

C2.04 – Hill Country Water Works

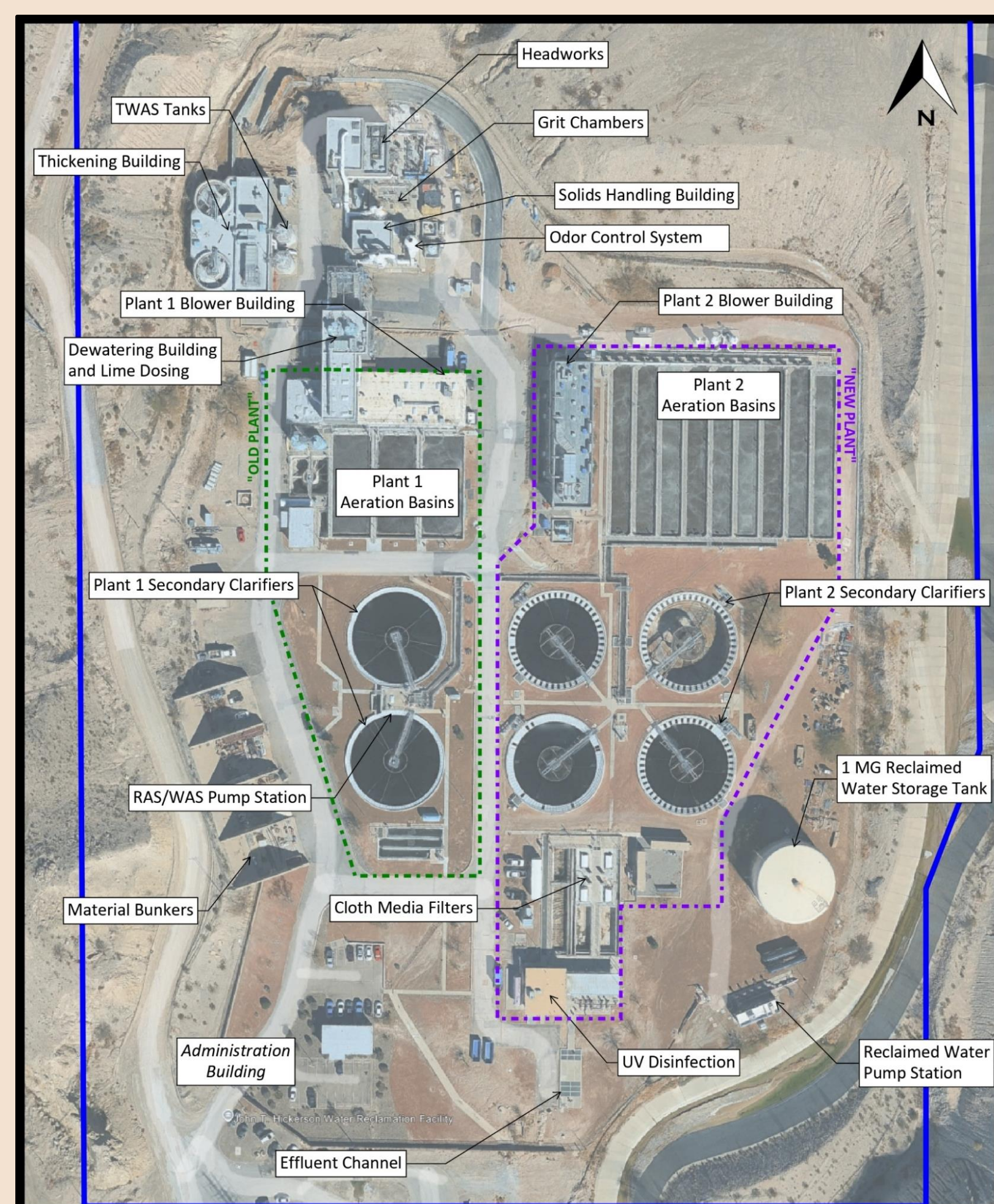
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Sponsored by: Felipe Gutierrez



HILL COUNTRY
WATER WORKS

Background



The John T. Hickerson Water Reclamation Facility (WRF) located in El Paso, Texas, treats 17.5 MGD of municipal and industrial wastewater for the west and northwest regions of the city.

Problem Summary

- BOD concentrations around 290 mg/L.
- Peak flows up to 40 MGD.
- Risk of non-compliance with TCEQ standards.

Constraints & Standards

- Maintain operations during all construction phases
- Stay within existing site boundary
- Meet TCEQ Chapter 217 design criteria
- Keep plant in continuous regulatory compliance (TPDES permit limits)
- Limit construction impacts to existing utilities and access roads

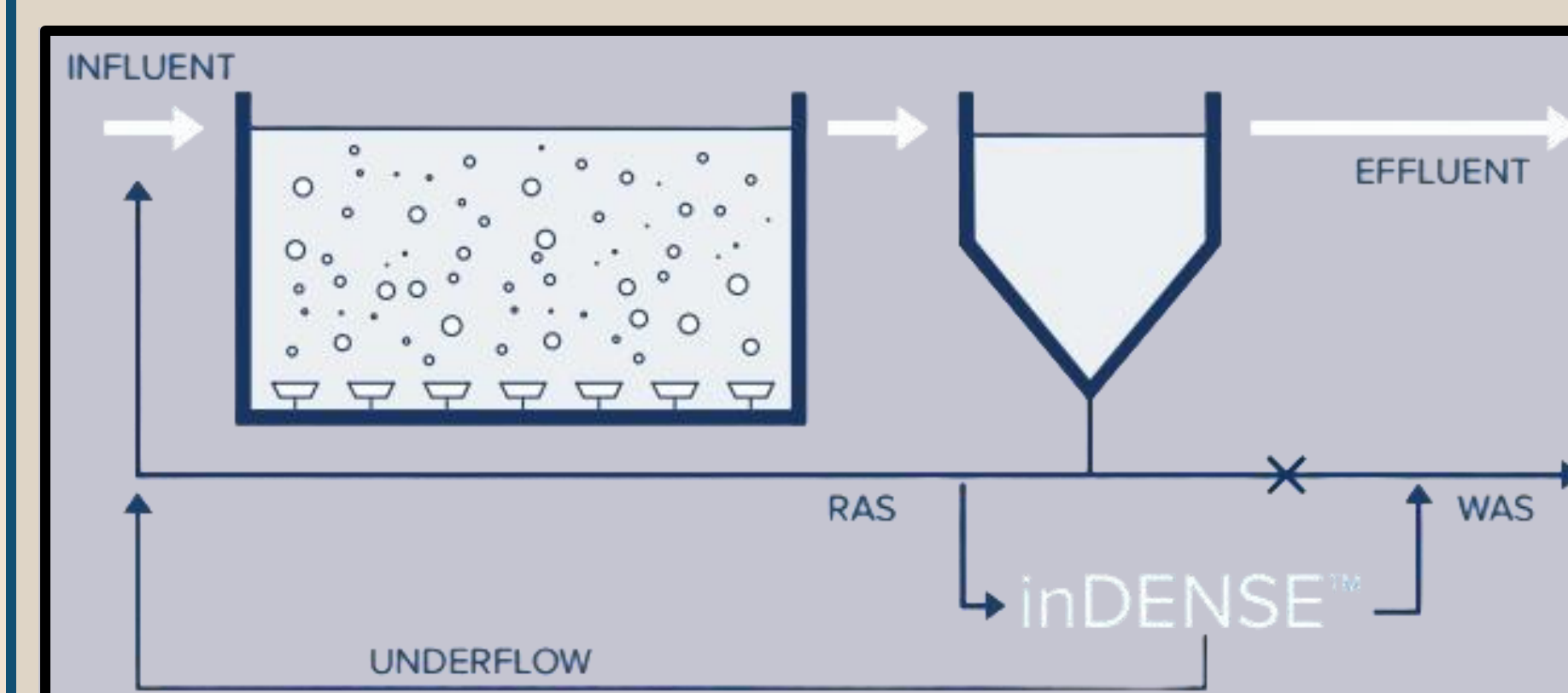
Engineering Solution

Phase 1 – EQ Basins



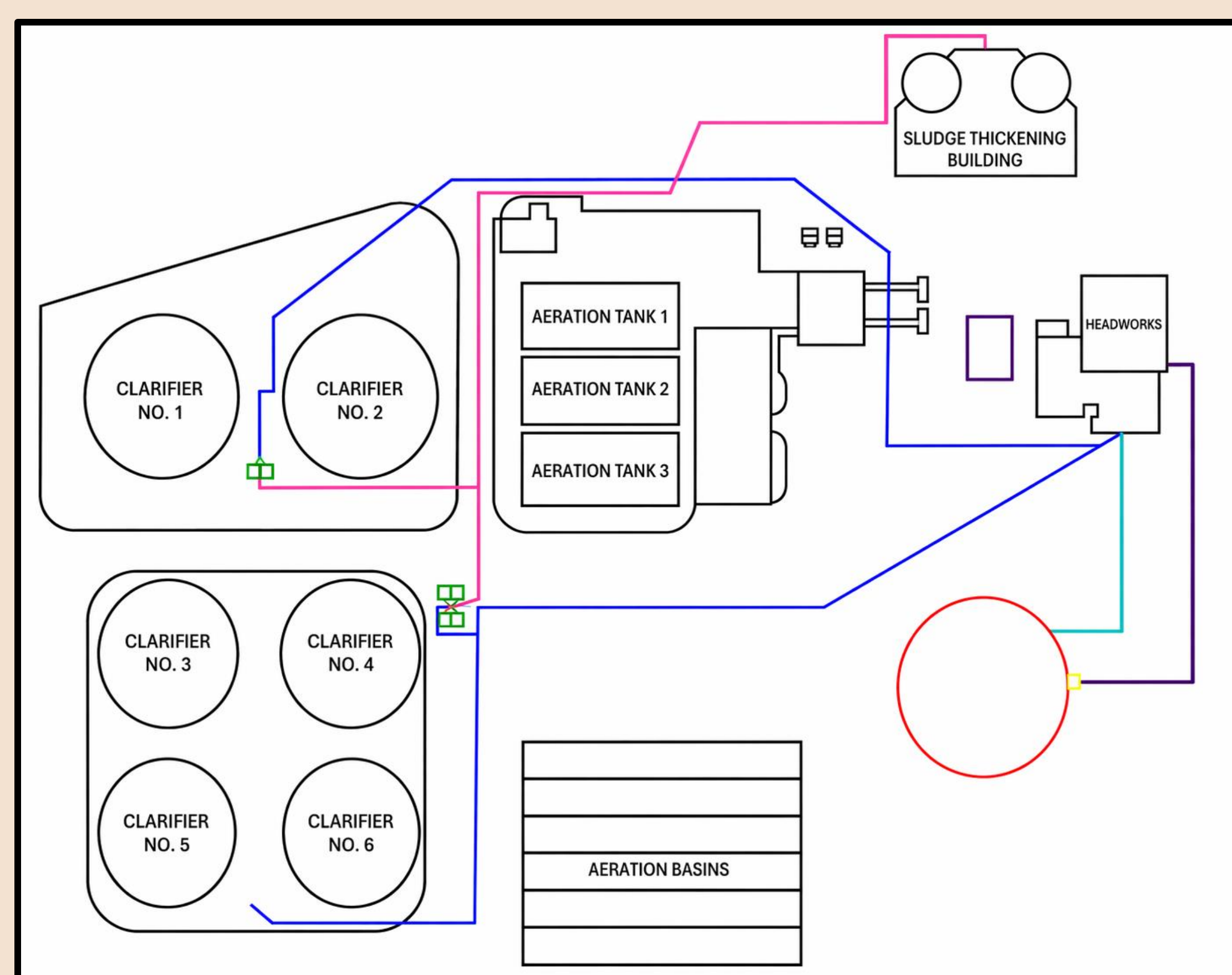
- Installed downstream of headworks to capture peak flows above 35 MGD.
- Provides 1.0 MG of storage.
- Protects from hydraulic shock and washout during storm events.
- Adds capacity with minimal disruption to existing facilities.

Phase 2 – Process Intensification



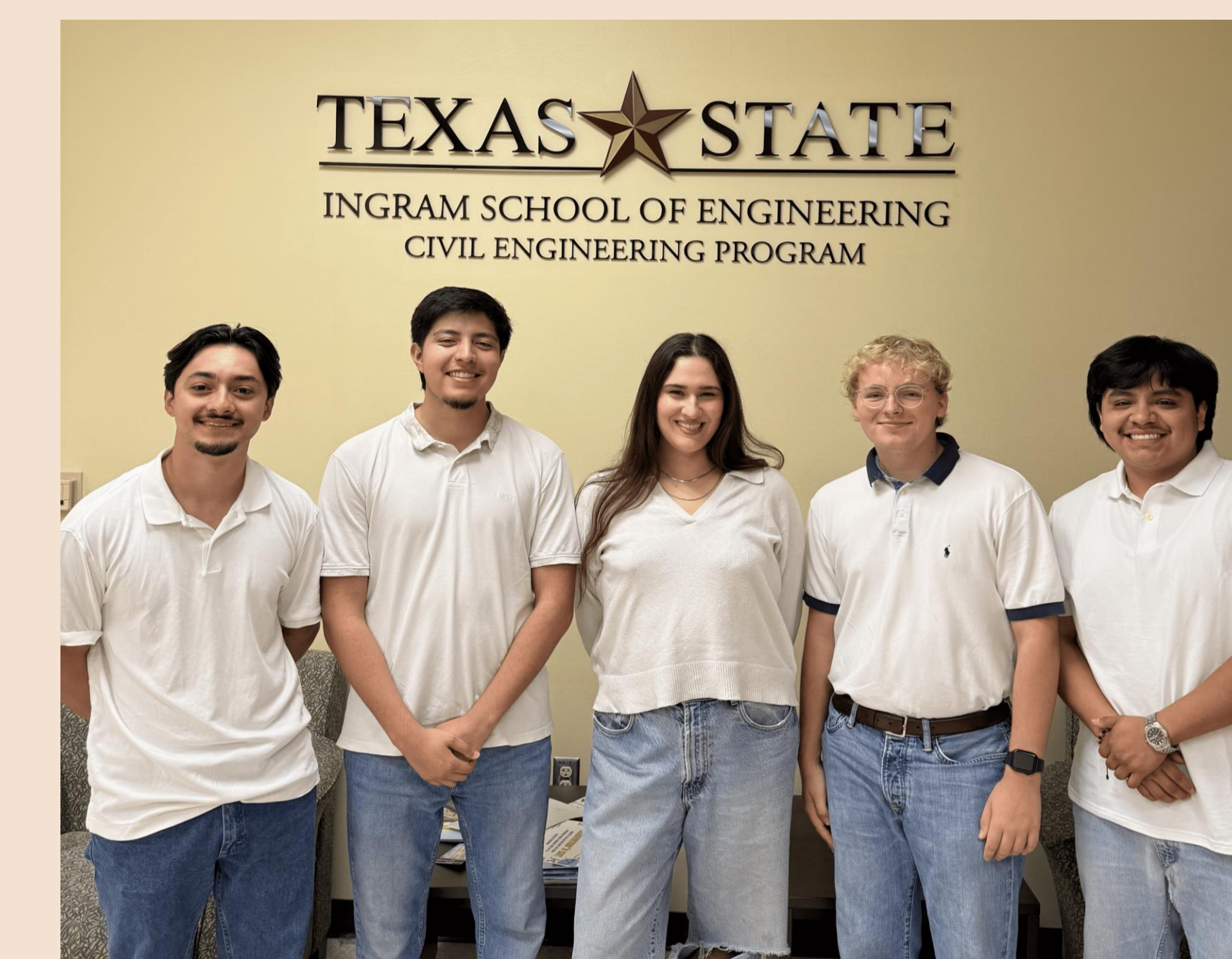
- Side-stream hydrocyclone system installed on the RAS/WAS line.
- Selectively retains dense, well-settling biomass and wastes lighter floc.
- Returns concentrated sludge to aeration basins, lowering SVI and improving clarifier settling.
- Increases effective aeration capacity
- Achieves modeled effluent BOD, TSS, and ammonia below permit limits.
- Compact footprint that fits inside the existing plant layout

Proposed Expansion



- Proposed Offline EQ Basin
- Proposed inDENSE™ System Units
- EQ Basin Fill Pipe
- EQ Basin Return Pipe
- Pump Station
- Existing RAS
- Densified RAS Distribution
- Existing WAS

Team



Cost Summary

Cost Category	Phase 1: EQ Basin
Civil/Structural	\$2,427,500
Equipment & Structure	\$0
Mechanical	\$805,000
Electrical & Instrumentation	\$380,000
Sitework	\$0
Contractor General Conditions	\$0
SUBTOTAL DIRECT CONSTRUCTION	\$3,612,500
Engineering & Administration (15%)	\$541,875
Contingency (30%)	\$1,246,313
SUBTOTAL INDIRECT COSTS	\$1,788,188
TOTAL PROJECT COST	\$5,400,688

Cost Category	Phase 2: inDENSE™
Civil/Structural	\$0
Equipment & Structure	\$1,463,400
Mechanical	\$731,700
Electrical & Instrumentation	\$379,400
Sitework	\$162,600
Contractor General Conditions	\$298,100
SUBTOTAL DIRECT CONSTRUCTION	\$3,035,200
Engineering & Administration (15%)	\$455,280
Contingency (30%)	\$1,047,144
SUBTOTAL INDIRECT COSTS	\$1,502,424
TOTAL PROJECT COST	\$4,537,624

TOTAL COST	\$9,938,312
TOTAL O&M COST / YEAR	\$280,210