

# City of Grand Ledge

Wastewater Treatment Plant – Basis of Design



# Purpose

- Discuss existing WWTP capacity and condition
- Define projected capacity needs
- Preliminary schedule for planning through construction

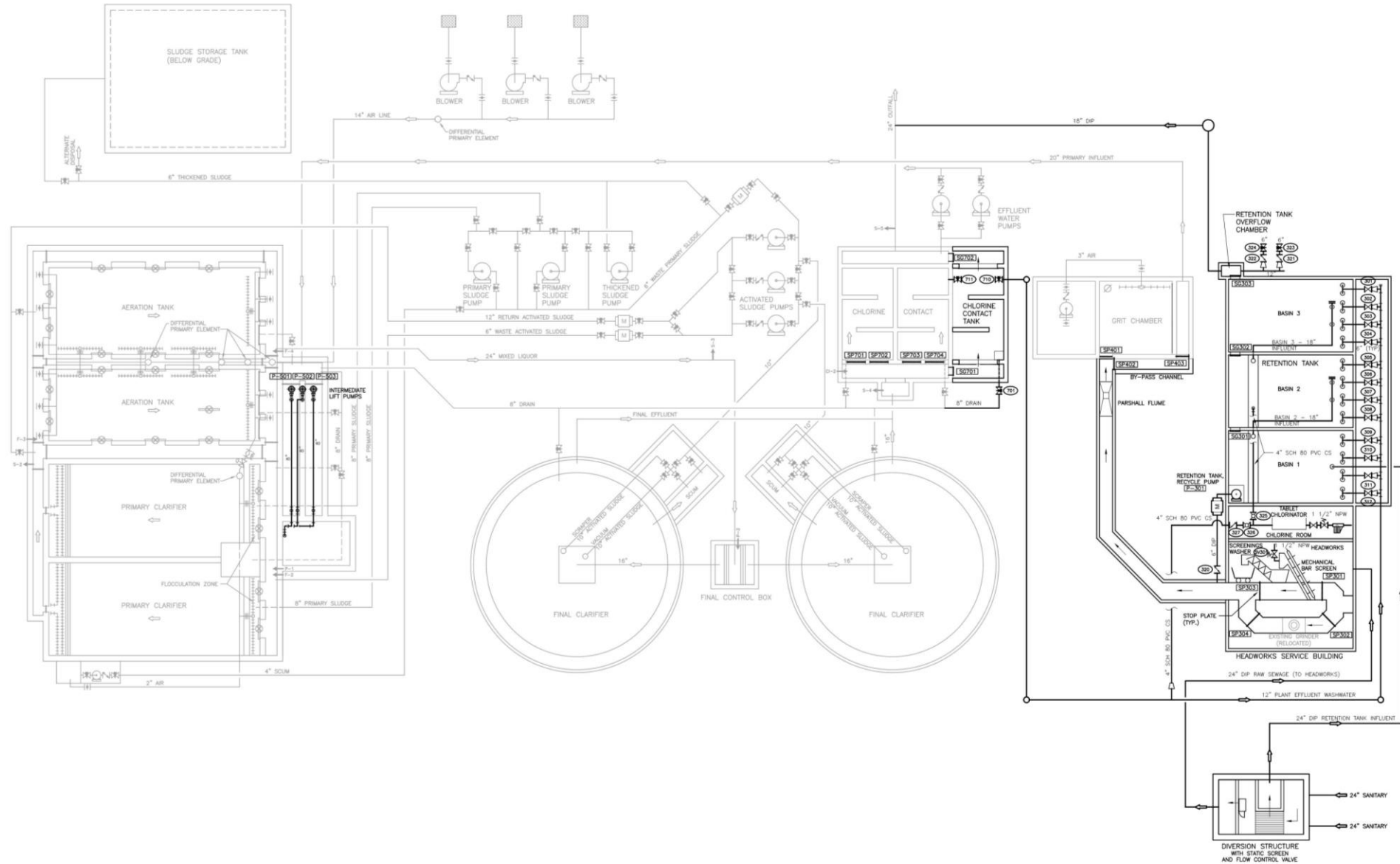
# Existing System

## Capacity:

- 1.5 MGD
- 2,250 lbs/day  $\text{CBOD}_5$
- 2,250 lbs/day TSS

## Aging assets

## Collection system capacity



PROCESS FLOW SCHEMATIC  
NO SCALE

# Existing Flow and Load

## Annual Average

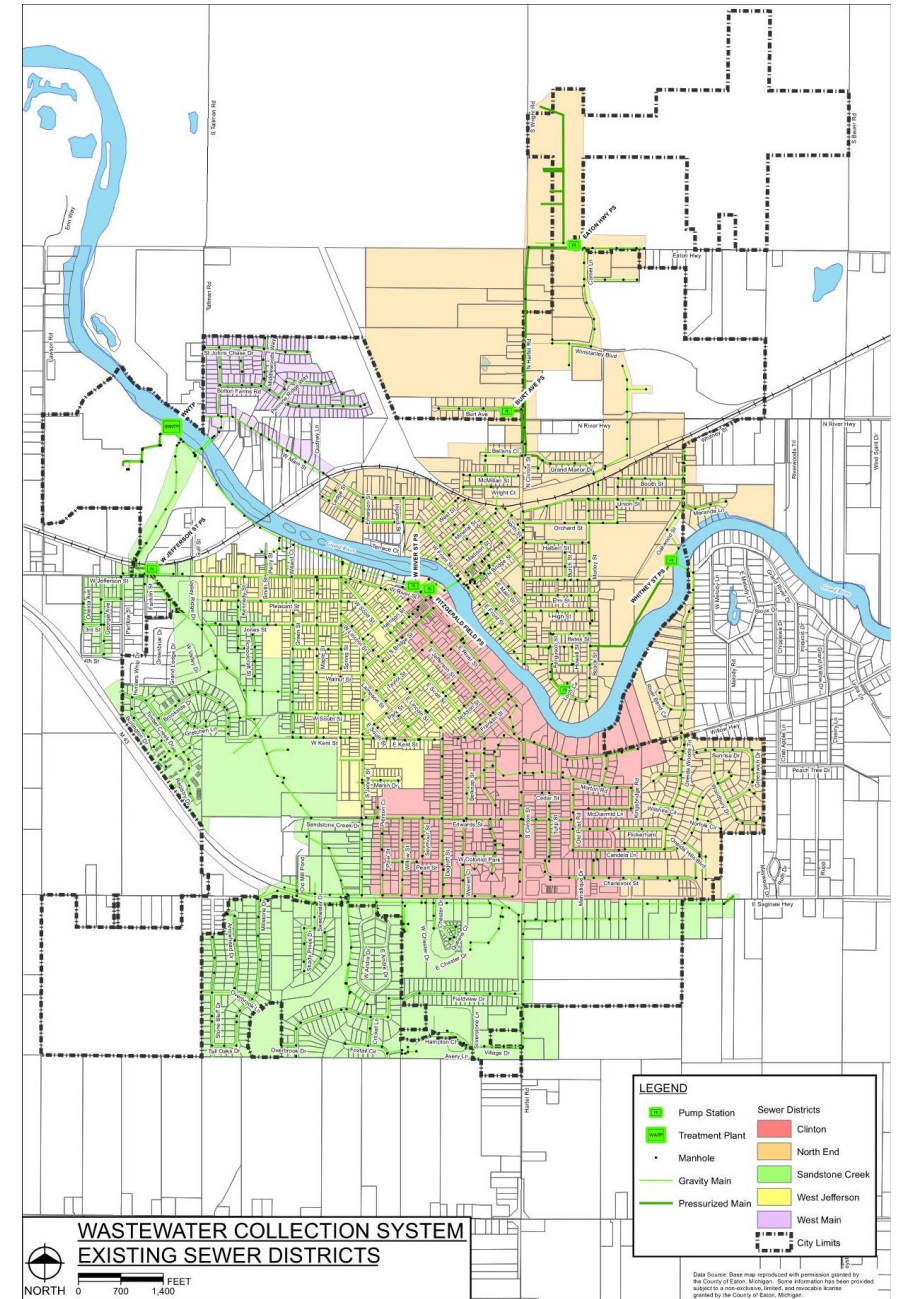
Year	Flow	CBOD <sub>5</sub>		TSS		Total-P	
	MGD	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day
2017	1.11	297	2,489	278	2,344	5.03	42.24
2018	0.99	316	2,439	318	2,445	4.95	38.53
2019	1.11	275	2,507	234	2,048	4.37	37.49
2020	1.07	233	1,891	252	2,133	4.71	37.79
4-Year Average	1.06	291	2,395	275	2,258	4.86	39.47

## Sewer Use Ordinance:

- CBOD<sub>5</sub> = 200 mg/L
- TSS = 250 mg/L

# Projecting Flow and Load Residential and Commercial

- Additional 1.4 MGD
- Infill development
- Undeveloped land along state corridors



# Projecting Flow and Load Industrial and Water Treatment Plant

## Industrial

- Evaluated potential industrial sewer users
- Sized to allow addition of two significant industrial users
- 1.2 MGD

## Water Treatment Plant

- Iron removal and ion exchange softening
- Does not include RO softening
- 0.28 MGD



# Basis of Design

## Projected Annual Average Flows and Loads

Flow Source	Flow (MGD)	CBOD <sub>5</sub> (mg/L)	CBOD <sub>5</sub> (lbs/day)	TSS (mg/L)	TSS (lbs/day)	NH <sub>3</sub> -N (mg/L)	NH <sub>3</sub> -N (lbs/day)	Total-P (mg/L)	Total-P (lbs/day)
Existing Average	1.06	291	2,395	228	2,258	25	221	4.9	39
Additional Residential & Commercial Average	1.40	190	2,211	210	2,453	25	292	4.9	57
Additional Industrial Average	1.20	183	1,834	234	2,282	36	351	5	49
WTP Average	0.28	0	0	144	340	0	0	0	0
Total Projected Average	3.9	198	6,449	225	7,332	26	864	4.4	145

# Next Steps

Task	Timeline
Alternatives Analysis	June 2021 – September 2021
Preliminary Design & Funding Report	October 2021 – April 2022
Final Design	April 2022 – September 2022
Permitting	September 2022 – November 2022
Bidding	November 2022 – December 2022
Construction	December 2022 – May 2025



# Thank You

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