

Site Plan Review for Pretreatment

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September 23, 2025

NC-PC Conference

Pretreatment Coordinator

A background image showing a group of people in a professional setting, likely an office or meeting room. They are gathered around a table, looking at and pointing to architectural blueprints or technical drawings. One person is holding a pen, ready to write on the plans. A laptop is visible in the background, and the overall atmosphere is one of collaborative work and discussion.

Investigators

IT Specialists

Police

Data Managers

Public Relations

Regulators

Legal Counsel

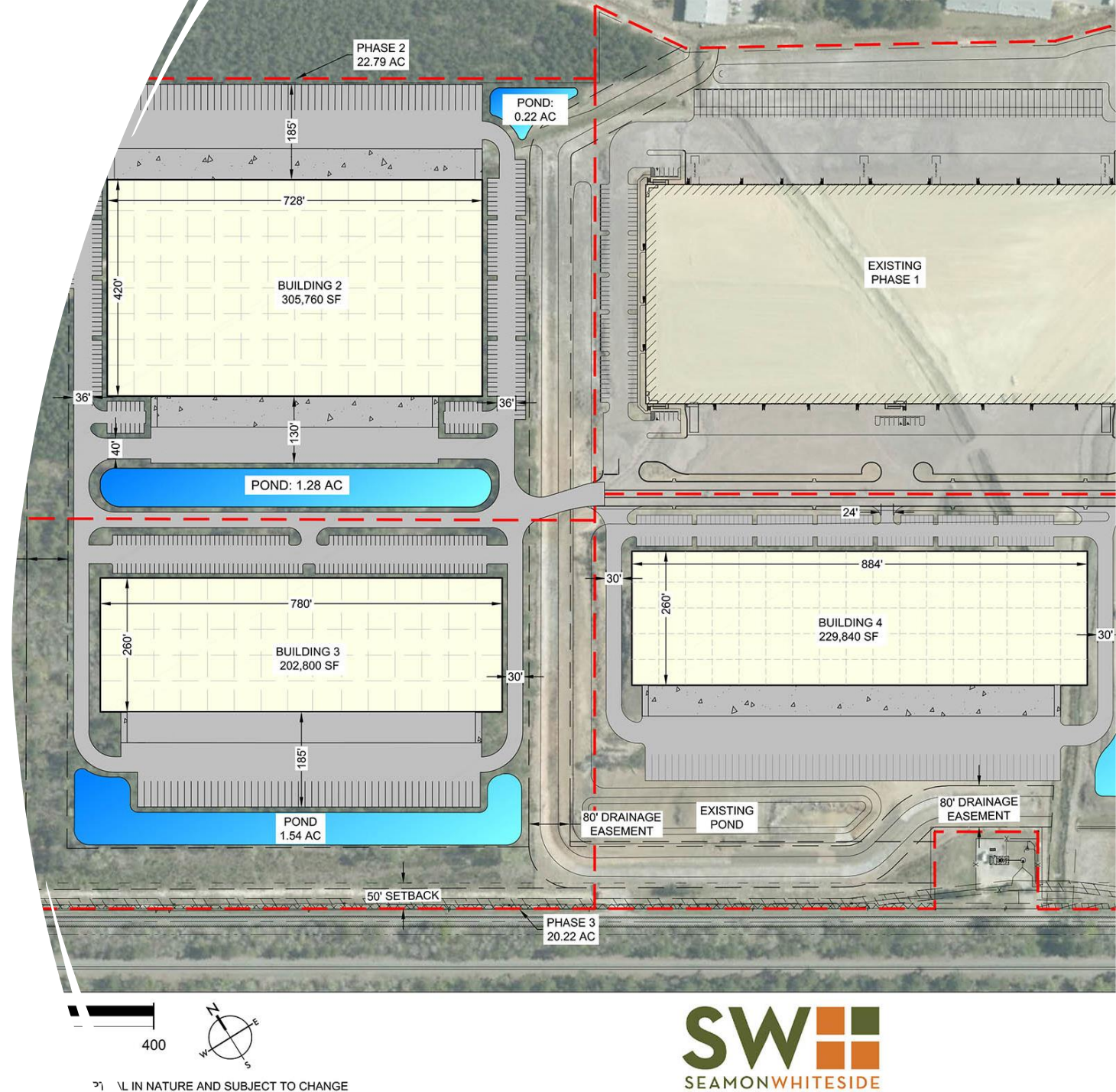
Engineers

and....

Architects???

Site Plans Required

- Pretreatment Permit
- Necessary for location of sewer lines
- Determine type of flow for each line
- Determine if regulations apply
- Determine sampling point and flow measurement
- PERMANENT Retention



Pretreatment Permit



Greenville Utilities Commission
hereafter in this permit referred to by
name or as the Control Authority

INDUSTRIAL USER PRETREATMENT PERMIT (IUP)
To Discharge Wastewater Under the
Industrial Pretreatment Program

0223
IUP Number

414
40 CFR Category

In compliance with the requirements and provisions of the Greenville Utilities Commission's Sanitary Sewer Use Regulations, adopted effective December 20th, 2012, or as amended; North Carolina General Statute 143-215.1; any applicable federal categorical pretreatment regulations, all other lawful standards and regulations promulgated and adopted by the North Carolina Environmental Management Commission; and other applicable rules and regulations of the Greenville Utilities Commission, and subsequent revisions thereof. The following industry hereafter referred to by name or as the permittee:

AVIENT PROTECTIVE MATERIALS, LLC
5750 Martin Luther King Highway
Greenville, NC 27834

is hereby authorized to discharge wastewater from the facility located at the above listed address into the sanitary sewer collection system and the wastewater treatment facility of the Control Authority listed below:

Greenville Utilities Commission WWTP
240 Aqua Lane
P.O. Box 1847
Greenville, NC 27835-1847
NPDES Number: NC0023931

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III of this Industrial User Pretreatment Permit (IUP).

Effective date, this permit and the authorization to discharge shall become effective at midnight on this date:

January 1, 2024

Expiration date, this permit and the authorization to discharge shall expire at midnight on this date:

Permit Application Requirement

Site Layout

**Flow
Diagram/Schematics**

**Pretreatment System
Flow Diagram**

Plant Site Layout Elements to Identify

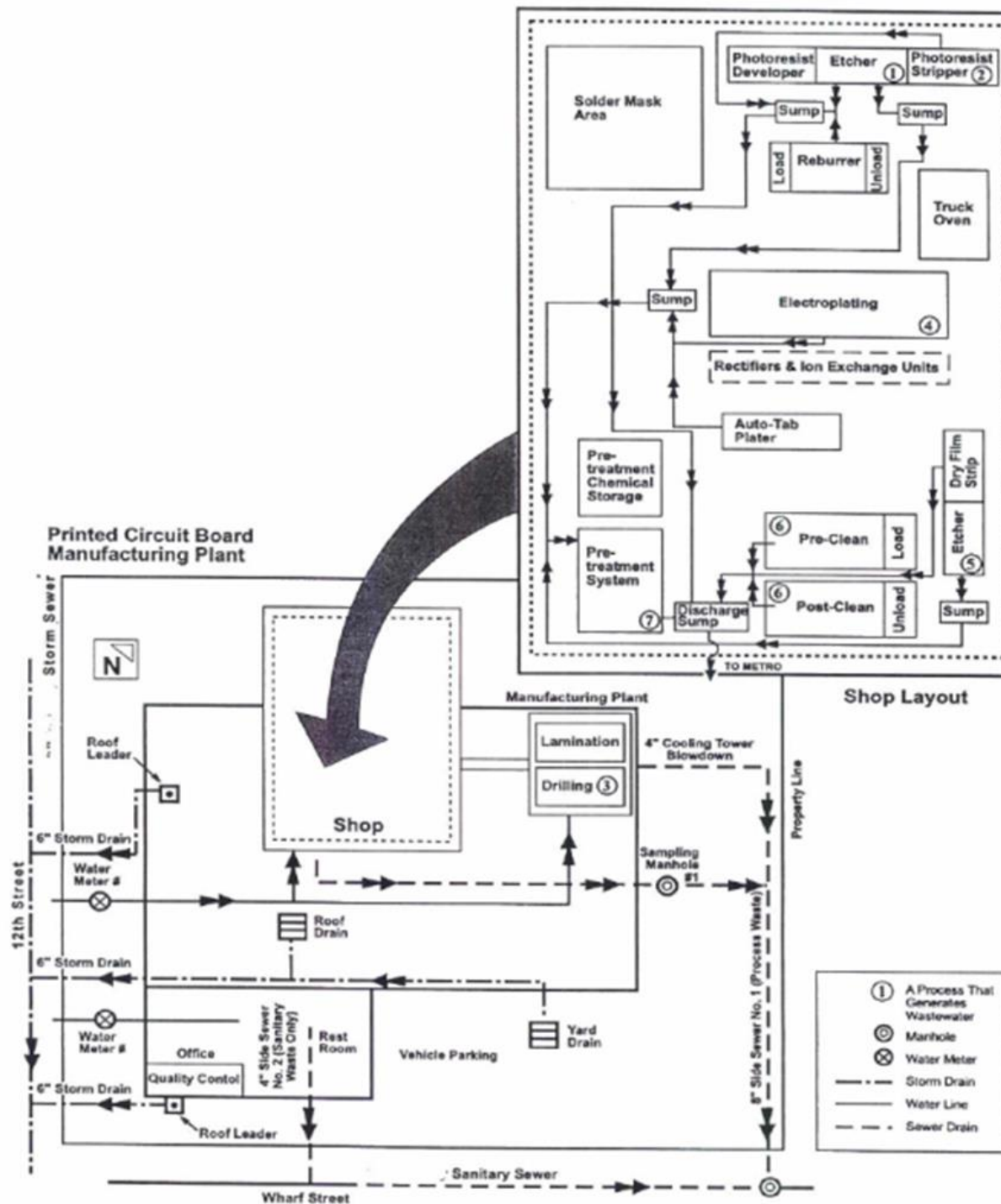
Identify existing and proposed conditions

- Buildings
- Parking
- Driveways
- Utility locations
- ... and more on next slide



1. PLANT SITE LAYOUT (REQUIRED)

The site layout locates each activity included in the schematic flow diagrams in a geographical setting.



Legend

The plan should include a legend for assistance in reading the plan.

					
Boiler	Boiler 2	Heat Exchanges	Heating Coil	Pump	Pump 2
					
Heater/Cooler	Heater/Cooler Horizontal	Radiator	Convactor	Radiant Panel	Radiant Panel 2
					
Open Tank	Closed Tank	Water Surface	Pipe Coils	Sink	Basin
					
Toilet	Bath	Bath Side	Toilet (side)	Bath (side)	End View
					
Shower Head	Towel Bar				

2. PRODUCTION/PROCESS SCHEMATIC FLOW DIAGRAM (REQUIRED)

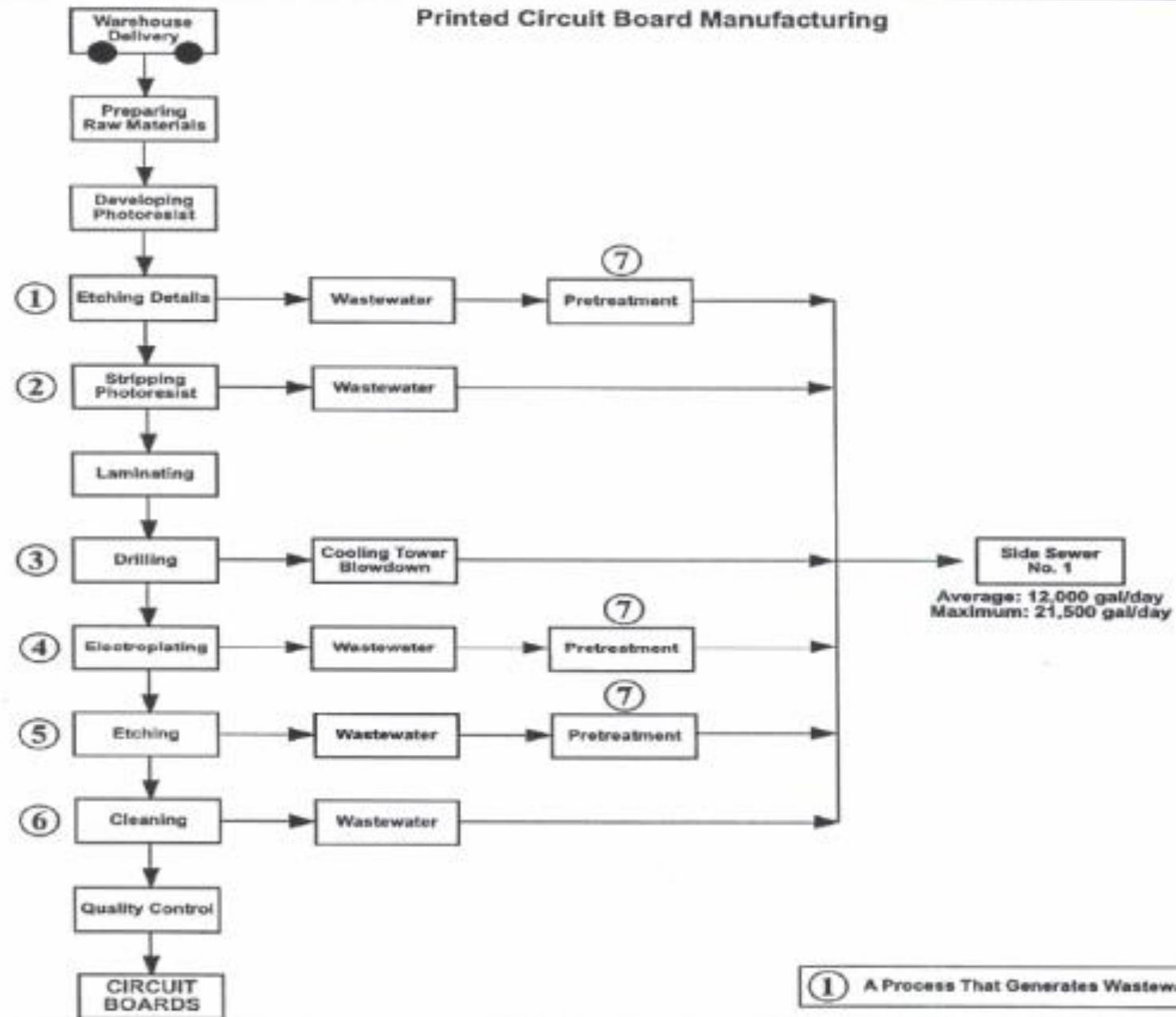
Simple line drawing that at a minimum, should include the following:

- Each plant process that generates wastewater
- All process steps and tanks (with volumes)
- Chemicals/raw materials used in each step/tank/vessel
- Each process and waste stream should be labeled, named, or have a unique identifying number

2. PRODUCTION/PROCESS SCHEMATIC FLOW DIAGRAM (REQUIRED)

- Operation names used in any applicable categorical regulation
- Each process step related to the manufacturing/process but that do not actually contact the process (for example, water circulated through jackets or piping in a process operation where the water is kept from contacting the item/object)
- Discharge points for each process/waste stream (including non-monitored industrial wastewater)
- Non-process lines/operations

Printed Circuit Board Manufacturing



3. Pretreatment Site Plan

A pretreatment site plan illustrates the layout of a facility designed to treat industrial wastewater and may include the following:

- Treatment tanks
- Piping (flow diagram)
- Control features
- Discharge points
- Sampling locations



Treatment Tanks

- Can be Outside or Inside
- Settling tanks, pH neutralization, Equalization, etc.
- Should be labeled on plan:
 - *Contents and volume*
 - *Flow direction*
 - *Spill Protection*
 - *Discharge point*



Piping

Start up or New Construction:

- Important to ID Process and Domestic Lines
- Helps to make important decisions

Existing Building:

- Are process and domestic combined?
- Are floor drains in process area? Do they all flow to pretreatment?
- Does all flow go to one final manhole, or are there multiple manholes that receive the flow?
- Are pipes labeled at the industry?



WASTEWATER PRETREATMENT SYSTEM FLOW DIAGRAM (IF APPLICABLE)

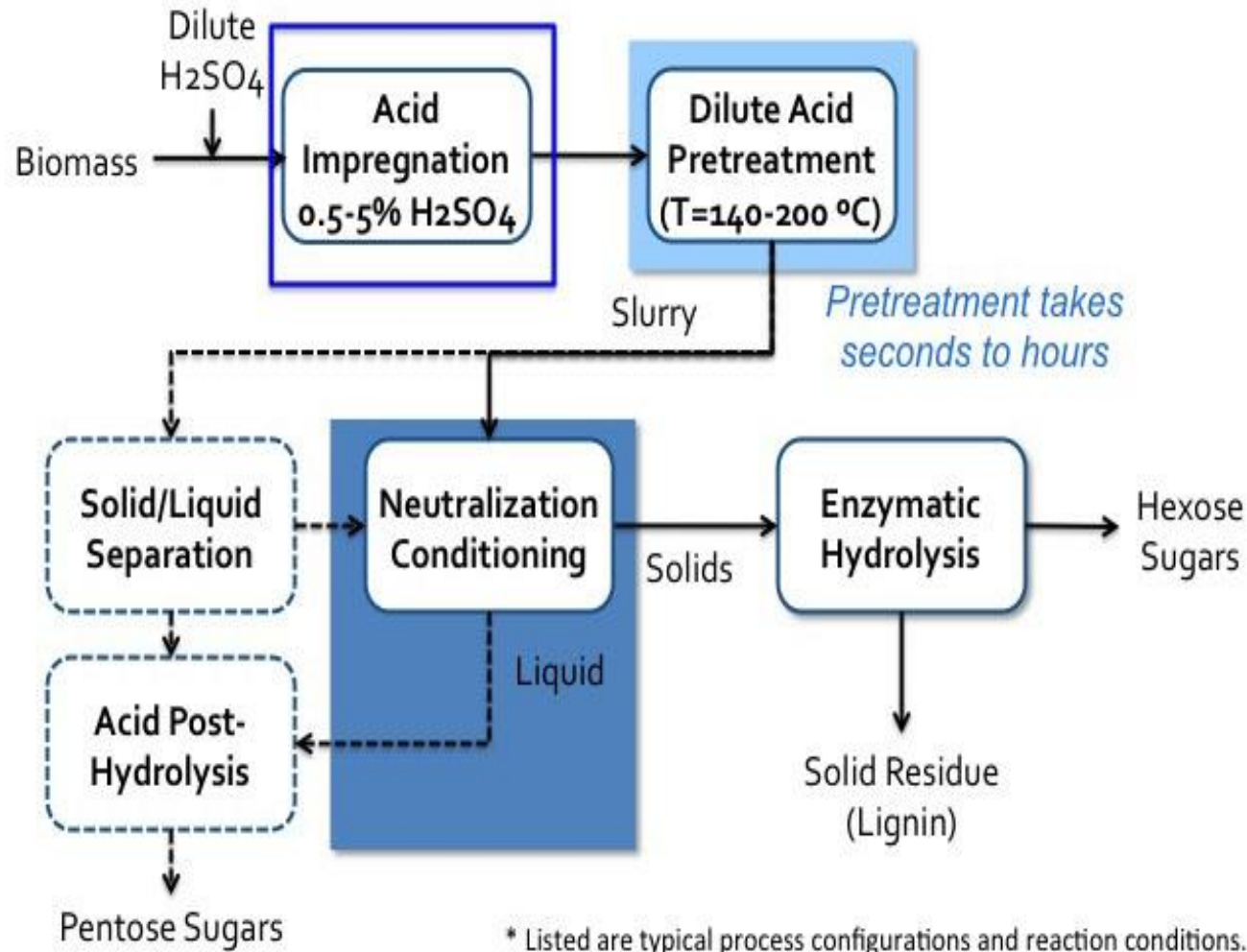
Identify wastewater flows going into pretreatment, especially if some treated separately

Each treatment process and waste stream should be labeled, named, or have a unique identifying number

Piping and control features

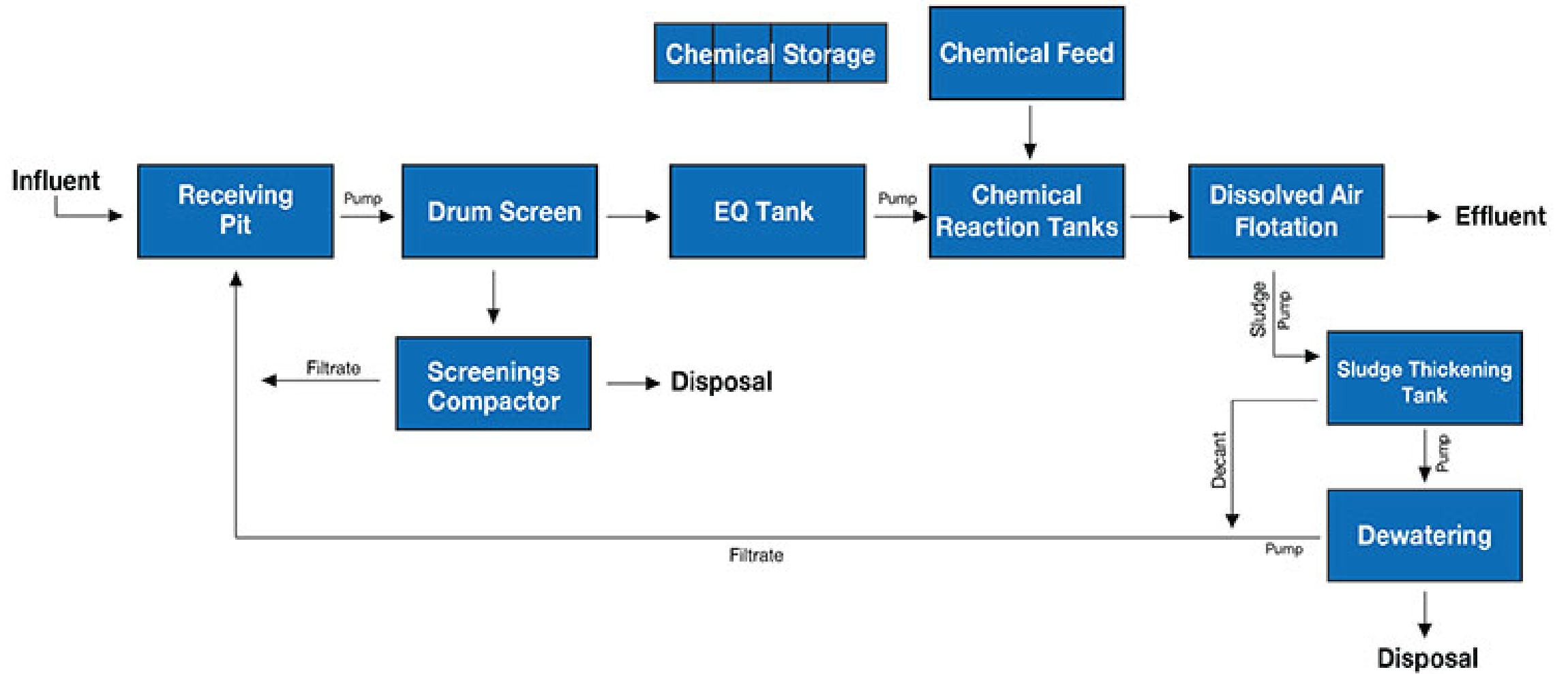
Compliance sampling point

WASTEWATER PRETREATMENT SYSTEM FLOW DIAGRAM (IF APPLICABLE)

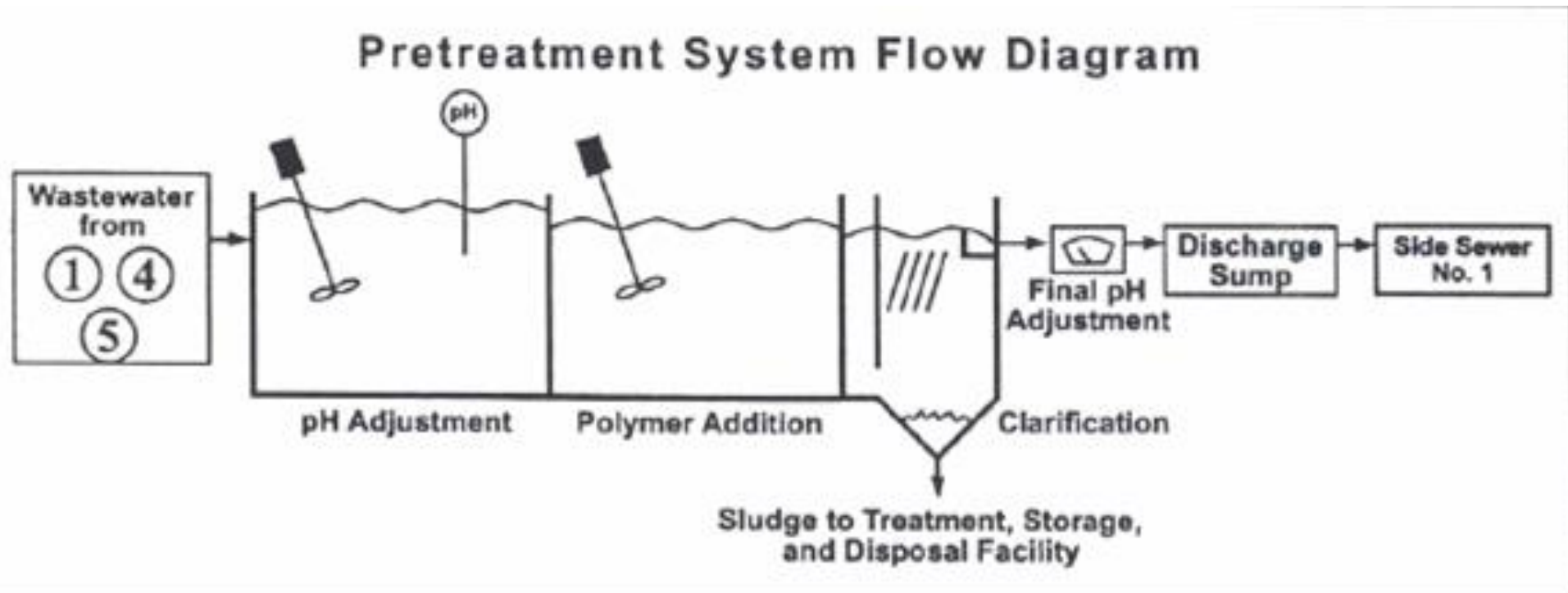


Pretreatment schematic flow diagram should include the following:

- Flow schematic showing order of treatment units
- Include all treatment process tanks
- Identify the chemicals/ additives in each tank/vessel



Another Example





Equalization Tank

Screening System

Chemical Treatment

pH Treatment

PLANT DISCHARGE

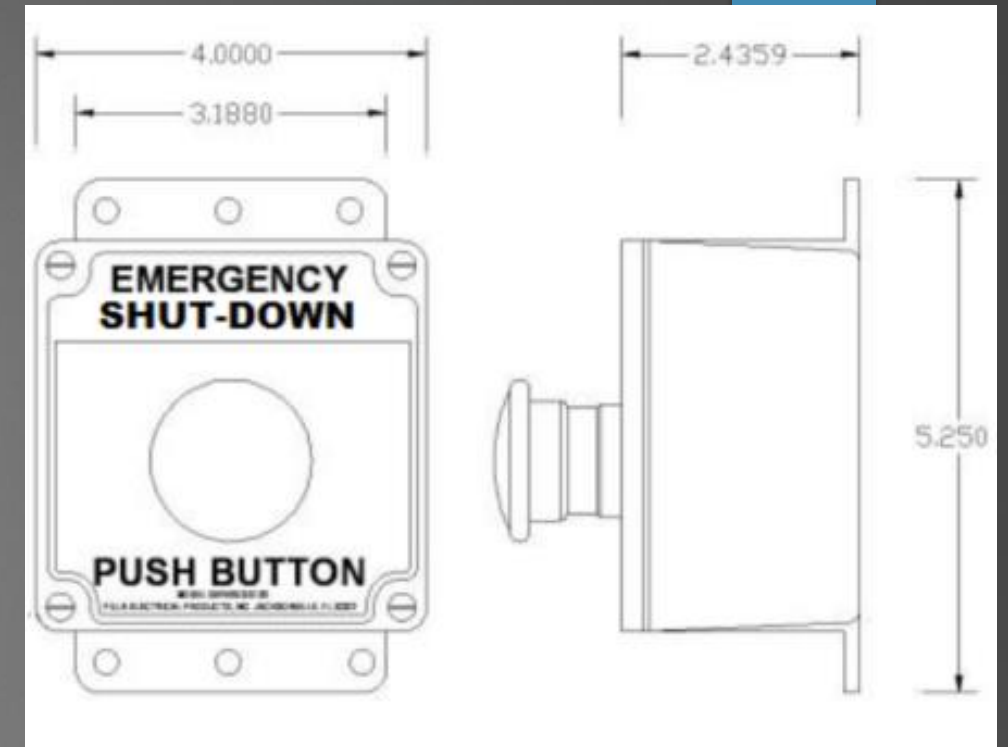
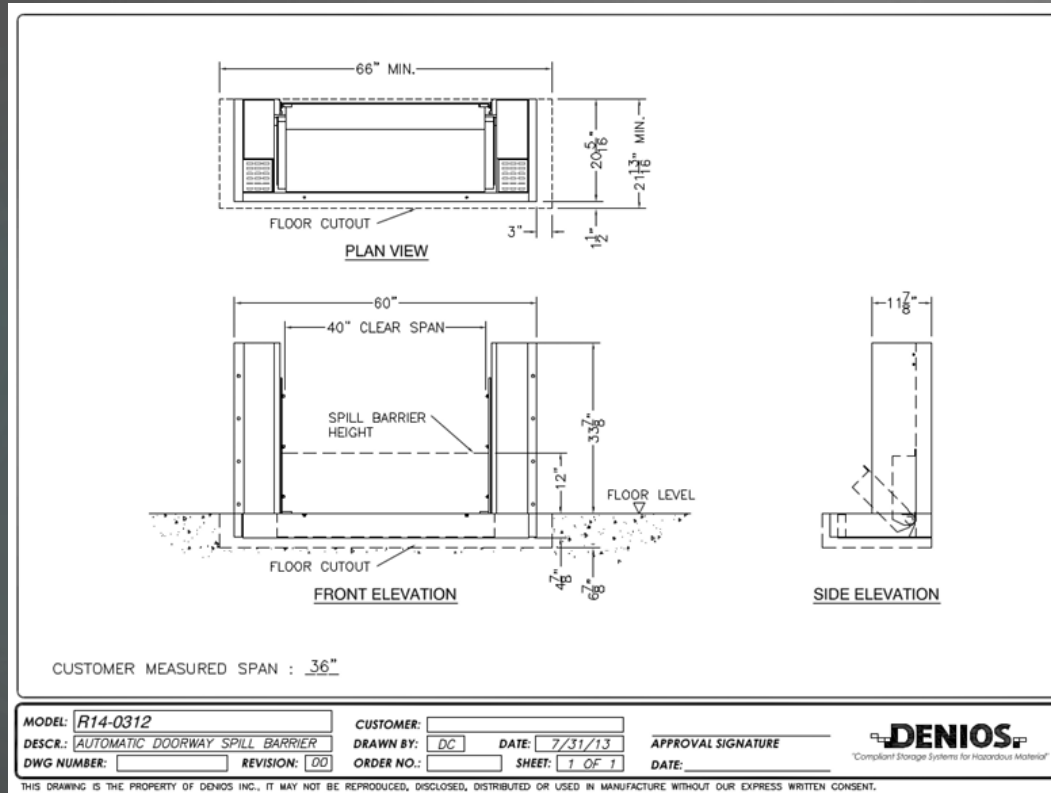
Control Features

- Instrumentation
 - Flow readings (digital, non-resettable)
- Automation
 - Biocide treatment
 - pH neutralization
- Monitoring
 - Inline pH probes, conductivity, etc.



Safety Features

- ▶ Emergency Shut-off Valves
- ▶ Spill Containment Systems





Discharge Points and Sampling Locations

The discharge point and sampling location is not always the same place.

Discharge point is where the process or combined wastestreams discharge into the sanitary system.

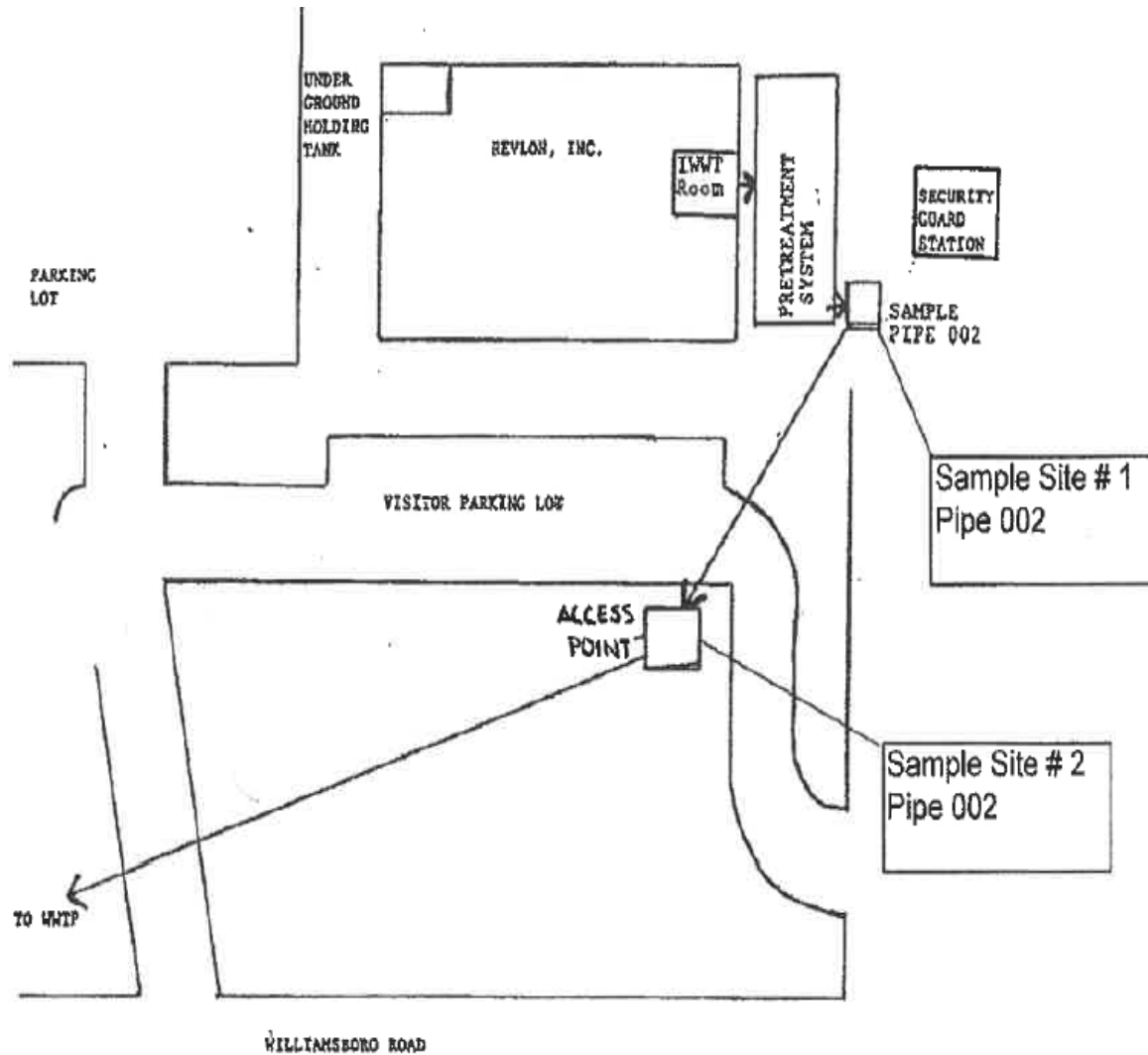
Sampling location is where the samples are collected, either

End of Process or End of Pipe



Decision must be made for most ideal location, so the plan is important to be as detailed as possible.

Discharge Points and Sampling Locations



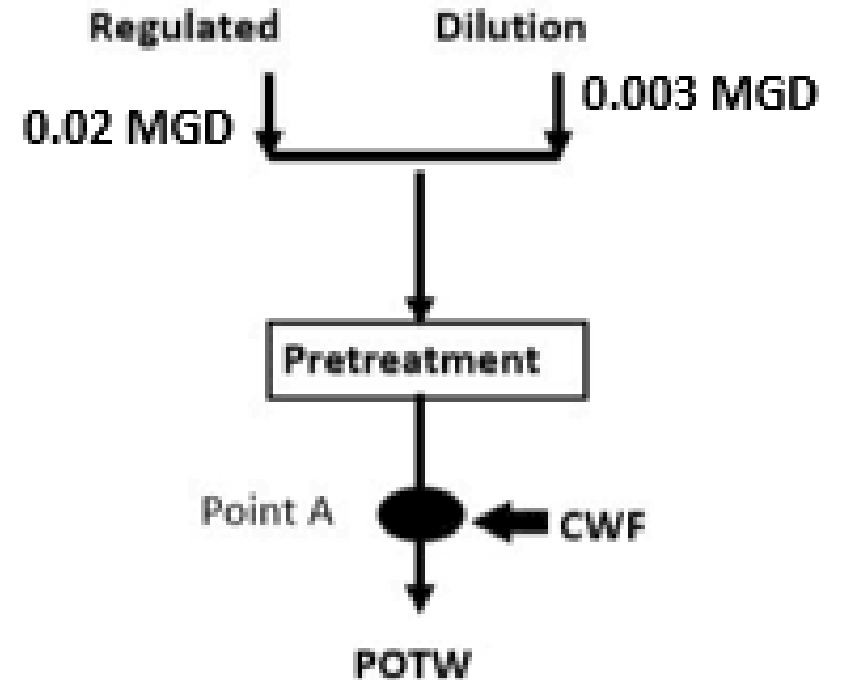
- Sample location is the PERMITTED location.
 - Must be clearly identified
 - Legally defensible data generated from the location
 - Succession plan

Combined Streams?

Domestic wastestream combines with the
Process wastestream

Why does this matter?

If the process wastestream is **CATEGORICAL**
must apply limits but use the Combined
Wastestream Formula [CWF] to adjust limits
based on dilution.



Combined Wastestream Formula (CWF)

Examine carefully all waste stream flows to ensure you are applying limits as required.

$$C_T = \left(\frac{\sum_{i=1}^N C_i F_i}{\sum_{i=1}^N F_i} \right) \left(\frac{F_T - F_D}{F_T} \right)$$

§ 433.17 Pretreatment standards for new sources (PSNS).

- (a) Except as provided in 40 CFR 403.7, any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for new sources (PSNS):

PSNS

Expand

Table



Pollutant or pollutant property	Maximum for any 1 day	Monthly average shall not exceed
	Milligrams per liter (mg/l)	
Cadmium (T)	0.11	0.07
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	

Types of Wastestreams

1- Categorical Process Wastestream (*and flow*)

Refers to the specific industry type and is the wastewater discharged from the process only.

EPA Uniform Standards apply to the process wastestream



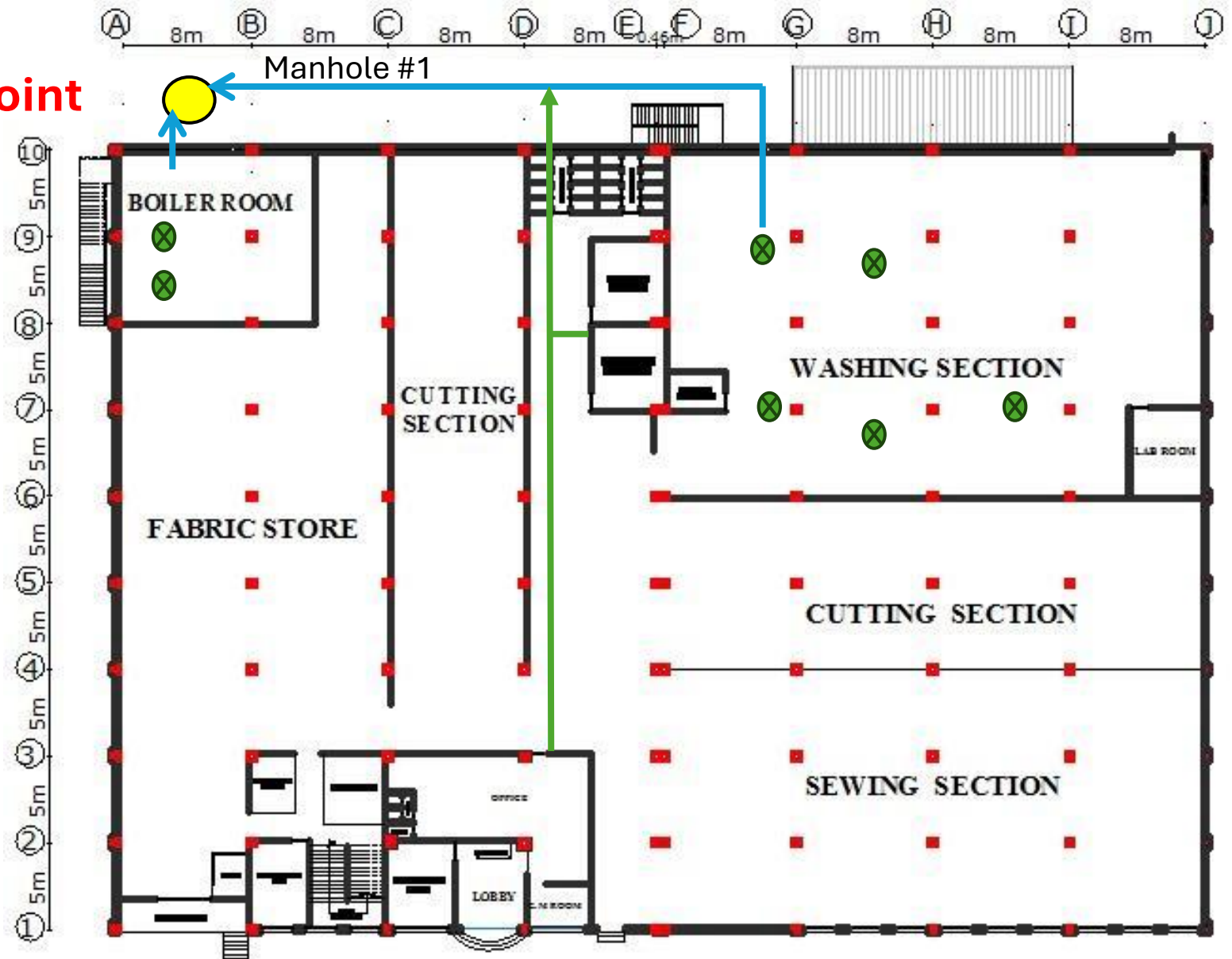
Types of Wastestreams

2- Dilution wastestreams

- Boiler Blowdown, non-contact cooling streams, stormwater streams, and demineralizer backwash streams and their flows
- Sanitary wastestreams where such are not regulated by a categorical pretreatment standard; (Unregulated)
- Process wastestreams which were or could have been entirely exempted from categorical Pretreatment Standards (Unregulated).
- Domestic Flow

Domestic,
Dilute,
and
Process
Combined

Process = Blue
Domestic = Green



COMBINED WASTESTREAM FORMULA CALCULATIONS PERFORMED using data from source listed above.

REGULATED WASTEFLows, gpd:	4,680
UNREGULATED WASTEFLows, gpd:	
DILUTION WASTEFLows, gpd:	9,000

TOTAL WASTEFLows, gpd: 13,680

CWF RATIO = (TOTAL FLOW - DILUTION FLOW) / TOTAL FLOW = 0.342

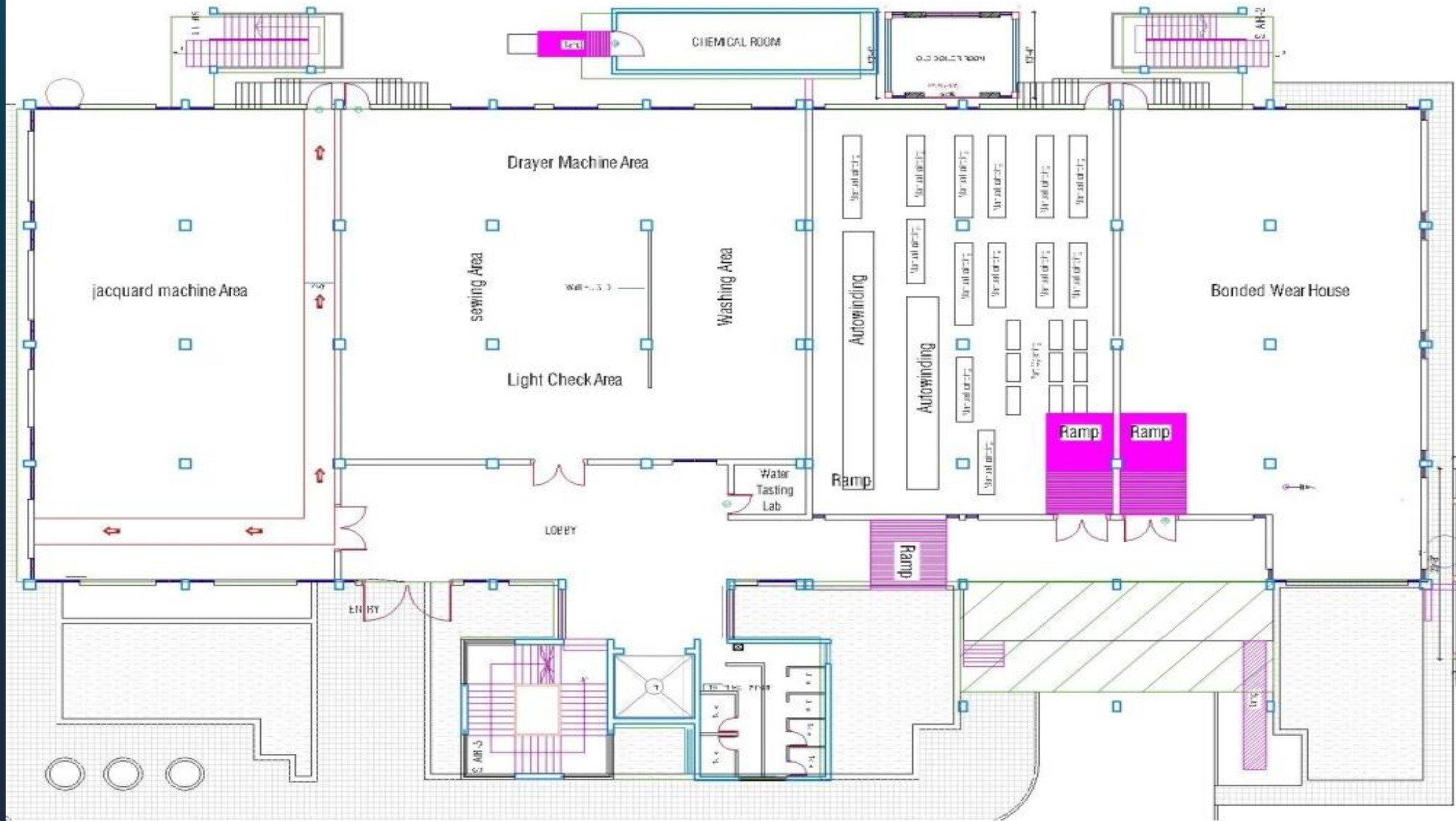
PARAMETER of Concern	CATEGORICAL DAILY MAXIMUM LIMIT, mg/l	ALTERNATIVE CATEGORICAL DAILY MAXIMUM LIMIT, mg/l	CATEGORICAL MONTHLY AVERAGE LIMIT, mg/l	ALTERNATIVE CATEGORICAL MONTHLY AVERAGE LIMIT, mg/l	Actual Industrial User Permit DAILY MAXIMUM LIMIT, mg/l	Actual Industrial User Permit MONTHLY AVERAGE LIMIT, mg/l
Acetone	20.7	7.08	8.2	2.81	2.81	N/A
n-Amyl Acetate	20.7	7.08	8.2	2.81	2.81	N/A
Ethyl Acetate	20.7	7.08	8.2	2.81	2.81	N/A
Isopropyl Acetate	20.7	7.08	8.2	2.81	2.81	N/A
Methylene Chloride	3	1.03	0.7	0.24	0.24	N/A

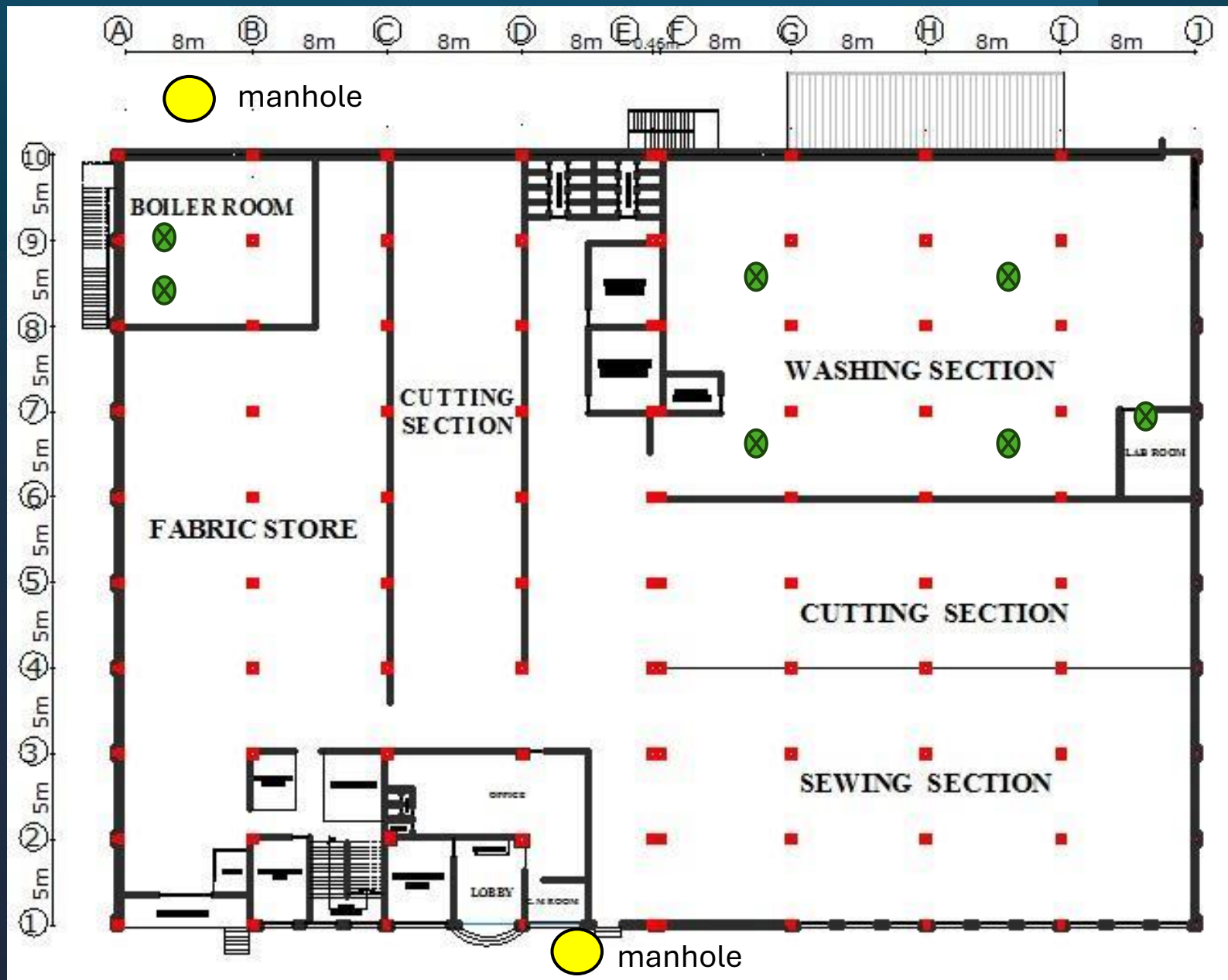
Flow information obtained from Part II, Sewer Discharge Permit Application dated 06/11/2009

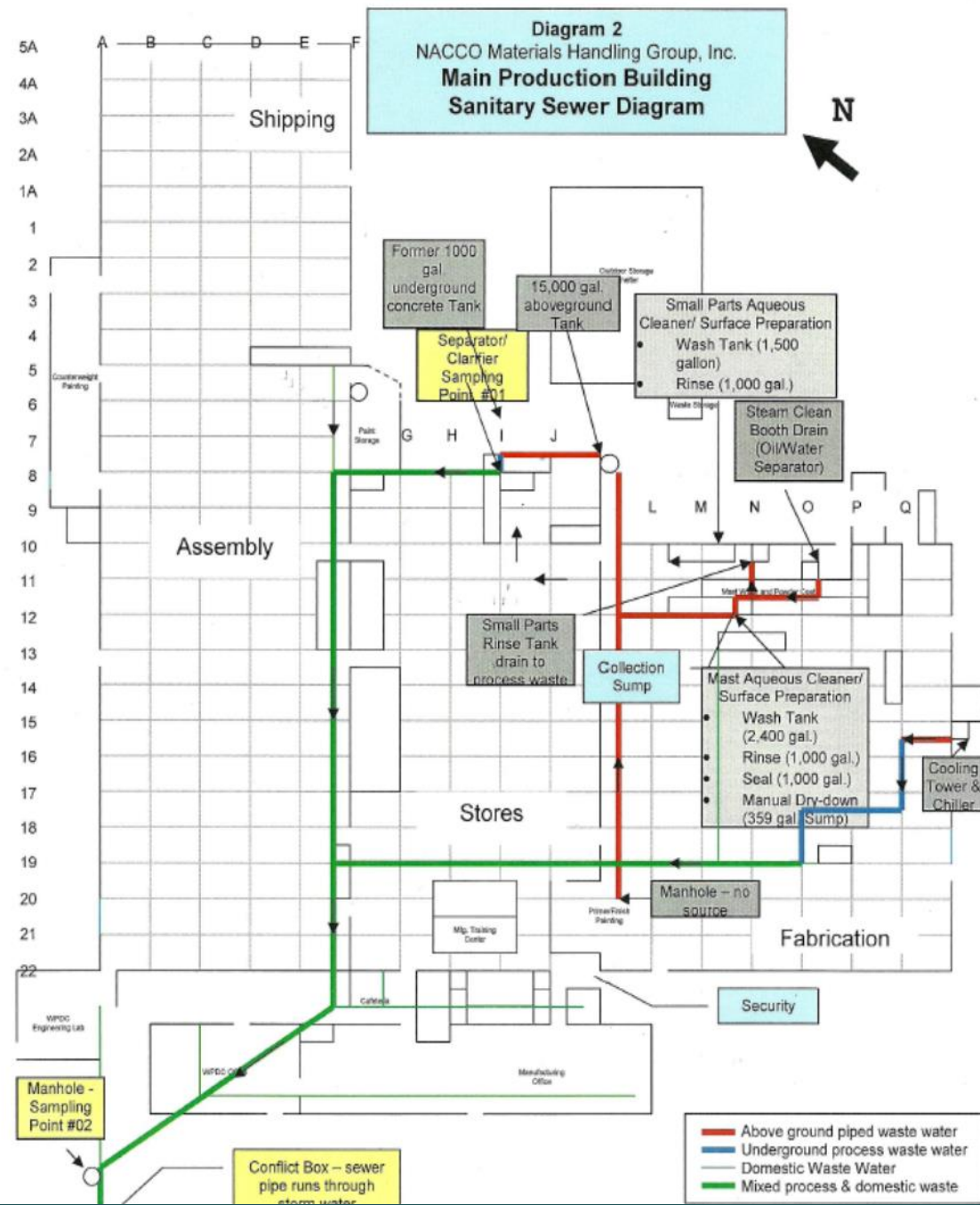
Regulated Process Flow	Other "Dilution" Flow
Process , Washdown, & Process Contact = 4,680	Other: Cooling Water, Process Non-Contact Boiler / Cooling Tower Blowdown = 0 gpd Air Quality Permitted Units = 0 gpd Domestic = 9,000 gpd
Total Regulated Flow = 4,680 gpd	Total Other "Dilution" Flow = 9,000 gpd

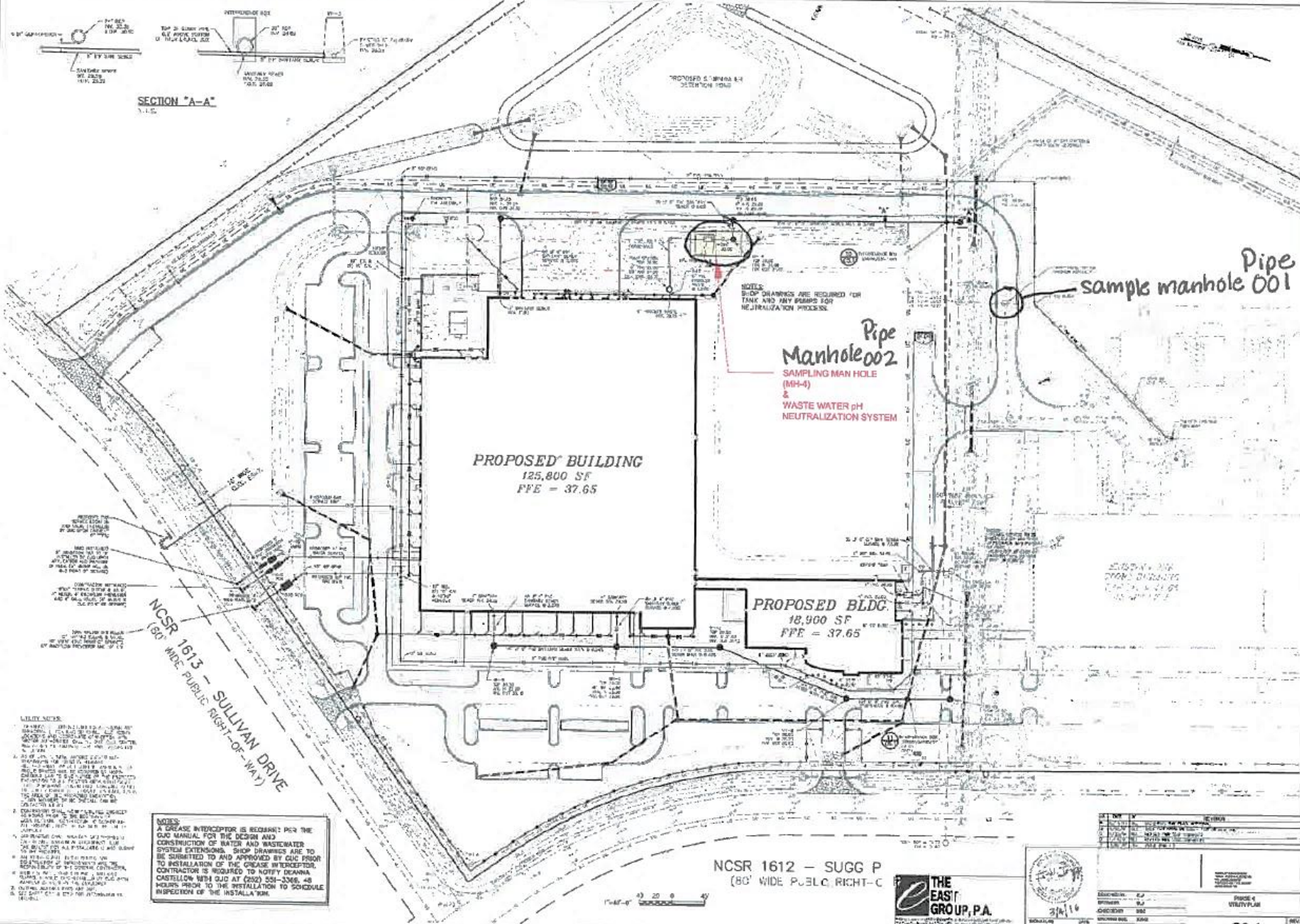
Examples of Site Plans

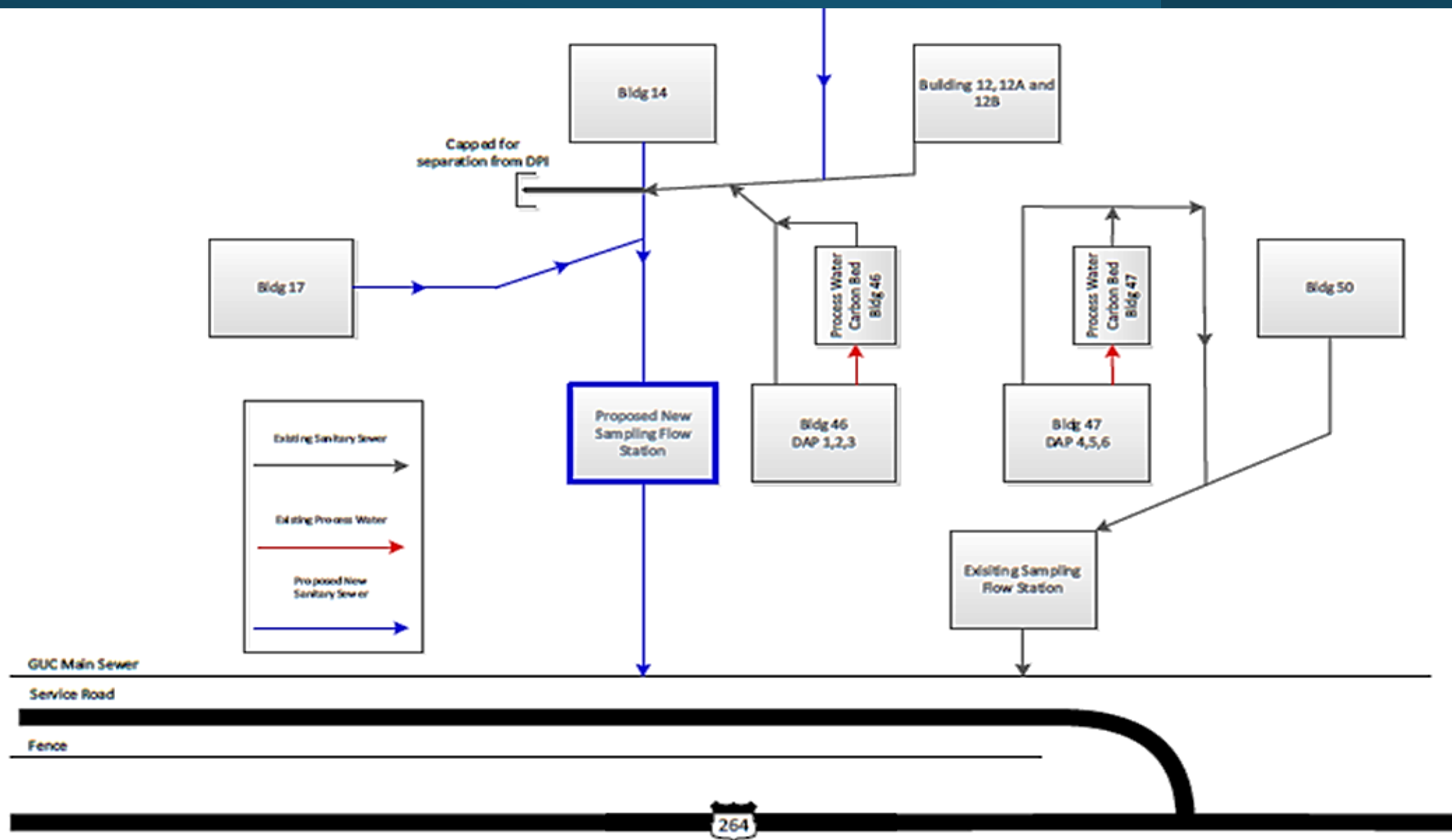


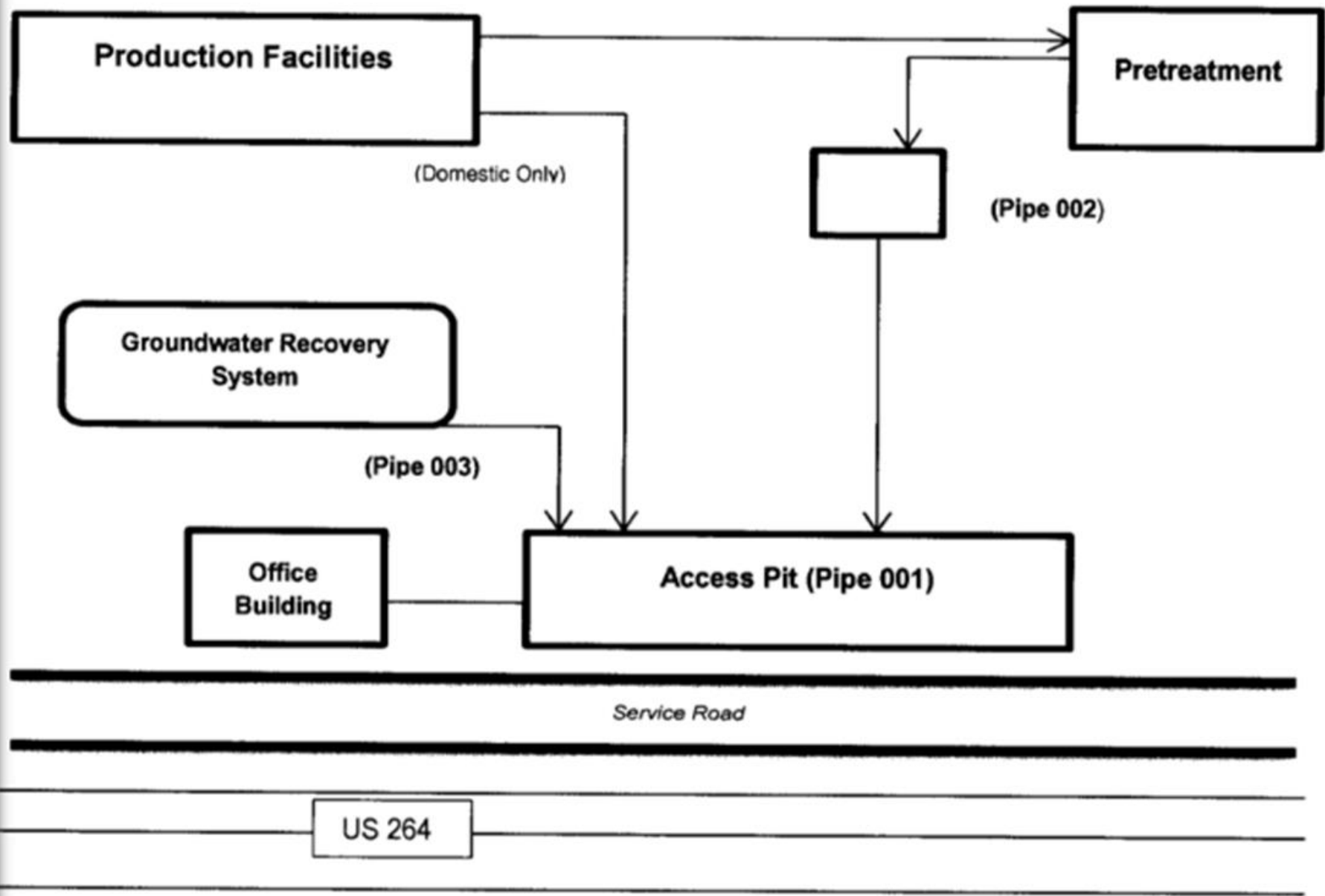
















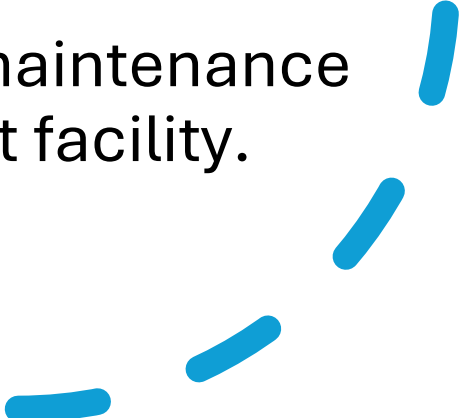
Pretreatment Site Plan Purpose

Compliance: Ensures compliance with federal, state, and local pretreatment regulations.

Effective Treatment: A well-designed site plan promotes effective wastewater treatment by providing a clear and organized layout.

Safety: It helps ensure the safety of workers and the environment by minimizing risks associated with wastewater treatment.

Maintenance: The plan supports maintenance and operation of the pretreatment facility.





Questions?