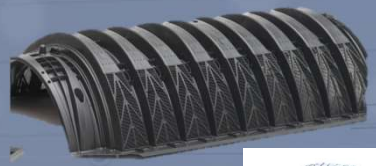
3. Dispersal

Dispersal (drainfields, spray or drip irrigation, recharge wells, etc)

Soil Application Rate is function of soil properties, GWT, local & state codes

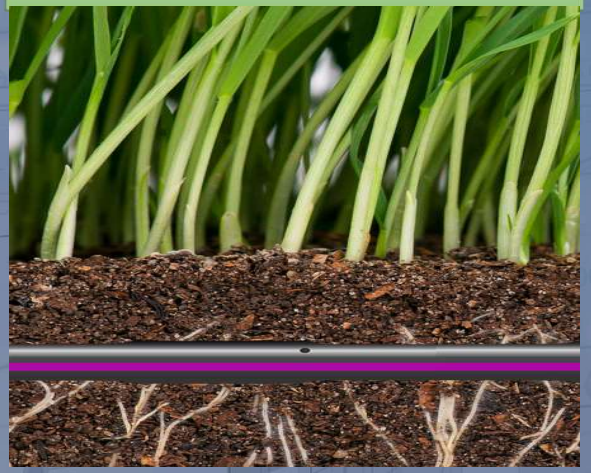
Subsurface Dispersal Systems

Chambers / Synthetic Aggregate Systems



Low Pressure Pipe Systems

Drip Dispersal Systems



3. Dispersal

*** Direct discharge into surface waters is an option, but the wastewater effluent must be disinfected and the system will likely need to be permitted.**

Hire a local Civil Engineering firm who specializes in Land Development

- Surveying crew?
- Experts in site design & permitting
- May offer construction management if needed

Individual septic? S.T.E.P. (septic tank effluent pump)**?**
Subsurface discharge? Direct discharge?

Dispersal System located in a central area

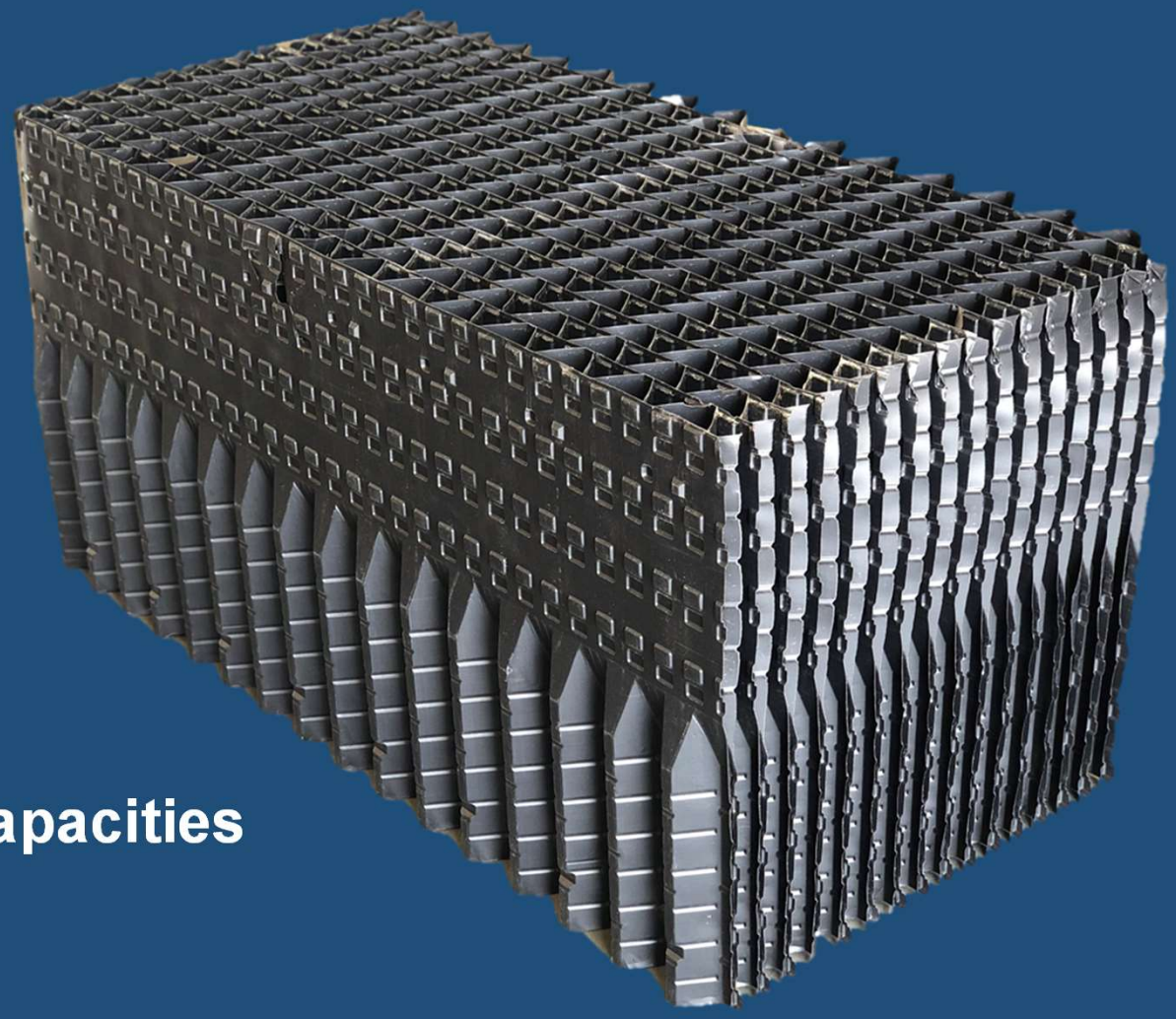
Collection system to a WW Treatment Plant?

Package Plants

Collection system to an ECOPOD?

ECOPOD Media

Vertical Fixed Film



Removal Capacities

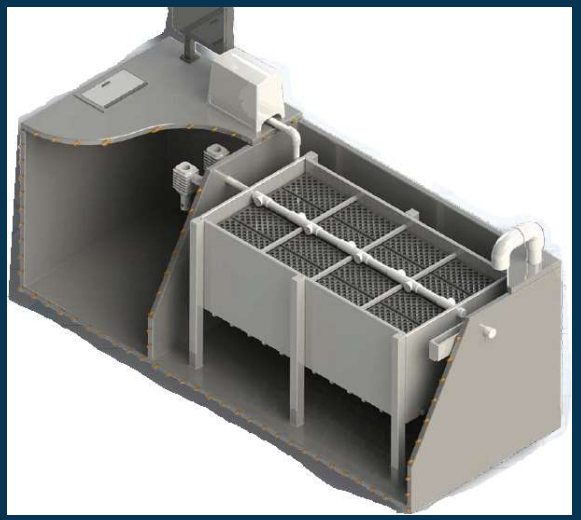
- BOD $_5$
- TSS
- Ammonia

Tank Options

Precast Concrete

Fiberglass

Cast-in-place Concrete

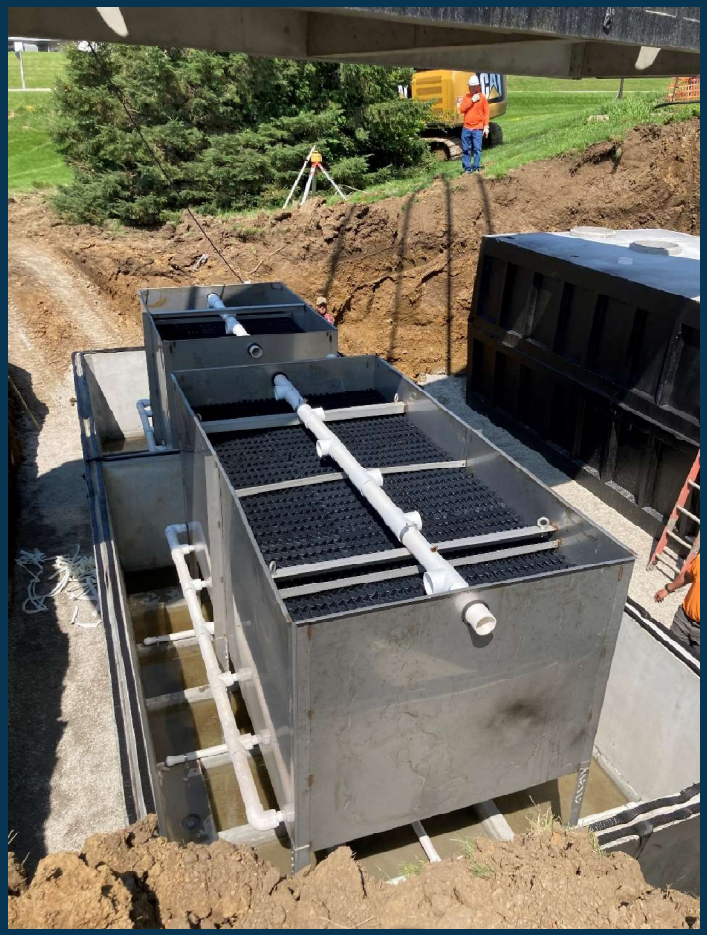


ECOPOD Project Example: Joshua Tree AutoCamp

Project Profile – Beyonder Campground, Iowa

- Oxford, IA
- 10,000 GPD Plant
- NH3 Limit: 1.2 mg/L
- ECOPOD E900D’s
- Seasonal Application

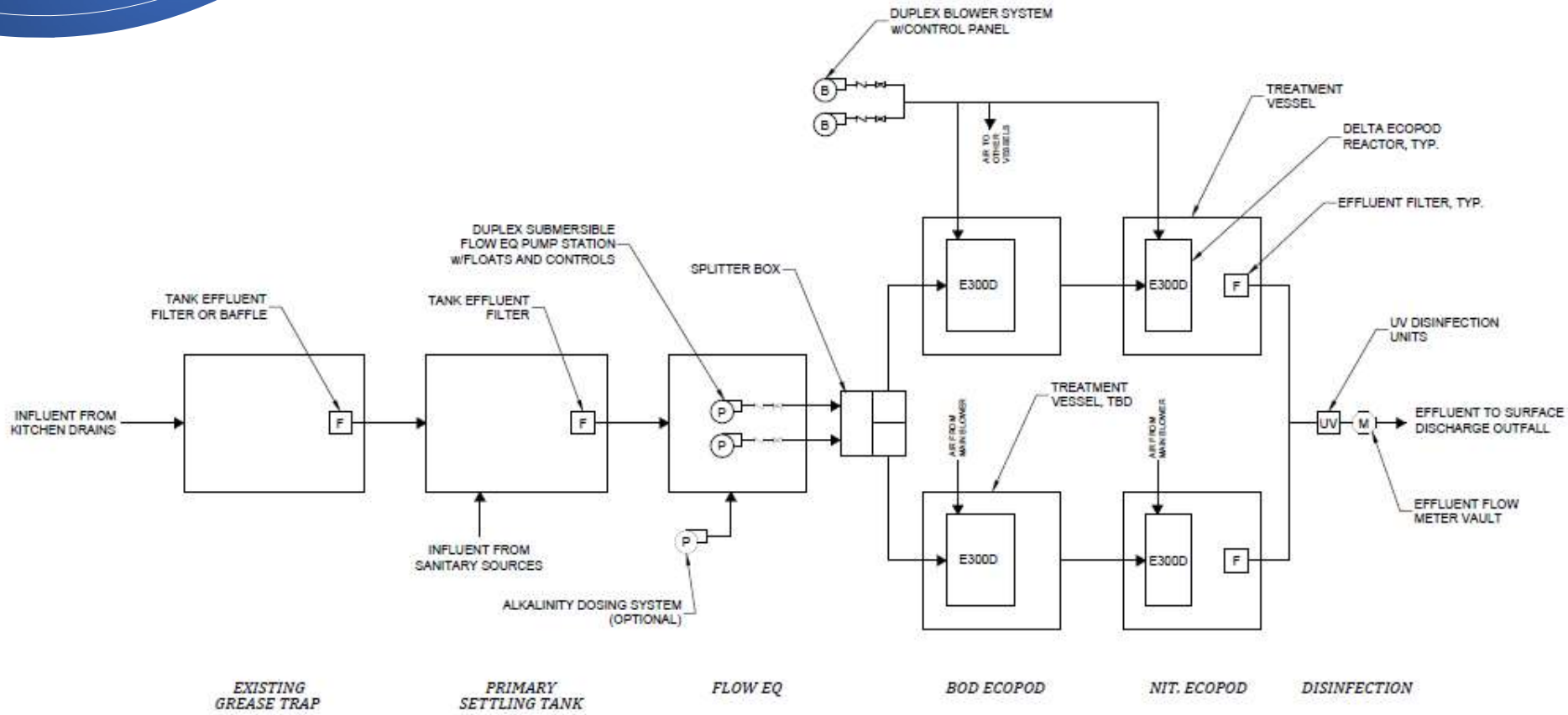
Project Profile – Beyonder Campground, Iowa



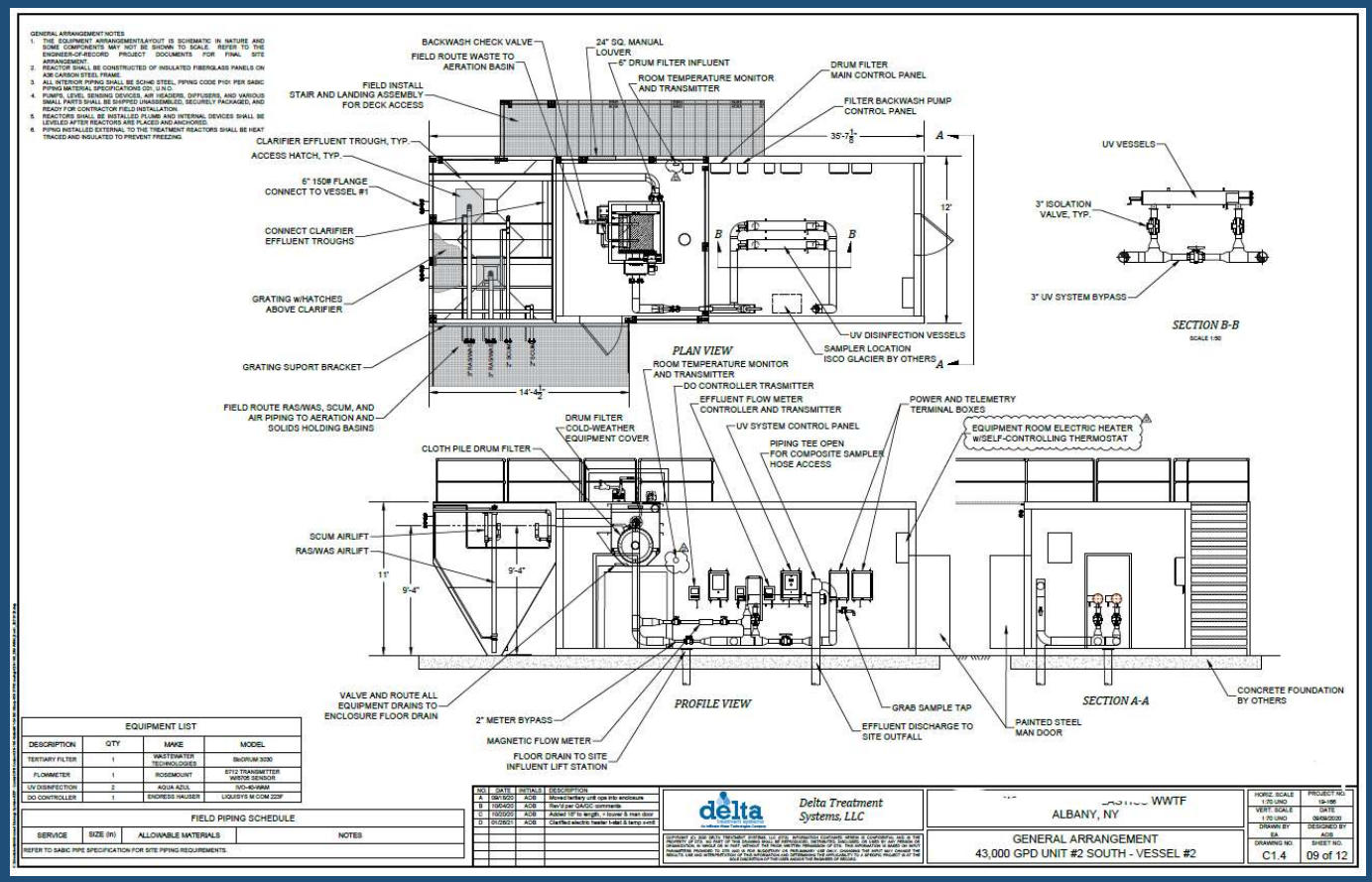
- Oxford, IA
- 10,000 GPD Plant
- NH3 Limit: 1.2 mg/L
- ECOPOD E900D’s
- Seasonal Application

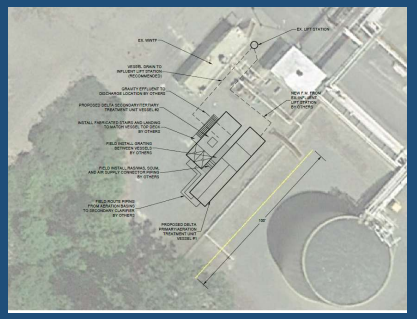
Civil Engineering

Process Diagram

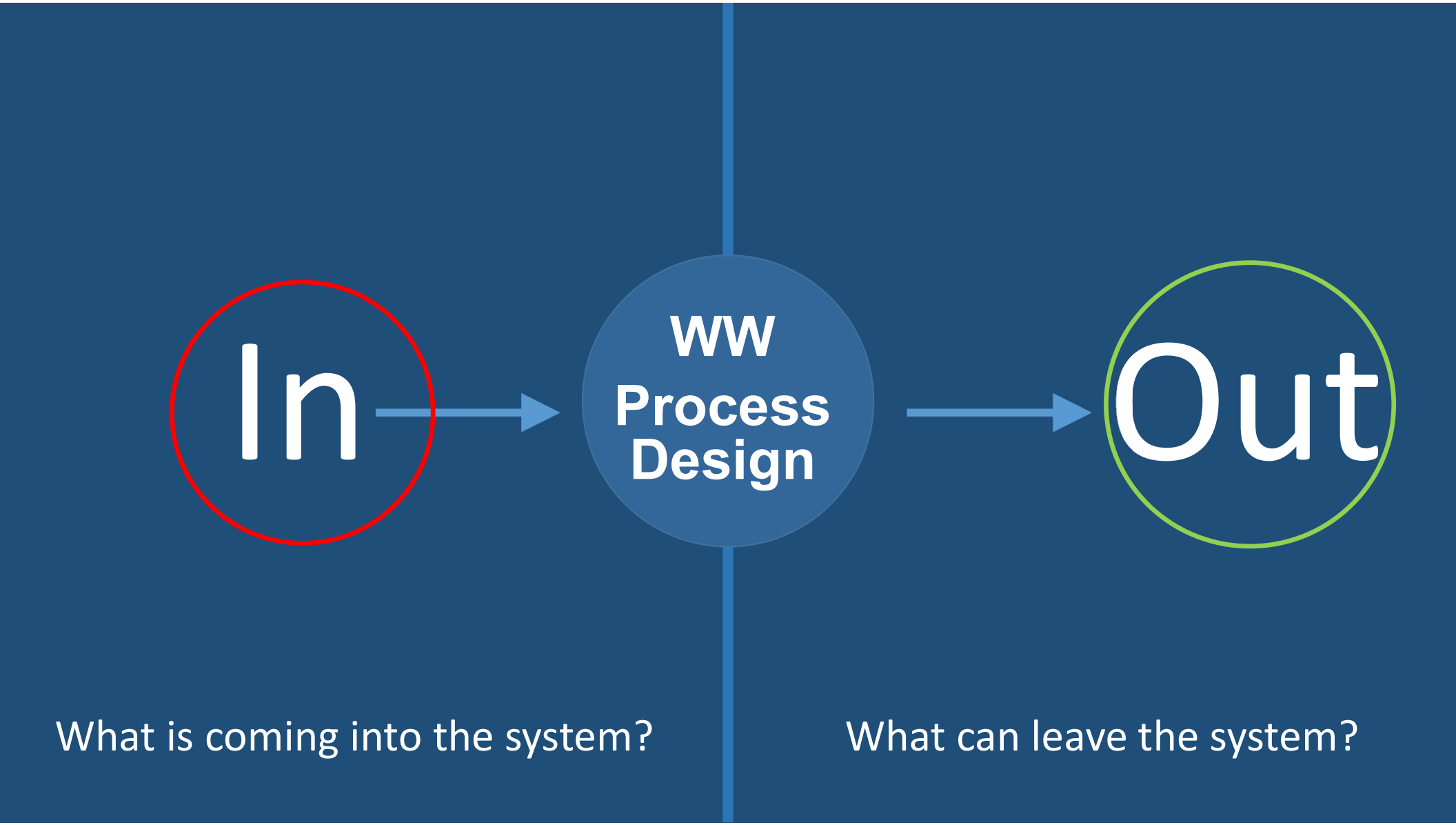


General Arrangement Drawing





- Central NY
- 65,000 GPD
- Two Phases
- 4 Treatment Vessels

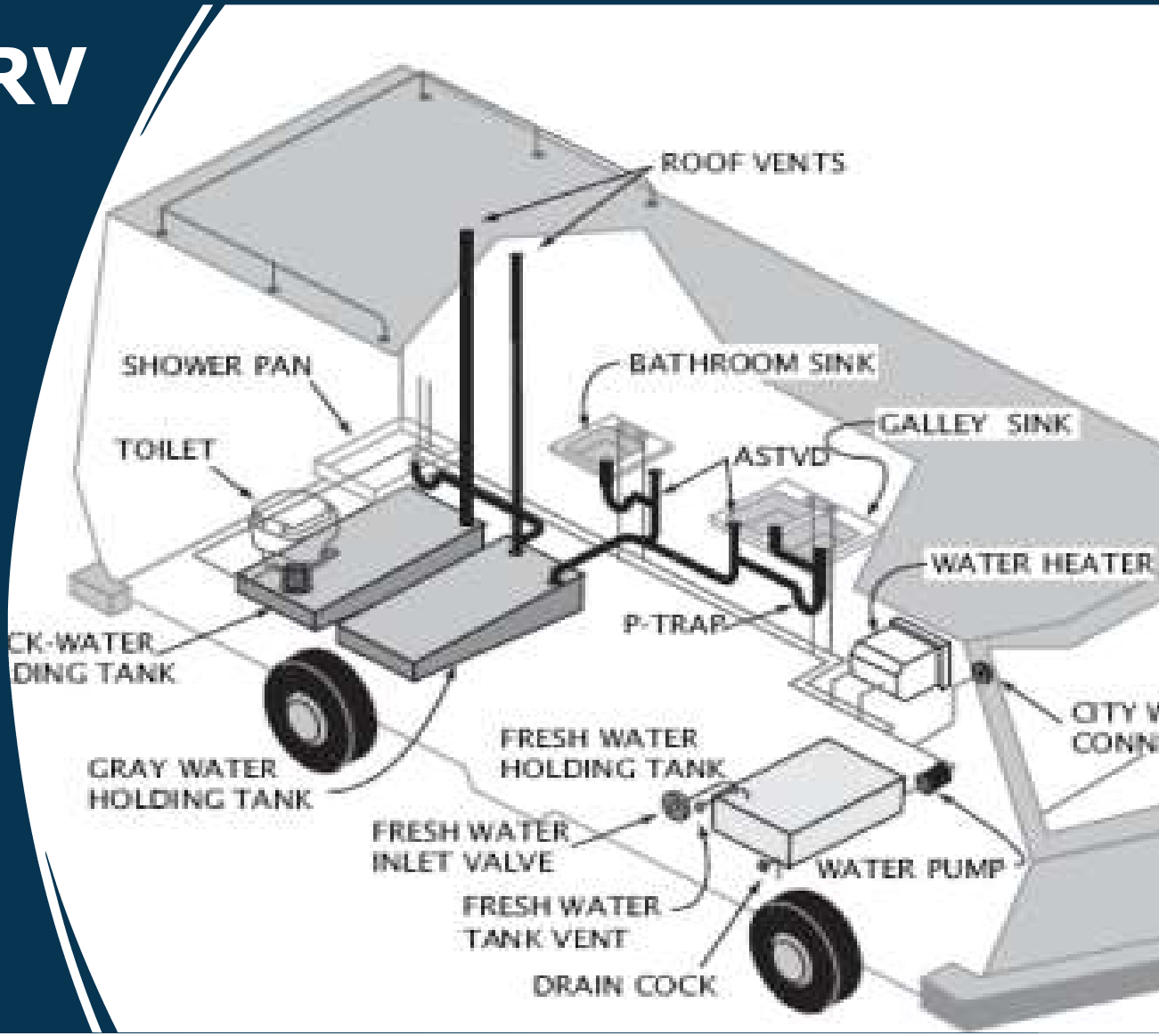

In
WW
Process
Design
Out
What is coming into the system?
What can leave the system?

In

Glamping venue WW Strength and Flow Rates vary widely

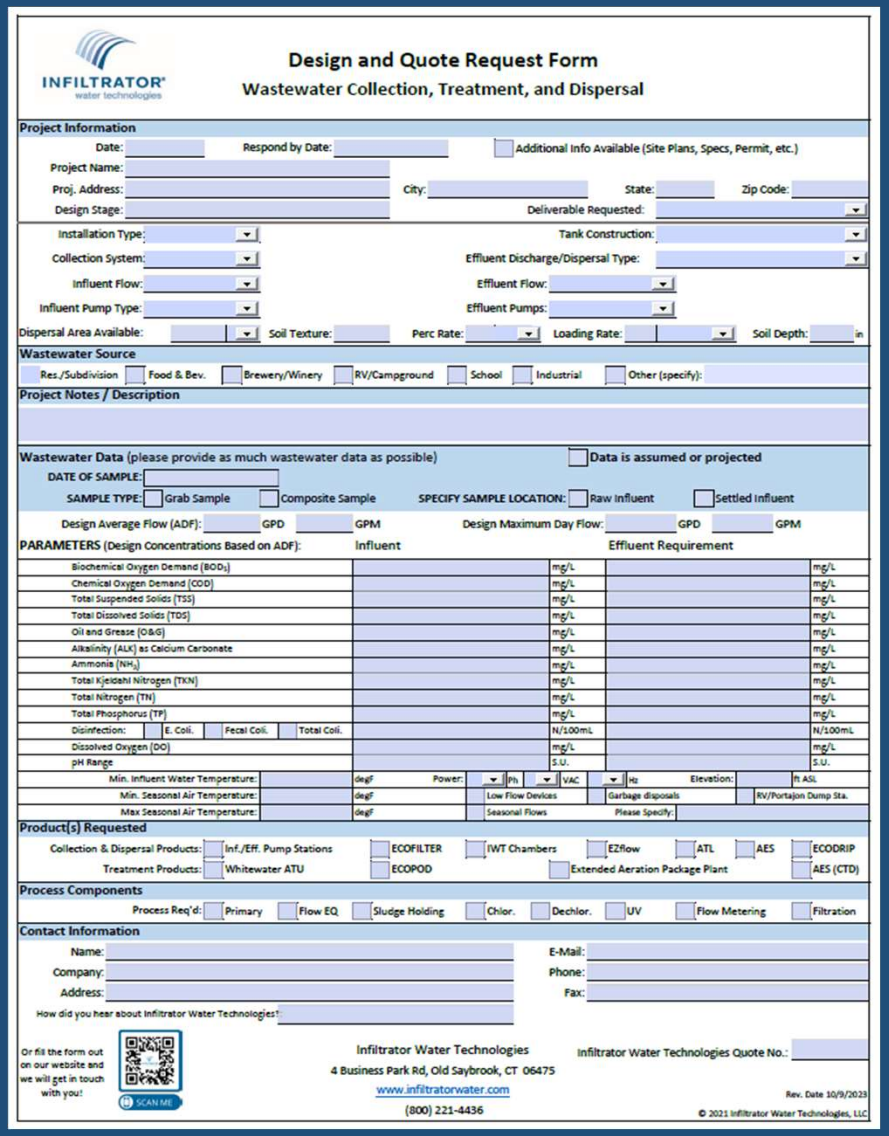
Water Use in an RV

Low Water Use = Higher Strength Wastewater



We work with the local Civil Engineering firm

Design & Quote Request Form



INFILTRATOR water technologies

Design and Quote Request Form

Wastewater Collection, Treatment, and Dispersal

Project Information

Date: | Respond by Date: | ☐ Additional Info Available (Site Plans, Specs, Permit, etc.)

Project Name:

Proj. Address: | City: | State: | Zip Code:

Design Stage: | Deliverable Requested:

Installation Type: | Tank Construction:

Collection System: | Effluent Discharge/Dispersal Type:

Influent Flow: | Effluent Flow:

Influent Pump Type: | Effluent Pumps:

Dispersal Area Available: | Soil Texture: | Perc Rate: | Loading Rate: | Soil Depth: in

Wastewater Source

☐ Res./Subdivision ☐ Food & Bev. ☐ Brewery/Winery ☐ RV/Campground ☐ School ☐ Industrial ☐ Other (specify):

Project Notes / Description

Wastewater Data (please provide as much wastewater data as possible) ☐ Data is assumed or projected

DATE OF SAMPLE:

SAMPLE TYPE: ☐ Grab Sample ☐ Composite Sample SPECIFY SAMPLE LOCATION: ☐ Raw Influent ☐ Settled Influent

Design Average Flow (ADF): GPD GPM Design Maximum Day Flow: GPD GPM

PARAMETERS (Design Concentrations Based on ADF):	Influent		Effluent Requirement	
Biochemical Oxygen Demand (BOD_5)		mg/L		mg/L
Chemical Oxygen Demand (COD)		mg/L		mg/L
Total Suspended Solids (TSS)		mg/L		mg/L
Total Dissolved Solids (TDS)		mg/L		mg/L
Oil and Grease (O&G)		mg/L		mg/L
Alkalinity (ALK) as Calcium Carbonate		mg/L		mg/L
Ammonia (NH_3)		mg/L		mg/L
Total Kjeldahl Nitrogen (TKN)		mg/L		mg/L
Total Nitrogen (TN)		mg/L		mg/L
Total Phosphorus (TP)		mg/L		mg/L
Disinfection: ☐ E. Coli. ☐ Fecal Coli. ☐ Total Coli.		N/100mL		N/100mL
Dissolved Oxygen (DO)		mg/L		mg/L
pH Range		S.U.		S.U.

Min. Influent Water Temperature: degF Power: Ph VAC Hz Elevation: ft ASL

Min. Seasonal Air Temperature: degF Low Flow Devices Garbage disposals RV/Portajon Dump Sta.

Max Seasonal Air Temperature: degF Seasonal Flows Please Specify:

Product(s) Requested

Collection & Dispersal Products: ☐ Inf./Eff. Pump Stations ☐ ECOFILTER ☐ IWT Chambers ☐ EZflow ☐ ATL ☐ AES ☐ ECODRIP

Treatment Products: ☐ Whitewater ATU ☐ ECOPOD ☐ Extended Aeration Package Plant ☐ AES (CTD)

Process Components

Process Req'd: ☐ Primary ☐ Flow EQ ☐ Sludge Holding ☐ Chlor. ☐ Dechlor. ☐ UV ☐ Flow Metering ☐ Filtration

Contact Information

Name: | E-Mail:

Company: | Phone:

Address: | Fax:

How did you hear about Infiltrator Water Technologies?

Or fill the form out on our website and we will get in touch with you!

SCAN ME

Infiltrator Water Technologies
4 Business Park Rd, Old Saybrook, CT 06475
www.infiltratorwater.com
(800) 221-4436

Infiltrator Water Technologies Quote No.:

Rev. Date 10/9/2023

The IWT Commercial Wastewater Team

Our Goal is identical to your Civil Engineer's Goal:

Find the solution that best meets the needs of the project, at a reasonable cost.

Hire a local Civil Engineering firm who specializes in Land Development

- Challenge them !

(glamping venues may be new to them)

Challenge them

Handling Wastewater

Overall Considerations:

- Use gravity when possible (look at the contours)
- Minimize earthmoving costs
- Consider frost depth, temperature range, elevation on a treatment system
- Think through piping types for moving influent, air and effluent; Soil types and the impacts
- Slab or no slab? At grade or above grade?
- Impact of tanks in live load areas
- O & M requirements and availability of a qualified operator, if needed
- Noise levels (owner input)
- Permitting challenges to be expected
- Footprint of Treatment and Dispersal areas

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Hugh Mickel, P.E.

Engineered Systems Sales Director

Cell: 812-799-6441

hmickel@infiltratorwater.com