Town of Erie North Water Reclamation Facility Expansion Master Plan: Findings & Recommendations

Board Meeting

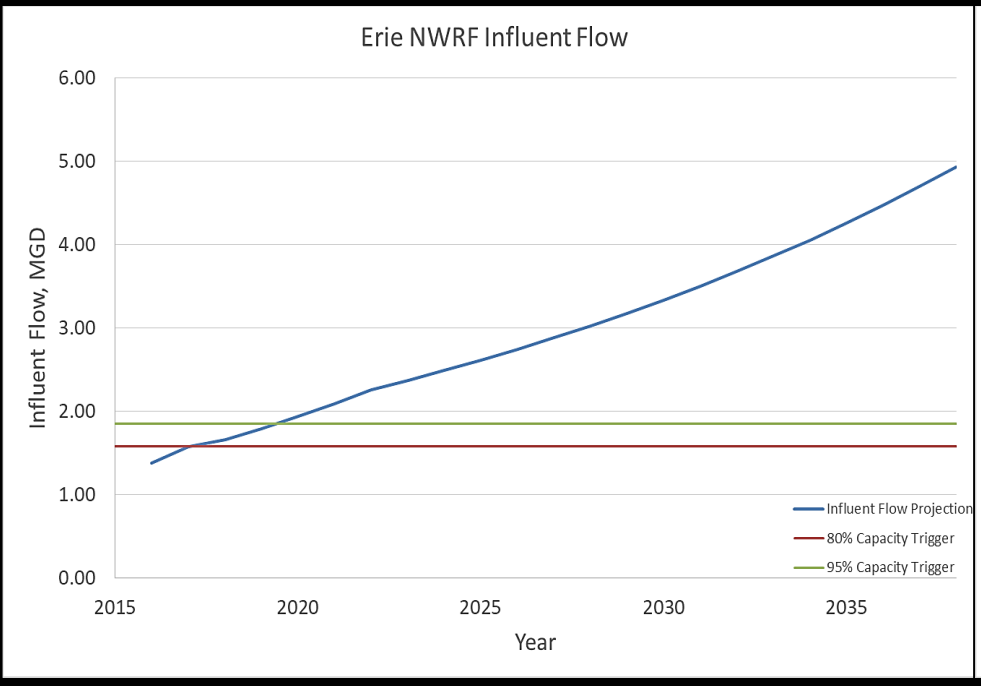
April 9th, 2019

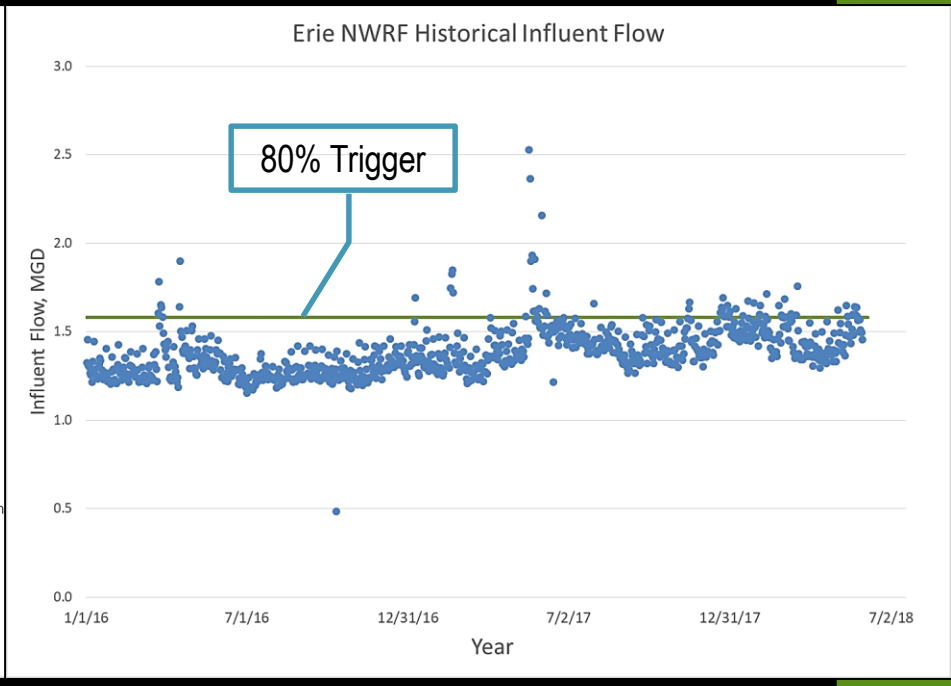
Erie NWRF Presentation Agenda

AGENDA
1. Project Drivers
2. Population Projections
3. Capacity Limitations
4. Master Plan Findings: Liquids Stream
5. Master Plan Findings: Solids Stream
6. Project Costs
7. Net Present Value Analysis
8. Sustainability Analysis

Project Drivers: CDPHE Requirements [Reg No. 61.8(7)]

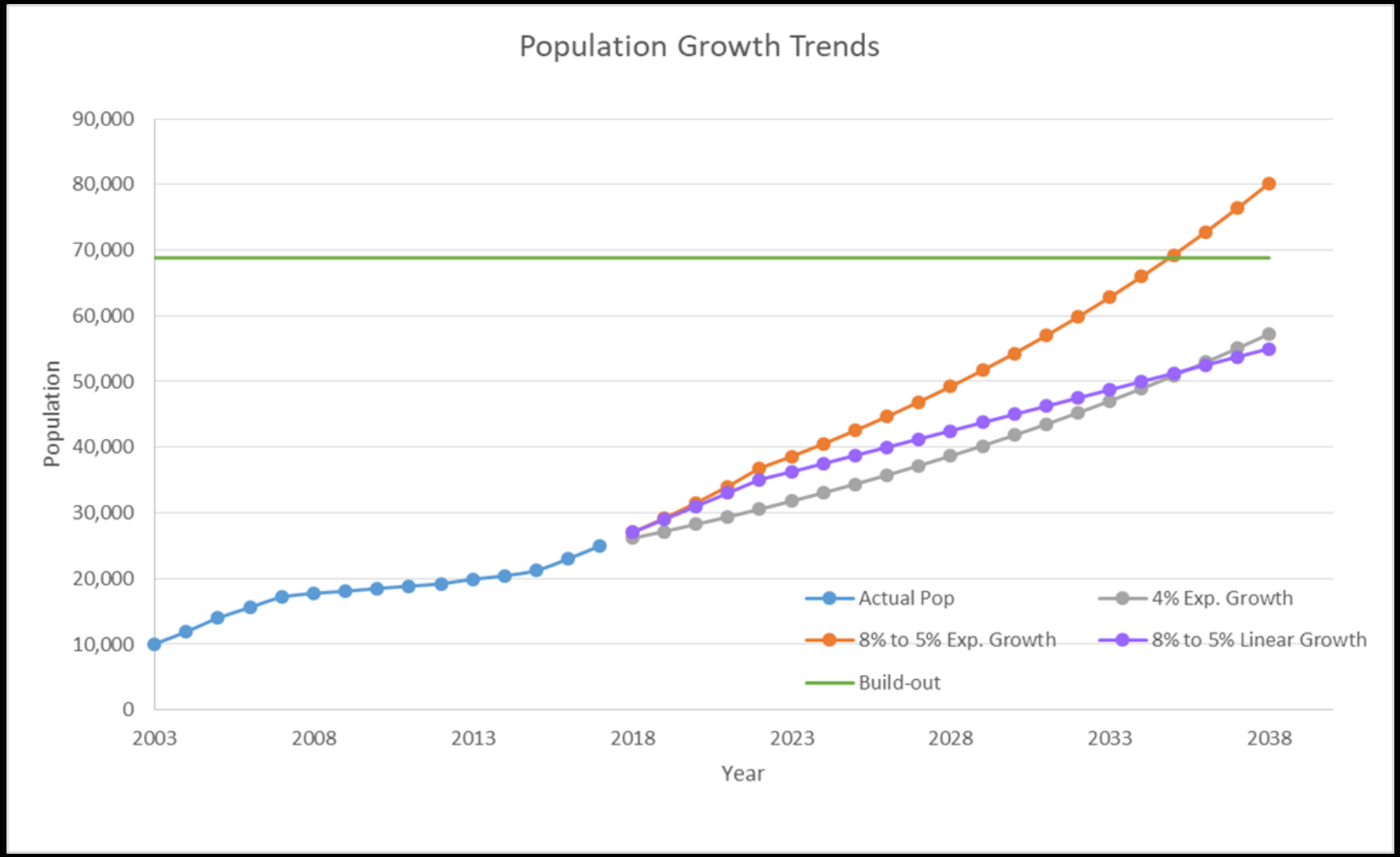
- Requirement to:
  - Initiate planning when influent flow reaches 80% of capacity.
  - Begin construction when influent flow reaches 95% capacity.
- Current capacity: 1.95 MGD flow
  - 2017 maximum month flow: 1.58 MGD flow (81%)
  - 2020 maximum month flow projection: 1.85 MGD (95%)





Population Growth

- Revised population projections account for faster than expected growth in Erie
- Using 8% exponential growth for the first five years, and 5% after that (Orange Line)



Project Drivers: Plant Capacity

- NWRF hydraulic capacity will be exceeded by 2021, according to population projections.
- Solids handling capacity has already been exceeded (dewatering process runs 24/7.)

Erie NWRF 2028 and 2038 Average Annual and Maximum Month Flows		
Parameter	Average Annual	Max. Month
2017	1.43	1.58
2021	1.93	2.09
2028	2.80	**3.03***
2038	4.56	**4.93****

- *New Design 10-year Hydraulic Capacity
- **Future 20-year Hydraulic Capacity

Project Drivers: Regulatory Changes

- Impending Regulations 85 and 31 impose stricter phosphorus and nitrogen effluent limits
- Nitrogen loads increases requires additional treatment capability
- Use Policy 17-1 to extend date required to meet strict Regulation 31 requirements.
  - Delays further regulatory treatment improvements by up to 10-years

	Reg. 85	Incentive Target
Total Phosphorus Annual Median	≥1.0 mg/L	≤0.5 mg/L
Months Earned	0	12
Total Inorganic Nitrogen Annual Median	≥15 mg/L	≤7 mg/L
Months Earned	0	12

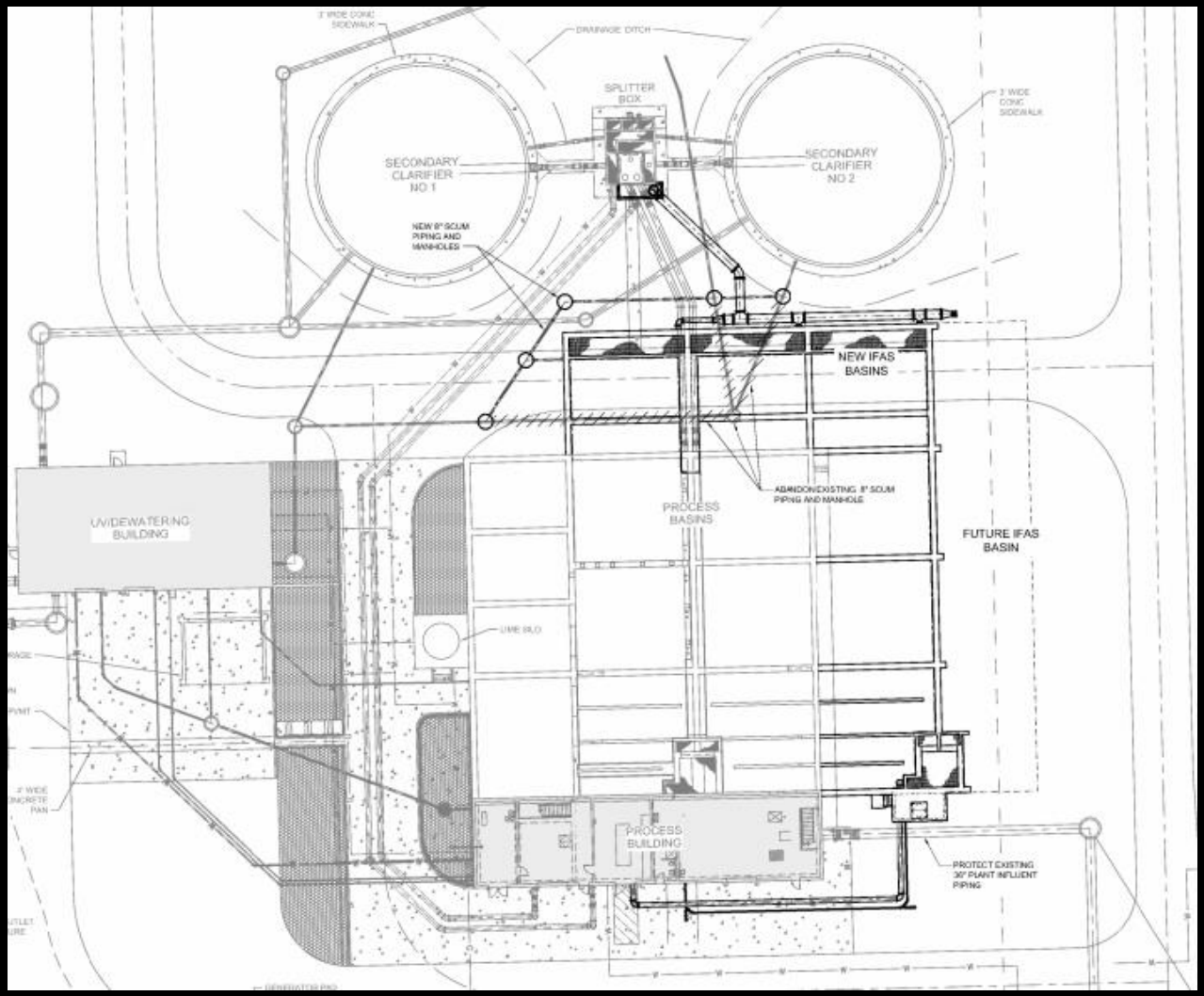
Project Drivers: Solids Handling Issues

- Existing solids system is at capacity
- Sulfuric and Lime chemicals pose health and operating risks
- System does not achieve original Class A design intent
- Biosolids with lime pose a high trucking cost

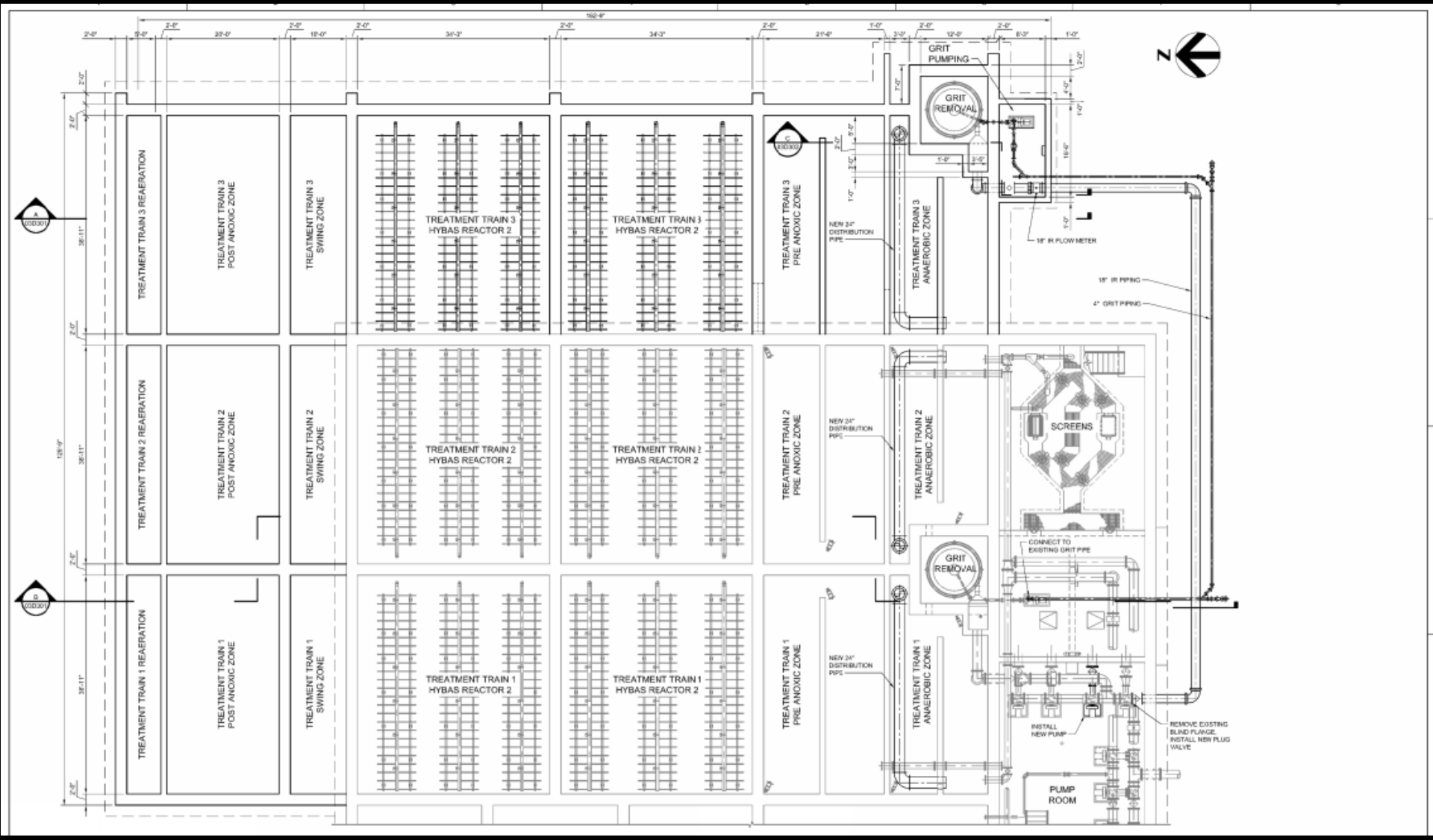
Master Plan Recommendations: Liquids Stream

Liquids Stream Capacity Improvements

- New 3rd liquid treatment train
- Expand existing treatment trains
- Additional influent pumping
- Second grit handling system



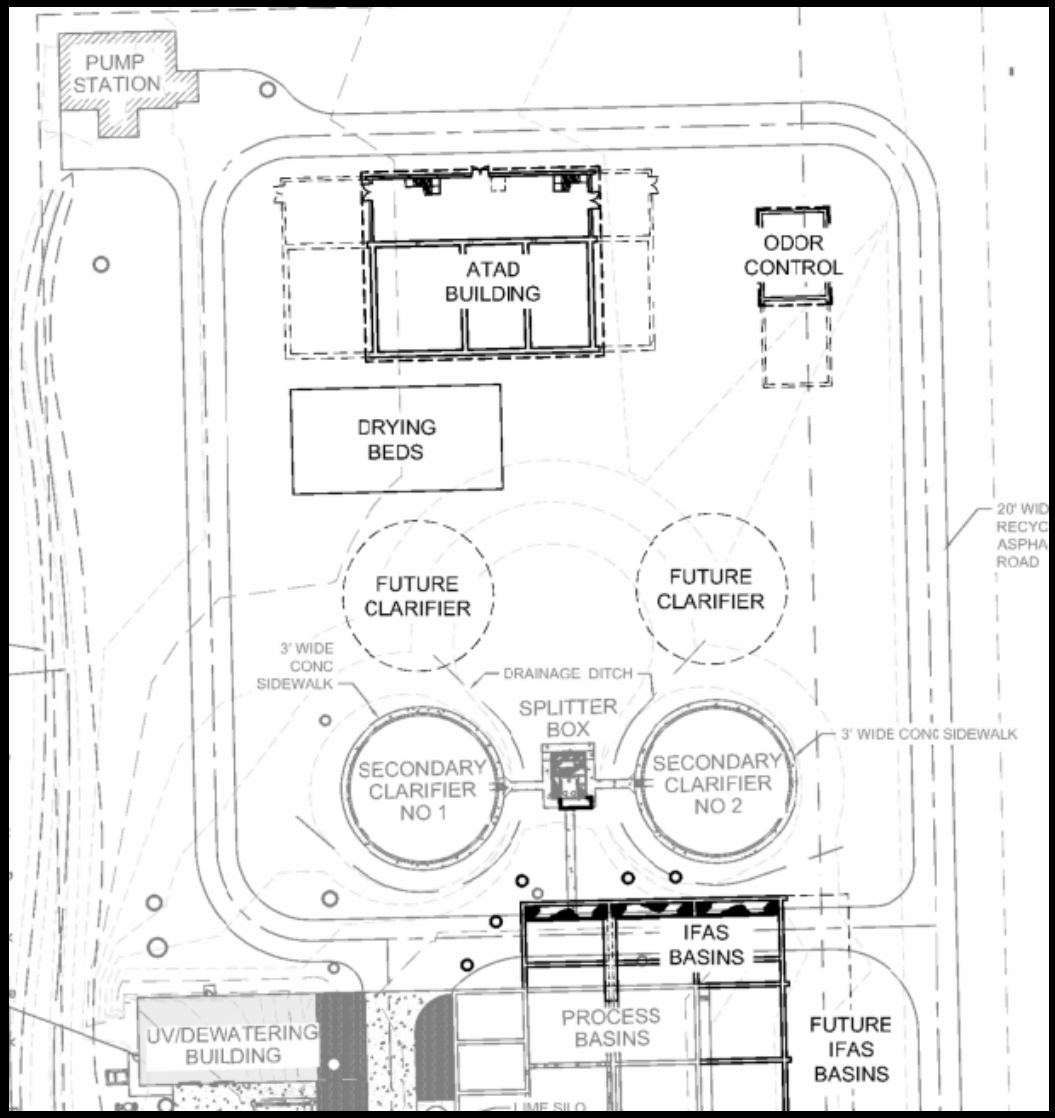
Master Plan Recommendations: Liquids Stream



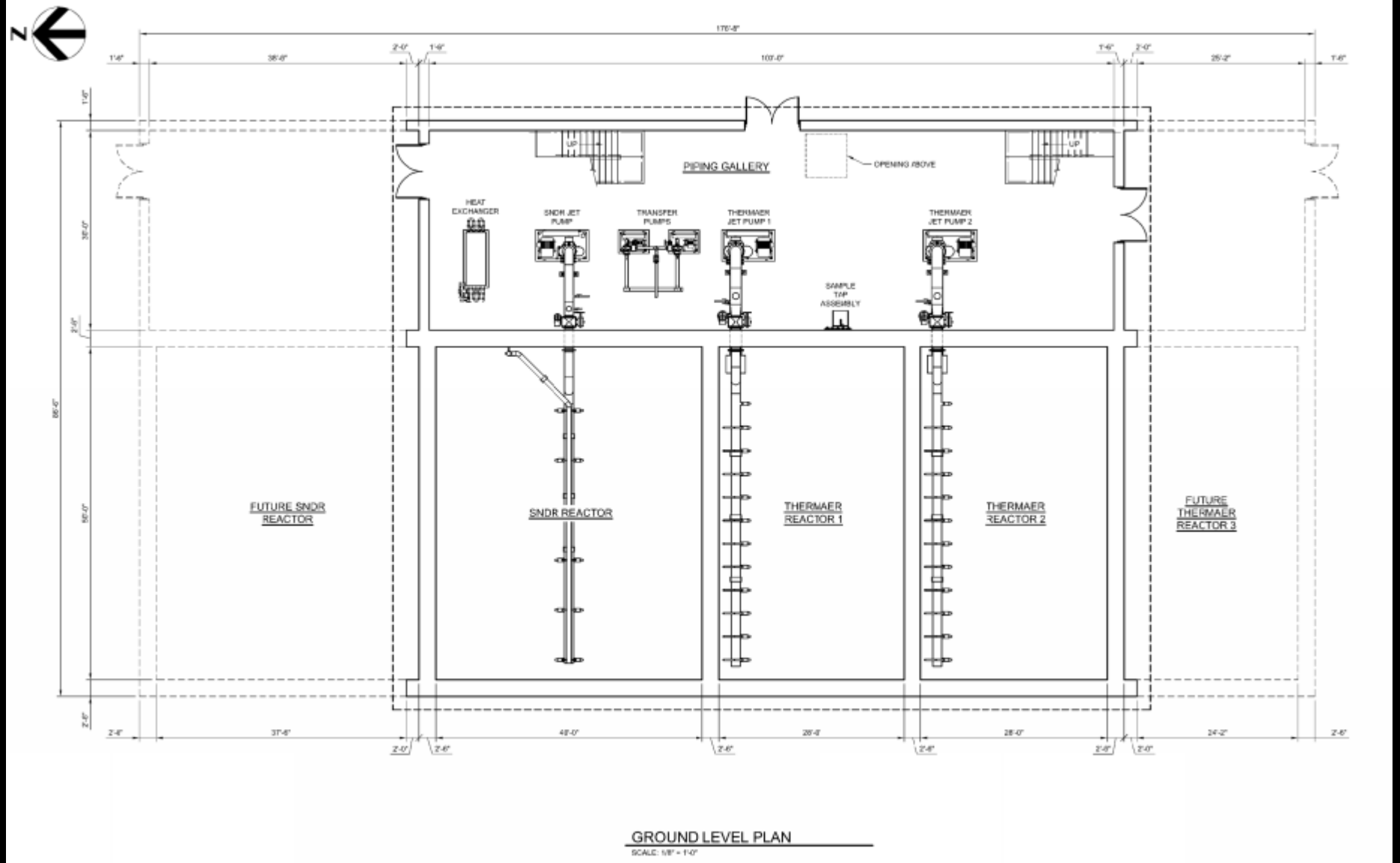
Master Plan Recommendations: Solids Stream

Solids Stream Improvements

- Construct new Autothermal Thermophilic Aerobic Digestion (ATAD) facility for Class A solids
- Install new thickening/dewatering
- Decommission existing lime stabilization system
- Construct drying beds for storage/continued drying



Master Plan Recommendations: Solids Stream



Project Costs: Summary of Recommended Improvements

Erie NWRF Expansion Project Opinion of Probable Construction Cost	
Item	**Cost**
Liquids Stream Improvements	$8,974,000
Solids Stream Improvements	$15,202,000
Existing Facility Site Improvements	$650,000
TOTAL ESTIMATED PROJECT COST	**$24,826,000**

- Solids Stream “Keep Existing” option results in average $1 million per year cost to Town, i.e. Rate Payers
- Town growth is paying for Expansion Project through existing Tap Fees. No increase in tap fees or user rates to fund this project.

Sustainability Analysis

Liquids Stream Expansion:

- Provides required capacity to support population growth
- Provides redundancy and operational safety
- Increases treatment performance
- Increases regulatory compliance
- Defers significant capital expenditure for Reg 31 compliance

Boulder County

1861 WELD COUNTY

CDPHE CO COLORADO Department of Public Health & Environment

Sustainability Analysis

Solids Stream: Waste or Resource? → Resource

- Eliminates chemical use
- Produces reliable Class A product. Future of Class B product is questionable
- Increases re-usability of end product
- Eliminates hauling costs
- Potential to convert drying beds to composting facility

Summary

- Liquid Stream is at Capacity
- Solids Stream Insufficient for Future Growth
- Plan Paves Road for Future Growth and Sustainable Return on Investment