
Preliminary Engineering Report

Sludge Processing Improvements Study

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Prepared for

Albany County Water Purification District

112 State Street
Albany, New York



Revision 5
March 2025

Barton & Loguidice

Sludge Processing Improvements Study
Albany County Water Purification District, Albany County

Preliminary Engineering Report

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Prepared for

Albany County Water Purification District
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Albany, New York 12207

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In association with:



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EXECUTIVE SUMMARY

The Albany County Water Purification District (ACWPD) owns and operates two regional wastewater treatment plants (WWTP), two interceptor sewers, and one trunk sewer. The ACWPD's WWTPs have served the ACWPD well since their original construction in 1974. Several components have been rehabilitated or replaced over the years, but much of the plant facilities and equipment are as originally constructed. This study includes an evaluation of alternative improvements to the WWTPs in an effort to identify energy saving opportunities and increased efficiency and reliability.

Both WWTPs continue to operate in a sound manner and generally meet SPDES permit effluent limitations. However, the ACWPD is currently under an Order on Consent (No. R4-2017-0426-210) issued by the NYSDEC due to deviations of Operational Parameter Limits (OPLs) established according to 40 CFR 60 Subpart MMMM. Under this consent order, ACWPD is required to evaluate the replacement of the existing incinerators with anaerobic sludge digesters, or improvements to the existing incinerators so that their emissions will comply with all applicable regulations.

Of the alternative scenarios evaluated, it was determined that consolidation of South Plant and North Plant sludge handling processes would be the most cost-effective and energy efficient means of long-term sludge disposal for the ACWPD. However, the feasibility of this alternative has raised concerns with NYSDEC, due to a combination of regulatory and technical factors. Specifically, the approximately 4-mile-long forcemain that would be necessary to convey liquid sludge from the South Plant to the North Plant would pass through multiple sensitive properties, including Department of Transportation (DOT) owned highways and the Corning Riverfront Preserve, a natural resource in the City of Albany which borders the Hudson River. NYSDEC has also voiced concerns with the ability of the North Plant incinerator to meet emission limits and the potential of increased odors at the North Plant with the additional sludge volume from the South Plant. Additionally, NYSDEC indicated that the consolidation of sludge handling processes to the North Plant may trigger more stringent air emissions limits under 40 CFR 60 Subpart LLLL. These complex challenges could likely be overcome through close coordination with all parties involved; however, the permitting and design process could take several additional years. In consideration of ACWPD's immediate need to upgrade critical systems to ensure permit compliance, the alternative to consolidate sludge operations to the North Plant was deemed a higher risk alternative because of the additional time needed to permit the project. As such the alternative to continue sludge incineration at both the North and South treatment plants was chosen as the preferred alternative.

The recommended project includes improvements to the North and South Plant sludge processes as summarized herein.

At the North Plant the following improvements will be made:

- New Fats, Oils and Grease (FOG)/septage receiving station
- Two (2) new sludge thickeners
- Two (2) new thickened waste activated sludge pumps

- Replacement of sludge tank mixing system for four (4) sludge mix tanks
- Two (2) new combined sludge pumps
- One (1) new sludge dewatering unit
- Rehabilitation of both sewage sludge incinerator units including but not limited to the following:
 - o Replacement of each incinerator's wet scrubber to improve emissions
 - o Installation of an afterburner to each incinerator to improve emissions and odors
 - o Upgrades to electrical and control systems.

At the South Plant the following improvements will be made:

- Two (2) new sludge thickeners
- Two (2) new thickened waste activated sludge pumps
- Replacement of sludge tank mixing system for three (3) sludge mix tanks
- Two (2) new combined sludge pumps
- One (1) new sludge dewatering unit
- Rehabilitation of one sewage sludge incinerator unit including an upgrade to the electrical and controls for both incinerators

These improvements would allow both plants to continue operating in compliance with existing SPDES and Title V permits.

The estimated capital cost of the overall recommended project is \$65,000,000.

The proposed FOG/septage receiving station at the North plant would involve the installation of a new system designed to separate the FOG component from grease trap waste, generating a low-moisture brown grease product which can be used as a biofuel and sold on commodities markets as a substitute for No. 6 fuel oil. This commodity is expected to create a significant new revenue stream for ACWPD. The estimated capital costs associated with the recommended FOG receiving station is approximately \$8,500,000 (this cost is included in the \$65,000,000 total above); the projected payback period is approximately 5.8 to 14.2 years dependent upon the ramp up of receipts from additional FOG waste.

The recommended Sludge Processing Improvements Project is currently listed on the Federal Fiscal Year 2025 Clean Water State Revolving Fund Intended Use Plan annual list (Project No. C4-5419-06-00) with a project score of 68. The project is identified as being eligible for a \$25,000,000 Bipartisan Infrastructure Law (BIL) grant, \$25,000,000 in BIL hardship financing, and \$15,000,000 in BIL subsidized financing to cover the balance of project costs. ACWPD intends to move forward with the project utilizing this BIL funding, and may continue to attempt to secure additional grant funding if suitable opportunities are identified.

ABBREVIATIONS

ACWPD	Albany County Water Purification District
ADD	Average Daily Demand
BMP	Best Management Practice
BOD5	Biochemical Oxygen Demand (5-day)
C	Celsius
CCI	Construction Cost Index (ENR)
cfs	Cubic feet per second
CT	Concentration x time
CWSRF	Clean Water State Revolving Fund
DEC	New York State Department of Environmental Conservation
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
DOT	New York State Department of Transportation
ECL	Environmental Conservation Law
EDU	Equivalent Dwelling Unit
EFC	New York State Environmental Facilities Corporation
ENR	Engineering News-Record
EPA	United States Environmental Protection Agency
EPG	Engineering Planning Grant
F	Fahrenheit
fps	Feet per second
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FOG	Fats, Oils, Grease
gpd	Gallons per day
GML	General Municipal Law
gpm	Gallons per minute
HGL	Hydraulic Grade Line
hp	Horsepower
HPGN	High Precision Geodetic Network (1998)
IUP	Intended Use Plan
ISO	Insurance Services Office
LF	Linear feet
MHI	Median Household Income
MGD	Million gallons per day
NAD83	North American Datum (1983)

ABBREVIATIONS (cont'd)

NAVD88	North American Vertical Datum (1988)
NPSHa	Net positive suction head available
NPSHr	Net positive suction head required
NYSCC	New York State Canal Corporation
NYSDOH	New York State Department of Health
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
OMB	Office of Management and Budget
PAC	Powdered activated carbon
PACl	Polyaluminum chloride
PER	Preliminary Engineering Report
PHF	Peak Hourly Flow
ppm	Parts per million
psig	Pounds per square inch (gauge)
Q	Volumetric flow rate (gpm, MGD)
scfm	Standard cubic feet per minute (68 degrees F and 1 atmosphere)
SEQR	State Environmental Quality Review
SPDES	State Pollutant Discharge Elimination System
SWPPP	Storm Water Pollution Prevention Plan
TDH	Total dynamic head
TSS	Total suspended solids
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

1.1. Authorization

Albany County Water Purification District (ACWPD) retained the services of Barton & Loguidice, D.P.C. (B&L) to prepare an engineering report to evaluate sludge processing improvements for their wastewater treatment facilities. This report describes options for the ACWPD to address the long-term sludge disposal needs of the North Plant and South Plant. This Preliminary Engineering Report (PER) has been prepared in accordance with NYSEFC guidance for municipal wastewater infrastructure projects. This report is co-funded by New York State Energy Research Development Authority (NYSERDA) for development of a parallel FlexTech Study for evaluating energy conservation opportunities within the recommended capital improvement project (CIP). In addition, co-funding from the NYSEFC EPG program was utilized for a supplemental evaluation of the following:

- North Plant Sludge Mixing Tank Structural Conditions
- North Plant WAS Thickening Improvements
- North Plant Combined Sludge Pumping Improvements

1.2. Background

The ACWPD owns and operates two regional wastewater treatment plants (WWTP), two interceptor sewers, and one trunk sewer. The ACWPD's WWTPs have served the ACWPD well since their original construction in 1974. Several components have been rehabilitated or replaced over the years, but much of the plant facilities and equipment are as originally constructed. This study includes an evaluation of alternative improvements to the WWTPs in an effort to identify energy saving opportunities and increased efficiency and reliability.

Both WWTPs continue to operate in a sound manner and generally meet SPDES permit effluent limitations. However, the ACWPD is currently under an Order on Consent (No. R4-2017-0426-210) issued by the NYSDEC due to deviations of Operational Parameter Limits (OPLs) established according to 40 CFR 60 Subpart M. Under this consent order, ACWPD is required to evaluate the replacement of the existing incinerators with anaerobic sludge digesters, or improvements to the existing incinerators so that their emissions will comply with all applicable regulations. This report will evaluate alternatives for the ACWPD to address their long-term sludge processing disposal needs.

In addition to the sludge disposal needs, major plant components are showing signs of age-related deterioration and/or have exceeded their useful lives. It is crucial to keep the WWTPs operating properly, ensuring continued protection of the Hudson River.

1.3. Scope of Work

The scope of services for the PER is as follows:

- Historical Data Review and Analysis
- Establish Current and Future Design Sludge Flows and Loads

- Evaluate Energy Conservation Measures and Process Alternatives
 - o FOG Receiving
 - o Consolidation of Sludge Management from South Plant to the North Plant
 - o Sludge Mixing – North Plant & South Plant
 - o Sludge Processing
- Supplemental Analysis
 - o North Plant Sludge Mixing Tank Structural Evaluation
 - o North Plant Waste Activated Sludge Thickening Evaluation
 - o North Plant Combined Sludge Pump Evaluation
- Preliminary Estimates of Probable Project Capital (Class 5), O&M Costs, and Short-Lived Assets
- Recommended Improvements Plan

2.0 PROJECT BACKGROUND AND HISTORY

The ACWPD operates two (2) regional wastewater treatment facilities in Albany County, New York. The North Plant is located in the Village of Menands, and treats wastewater from the Cities of Cohoes, Watervliet, and a portion Albany, as well as the Towns of Guilderland and Colonie, and the Villages of Colonie, Green Island, and Menands. The South Plant is located in the City of Albany and treats wastewater from approximately 90% of the City of Albany, and the Port of Albany. Both facilities currently utilize incineration as their primary means of sludge processing. Each facility has two (2) multiple-hearth incinerators.

2.1. Site Information

2.1.1. Location

The City of Albany is located in the northeast quadrant of Albany County, New York. Nearby communities consist of the Town of Colonie to the north, Town of Bethlehem to the south, and the Town of Guilderland to the west. The Hudson River is the City's border to the east.



Figure 2-1: Project Location Map



Figure 2-2: Map of Albany County

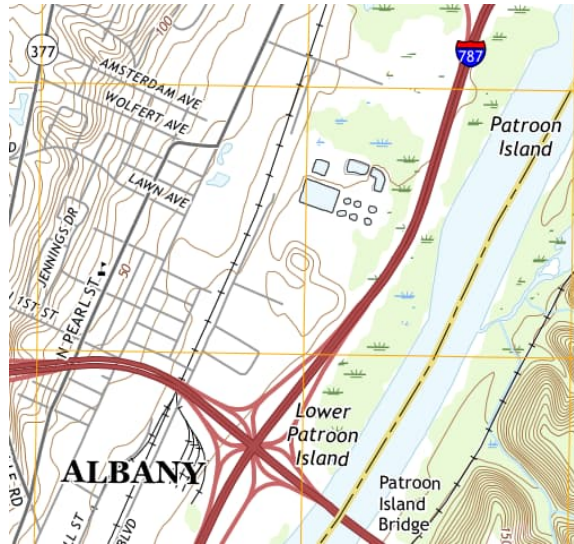


Figure 2-3: USGS Topographic Map – North WWTP

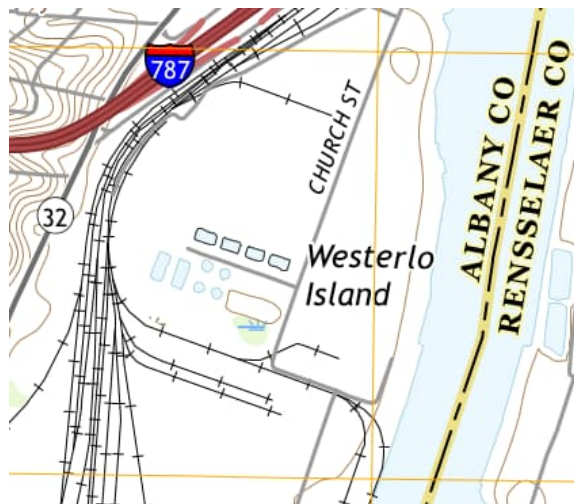


Figure 2-4: USGS Topographic Map – South WWTP

2.1.2. Geologic Conditions

A Custom Soil Resource Report for each WWTP was generated using the USDA Natural Resource Conservation Service (NRCS) Web Soil Survey (WSS) tool. The reports include Geologic conditions and topography, and are included as Appendix A.

2.1.3. Environmental Resources

Preliminary screening through the New York State Department of Environmental Conservation (DEC) Environmental Resource Mapper has identified that the project is located within the vicinity of natural communities. Copies of the Environmental Resource Maps are included in Appendix B.

2.1.4. Floodplain Considerations

Both WWTPs are partially located in a designated FEMA flood zone, as shown on the figures below and on the FEMA FIRM Maps in Appendix C.



Figure 2-5: North WWTP FEMA FIRMette



Figure 2-6: South WWTP FEMA FIRMette

Neither WWTP is located in an area within six (6) feet of sea level rise by 2100, according to the Surging Seas Risk Zone Map online mapping service.

2.1.5. Environmental Justice Areas

Screening through the DEC Webmap of Potential EJ Areas has identified that this project is located in and serves environmental justice areas.

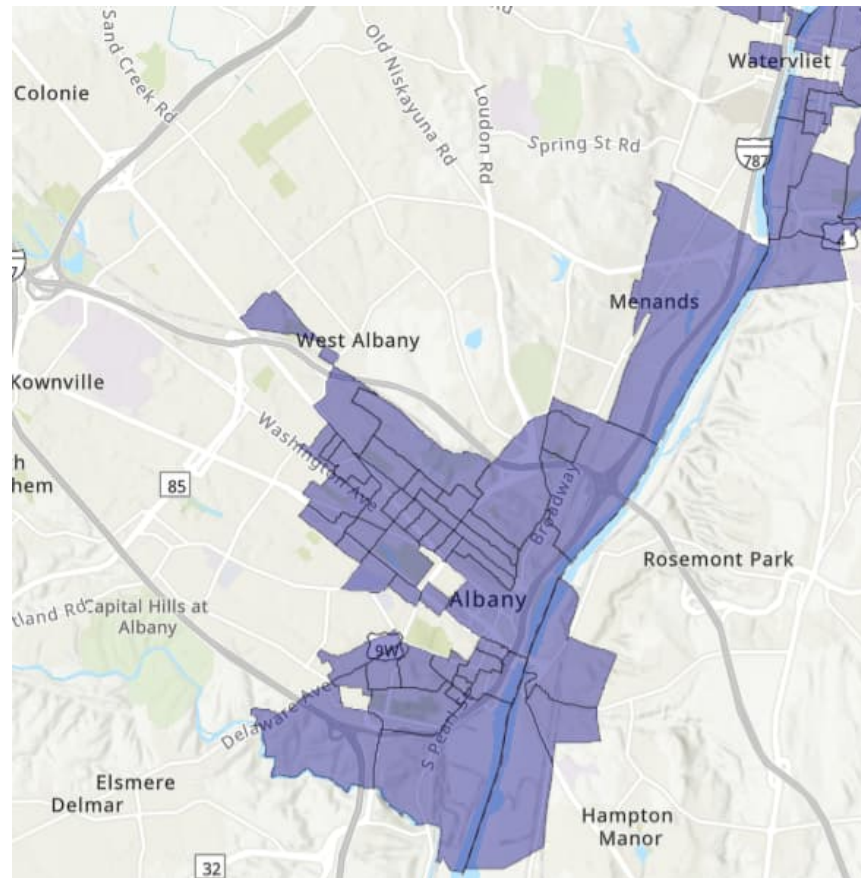


Figure 2-7: Environmental Justice Area Map

2.1.6. Disadvantaged Communities

Screening through the EFC Webmap of Disadvantaged communities has identified that this project is located in and serves disadvantaged communities.

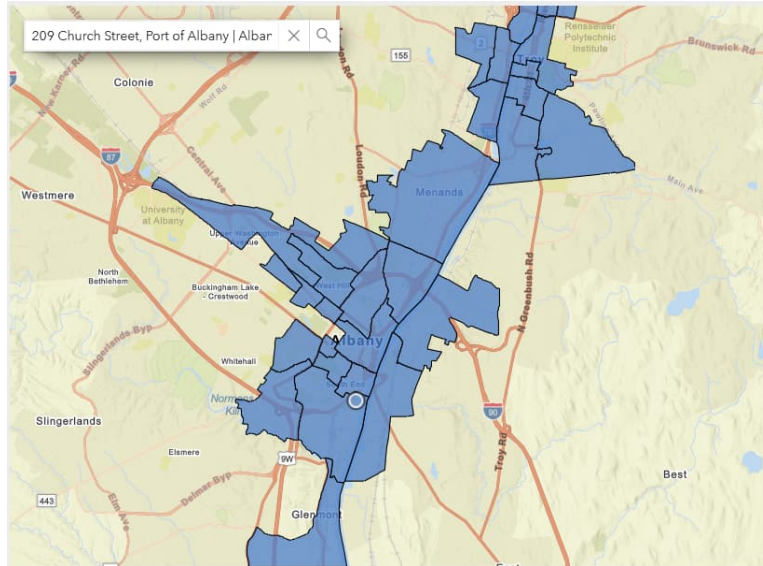


Figure 2-8: DAC Map

2.2. Ownership and Service Area

2.2.1. Facility Ownership

Both existing WWTPs are owned and operated by the ACWPD. ACWPD personnel are divided into four departments: Administration, Process Operation, Maintenance, and Wastewater Management. A full organizational flow chart can be found in Appendix D.

2.2.2. Presence of Outside Users

Currently there are several outside users that discharge sanitary wastewater into municipal collection systems for conveyance and treatment at the ACWPD WWTPs.

2.2.3. Required Agreements

The ACWPD was established by County Resolution No. 45 in 1968. Each member municipality is allotted a percentage of total flow.

Table 2-1: Municipal Flow Allocations

Municipality	Flow Allocation	
	%	MGD
Albany (C)	54.40%	34.816
Colonie (T)	14.40%	9.216
Guilderland (T)	1.70%	1.088
Cohoes (C)	6.80%	4.352
Watervliet (C)	4.30%	2.752
Colonie (V)	4.10%	2.624
Menands (V)	2.40%	1.536
Green Island (V)	11.90%	7.616
Total	100%	64.000

The South Plant currently accepts liquid sludge from the Town of Bethlehem. The South Plant has also historically accepted sludge from the Village of Coeymans and the Town of East Greenbush; however, it has not received any in the previous five (5) years and does not plan to in the future.

2.2.4. Industrial Users

The existing WWTPs accept industrial discharges and hauled waste from ten (10) permitted Significant Industrial Users (SIUs) and three (3) permitted Industrial Users (IUs). All SIUs and IUs are permitted through the ACWPD's USEPA approved Pretreatment Program. Pretreatment is required as necessary.

2.2.5. Population Trends and Projected Growth

Census data for the eight (8) municipalities which make up the ACWPD is presented in Table 2-2. The data indicates that the combined population increased approximately 0.33% annually between 2000 and 2020. Based on this information, the estimated combined population in Year 2040 is 281,541.

Table 2-2: Population Data Taken from U.S. Census

Village/Town/City	2000 Population	2010 Population	2020 Population	20-Year Projected Growth
Albany (C)	95,699	97,856	99,224	102,881
Colonie (T) ⁽¹⁾	79,258	81,591	85,590	91,644
Guilderland (T) ⁽¹⁾	34,045	35,303	36,848	39,603
Cohoes (C)	15,521	16,168	18,147	20,551
Watervliet (C)	10,207	10,254	10,375	10,531
Colonie (V)	7,916	7,793	7,781	7,628
Menands (V)	3,910	3,990	4,550	5,110
Green Island (V)	2,278	2,620	2,934	3,595
Total	248,834	255,575	265,449	281,541

(1) ACWPD only services a portion of the residents of the Town of Colonie and the Town of Guilderland

2.2.6. Anticipated Development

The ACWPD is not anticipating major growth in its collection system over the next 20 years. Generally speaking, the areas served by the two WWTPs are substantially built-out and do not have significant capacity for further development. Based on the location of available undeveloped land, growth within the Town of Colonie and the Town of Guilderland would result in the majority of the wastewater generated being directed to each individual Town's respective WWTPs.

3.0 EXISTING FACILITIES

3.1. Description and History

Construction on each WWTP began in 1970, and each facility was brought online in 1974. The North Plant was designed as a 35 MGD WWTP. The South Plant was originally designed as a 19 MGD WWTP, but the permitted flow was increased to 29 MGD in 2005.

3.2. Current or Future Projects on the Site

The South Plant recently completed an upgrade to its influent bar screens. This PER includes improvements to the sludge mixing, sludge thickening, dewatering, and incineration processes at both plants as well as the installation of a FOG receiving station at the North Plant. A Capital Improvement Project to upgrade the North and South Plant's main wastewater treatment processes (e.g., headworks, aeration, secondary clarifiers) is being undertaken via a separate EPG award.

The County has undertaken two emergency incineration projects in 2024 which included in general:

- North Plant Incinerator #2
 - o Replacement of Hearth 6
 - o Replacement of teeth in Hearths 2, 3, 4 and 8
- South Plant Incinerator #2
 - o Hearth 1 replace refractory, reinsulate roof where steel was exposed, repair both sides of the Guillotine door
 - o Hearth 2 replace rabble teeth, patch walls that are missing bricks, reinsulate castable at both doors
 - o Hearth 3 reinsulate both rabble arms with new castable refractory, replace rabble teeth, replace refractory, replace 20 ft. of linear wall section, replace insulation on one (1) door frame
 - o Hearth 4 fully reinsulate both rabble arms with new castable refractory, replace rabble teeth, patch centershaft refractory
 - o Hearth 5 fully reinsulate both rabble arms with new castable refractory, replace rabble teeth, patch centershaft refractory, replace refractory to both doors, and one (1) door casting, replace firebrick to repair one (1) drop hole
 - o Hearth 6 replace rabble teeth, replace refractory in west door area
 - o Hearth 7 replace rabble teeth

3.3. Permit Conditions and Effluent Discharge Limits

The North WWTP operates under SPDES permit number NY 002 6875. The permit was last issued to the District in 2009. North WWTP discharge permit limits are tabulated in Table 3-1. A copy of the active SPDES permit that highlights permit conditions and effluent discharge limits is included in Appendix E.

Table 3-1: North WWTP SPDES Permit Summary

Parameter	Type	Effluent Limits			
		Limit	Units	Limit	Units
Flow	Monthly Avg	35	MGD		
CBOD5	Monthly Avg	25	mg/l	7,300	lbs/day
CBOD5	7-day Avg	40	mg/l	12,000	lbs/day
CBOD5	% Removal	85			
TSS	Monthly Avg	30	mg/l	8,800	lbs/day
TSS	7-day Avg	45	mg/l	13,000	lbs/day
TSS	% Removal	85			
Solids, Settleable	Daily Max	0.3	ml/l		
pH	Range	6.0-9.0	SU		
Nitrogen, TKN (as N)		15.2	mg/l		
(June 1 – October 31)	Monthly Avg				
Temperature	Daily Max	Monitor			
	Seasonal Disinfection from May 1 to October 31				
Coliform, fecal	Monthly Avg	200	No./ 100 ml		
Coliform, fecal	7-day Avg	400	No./ 100 ml		
Chlorine, total residual	Daily Max.	0.60	mg/l		

The South WWTP operates under SPDES permit number NY 002 6867. The permit was last issued to the District in 2009. South WWTP discharge permit limits are tabulated in Table 3-2. A copy of the active SPDES permit that highlights permit conditions and effluent discharge limits is included in Appendix E.

Table 3-2: South WWTP SPDES Permit Summary

Parameter	Type	Effluent Limits			
		Limit	Units	Limit	Units
Flow	Monthly Avg	29	MGD		
CBOD5	Monthly Avg	25	mg/l	4,000	lbs/day
CBOD5	7-day Avg	40	mg/l	6,300	lbs/day
CBOD5	% Removal	85			
TSS	Monthly Avg	30	mg/l	4,800	lbs/day
TSS	7-day Avg	45	mg/l	7,100	lbs/day
TSS	% Removal	85			
Solids, Settleable	Daily Max	0.3	ml/l		
pH	Range	6.0-9.0	SU		
Nitrogen, TKN (as N)		15.4	mg/L		
(June 1 – October 31)	Monthly Avg				
Temperature	Daily Max	Monitor			
	Seasonal Disinfection from May 1 to October 31				
Coliform, fecal	Monthly Avg	200	No./ 100 ml		
Coliform, fecal	7-day Avg	400	No./ 100 ml		

3.4. Compliance Issues

Flow and organic loading conveyed through the North WWTP has consistently met the SPDES permit parameters during the 5-year period 2019-2023. There have been SPDES excursions across that time period, which are summarized in Table 3-3.

The ACWPD is currently under an Order on Consent (No. R4-2017-0426-210) issued by the NYSDEC due to deviations of Operational Parameter Limits (OPLs) established according to 40 CFR 60 Subpart M. Specifically, the deviation which led to the consent order being issued was a failure to maintain the minimum required pH in the incinerator scrubber drain. The pH serves as a surrogate measurement to indicate similar acid gas removal performance as observed during the compliance stack test. The District does not currently test directly for hydrogen fluoride (HF). It is likely HF is present and contributes to pH suppression in the wet scrubber; the degree of which is unknown. A more thorough discussion on air permit compliance is included later in this report.

Table 3-3: North WWTP Effluent Limit Exceedances (2019 – 2023)

Parameter	Limit Type	Number of Exceedances
Solids, total suspended	7-day avg.	1
Solids, total suspended	Monthly avg.	2
Solids, settleable	Daily Max	4
Nitrogen, Kjeldahl, total (as N)	Monthly avg.	2
Coliform, fecal general	30-day avg.	10
Coliform, fecal general	7-day avg.	12
pH	Range	1

Flow and organic loading conveyed through the South WWTP had SPDES permit violations during the 5-year period 2019-2023. Permit excursions across that time period are summarized in Table 3-4.

Table 3-4: South WWTP Effluent Limit Exceedances (2019 – 2023)

Parameter	Limit Type	Number of Exceedances
Solids, total suspended	Monthly avg.	1
Solids, settleable	Daily Max	2
Nitrogen, Kjeldahl, total (as N)	Monthly avg.	2
Coliform, fecal general	30-day avg.	8
Coliform, fecal general	7-day avg.	7
BOD, carbonaceous, 5 day, 20 °C	Monthly avg.	1
pH	Range	1

Detailed summaries of both facilities compliance and enforcement histories, generated using the USEPA Enforcement and Compliance History Online (ECHO) tool, are included in Appendix F.

Following the initial preparation of this report in 2022, subsequent NYSDEC inspections have observed additional operational and equipment concerns relating to FOG and sludge processing. One inspection noted excessive grease accumulation in the North Plant chlorine contact tanks; another inspection noted the presence of odors suspected to be emanating from the North Plant sludge holding tanks and/or solids disposal building. While not the primary focus of this study, it is expected that these concerns will be alleviated, in whole or in part, by the implementation of the improvements recommended later in this report.

3.5. Design Flows and Waste Loads

The North Plant was originally designed to treat 35 MGD, with capacity to process 78,000 pounds of BOD and 84,000 pounds of suspended solids per day.

The South Plant was originally designed to treat 19 MGD, with capacity to process 31,000 pounds of BOD and 47,000 pounds of suspended solids per day. The plant's hydraulic capacity was changed to 29 MGD.

3.6. Existing Flows and Waste Loads

Sections 3.6.1 and Sections 3.6.2 below were included in the original PERs and present operating data through December 2021. A preliminary review of more recent operating data by B&L indicates that no major changes to the basis of design for improvements recommended later in this report would result from its inclusion. The final Basis of Design report for the project will include a review and analysis of this more recent operating data to verify final equipment sizing and design parameters.

3.6.1. North Plant:

B&L reviewed DMRs for the ACWPD's North Plant from 2018 through 2021. The following summaries were compiled from all raw data contained in the DMRs. No data was eliminated from the analysis to yield the most conservative values. The recent observed flows to the North Plant are summarized in the tables below which represents the average and 30-day monthly average flows in comparison to the permitted discharge limitations. The facility is designed and permitted to treat 35 MGD, and currently has additional flow and load capacity available.

Table 3-5: North Plant Influent Flow Characteristics (2018 – 2021)

Year	Average Month (MGD)	Maximum Month (MGD)	Minimum Month (MGD)	Average Available Capacity
2018	22.13	27.21	17.39	12.87
2019	22.71	26.10	17.30	12.29
2020	19.41	24.68	15.01	15.59
2021	20.23	24.88	17.25	14.77
Average	21.12	25.72	16.74	13.88

Table 3-6: North Plant Average Monthly Loading Characteristics (2018 – 2021)

Year	BOD (mg/L)	BOD (lb/day)	TSS (mg/L)	TSS (lb/day)
2018	209	38,318	349	64,084
2019	196	37,134	321	61,301
2020	196	31,583	246	39,966
2021	181	30,116	239	40,300
Average	195	34,288	289	51,412

Table 3-7: North Plant Maximum Monthly Average Loading Characteristics (2018 – 2021)

Year	BOD (mg/L)	BOD (lb/day)	TSS (mg/L)	TSS (lb/day)
2018	277	53,114	485	92,952
2019	256	55,695	590	128,403
2020	255	44,389	337	58,555
2021	281	45,837	343	55,995
Average	267	49,759	439	83,976

3.6.2. South Plant:

B&L reviewed DMRs for the ACWPD's South WWTP from 2018 through 2021. The following summaries were compiled from all raw data contained in the DMRs. No data was eliminated from the analysis to yield the most conservative values. The recent observed flows to the South WWTP are summarized in the tables below which represents the average and 30-day monthly average flows in comparison to the permitted discharge limitations. The facility is permitted to treat 29 MGD, and currently has additional flow and load capacity available.

Table 3-8: South WWTP Influent Flow Characteristics (2018 – 2021)

Year	Average Month (MGD)	Maximum Month (MGD)	Minimum Month (MGD)	Average Available Capacity
2018	23.36	29.07	18.11	5.64
2019	23.33	26.19	18.26	5.67
2020	20.33	23.59	16.86	8.67
2021	22.27	27.59	19.29	6.73
Average	22.32	26.61	18.13	6.68

Table 3-9: South WWTP Average Monthly Loading Characteristics (2018 – 2021)

Year	BOD (mg/L)	BOD (lb/day)	TSS (mg/L)	TSS (lb/day)
2018	86	16,577	141	26,732
2019	73	14,051	111	21,291
2020	73	12,422	108	18,525
2021	77	14,253	103	18,928
Average	77	14,326	116	21,369

Table 3-10: South WWTP Maximum Monthly Average Loading Characteristics (2018 – 2021)

Year	BOD (mg/L)	BOD (lb/day)	TSS (mg/L)	TSS (lb/day)
2018	131	22,891	278	42,025
2019	85	17,185	141	27,625
2020	92	18,062	166	32,613
2021	100	18,205	136	24,362
Average	102	19,086	180	31,656

3.7. Existing Energy Consumption

Energy consumption data for both facilities are presented in the following tables.

Table 3-11: North WWTP Average Monthly Energy Consumption (2018 – 2021)

Year	Electricity Usage (kWh)	Electricity Cost	Natural Gas Usage (therm)	Natural Gas Cost
2018	974,614	\$ 66,608.87	22,559	\$ 12,939.76
2019	917,082	\$ 55,152.64	25,028	\$ 14,641.73
2020	865,465	\$ 48,740.27	23,938	\$ 13,815.92
2021	888,120	\$ 71,062.90	29,414	\$ 20,375.18
Average	911,320	\$ 60,391.17	25,235	\$ 15,443.15

Table 3-12: South WWTP Average Monthly Energy Consumption (2018 – 2021)

Year	Electricity Usage (kWh)	Electricity Cost ⁽¹⁾	Natural Gas Usage (therm)	Natural Gas Cost
2018	611,203	\$ 48,445.96	29,355	\$ 15,846.51
2019	627,075	\$ 44,457.21	28,701	\$ 16,489.45
2020	567,126	\$ 38,497.92	28,250	\$ 16,407.37
2021	588,269	\$ 55,006.69	26,847	\$ 17,688.80
Average	598,418	\$ 46,601.94	28,288	\$ 16,608.03

(1) For the purposes of operations costs estimated within this report, 10 cents per kWh was used based on the District's negotiated utility rate at the time of the preparation of this report.

3.8. Site Layout

Aerial photos depicting site location and associated WWTP building are included as Figures 3-1 and 3-2 below. As shown in the photos, each WWTP has an administration building, preliminary treatment building, primary settling tanks, aeration tanks, aeration control building, final settling tanks, return activated sludge (RAS) pump station, sludge mix/holding tanks, solids handling building, ash lagoons, and chlorine contact tanks.



Figure 3-1: North WWTP Site Layout

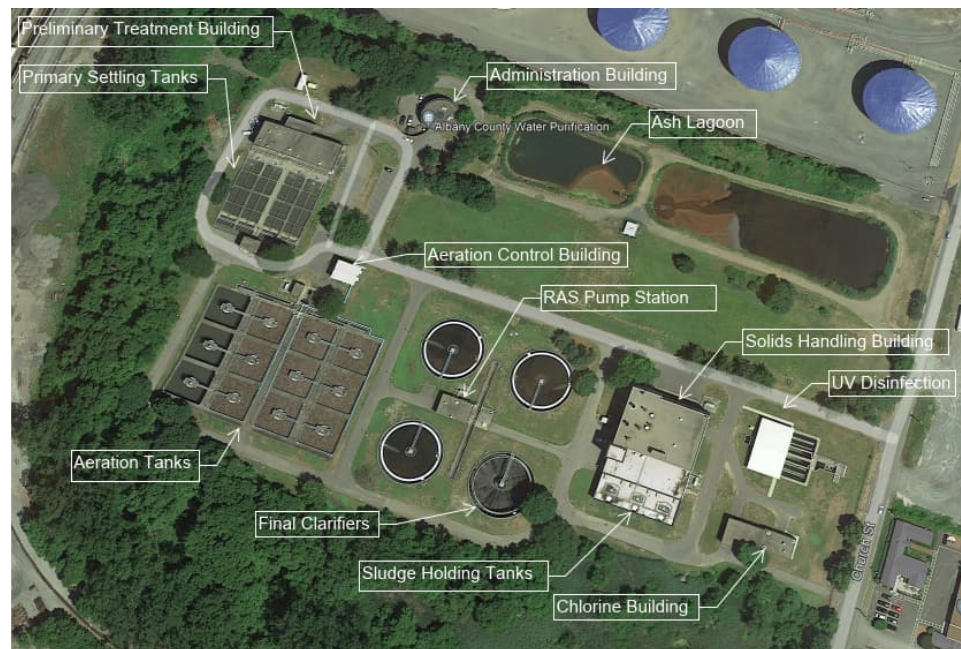


Figure 3-2: South WWTP Site Layout

3.9. History of Damage

Both WWTPs are located within a FEMA 100-year flood zone. Neither facility has documented any major flood nor storm related damages.

3.10. Unit Process

Both WWTPs employ similar unit processes throughout all stages of treatment.

3.10.1. Preliminary Treatment

The first stage of treatment at each facility is screening and grit removal.

At the North WWTP, influent wastewater is conveyed to the influent wet well in the preliminary treatment building via gravity through an 84-inch trunk sewer. Flow passes through mechanical bar screens. Wastewater is then pumped from the wet well to grit removal by five (5) dry pit submersible pumps. Grit removal occurs in four (4) grit chambers, from which wastewater flows to the primary settling tanks. Screenings and grit are collected and trucked to landfill for final disposal.

At the South WWTP, influent wastewater is conveyed to the influent wet well in the preliminary treatment building via gravity through a 54-inch trunk sewer. Flow passes through a mechanical bar screen, which was recently upgraded to fine screens. Wastewater is then pumped from the wet well to grit removal by six (6) dry pit submersible pumps. Grit removal occurs in three (3) grit chambers, from which wastewater flows to the primary settling tanks. Screenings and grit are collected and trucked to landfill for final disposal.

3.10.2. Primary Treatment

At each facility, wastewater flows from the Preliminary Treatment Building into four (4) rectangular primary settling tanks. Each clarifier has a chain and flight sludge collection system, scum skimmer, and effluent weir collection system. Each North WWTP primary settling tank is 41' (W) x 240' (L). Each South WWTP primary settling tank is 33' (W) x 157' – 1" (L). Effluent from the primary settling tanks is collected in effluent troughs and flows to the aeration tanks for secondary treatment. Primary sludge is pumped to the sludge mix tanks.

3.10.3. Secondary Treatment

Each facility utilizes conventional activated sludge treatment for biological treatment. The first stage of this process is aeration. Effluent from the primary settling tanks is conveyed to the aeration tanks via gravity. The North WWTP has six (6) aeration tanks, each with four (4) 59' (W) x 59' (L) chambers. Of these six (6) tanks, only three (3) are currently in use for aeration at average flows. Three (3) tanks are kept empty as a buffer for high flows during wet weather.

The South WWTP has four (4) aeration tanks, each with three (3) 59' (W) x 59' (L) chambers. Some aeration tanks were converted from surface aerators to a fine bubble diffusion system in 1994.

Plant operators can control flow into the aeration tanks with manual slide gates. Aeration effluent flows over weir plates into effluent channels, and is conveyed to final settling tanks via gravity.

The North WWTP has six (6) 110-foot diameter circular final settling tanks. The South WWTP has four (4) 100-foot diameter circular final settling tanks. Each final settling tank has a surface skimmer, sludge collection rake/arm mechanism, and effluent trough weir.

At each facility waste activated sludge (WAS) is pumped to dissolved air floatation units for thickening prior to discharge to the sludge mix tanks.

3.10.4. Disinfection

Seasonal disinfection (May 1st – October 31st) is provided at each facility. The North WWTP utilizes Sodium Hypochlorite for disinfection, as well as Sodium Bisulfite for dechlorination prior to effluent discharge into the Hudson River. The South WWTP utilizes Ultraviolet (UV) disinfection.

3.10.5. Solids Handling

Both facilities currently employ identical solids handling processes. Primary sludge and thickened waste activated sludge (TWAS) is mixed and stored in the sludge mixing tanks prior to dewatering. The combined sludge is pumped from the sludge mix tanks to the belt filter presses (BFP). Chemical addition for odor control and coagulation is provided. The BFP dewateres sludge to approximately 20-30% solids. Dewatered cake is then fed into the multiple-hearth incinerator. Ash from the incineration process is pumped into lagoons and held there until the lagoons are dredged and the ash is ultimately disposed at a landfill under a Beneficial Use Determination (BUD) for the ash.

Combined ash generation between the North and South WWTP ranges from 9,000 to 13,000 cubic yards per year.

3.11. Definition of the Problem

Solids handling infrastructure and the North and South plants have experienced issues with meeting Clean Air Act regulations and thus the County entered into an Order on Consent to evaluate anaerobic sludge digestion. This Order was modified in January 2022 to allow for the evaluation of alternative operational improvements and increased efficiencies at the North and South plants.

In addition, equipment is in need of repair or replacement due to age-related deterioration. Instead of simply replacing all deteriorating equipment in-kind, there is an opportunity to consider alternative technologies that are more efficient, improve performance and reduce energy consumption.

3.11.1. Health, Sanitation, and Security

Rehabilitation and/or replacement of certain WWTP components is necessary to maintain effluent quality and protect the health and safety of residents that rely on the ACWPD for wastewater treatment.

3.11.2. Aging Infrastructure

Both WWTPs are over fifty (50) years old and various components will exceed their useful design life without rehabilitation. It is not reasonable to expect the equipment to function another number (20) years without investment in maintenance and component replacement.

Currently, there are several major pieces of equipment offline due to age-related deterioration, including one (1) North Plant incinerator, two (2) North Plant sludge tank mechanical mixers, two (2) North Plant DAFTs, and one (1) South Plant incinerator.

3.11.3. Infiltration and Inflow (I/I)

Elevated levels of inflow have been observed at both the North and South Plants as they treat wastewater from combined sewer systems. This issue is especially apparent at the South Plant, where influent organic and solids concentrations are significantly below what would be expected of municipal wastewater, in part due to dilution from inflow. ACWPD member communities are responsible for reducing I&I within their respective sewer collection systems.

3.11.4. Reasonable Growth

The ACWPD service area is projected to experience minimal growth over the next 20 years as previously discussed in this report. This projected growth will place an additional strain on WWTP components and may increase the likelihood of component failure for components at or exceeding their useful service life.

3.11.5. Water, Energy and/or Waste Considerations

This PER is being partially funded as part of a NYSERDA FlexTech Study. Under the FlexTech project, energy efficiency measures (EEM) have been assessed. EEM components recommended in the FlexTech report and, where appropriate, incorporated into the recommended plant alternative. Reducing energy usage and increasing efficiency is a major goal of this project.

3.11.6. Suitability for Continued Use

The multi-hearth sludge incinerators at the North and South Plants are in need of rehabilitation for continued operation. This project will ensure that the ACWPD's long-term sludge processing and disposal needs are addressed.

The ACWPD is currently under an Order on Consent (No. R4-2017-0426-210) issued by the NYSDEC due to deviations of Operational Parameter Limits (OPLs) established according to 40 CFR 60 Subpart MMMM. Under this consent order, ACWPD is required to evaluate the replacement of the existing incinerators with anaerobic sludge digesters, or improvements to the existing incinerators so that their emissions will comply with all applicable regulations. A copy of the consent order can be found in Appendix G.

3.11.7. Storm and Flood Resiliency

The North and South plants are both located partially within 100-year flood zones. The proposed project will incorporate storm and flood resiliency best practices in order to protect new infrastructure.

3.11.8. Compliance with Accepted Standards

Both facilities are generally found to be in compliance with accepted standards. However, there are certain plant components or processes which require improvements to ensure continued compliance.

According to *Recommended Standards for Wastewater Facilities* (10 States Standards), septage receiving facilities should include "screening, grit, and grease removal of the septage as appropriate to protect the treatment units." The existing grease receiving facility at the North Plant provides screening but does not include removal of grease, leading to operational issues later in the treatment process. Alternative treatment technologies for fats, oils and greases are evaluated in this report.

3.12. Financial Status

ACWPD receives revenue from 8 member communities as discussed herein. The financial capability of ACWPD with respect to these specific portions of communities that direct wastewater to ACWPD was evaluated by NYSEFC in 2020. A detailed evaluation completed by the Capital District Regional Planning Commission for specific Census Tract Data for areas that contribute to ACWPD was submitted to NYSEFC for review. It was determined by NYSEFC that the District previously qualified for interest free hardship financing for the previous joint biosolids project based on a District poverty rate.

A revised hardship assessment utilizing the new 2021 MHI's and the March 2022 to February 2023 allocated flows is included in the cost estimate appendix (Appendix N) at the end of this report. The District's weighted MHI, at \$60,039, is less than the 80% Upstate MHI and the District's weighted poverty rate is greater than the statewide poverty rate.

3.12.1. Source of Income

ACWPD generates income directly from its eight (8) member municipalities to compensate for expenses associated with operation and maintenance of the WWTPs, as well as debt service for capital improvement projects. Bills are sent to the municipalities twice annually. ACWPD also generates income through the collection of scavenger waste tipping fees and through grey water sales.

Debt service obligations are shared across the member communities at fixed percentages based on the flow allocation reserved for each community in the ACWPD charter. O&M cost obligations are split at a varying percentage based on actual wastewater flow received from each community over the previous six (6) months. The table below summarizes the distribution of costs between member communities.

Table 3-13: Debt Service and 2020-2021 O&M Cost Allocations

Municipality	Debt Service	O&M			
		3/1/2020	9/1/2020	3/1/2021	9/1/2021
Albany (C)	54.40%	59.45%	61.33%	62.60%	63.03%
Colonie (T)	14.40%	15.49%	15.06%	14.14%	13.27%
Guilderland (T)	1.70%	1.81%	1.61%	1.71%	1.70%
Cohoes (C)	6.80%	9.96%	8.62%	7.80%	9.02%
Watervliet (C)	4.30%	5.49%	5.34%	5.09%	4.66%
Colonie (V)	4.10%	1.97%	2.14%	2.09%	2.10%
Menands (V)	2.40%	3.04%	2.90%	2.90%	2.59%
Green Island (V)	11.90%	2.79%	3.00%	3.67%	3.63%
Total	100%	100.00%	100.00%	100.00%	100.00%

The table below shows the total amount of debt service and O&M costs collected by the ACWPD in 2020 and 2021.

Table 3-14: Debt Service and O&M Collected (2020-2021)

Municipality	3/1/2020		9/1/2020		3/1/2021		9/1/2021	
	Debt Service	O&M	Debt Service	O&M	Debt Service	O&M	Debt Service	O&M
Albany (C)	\$236,290	\$2,780,180	\$236,290	\$2,868,098	\$252,076	\$3,021,803	\$252,076	\$3,042,560
Colonie (T)	\$62,547	\$724,390	\$62,547	\$704,281	\$66,726	\$682,561	\$66,726	\$640,564
Guilderland (T)	\$7,384	\$84,645	\$7,384	\$75,292	\$7,877	\$82,544	\$7,877	\$82,062
Cohoes (C)	\$29,536	\$465,779	\$29,536	\$403,114	\$31,510	\$376,519	\$31,510	\$435,410
Watervliet (C)	\$18,677	\$256,740	\$18,677	\$249,725	\$19,925	\$245,703	\$19,925	\$224,946
Colonie (V)	\$17,809	\$92,127	\$17,809	\$100,077	\$18,998	\$100,888	\$18,998	\$101,370
Menands (V)	\$10,425	\$142,166	\$10,425	\$135,619	\$11,121	\$139,988	\$11,121	\$125,023
Green Island (V)	\$51,688	\$130,474	\$51,688	\$140,295	\$55,142	\$177,157	\$55,142	\$175,226
Total	\$434,357	\$4,676,501	\$434,357	\$4,676,501	\$463,375	\$4,827,162	\$463,375	\$4,827,162

Each municipality passes these costs on to their rate payers through sewer rents.

3.12.2. Other Capital Improvements

ACWPD has a Capital Improvement Plan Study scheduled to begin later this year. There are multiple other projects in the planning phase, including a major upgrade to the North Plant headworks, grit system, and primary and secondary clarifiers.

3.12.3. Status of Existing Debt

ACWPD has completed various capital improvement projects in the last 20 years. Currently, ACWPD has outstanding debts from the following projects:

- 2003 Bar Screen Improvements (Refinanced 2012)
 - o 2021 Debt Service Payment: \$85,000
 - o Maturation Date: 10/15/2022 (now retired)
- 2006 Incinerator Improvements (Refinanced 2015)
 - o 2021 Debt Service Payment: \$226,369.39
 - o Maturation Date: 10/01/2026
- 2013 Roof Improvements
 - o 2021 Debt Service Payment: \$117,969.24
 - o Maturation Date: 08/01/2028
- 2015 Disinfection Improvements
 - o 2021 Debt Service Payment: \$207,203.72
 - o Maturation Date: 03/01/2035
- Electrical Improvements
 - o 2021 Debt Service Payment: \$248,238.82
 - o Maturation Date: 12/31/2029
- Sludge Pump Improvements
 - o 2021 Debt Service Payment: \$241,969.19
 - o Maturation Date: 12/31/2029

As these debts retire, the bonding capacity for the district should increase.

3.12.4. Required Reserve Accounts

ACWPD maintains multiple reserve accounts, each with a designated purpose. As of June 14, 2022, the fund balances are as follows:

- Debt Reserve: \$1,035,583.09
- Pension Reserve: \$251,583.09
- Repair Reserve: \$230,175.28
- Capital Reserve: \$217,423.15
- Undesignated Fund Balance \$6,329,129

4.0 BASIS OF DESIGN

For the purposes of sizing solids handling equipment and processes, historic sludge production data was analyzed for the South and North plants from 2015-2021. Sludge production at each facility is measured in dry tons prior to incineration. The following tables show the basis of design sludge production projections for each facility. A full breakdown of the development of these projections is included in Appendix H.

Table 4-1: North Plant Future Projected Sludge Production

	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)
Average Year	52,214	71,792	66,464	61,641
Max Year	59,448	86,140	75,674	69,857

Table 4-2: South Plant Future Projected Sludge Production

	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)
Average Year	18,560	28,625	26,274	24,761
Max Year	22,412	34,781	30,822	27,951

Table 4-3: North Plant + South Plant Future Projected Sludge Production

	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)
Average Year	70,774	100,417	92,738	86,402
Max Year	81,860	120,921	106,497	97,808

For the purposes of this analysis, 120,000 dry-lb/day (60 dry tons per day) (maximum combined 7-day rolling average) was utilized as the basis for the consolidated incineration process at the North Plant. The maximum conditions occurred in the fall of 2021. For the anaerobic digestion process the maximum combined 14-day average from the historical data was used at 106,500 dry-lb/day (53 dry-tons/day).

More recent sludge production data from 2022-2024 was preliminarily analyzed and based on review no major changes in solids production were observed. Updated data will be contained in the Basis of Design Report and will be reviewed during final project design to confirm equipment sizing.

4.1. Air Permit Conditions

Air emissions from the existing sewage sludge incineration units are regulated under a Title V Operating Permit administered by the New York Department of Environmental Conservation. The existing permit conditions are based on the requirements laid out in 40 CFR 60, Subpart MMMM – Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units.

For the purposes of this report, it is assumed that the proposed incinerator rehabilitation work does not constitute a “modification” as defined by 40 CFR 60.4930. This assumption is based on the fact that the majority of the improvements proposed later in this report represent the replacement normal wear components of the existing incineration system. It is anticipated that these improvements would not be applied towards the cost thresholds, or be considered a “modification”, under the Subpart Mmmm regulations. Therefore, the North and South WWTPs should continue to meet the definition of “Existing Facility” and as such, air permit requirements should continue to be based on Subpart Mmmm. Based on the conclusion of the December 13, 2024, review meeting the NYSDEC advised the County that the Department would indeed not require compliance with Subpart LLLL as part of this project. However, NYSDEC advised that this position was subject to change pending USEPA evaluation and direction. Should modifications be necessary based on USEPA evaluation that would be handled as a separate project. Meeting minutes are included in Appendix O.

5.0 ALTERNATIVE ANALYSIS – FOG RECEIVING

The North Plant currently accepts septage and fats, oils, and grease (FOG) waste via a discharge manhole upstream of the Preliminary Treatment Building (PT Building). Trucks are required to back up to the discharge corridor east of the PT Building. Due to the location of the manhole, and the volume of septage and FOG received at the site, there is routinely a backup of trucks waiting to offload. Based on conversations ACWPD has had with some of their larger waste haulers, this inefficient unloading process has caused some haulers to utilize alternate facilities, reducing ACWPD's tipping fee revenue.

Once septage and FOG is received at the discharge manhole, it is comingled with the influent wastewater stream as it passes through the mechanical bar screens in the PT Building. The FOG waste is ultimately skimmed off the primary clarifiers and manually removed. FOG skimmings are then placed in a dumpster. When the dumpster is full, it is transported to the sludge holding tanks, where FOG is manually pumped from the dumpster into the tanks.

The ACWPD desires to evaluate a more effective receiving system in order to protect downstream treatment processes, improve sludge dewaterability, increase revenue potential, and reduce operator labor associated with manual FOG removal. Vendor information related to FOG receiving processes can be found in Appendix I.

Historical separated FOG waste received at the North Plant is presented in Table 5-1.

Table 5-1: North Plant: Historical FOG Quantities

	Average Day (gal/day)	Max Day (gal/day)
2019	15,240	51,700
2020	13,260	65,500
2021	16,882	80,701

ACWPD desires to increase its revenue stream and thus equipment will be designed to handle 40,000 gallons per day on average received at the facility.

5.1. No Action

The North Plant's current FOG removal processes require significant operator effort, and does not effectively remove all FOG from the wastewater stream. Downstream treatment processes and equipment have been negatively impacted as a result. It is in the best interest of the ACWPD to upgrade their FOG receiving/removal capabilities.

5.2. FOG Hydronic Separation System (Alternative 1)

5.2.1. Proposed Preliminary Design

Under this alternative, a dual septage/FOG receiving station would be installed at the North Plant. The receiving station would include a hydronic separation system designed to separate and process FOG waste from haulers. Septage waste would be received

through a separate port and directed to the influent screens at the front end of the plant and enter the plant's liquid process stream for further treatment.

The hydronic system would be designed to separate the FOG component from the overall grease trap waste, generating a low-moisture brown grease biofuel product which can be used as a #6 bunker fuel substitute or sold on commodities markets as a feedstock for biodiesel production. Biofuel production is estimated to be approximately 5% of the influent FOG volume. Another 3-5% of the influent FOG is separated into a layer of "batter", rich in organic material. This "batter" material can be anaerobically digested, composted, or returned to the head of the facility for conventional treatment. For the purposes of this evaluation the batter will be returned to the head end of the plant for treatment. The remainder of the influent waste volume is residual water, and decants back to the head of the plant for treatment.



Figure 5-1: Example FOG Separation System Installation

The proposed receiving station will be designed to accept 40,000 gpd of grease trap waste. Received FOG waste from haulers will be screened to protect downstream equipment from debris and stored in equalization/decant tanks prior to processing. It is expected that the decant tanks will reduce received FOG waste volume by approximately 50% prior to entering the separation system. FOG from the equalization tank would be pumped into the FOG separation system and processed. Residual water from the tank would be decanted and flow via gravity into an existing process drain and back to the head of the plant for treatment.

The proposed storage /decant tanks will allow ACWPD to manage excess delivery volumes to prevent exceeding the FOG separation system capacity. ACPWD will also work with the haulers to manage receipt of these truck loads to minimize the peak day volumes. In extreme emergency circumstances, ACWPD could also handle any excess

FOG at the front end of the WWTP similar to current operations and within the capacity of the WWTP.

Brown grease biofuel produced will be sold as a fuel substitute on the open market. It is anticipated that if this alternative is implemented, ACWPD would contract a third party to manage the market sales of excess biofuel. The proposed receiving station requires no chemical addition and minimal operator input.

5.2.2. Impact on Existing Facility

The improvements proposed under this alternative would greatly benefit the existing facility. The installation of a FOG receiving station would greatly reduce the amount of FOG loading on the primary clarifiers and downstream treatment processes, improving treatment and reducing wear on equipment. Reducing downstream FOG loading will improve performance of the belt filter presses and enhance the overall sludge management process selected for the facility.

Additionally, biofuel generated by the FOG separation process would create an additional source of revenue for the ACWPD, helping to offset the capital cost of the alternative. Lastly, the proposed system is modular and easily expandable. If the initial installation proves successful, ACWPD will have the option of installing additional reactor tanks, allowing an increase in FOG waste received from haulers, generating additional revenue from tipping fees and biofuel sales. Lastly, removal of grease from the incinerators may also result in a reduction of air emissions associated with the incineration of FOG.

A new building will need to be constructed to house the processing equipment. It will be located at the southwest corner of the property. This will allow the County to direct FOG trucks to an alternate offloading location which will eliminate truck congestion near the Administration Building and truck idling. This location would require minimal modification of existing access roads and can be constructed without any disruption of existing process equipment. The proposed separation system would be installed within the building, while the FOG decant tank would be constructed adjacent to the building.

5.2.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

5.2.4. Land Requirements

Under this alternative, new FOG decant tanks would be constructed adjacent to a new building. Minor site clearing and grading would be required, and no trees would need to be removed.

5.2.5. Environmental Impacts and Mitigation Measures

Any environmental impacts associated with this alternative would be temporary impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

5.2.6. Seasonal Limits, Challenges, and Requirements

There are no seasonal limits, challenges, or requirements associated with this alternative.

5.2.7. Discharge Permit Requirements

This alternative would provide a water quality benefit and help to ensure that the North Plant is able to meet its discharge permit requirements. The construction of a dedicated FOG receiving station would greatly reduce FOG loading on the primary clarifiers, improving treatment and reducing FOG pass-through to downstream processes. Removing FOG from the primary influent stream would also reduce sludge volumes, improve sludge settleability, improve belt filter press performance, and enhance the overall sludge management process at the facility.

5.2.8. Water and Energy Efficiency Measures

This alternative would result in the generation of a renewable energy source in the form of brown grease biofuel, a fuel oil substitute. This renewable energy generation will provide an additional revenue source to the facility.

Process pumps and equipment associated with this alternative will be designed with energy efficiency in mind.

5.2.9. Storm and Flood Resiliency

The North Plant is located within the 100-year flood zone. Special consideration would be given to storm and flood resiliency during the final design of the proposed improvements. New equipment will be installed at an appropriate elevation to protect against damage in accordance with TR-16 section 1.2.1(h).

5.2.10. Constructability and Schedule

There are no constructability issues with this alternative. It is expected that the improvements proposed under this alternative would require approximately six (6) months to construct.

5.2.11. Opportunities for Green Infrastructure

This alternative does not include any modifications to stormwater infrastructure, so there was no opportunity to implement Green Infrastructure.

5.2.12. Project Capital Cost

The estimated capital cost associated with the FOG receiving station proposed under this alternative is approximately \$8,500,000. A full itemized cost estimate is included in Appendix N at the conclusion of this report.

5.2.13. Anticipated O&M Costs, Revenue and Payback

Anticipated annual operation and maintenance costs associated with implementation of Alternative 1 improvements are included below in Table 5-2.

Table 5-2: Annual Operating and Maintenance Cost Estimate (Alternative 1)

Item	Total
Hydronic Separation System Maintenance	
OEM Maintenance Contract (\$2,000 per month)	\$24,000
Electric/Misc Utilities	\$12,000
Supplies/Wear Parts	\$10,000
Total Estimate O&M Cost	\$44,000
Note: Labor costs for Alternative 1 would be equivalent to current FOG management costs	

The increase in the tipping fees for FOG and the sale of biofuel would result in additional annual revenues as presented in Table 5-3.

Table 5-3: Annual Revenues and Payback (Alternative 1)

Item	Current FOG Volumes	Projected FOG Volumes
FOG Tipping Fees		
Existing Daily FOG 16,900 gpd @ \$0.05/gal	\$308,000	\$308,000
Additional Daily FOG 23,100 gpd @ \$0.05/gal		\$421,000
Biodiesel Resale		
Existing FOG yields 277,600 gal/yr brown grease at \$1.50 - Management fee 20% = \$1.20 gal	\$333,000	\$333,000
Additional FOG yields 169,000 gal/yr brown grease at \$1.20 gal		\$455,000
Total Annual Revenue	\$641,000	\$1,517,000
Total Annual O&M Costs (assumed same)	(\$44,000)	(\$44,000)
Net Revenue	\$597,000	1,473,000
Opinion of Probable Cost	\$8,500,000	\$8,500,000
Payback, years	14.24	5.77

5.2.14. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, will require replacement one or more times during the design life of the overall system. Short-lived assets associated with this alternative include FOG transfer pumps, instrumentation (level sensors, flow meters, etc.), and controls. These costs are included in the annual O&M estimate above.

5.3. FOG and Septage Screening (Alternative 2)

5.3.1. Proposed Preliminary Design

Under this alternative, a dual septage/FOG receiving station would be installed at the North Plant and used in conjunction with the anaerobic digestion alternatives discussed later in this report. The station would include an automatic, self-cleaning, dual drive receiving station that utilizes a rotating drum screen, conveyor system, and a dewatering system to process incoming septage and FOG. The station will be capable of processing waste at a peak flow of 300 – 875 gpm (dependent upon waste properties), separating large solids and debris for disposal. Processed septage would be directed to the head of the plant for further treatment. Processed FOG would be directed to a 40,000-gallon storage tank that needs to be heated and then ultimately directed to the anaerobic sludge digestion process, digested and a biogas would be produced.



Figure 5-2: Example FOG Screen Installation

5.3.2. Impact on Existing Facility

The improvements proposed under this alternative would greatly benefit the existing facility. Primarily, the installation of a FOG receiving station would greatly reduce the amount of FOG loading on the primary clarifiers and downstream treatment processes, improving treatment and reducing wear on equipment. Reducing downstream FOG loading will improve the performance of the dewatering system. This alternative would

also improve acceptance capabilities for septage, and potentially attract additional haulers due to the increased ease of offloading.

Additionally, this alternative would allow the facility to utilize accepted FOG waste as a feedstock for anaerobic digestion. Anaerobic digestion is discussed in greater detail later in this report. As presented, this alternative is in conjunction with the anaerobic digestion alternatives. Alternative modifications to septage offloading could be accomplished under Alternative 1 above.

The FOG receiving station proposed under this alternative would be constructed within a new 26' x 38' receiving building near the existing ash lagoons. This location was chosen due to the proximity to the proposed anaerobic digesters discussed later in this report.

5.3.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

5.3.4. Land Requirements

Under this alternative, a new structure would be constructed to house the FOG/septage receiving station and associated equipment.

5.3.5. Environmental Impacts and Mitigation Measures

Any environmental impacts associated with this alternative would be temporary impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

5.3.6. Seasonal Limits, Challenges, and Requirements

There are no seasonal limits, challenges, or requirements associated with this alternative.

5.3.7. Discharge Permit Requirements

This alternative would not adversely impact the facilities discharge permit requirements. Reducing the amount of FOG that enters the main liquid treatment stream would improve plant performance.

5.3.8. Water and Energy Efficiency Measures

Equipment installed under this alternative would be designed to include energy efficient measures (premium efficiency motors, VFDs, etc.).

5.3.9. Storm and Flood Resiliency

The North Plant is located within the 100-year flood zone. Special consideration would be given to storm and flood resiliency during the final design of the proposed improvements.

5.3.10. Constructability and Schedule

The proposed location is in a more congested area of the site. Impacts on truck traffic will need to be considered in the final design. It is expected that the improvements proposed under this alternative would require approximately six (6) months to construct.

5.3.11. Opportunities for Green Infrastructure

This alternative does not include any modifications to stormwater infrastructure, so there was no opportunity to implement Green Infrastructure.

5.3.12. Project Capital Cost

The estimated capital cost associated with the FOG receiving station proposed under this alternative is approximately \$3,600,000. A full itemized cost estimate is included in Appendix N at the conclusion of this report. This alternative can only be used in conjunction with an anaerobic sludge digestion alternative.

5.3.13. Anticipated O&M Costs

There would be an increase in electricity usage compared to current plant operations if this alternative is implemented.

5.3.14. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, will require replacement one or more times during the design life of the overall system. Short-lived assets associated with this alternative include FOG transfer pumps, instrumentation (level sensors, flow meters, etc.), and controls. If this alternative is selected, ACWPD should maintain sufficient reserve funds to replace these assets as necessary.

6.0 ALTERNATIVE ANALYSIS – CONSOLIDATION OF SLUDGE MANAGEMENT FROM THE SOUTH PLANT TO THE NORTH PLANT

The ACWPD North Plant and South Plant currently maintain their own dedicated sludge processing systems. This section will evaluate the consolidation of these processes by an expansion of the North Plant sludge processing system, and the construction of a pump station and force main at the South Plant to convey South Plant sludge to the North Plant. Vendor information related to the sludge consolidation evaluation can be found in Appendix J.

6.1. No Action

6.1.1. Proposed Preliminary Design

Under this alternative, the North and South plants would continue to operate their own dedicated sludge processing systems, including dewatering, incineration, and ash disposal. This alternative would require the rehabilitation of both incinerators at the South Plant and North Plant, requiring a significant capital expenditure as well as higher ongoing O&M costs as compared to the consolidated option. A thorough evaluation and cost estimate for incinerator rehabilitation is included later in this report.

6.2. Consolidation of Sludge Management (Alternative 1)

6.2.1. Proposed Preliminary Design

Under this alternative, the South Plant incinerators would be idled, and a pump station and two (2) parallel 6-inch force mains would be constructed to convey liquid sludge from the South Plant to the North Plant for processing and disposal. North Plant sludge processing infrastructure would be improved to accommodate the increased sludge flows.

A summary of the proposed modifications to the solids handling processes at both plants can be found below:

6.2.1.1 Eliminate South Plant DAFTs

Thickening of South Plant WAS via dissolved air floatation will no longer be necessary under this alternative. The existing South Plant DAFTs will be demolished and removed.

6.2.1.2 South Plant Sludge Screening

Within the footprint of the existing South Plant DAFTs, two (2) strain presses will be installed to screen primary and waste sludge prior to entering the sludge mix/holding tanks. Process piping modifications will be necessary. Design criteria for the proposed strain presses are as follows:

Table 6-1: Strain Press Design Criteria

Parameter	Value
Design Feed Rate	440 gpm
Design Feed Sludge Concentration	1% TS
Estimated Screenings Solid Content	25% – 35% TS

The strain press would remove deleterious materials from the blended sludge, protecting downstream sludge pumps and processing equipment.



Figure 6-1: Strain Press Example Installation

6.2.1.3 Sludge Pumping

Two (2) new sludge pumps will be installed in the basement of the South Plant solids handling building. The pumps will draw sludge from the existing sludge holding tanks and pump blending sludge to the North Plant. Design criteria for the pumps is as follows:

Table 6-2: Sludge Pump Design Criteria

Parameter	Value
No. Pumps	2 (1 duty/1 standby)
Design Flow	210 gpm
Design Head	200 TDH
Motor HP	40

The design flow was selected in order to maintain a minimum velocity of 2.5 fps through a 6" HDPE force main. Based on projected sludge production at the

South Plant, the proposed sludge pumps would operate roughly 14 hours per day during average conditions, and roughly 19 hours per day at max month conditions.

Provision for chemical addition or other odor mitigation technology will be included at the proposed sludge pumping facilities as a means of odor control. Final selection will be determined during final project design.

6.2.1.4 Sludge Force Main

To convey the South Plant blended sludge from the South Plant sludge holding tanks to the North Plant, the installation of an approximately 4-mile-long HDPE force main would be necessary. There are several potential routes that this force main could follow; for the purpose of this evaluation, a route following the existing bike path along the Hudson River was selected.

There are several constructability challenges associated with this route. The proposed force main would pass underneath both the Dunn Memorial Bridge and the Patroon Island Bridge, as well as Interstate I-787. Close coordination with NYS Department of Transportation (DOT) would be necessary throughout project design and construction. The proposed force main would also pass through the Corning Preserve and the Riverfront Preserve, requiring a Parkland Alienation review by the New York State Legislature. Environmental review should be completed to ensure the protection of natural resources during construction. It is expected that the construction of the sludge forcemain would constitute a Type I action, requiring the preparation of an Environmental Impact Statement (EIS). The process of acquiring all necessary approvals from DOT, DEC, the NYS Legislature, USEPA, and any other involved parties will likely take a significant period of time and must be thoroughly planned and coordinated to avoid delaying project implementation.

Despite these concerns, this route was deemed most feasible. Other potential routes along city streets were considered, but the density of existing utilities would make force main installation via horizontal directional drilling a difficult, costly, and slow process. The final force main route should be determined once a survey of the proposed area has been completed. A figure showing the preliminary route is included in Figure 6-2.

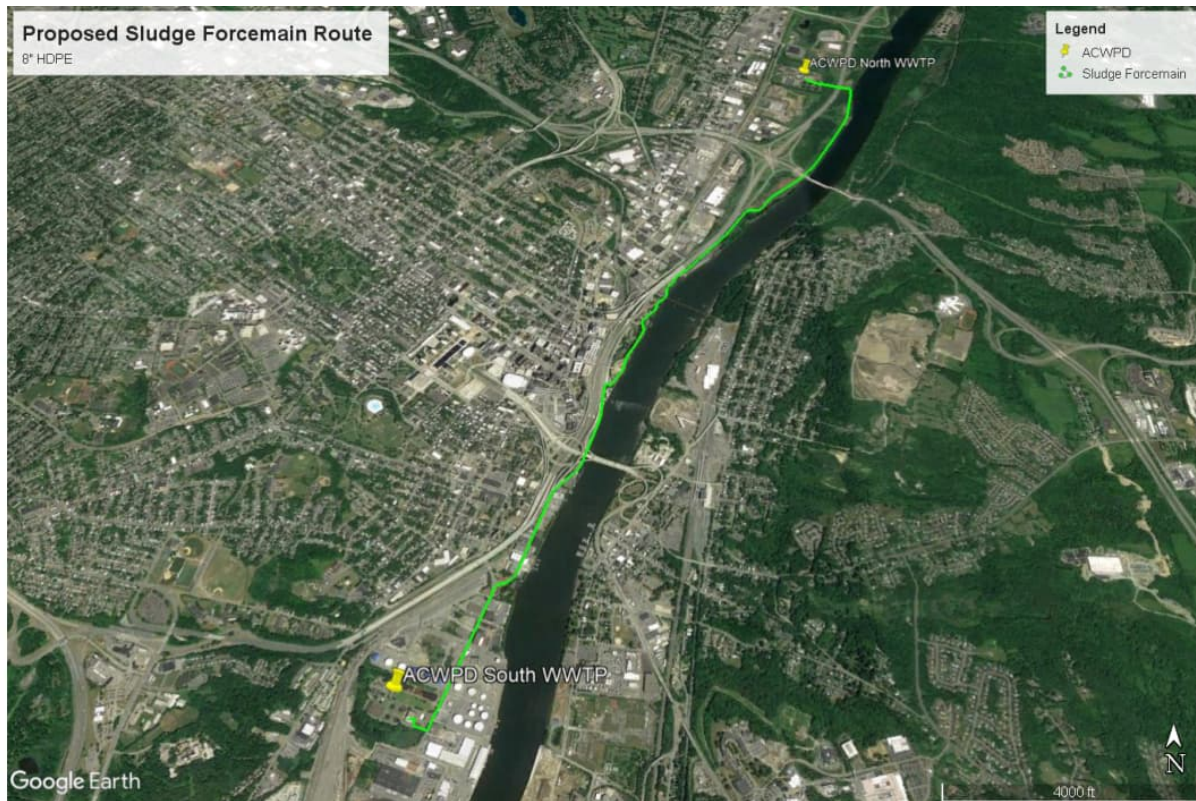


Figure 6-2: Proposed Sludge Force Main Route

Bi-directional cleanouts would be installed approximately every 1,000 feet to allow routine force main maintenance. The proposed flow rates will maintain adequate flushing velocities through the force main.

6.2.1.5 Sludge Receiving

The sludge force main would enter the North Plant solids handling building, where the South Plant sludge would be thickened separately in the proposed GBTs or upgraded DAFTs and then blended with North Plant sludge. Odor control measures may be necessary at the forcemain outlet if sludge holding times in the forcemain lead to septic conditions. This is not expected to occur during normal operations, but could arise following any potential extended shutdowns. Provisions for forcemain flushing will be included in final design to allow operators to drain sludge from the forcemain during such shutdowns to minimize these concerns.

6.2.1.6 Sludge Thickening

Once arriving at the North Plant, the blended South Plant sludge would be thickened utilizing gravity belt thickeners (GBTs) or screw presses. For the purposes of this evaluation two (2) 2.0m GBTs would be installed to provide complete redundancy. The gravity belt thickeners would be installed in the footprint of existing DAFT No. 4 and 5, which are currently out of service and

would be demolished. Thickened sludge from the GBTs would be discharged to existing thickened WAS (TWAS) sump, and pumped to the sludge holding tanks by the existing TWAS pumps.

6.2.2. Impact on Existing Facility

This alternative will allow ACWPD to idle the thickening, dewatering, and incineration processes currently operating at the South Plant.

6.2.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

6.2.4. Land Requirements

This alternative would require the ACWPD to acquire easements along the proposed sludge force main route along multiple properties, including Department of Transportation (DOT) owned highways and the Corning Riverfront Preserve, a natural resource in the City of Albany which borders the Hudson River. The ACWPD would need to develop contingency plans for emergency response to potential forcemain repairs/failures along its route.

6.2.5. Environmental Impacts and Mitigation Measures

This alternative would allow ACWPD to idle the South Plant incinerators.

This alternative would also involve temporary environmental impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

6.2.6. Seasonal Limits, Challenges, and Requirements

There are no seasonal concerns associated with this alternative.

6.2.7. Discharge Permit Requirements

Under this alternative, the South Plant incinerators would be idled, and the North Plant incinerators would increase run times in order to handle the increased loading. Further discussion of incinerator air permitting requirements can be found later in this report.

6.2.8. Water and Energy Efficiency Measures

Major equipment and motors installed under this alternative would be designed with energy efficiency measures in mind. The consolidation of sludge management under this alternative also presents a major opportunity for energy savings. The overall energy savings of the consolidated option will be discussed in Chapter 9.

6.2.9. Storm and Flood Resiliency

Appropriate measures would be taken during final design to ensure all infrastructure constructed under this alternative is adequately protected from the site's 100-year flood elevation in accordance with TR-16 section 1.2.1(h).

6.2.10. Constructability and Schedule

There are several constructability concerns associated with this alternative, most notably the permits that will be required to install the proposed force main under DOT-owned highway bridges and through the City of Albany owned Corning Riverfront Preserve. It is expected that these concerns will be overcome through thorough coordination between ACWPD, contractor(s), and interested parties.

6.2.11. Opportunities for Green Infrastructure

The energy savings will result in a significant reduction in the use of natural gas for both facilities combined.

6.2.12. Project Capital Cost

The estimated capital costs of sludge consolidation are included as part of the sludge processing alternative analysis found later in this report.

6.2.13. Anticipated O&M Costs

The estimated O&M costs of sludge consolidation are included as part of the sludge processing alternative analysis found later in this report.

6.2.14. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, will require replacement one or more times during the design life of the overall system. This alternative includes several short-lived assets, including the sludge force main pumps, gravity belt thickener media, and miscellaneous instrumentation.

7.0 ALTERNATIVE ANALYSIS – SLUDGE MIXING

Each of the four (4) sludge holding tanks at the North Plant and three (3) at the South Plant have mechanical mixer with a 40 HP motor. The ACWPD has experienced continued operational issues with the existing mixing systems. Plant staff have observed significant buildup of rags and debris on the mixing arms, leading to uneven loading and increased wear and tear on the mixer motors and drive shafts. In recent years, three (3) of the mechanical mixers at the North Plant have failed completely. As an emergency measure, these three sludge holding tanks were retrofit with diffused air mixing systems to maintain sludge mixing until long-term improvements can be designed and implemented. Vendor information related to the sludge mixing evaluation can be found in Appendix K.



Figure 7-1: Mixer Drive Mechanism

7.1. No Action

The No Action alternative is not feasible. Repair or replacement of the failed mixing system is necessary to restore the facilities sludge holding capacity to its design volume.

7.2. Replace In-Kind (Alternative 1)

7.2.1. Proposed Preliminary Design

This alternative would involve the in-kind replacement of the existing mixing systems, including new motors, drive shafts, mixing arms, and associated hardware. Under this alternative, replacement of all seven (7) mixing systems would be recommended so that the ACWPD does not continue to experience operational issues with the current aging equipment.

7.2.2. Impact on Existing Facility

This alternative would allow the North Plant solids handling processes to operate at their full design capacity by restoring Sludge Holding Tank No. 3 to service.

This alternative would not address the underlying cause of the failure of the mechanical mixing equipment. Due to the elevated level of rags & debris that enter the sludge holding tanks, it could be expected that if the mixing systems are replaced in kind, the new equipment would continue to experience similar issues and possibly fail prior to its design life. If improvements to preliminary screening equipment are made upstream, the lifespan of mechanical mixing equipment may be increased.

A structural assessment on the interior of the North Sludge Mix Tanks as well as the roof and facade was completed as part of the Engineering Planning Grant. This evaluation is presented in Chapter 8. Preliminary repairs costs were developed and included in the project budget. The costs associated with this are common to both alternatives.

7.2.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

7.2.4. Land Requirements

There are no land requirements associated with this alternative.

7.2.5. Environmental Impacts and Mitigation Measures

Any environmental impacts associated with this alternative would be temporary impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

7.2.6. Seasonal Limits, Challenges, and Requirements

There are no seasonal limits or challenges associated with this alternative.

7.2.7. Discharge Permit Requirements

Implementation of this alternative would ensure that the North Plant is able to continue meeting its SPDES discharge requirements.

7.2.8. Water and Energy Efficiency Measures

This alternative does not consider water and/or energy efficiency measures.

7.2.9. Storm and Flood Resiliency

According to FEMA, the existing sludge holding tanks are located in an “area of 1% annual chance flood with average depth less than one foot or with drainage area less than one (1) square mile.” However, because this alternative represents an in-kind replacement of existing equipment, no change in storm and flood resiliency would be expected.

7.2.10. Constructability and Schedule

Construction would be sequenced so that only one sludge holding tank at each plant would be offline at a given time. A crane would be necessary to get the equipment to

the top of the sludge mix tanks. The lead time for equipment is estimated to be up to 20 weeks. Upon receipt of equipment this alternative could be constructed in approximately 12 weeks.

7.2.11. Opportunities for Green Infrastructure

There are no Green Infrastructure opportunities associated with this alternative.

7.2.12. Project Capital Cost

The estimated capital cost (2026 dollars) of the proposed Alternative 1 improvements is \$9,100,000.

7.2.13. Anticipated O&M Costs

This alternative represents a replacement in-kind of existing equipment; no changes in O&M costs would be expected.

7.2.14. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, will require replacement one or more times during the design life of the overall system. Short-lived assets associated with this alternative include the mixer motors and gearboxes. Recent plant history indicates that these components may require repair or replacement multiple times throughout the mixing system's design life due to tank conditions.

7.3. Large Bubble Mixing (Alternative 2)

7.3.1. Proposed Preliminary Design

This alternative involves the replacement of the existing mechanical mixing systems with large bubble diffuser systems. Large bubble mixing systems function by discharging short bursts of compressed air through nozzles at the bottom of the tank. The nozzles are designed so that the burst of air quickly forms a large bubble and rises through the tank. The bubble expands as it rises until reaching the surface, where it bursts and further agitates the tank. Each tank would contain several of these nozzles so that the entire tank would be uniformly mixed.

Under this alternative, large bubble mixing systems would be installed at each plant. The systems would consist of several nozzles in each tank, along with two (2) air compressors (duty/standby), a receiver tank, and air injection valves to control the flow of compressed air to the discharge nozzles. A small enclosure would be constructed at each plant to protect the mixing system compressors and receiver from the elements. It is anticipated that these enclosures would be constructed adjacent to the sludge holding tanks to minimize the amount of compressed air piping required. The proposed enclosures would be of FRP construction with a slab-on-grade concrete foundation to minimize cost, while still providing robust protection. The final structural design may be modified pending soils testing and analysis.

7.3.2. Impact on Existing Facility

This alternative would provide more reliable and consistent mixing of the sludge holding tanks than the existing mechanical mixers. Large bubble mixing systems are less susceptible to damage due to grit, rags, and debris. The nozzles “self-clean”; air is discharged with enough pressure to clear obstructions from the nozzle. Debris should still be removed upstream of the sludge holding tanks to the greatest extent possible in order to optimize mixing and downstream sludge processing, but the risk of mixing system failure requiring in-tank maintenance will be greatly reduced.

The sludge holding tanks currently operate on a “fill/draw” cycle, in which sludge is pumped into the sludge holding tanks throughout the week. When a tank is at or near its full capacity, it is then drawn down by pumping the sludge to the Solids Disposal Building. The proposed large bubble mixing system can operate at any side water depth, meaning operators will not have to adjust the mixing system throughout the tank’s cycles.

As the large bubble system uses a fraction of the air utilized by the temporary emergency aeration system, the conversion to the large bubble mixing system will significantly reduce the odors currently experienced with the temporary aeration system.

An added benefit of this alternative would be the ability to provide mixing to other plant processes (primary clarifier influent channels) by the addition of additional discharge headers and valve modules.

7.3.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

7.3.4. Land Requirements

A small amount of land adjacent to the existing sludge holding tanks would be required for the construction of the blower enclosure.

7.3.5. Environmental Impacts and Mitigation Measures

Any environmental impacts associated with this alternative would be temporary impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

7.3.6. Seasonal Limits, Challenges, and Requirements

There are no seasonal limits or challenges associated with this alternative.

7.3.7. Discharge Permit Requirements

Implementation of this alternative would restore the full capacity of each facility's sludge holding tanks, providing operators with greater flexibility in regard to the frequency and volume of sludge wasting from the activated sludge processes. This flexibility should improve plant performance and help ensure each facility is able to meet its SPDES permit limits. This alternative would also improve the performance of the dewatering processes at each facility by ensuring a consistent and homogenous supply of combined sludge to the belt filter presses.

7.3.8. Water and Energy Efficiency Measures

This alternative would be designed in consideration of energy efficient practices. The large bubble mixing system would be programmable to optimize mixing and minimize the air input required. The air compressors would be of high-efficiency, rotary screw design. It is expected that energy usage would be reduced eight-fold compared to the existing mechanical mixing system.

7.3.9. Storm and Flood Resiliency

According to FEMA, the existing sludge holding tanks are located in an "area of 1% annual chance flood with average depth less than one foot or with drainage area less than one (1) square mile." Special consideration would be taken in the design of the compressor enclosure to ensure it is protected from a 100-year flood event in accordance with TR-16 section 1.2.1(h).

7.3.10. Constructability and Schedule

This alternative could be constructed in approximately eight (8) weeks. Construction would be sequenced so that only one sludge holding tank would be offline at a given time. The lead time for equipment is estimated to be up to 24 weeks.

7.3.11. Opportunities for Green Infrastructure

The energy savings for this alternative are significant and will yield an opportunity under Green Infrastructure.

7.3.12. Project Capital Cost

The estimated capital cost (2026 dollars) of the proposed Alternative 2 improvements is \$7,100,000 for all seven (7) tanks including the associated structural repairs.

7.3.13. Anticipated O&M Costs

Under this alternative, it is expected that plant O&M costs would decrease significantly. The main driver of this decrease would be a reduction in energy consumption. Each proposed large bubble mixing system includes one (1) 20 HP compressor at each plant operating 24 hours a day, seven (7) days a week, consuming a total of approximately 261,000 kWh annually across both plants. The existing sludge mixing systems include seven (7) 40 HP motors operating 24/7, consuming approximately 1,830,000 kWh

annually across both plants. This reduction in energy consumption would represent approximately \$156,000 in annual savings at \$0.10 / kWh.

Additionally, the proposed system contains no moving parts within the sludge holding tanks, meaning that routine maintenance can be performed without dewatering and/or entering the tanks.

The mixing system compressors should undergo annual maintenance to ensure they operate reliably and efficiently over the course of their lifespan.

7.3.14. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, will require replacement one or more times during the design life of the overall system. Short-lived assets associated with this alternative include compressed air injection valves, and air compressor accessories (inlet filter, etc.).

7.4. Conclusion on Sludge Mixing

The recommended alternative for the sludge mixing at the North and South plants is the Large Bubble Mixing. This alternative is lower cost and will save over \$150,000 in annual electrical consumption between the two (2) WWTPs. North Plant sludge mixing improvements are a high-priority item and should be implemented as part of the North Plant Solids Handling Improvements contract. It is also recommended that the North Plant mixing system be sized to accommodate additional mixing nozzles in the primary clarifier influent channel.

8.0 ALTERNATIVE ANALYSIS – SLUDGE THICKING AND PUMPING

The ACWPD has experienced significant operational issues with sludge thickening equipment and pumps at the North Plant in recent years. This section will evaluate alternatives for improvements to these processes. The analysis performed under this section has been funded via NYSEFC Engineering Planning Grant (EPG) No 109868. As part of this analysis, B&L prepared a technical memorandum fully evaluating alternative technologies for a structural analysis for the North Plant sludge mix tanks, and sludge thickening and sludge pumps at the North Plant; this memorandum is included as Appendix L.

Due to the consolidation option being eliminated from consideration the South Plant sludge thickeners and sludge pumps will require upgrades as those systems are in similar condition to those at the North Plant. Therefore, improvements proposed in the memorandum for the North Plant are also recommended for the South Plant.

8.1. No Action

The No Action alternative is not feasible. Repair or replacement of the failing equipment is necessary to maintain the facility's sludge thickening capabilities.

8.2. Replacement of Sludge Thickening Equipment and Sludge Pumps

8.2.1. Proposed Preliminary Design

Under this alternative, various upgrades would be made to the existing North and South Plant sludge thickening and pumping processes. A summary of the proposed modifications can be found below:

8.2.1.1 North and South Plant Combined Sludge Pump Replacement

The existing North and South Plant rotary lobe combined sludge pumps are undersized and operate outside of ideal conditions as a result, leading to excessive wear and tear and repeated failure. A secondary booster pump system was required to ensure the sludge dewatering system functions properly leading to double pumping. Under this alternative, four pumping systems were evaluated. It was determined that new larger rotary lobe or new progressive cavity pumps would be installed to replace the existing pumps. The new pumps would be sized for future projected sludge volumes. This would eliminate the need for the secondary booster pumping system that is being utilized at the North Plant.

8.2.1.2 North and South Plant Thickened Waste Activated Sludge Pump Replacement

The existing North and South Plant thickened waste activated sludge (TWAS) pumps are nearing the end of their useful service life. Under this alternative, two (2) new pumps would be installed at each plant to replace these existing pumps. Final pump design parameters would be determined during final project design.

8.2.1.3 North and South Plant Sludge Thickener Replacement

The existing North and South Plant DAFTs are beyond their useful design life and in need of replacement. Under this alternative, two (2) new screw presses would be installed at each plant to replace the existing DAFTs. The new equipment would be sized for future projected sludge volumes.

8.2.2. Impact on Existing Facility

This alternative will allow ACWPD to reliably thicken and convey sludges produced at the North and South Plants.

8.2.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

8.2.4. Land Requirements

There are no land requirements associated with this alternative.

8.2.5. Environmental Impacts and Mitigation Measures

Any environmental impacts associated with this alternative would be temporary impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

8.2.6. Seasonal Limits, Challenges, and Requirements

There are no seasonal limits or challenges associated with this alternative.

8.2.7. Discharge Permit Requirements

Implementation of this alternative would improve the functionality and performance of each facility's sludge thickening and conveyance processes, providing operators with greater flexibility in regard to the frequency and volume of sludge wasting from the activated sludge processes. This flexibility should improve plant performance and help ensure each facility is able to meet its SPDES permit limits. This alternative would also improve the performance of the dewatering processes at each facility by ensuring a consistent and homogenous supply of combined sludge to the belt filter presses.

8.2.8. Water and Energy Efficiency Measures

This alternative would be designed in consideration of energy efficient practices.

8.2.9. Storm and Flood Resiliency

There are no storm and flood resiliency concerns associated with this alternative.

8.2.10. Constructability and Schedule

There are no major constructability concerns associated with this alternative. It is expected that the proposed equipment could be installed with minimal disruption to existing North and South Plant operations.

8.2.11. Opportunities for Green Infrastructure

There are no Green Infrastructure opportunities associated with this alternative.

8.2.12. Project Capital Cost

The estimated capital cost (2026 dollars) of the proposed Alternative 1 improvements is \$4,000,000 (per plant).

8.2.13. Anticipated O&M Costs

There are no major anticipated O&M costs associated with this alternative; a small reduction in O&M may be seen due to reduced frequency of repairs.

8.2.14. Short-lived Asset Costs

Short-lived assets associated with this alternative include the pump motors, screw press motors, and gearboxes.

9.0 ALTERNATIVE ANALYSIS – SLUDGE PROCESSING

The ACWPD North Plant and South Plant currently maintain their own dedicated sludge processing systems. Sludge processing equipment, and specifically the multi-hearth incinerators, at both plants are in need of rehabilitation if it is to remain in service. As part of this evaluation, Brown and Caldwell (BC) prepared a technical memorandum which summarizes the current condition of the incinerators and the capital and operating expenses that would be required in order to continue their operation at current and projected solids loading. The memorandum can be found in Appendix M.

BC conducted a site inspection at both the North Plant and South Plant on April 7, 2022. BC noted the general condition of the incineration system components to establish a repair and replacement schedule for estimating a construction budget aimed at providing reliable service for the next 20 years. The boundaries of the inspection began at the feed conveyors and ended at the stacks and ash ponds.

The site inspection was limited to visual inspection of equipment and discussions with ACWPD staff. Industrial Furnace Company (IFCO) previously conducted an inspection of the North Plant furnaces. The technical memorandum was prepared considering this information and using BC's industry experience.

The following alternatives were investigated in detail:

- Scenario 1: Incinerator Rehabilitation – Both Plants
- Scenario 2: Incinerator Rehabilitation – North Plant & Consolidated South
- Scenario 3: Anaerobic Digester Construction + Incinerator Rehabilitation – North Plant & Consolidated South
- Scenario 4: Anaerobic Digester Construction + Sludge Dryer Installation – North Plant & Consolidated South
- Scenario 5: Enhanced Incinerator Rehabilitation – Both North Plant & One South Plant MHF

In addition, the following alternatives were considered in brief, but not evaluated in detail for reasons described in this section:

- No Action
- Anaerobic Digester Construction – Both Plants
- Gasification

9.1. No Action

Due to the deteriorated condition of existing sludge processing equipment, continued operation without corrective action is not appropriate.

9.2. Incinerator Rehabilitation – Both Plants (Scenario 1)

Under this alternative, the North Plant and South Plant incinerators would be rehabilitated. This alternative was developed based on the assumption that sludge management is not consolidated and both facilities would continue status-quo operation.

9.2.1. Proposed Preliminary Design

Table 9-1 summarizes the equipment repairs and replacements that would be necessary for the North Plant incinerators to continue operation.

Table 9-1: North Plant MHF System Repair and Replacement Schedule

Item	Comment
Furnace shell/refractory/castings	Repair and replace per IFCO's inspection
Burner systems	Replace equipment and controls for more reliable and efficient operation
Combustion air fans	Replace due to age and condition
Upper centershaft bearings/seals	Refurbish
Lower centershaft bearings	Refurbish
Centershaft drive motors/gearboxes	Replace for reliable operation
Spare pinion/bull gears	On shelf spare set
Shaft cooling air fans	Replace due to age and condition
Clinker grinders	Replace due to age and condition
Wet ash systems	Replace, tanks and pumps in poor condition
Refractory lined ducts	Replace due to age and failures observed at similar facilities
Bypass dampers	Replace due to age
CEMs	Replace due to age
Actuators	Replace for reliability
Cake conveyors	Replace due to age
Instrumentation and controls	Replace due to age
Electrical	Replace due to age

A hazardous material survey was not performed as part of this evaluation, and should be conducted as the project advances to future phases.

For the purposes of this alternative, the repair schedule above generally applies to the South Plant as well. IFCO has not provided a similar detailed inspection for the South Plant furnaces. ACWPD staff noted the condition of the furnaces refractory roofs and BC observed several cracks. The roofs would require replacement for reliable long-term service. The repair and replacement schedules may differ from other aspects as well but for the purposes of this evaluation were considered equivalent. For additional information on the present condition of the South Plant incinerators, see Section 9.6 below.

9.2.2. Impact on Existing Facility

Rehabilitation of the North and South Plant incinerators as described above would provide reliable service for the next 20 years.

9.2.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

9.2.4. Land Requirements

There are no land requirements associated with this alternative.

9.2.5. Environmental Impacts and Mitigation Measures

Implementation of this alternative would help ensure that the North and South Plant incinerators would continue to meet all emission requirements currently imposed under a Title V air permit administered by the New York Department of Environmental Conservation.

This alternative would also involve temporary environmental impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

9.2.6. Seasonal Limits, Challenges, and Requirements

There are no seasonal limitations associated with this alternative.

9.2.7. Discharge Permit Requirements

As discussed in the technical memo, this alternative is not expected to change the system's "existing" classification in the present Title V air permit.

9.2.8. Water and Energy Efficiency Measures

High efficiency motors will be installed where possible under this alternative. There are no other significant water or energy efficiency measures applicable.

9.2.9. Storm and Flood Resiliency

Storm and flood resiliency measures are not applicable to this alternative.

9.2.10. Constructability and Schedule

It is expected that rehabilitation of each incinerator would take approximately one (1) year. Rehabilitation would be sequenced so as not to disrupt facility operation. The total project duration would be two (2) years.

9.2.11. Opportunities for Green Infrastructure

There are no opportunities for Green Infrastructure associated with this alternative.

9.2.12. Project Capital Cost

The estimated capital cost of the proposed Alternative 1 improvements is \$63,400,000 (2026 dollars). This cost includes complete rehabilitation of the incinerators at both

plants as detailed above, as well as the installation of large bubble mixing systems in the sludge mixing tanks as detailed in Section 7.3, and the installation of sludge thickening, pumping, and dewatering improvements as detailed in Section 8.2.

9.2.13. Anticipated O&M Costs

Anticipated annual operation and maintenance costs associated with implementation of Alternative 1 improvements are included in the table below. Natural gas, polymer and electricity values are based on historical usage.

Table 9-2: Annual Operating and Maintenance Cost Estimate (Scenario 1)

Item	Total
North Plant	
Dewatering Polymer	\$160,000
Ash management (for both plants)	\$100,000
Natural Gas	\$210,000
Electricity	\$220,000
Caustic	\$20,000
Maintenance (Incinerator; labor, inspection, minor repairs)	\$50,000
South Plant	
Dewatering Polymer	\$60,000
Natural Gas	\$170,000
Electricity	\$150,000
Caustic	\$20,000
Maintenance (Incinerator; labor, inspection, minor repairs)	\$50,000
Total Estimate O&M Cost	\$1,220,000

9.2.14. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, will require replacement one or more times during the design life of the overall system. ACWPD should budget for the repair or replacement of short-lived assets associated with the incinerators, such as furnace refractory systems, wet scrubbers, and booster pumps. Reference BC technical memo for more information regarding equipment which will require rehabilitation or replacement over the design service life of the rehabilitated incinerators. For the lifecycle cost, it is assumed that each incinerator will need minor rehabilitation after ten years of operation at a cost of 25% of the initial incinerator rehabilitation cost (\$2,130,000/furnace).

9.3. Incinerator Rehabilitation – North Plant (Scenario 2)

Under this alternative, the North Plant incinerators would be rehabilitated, and the South Plant incinerators would be idled. This alternative was developed based on the assumption that Alternative 6.2 – Consolidation of Sludge Management has been selected.

9.3.1. Proposed Preliminary Design

The following table reproduced from the BC technical memorandum summarizes the equipment repairs and replacements that would be necessary for the North Plant incinerators to continue operation.

Table 9-3: North Plant MHF System Repair and Replacement Schedule

Item	Comment
Furnace shell/refractory/castings	Repair and replace per IFCO's inspection
Burner systems	Replace equipment and controls for more reliable and efficient operation
Combustion air fans	Replace due to age and condition
Upper centershaft bearings/seals	Refurbish
Lower centershaft bearings	Refurbish
Centershaft drive motors/gearboxes	Replace for reliable operation
Spare pinion/bull gears	On shelf spare set
Shaft cooling air fans	Replace due to age and condition
Clinker grinders	Replace due to age and condition
Wet ash systems	Replace, tanks and pumps in poor condition
Refractory lined ducts	Replace due to age and failures observed at similar facilities
Bypass dampers	Replace due to age
CEMs	Replace due to age
Actuators	Replace for reliability
Cake conveyors	Replace due to age
Instrumentation and controls	Replace due to age
Electrical	Replace due to age
Wet Scrubbers	Replace due to design loading

A hazardous material survey was not performed as part of this evaluation, and should be conducted as the project advances to future phases.

Given the increased sludge loading due to the consolidation of South Plant sludge, enhanced dewatering will be necessary to ensure reliable incinerator performance under all projected operating conditions (current annual average, as well as future peak week). A third belt filter press (BFP) will be added (2 duty, 1 standby) at the North Plant. Long-term improvements to the existing BFPs may be required.

The incinerator analysis showed that an incinerator at the North Plant can handle the projected peak month loading condition. For times when this is exceeded, this

alternative includes the installation of dewatered cake loadout conveyors. It is assumed that these will be screw conveyors, and will include a truck distribution conveyor to evenly distribute solids in a truck.

9.3.2. Impact on Existing Facility

Rehabilitation of the North Plant incinerators as described above would provide reliable service for the next 20 years.

Under this alternative, a seven (7) day per week operating schedule is proposed in order to increase system capacity and reduce thermal cycling on equipment.

9.3.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

9.3.4. Land Requirements

There are no land requirements associated with this alternative.

9.3.5. Environmental Impacts and Mitigation Measures

Implementation of this alternative would help ensure that the North Plant incinerators would continue to meet all emission requirements currently imposed under a Title V air permit administered by the New York Department of Environmental Conservation. This alternative would use less natural gas due to reduced incineration start-ups.

This alternative would also involve temporary environmental impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

9.3.6. Seasonal Limits, Challenges, and Requirements

There are no seasonal limitations associated with this alternative.

9.3.7. Discharge Permit Requirements

As discussed in the tech memo, this alternative is not expected to change the system's "existing" classification in the present Title V air permit.

9.3.8. Water and Energy Efficiency Measures

Switching from a five (5) day per week to a seven (7) day per week operating schedule would significantly reduce the amount of electricity and natural gas consumed by the incinerators during their weekly startup and shutdown processes. There are also energy savings associated with discontinuing operation of the South Plant incinerators.

9.3.9. Storm and Flood Resiliency

Storm and flood resiliency measures are not applicable to this alternative.

9.3.10. Constructability and Schedule

This alternative is expected to require 24 months to construct. Implementation of this alternative is a prerequisite for the construction of sludge consolidation improvements discussed earlier in this report.

9.3.11. Opportunities for Green Infrastructure

There would be a significant reduction in the use of natural gas under this scenario resulting in an opportunity for green infrastructure.

9.3.12. Project Capital Cost

The estimated capital cost of the proposed Alternative 1 improvements is \$56,500,000 (2026 dollars). This cost includes complete rehabilitation of the incinerators at the North Plant as detailed above, as well as all costs associated with the consolidation of sludge management (sludge force main, pumps, etc.) as detailed in Section 6.2. This cost also includes the installation of large bubble mixing systems in the sludge mixing tanks as detailed in Section 7.3, a third belt filter press and dewatered cake loadout conveyors.

9.3.13. Anticipated O&M Costs

Anticipated annual operation and maintenance costs associated with implementation of Alternative 2 improvements are included in the table below. There is a small additional cost (\$10,000/year) shown to account for cake that is produced during peak conditions that is not able to be handled by the incinerators.

Table 9-4: Annual Operating and Maintenance Cost Estimate (Scenario 2)

Item	Total
North Plant	
Dewatering Polymer	\$220,000
Ash, excess cake management	\$110,000
Natural Gas*	\$150,000
Electricity	\$220,000
Caustic	\$40,000
Maintenance (Incinerator; labor, inspection, minor repairs)	\$50,000
South Plant	
Electricity (strain presses and sludge transfer pumps)	\$20,000
Maintenance (strain presses and sludge transfer pumps)	\$10,000
Total Estimate O&M Cost	\$810,000

* Gas consumption will continue to be evaluated as project progresses. Reduction in gas consumption is anticipated with the consolidated operations

9.3.14. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, will require replacement one or more times during the design life of the overall system. ACWPD should budget for the repair or replacement of short-lived assets associated with the incinerators, such as furnace refractory systems, wet scrubbers, and booster pumps. Reference BC technical memo for more information regarding equipment which will require rehabilitation or replacement over the design service life of the rehabilitated incinerators. For the lifecycle cost, it is assumed that each incinerator will need a minor rehabilitation after ten years of operation at a cost of 25% of the initial incinerator rehabilitation cost before markups (\$2,130,000/furnace).

9.4. Anaerobic Digester Construction + Incinerator Rehabilitation (Scenario 3)

Under this alternative, three (3) anaerobic digesters would be constructed at the North Plant in order to process the consolidated sludge stream from both plants. Digested sludge would then be incinerated utilizing the rehabilitated North Plant incinerators. This alternative was developed based on the assumption that Alternative 6.2 – Consolidation of Sludge Management has been selected.

9.4.1. Proposed Preliminary Design

Digesters for this alternative were sized based on peak conditions for the future design year. The digesters were sized to ensure an organic loading rate less than 0.17 lb-VS/ft³-day and a solids retention time greater than 15 days under the following conditions:

- Peak 14-day loading with all digesters in service, and
- Peak 28-day loading with one digester out of service.

Based on these criteria and allowing for a 5% allowance for mixing and a 5% allowance for volume expansion, it was determined that three (3) 1.9-million-gallon digesters would be sufficient. Different digester geometries are possible, but in this analysis, it was assumed that each digester would have an internal diameter of 73 feet and a height of 59 feet.

To minimize capital and installation costs, stainless steel digesters that can be constructed in situ were assumed for this alternative. These digesters, supplied by Lipp, with an internal stainless-steel layer for corrosion protection and an external galvanized steel shell, can be installed substantially faster and at a reduced cost of up to 20% to 30% compared to concrete.

Emergency flares are a necessary part of nearly all digester gas management systems. An operational flare system would be required to safely dispose of the digester gas anytime that the digester and incineration heating systems are out of service (e.g., for planned maintenance or during a power outage). Because the emergency flare system

adds a layer of redundancy to the gas utilization system, additional redundancy is not considered for the flare system itself. Other ancillary equipment for digestion includes feed and withdrawal pumps and a head house.

9.4.2. Impact on Existing Facility

This alternative would represent the addition of a new major treatment process to the facility. Operators would require training in order to manage the new processes and equipment.

The proposed anaerobic digesters would also create nutrient-rich side streams that would be recycled back to the head of the plant. It is expected that modifications to the North Plant's aeration processes would be necessary to treat these side streams. For the purposes of this analysis, it has been assumed that three (3) new blowers and associated piping and a diffusion system would need to be installed in all aeration tanks to supplement the aeration system. A new blower building is also assumed. Further analysis of the facilities biological treatment process would be necessary to verify these assumptions.

This alternative would also impact ACWPD's ability to utilize its current tankage to mitigate wet weather impacts.

9.4.3. Land Requirements

It is expected that the proposed anaerobic digesters could be constructed within the footprint of the existing facility; no additional land acquisition would be required. Some clearing and/or regrading would likely be necessary.

9.4.4. Environmental Impacts and Mitigation Measures

Implementation of this alternative would help ensure that the North Plant incinerators would continue to meet all emission requirements currently imposed under a Title V air permit administered by the New York Department of Environmental Conservation.

This alternative would also involve temporary environmental impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

9.4.5. Discharge Permit Requirements

This alternative would not require any modifications to the facilities' SPDES permits.

9.4.6. Water and Energy Efficiency Measures

Process pumps and equipment associated with this alternative will be designed with energy efficiency in mind.

9.4.7. Storm and Flood Resiliency

Appropriate measures would be taken during final design to ensure all infrastructure constructed under this alternative are adequately protected from the site's 500-year flood elevation.

9.4.8. Schedule and Constructability

To spread the cost of capital improvements over time or to increase the plant throughput that can be handled by the incinerators, digestion could be phased in at a later date. If the incinerators were rehabilitated now, it would not preclude the addition of digesters in the coming years. The incentives for biogas beneficial use fluctuate with market and political changes, but could make the installation of digesters favorable.

9.4.9. Opportunities for Green Infrastructure

The implementation of green infrastructure may be considered in order to minimize impacts to site drainage that would follow from digester construction and site regrading. This possibility has not been reflected in the project cost estimate. In addition, the elimination in the usage of natural gas from the incineration option would be eliminated creating a significant energy savings.

9.4.10. Project Capital Cost

The estimated project capital cost for this alternative is \$102,900,000 (2024 dollars, \$109,200,000 in 2026 dollars). This cost includes the construction of three (3) anaerobic digesters, rehabilitation of both North Plant incinerators, improvements to the North Plant's aeration system, as well as all costs associated with the consolidation of sludge management (sludge force main, pumps, etc.) as detailed in Section 6.2. This cost also includes the installation of large bubble mixing systems in the sludge mixing tanks as detailed in Section 7.3.

9.4.11. Anticipated O&M Costs

The table below shows the anticipated O&M costs associated with this alternative. The amount of polymer used in dewatering decreases because there are fewer solids produced after digestion; however, the ash management cost remains the same since the amount of inorganic material is not impacted by digestion. It is assumed that all incinerator fueling needs are met by biogas from the digesters.

Table 9-5: Annual Operating and Maintenance Cost Estimate (Scenario 3)

Item	Total
North Plant	
Electricity, Additional Sidestream Aeration	\$40,000
Dewatering Polymer	\$110,000
Ash management	\$100,000
Electricity	\$470,000
Caustic	\$40,000
Incinerator maintenance (labor, inspection, minor repairs)	\$50,000
Maintenance (digestion and FOG receiving station)	\$250,000
South Plant	
Electricity	\$30,000
Maintenance (strain presses and sludge transfer pumps)	\$10,000
Total Estimate O&M Cost	\$1,090,000

It is also assumed that one digester will need to be cleaned out every six (6) years at a cost of \$250,000.

Under most conditions there should be additional biogas available after the amount used for digester heating and incineration in this alternative. Additional analysis to more accurately predict the biogas quantity and quality would be advisable if this alternative is pursued. The volume of excess biogas and how much conditioning it would require would help determine the highest value use of the gas. The value of Renewable Energy Credits (RECs) and Renewable Identification Numbers (RINs) fluctuate, but at recent levels can greatly impact the economics of digestion projects.

The reuse of the biogas in the incinerations would need to be evaluated further. IFCO prefers not to use biogas as the fuel for the incinerators due to fouling issues. If the excess biogas was sent to the pipeline additional gas cleaning equipment would be required. The cost of this additional gas cleaning equipment could be in the range of \$25M, or more.

9.4.12. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, will require replacement one or more times during the design life of the overall system. This alternative includes several short-lived assets, including pumps, digester mixing equipment, and miscellaneous instrumentation. If this alternative were to be selected, the ACWPD should maintain adequate reserve funds to replace these short-lived assets as necessary. For the lifecycle

cost, it is assumed that each incinerator will need a minor rehabilitation after ten years of operation at a cost of 25% of the initial incinerator rehabilitation cost before markups (\$2,130,000/furnace).

9.5. Anaerobic Digester Construction + Sludge Dryer Installation (Scenario 4)

Under this alternative, three (3) anaerobic digesters would be constructed at the North Plant in order to process the consolidated sludge stream from both plants. Digested sludge would then undergo a thermal drying process to create a dried biosolids product suitable for some form of beneficial reuse. The existing incinerators would be idled and taken offline. This alternative was developed based on the assumption that Alternative 6.2 – Consolidation of Sludge Management has been selected.

9.5.1. Proposed Preliminary Design

Thermal drying after anaerobic digestion of the consolidated solids at the North Plant was analyzed as an alternative to incineration. The quality and marketability of the resulting dried biosolids product varies significantly depending on the type of dryer, with product quality generally increasing with increasing capital cost of the dryer. Since the market for dried biosolids products is largely unproven in this area, a lower cost dryer type—belt dryers—was considered in this analysis. In a belt dryer, the biosolids are distributed onto a moving belt through some type of extruder, where hot, dry process gases pass over the solids to remove moisture.

The proposed belt dryer can evaporate more than 6,800 lb-water/hour per unit. At the calculated solids throughput after digestion at current annual average solids production (1,600 dry-lb/hour), approximately 5,000 lb-water/hour would need to be evaporated to dry dewatered cake to the Class A standard of at least 90%TS, assuming operation 24 hours per day, seven (7) days per week. At the projected peak week solids production following digestion (2,500 dry-lb/hr), approximately 7,750 lb-water/hour would need to be evaporated on a continuous basis. The proposed installation would therefore have two units to provide redundancy during most conditions.

Dried product would be conveyed by a pneumatic conveyance system or tubular drag conveyors to a dried product storage building. According to biosolids management companies in the area, two (2) months of storage is advisable for dried biosolids to allow for seasonal decreases in demand.

As a backup for when the dryers are down, this alternative includes the installation of dewatered cake loadout conveyors. It is assumed that these will be screw conveyors, and will include a truck distribution conveyor to evenly distribute solids in a truck.

9.5.2. Impact on Existing Facility

This alternative would represent the addition of a new major treatment process to the facility. Operators would require training in order to manage the new processes and equipment.

The proposed anaerobic digesters would also create nutrient-rich side streams that would be recycled back to the head of the plant. It is expected that modifications to the North Plant's aeration processes would be necessary to treat these side streams. For the purposes of this analysis, it has been assumed that three (3) new blowers and associated piping would need to be installed to supplement the existing blowers. Further analysis of the facilities biological treatment process would be necessary to verify these assumptions.

This alternative does not provide any means of demonstrated PFAS destruction.

9.5.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

9.5.4. Land Requirements

This analysis assumes that dryers could be installed in an existing building; however, this assumption would need to be verified if this alternative were pursued further.

9.5.5. Environmental Impacts and Mitigation Measures

This alternative would allow ACWPD to idle or decommission the South and North Plant incinerators.

This alternative would also involve temporary environmental impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

9.5.6. Seasonal Limits, Challenges, and Requirements

The market for dried biosolids is highly seasonal. This analysis assumes a building sized to handle two (2)-months of production at future throughput will be constructed to accommodate periods with lower demand.

9.5.7. Discharge Permit Requirements

This alternative would not require any modification to the facilities' SPDES permits.

9.5.8. Water and Energy Efficiency Measures

Process pumps and equipment associated with this alternative will be designed with energy efficiency in mind.

9.5.9. Storm and Flood Resiliency

Appropriate measures would be taken during final design to ensure all infrastructure constructed under this alternative are adequately protected from the site's 100-year flood elevation.

9.5.10. Constructability and Schedule

It is expected that construction of this alternative would take approximately two (2) years. Construction would be phased to avoid disruption of facility operations.

9.5.11. Opportunities for Green Infrastructure

The implementation of green infrastructure may be considered in order to minimize impacts to site drainage that would follow from digester construction and site regrading. This possibility has not been reflected in the project cost estimate.

9.5.12. Project Capital Cost

The estimated project capital cost for this alternative is \$117,000,000 (2024 dollars, \$125,000,000 in 2026 dollars). This cost includes the construction of three (3) anaerobic digesters, installation of two (2) thermal belt dryers, as well as all costs associated with the consolidation of sludge management (sludge force main, pumps, etc.) as detailed in Section 6.2. This cost also includes the installation of large bubble mixing systems in the sludge mixing tanks as detailed in Section 7.3.

9.5.13. Anticipated O&M Costs

The table below shows the anticipated O&M costs associated with this alternative. Based on a 2019 Biosolids Market Assessment by Material Matters, it was assumed that the dried product could be managed at a cost of \$30/wet-ton. The natural gas cost is based on conceptual calculations of the additional amount of energy needed beyond the amount of biogas produced from digestion.

Table 9-6: Annual Operating and Maintenance Cost Estimate (Scenario 4)

Item	Total
North Plant	
Electricity, Additional Sidestream Aeration	\$40,000
Dewatering polymer	\$110,000
Dried Product Management	\$250,000
Natural Gas	\$20,000
Electricity	\$360,000
Maintenance (digestion, FOG receiving station and dryer)	\$290,000
South Plant	
Maintenance (strain presses and sludge transfer pumps)	\$10,000
Electricity	\$20,000
Total Estimate O&M Cost	\$1,100,000

It is also assumed that one digester will need to be cleaned out every six (6) years at a cost of \$250,000.

9.5.14. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, will require replacement one or more times during the design life of the overall system. This alternative includes several short-lived assets, including pumps, digester mixing equipment, and miscellaneous instrumentation. If this alternative were to be selected, the ACWPD should maintain adequate reserve funds to replace these short-lived assets as necessary.

9.6. Enhanced Incinerator Rehabilitation – Both North Plant & One South Plant MHF (Scenario 5)

Under this alternative, both North Plant incinerators, and one South Plant incinerator would be rehabilitated. ACWPD recently contracted IFCO to perform approximately \$800,000 of emergency incinerator maintenance at the South Plant; this incinerator is now in adequate condition to remain in service. This alternative was developed based on the assumption that sludge management is not consolidated and both facilities would continue status-quo operation.

9.6.1. Proposed Preliminary Design

Table 9-7 summarizes the equipment repairs and replacements that would be necessary for the North Plant incinerators to continue operation. Of note, the replacement of the wet scrubbers will ensure they are capable of operating across all projected loading scenarios. The conversion of the first and/or second hearth into a zero-hearth afterburner will improve emissions and odors from the North Plant incinerators. This work is described in further detail in Appendix M.

Table 9-7: North Plant MHF System Repair and Replacement Schedule (Both MHFs)

Item	Comment
Furnace shell/refractory/castings	Repair and replace per IFCO's inspection
Afterburner	Reconfigure both MHFs with afterburners
Burner systems	Replace equipment and controls for more reliable and efficient operation
Combustion air fans	Replace due to age and condition
Upper centershaft bearings/seals	Refurbish
Lower centershaft bearings	Refurbish
Centershaft drive motors/gearboxes	Replace for reliable operation
Pinion/bull gears	One set per plant
Shaft cooling air fans	Replace due to age and condition
Clinker grinders	Replace due to age and condition
Wet ash systems	Replace, tanks and pumps in poor condition
Refractory lined ducts	Repair as needed
Bypass dampers	Replace due to age
Wet scrubbers	Replace for capacity
CEMs	Replace due to age
Actuators	Replace for reliability
Cake conveyors	Replace due to age
Instrumentation and controls	Replace due to age and obsolescence
Electrical	Replace due to age and obsolescence

A hazardous material survey was not performed as part of this evaluation, and should be conducted as the project advances to future phases.

Table 9-8 summarizes the equipment repairs and replacements that would be necessary for the South Plant incinerator No. 1 to facilitate this unit being placed back into operation. As significant emergency repairs to incinerator No. 2 were completed in 2024 no additional improvements are included in the scope of this alternative, with the exception of the instrumentation and controls upgrades, which will include both incinerators to provide operating staff with one common controls platform. Other incinerator No. 2 upgrades will be performed by the ACWPD under their annual maintenance budget as needed in the coming years.

Table 9-8: South Plant MHF No. 1 System Repair and Replacement Schedule

Item	Comment
Furnace shell/refractory/castings	Repair and replace per IFCO's inspection
Burner systems	Replace equipment and controls for more reliable and efficient operation
Combustion air fans	Replace due to age and condition
Upper centershaft bearings/seals	Refurbish
Lower centershaft bearings	Refurbish
Centershaft drive motors/gearboxes	Replace for reliable operation
Pinion/bull gears	One set per plant
Shaft cooling air fans	Replace due to age and condition
Clinker grinders	Replace due to age and condition
Wet ash systems	Replace, tanks and pumps in poor condition
ID Fan	Replace due to age and condition
Refractory lined ducts	Repair as needed
Bypass dampers	Replace due to age
CEMs	Replace due to age
Actuators	Replace for reliability
Cake conveyors	Replace due to age
Instrumentation and controls	Replace due to age and obsolescence
Electrical	Replace due to age and obsolescence

At both facilities, the instrumentation and controls upgrades would be designed and implemented to allow for a greater degree of automation and operational flexibility for operators to help ensure emissions limits are reliably met, specifically through more precise control of temperatures within the burning hearths of each incinerator. These upgrades should lessen the impact of variations in dewatering efficiency on incinerator performance.

Equipment controls and software would be standardized across each facility so that operators may transition between plants without issue. Scalability, compatibility with existing SCADA system, and network security will all be taken into consideration along with a number of other factors during the final design phase to determine the exact nature of these upgrades.

This alternative would also require the replacement of one (1) sludge dewatering unit at each facility to provide consistent dewatering performance prior to incineration.

9.6.2. Impact on Existing Facility

Rehabilitation of the North and South Plant incinerators as described above would provide reliable service for the next 20 years.

9.6.3. Outfall Configuration Concerns

There are no outfall configuration concerns associated with this alternative.

9.6.4. Land Requirements

There are no land requirements associated with this alternative.

9.6.5. Environmental Impacts and Mitigation Measures

Implementation of this alternative would help ensure that the North and South Plant incinerators would continue to meet all emission requirements currently imposed under the current Title V air permit administered by the New York Department of Environmental Conservation.

This alternative would also involve temporary environmental impacts associated with construction (noise, air quality, etc.). Appropriate measures would be taken to protect nearby environmentally sensitive areas and wetlands to prevent disturbance.

9.6.6. Seasonal Limits, Challenges, and Requirements

There are no seasonal limitations associated with this alternative.

9.6.7. Discharge Permit Requirements

As discussed in the technical memo, this alternative is not expected to change the system's "existing" classification in the present Title V air permit.

9.6.8. Water and Energy Efficiency Measures

High efficiency motors would be installed where possible under this alternative. There are no other significant water or energy efficiency measures applicable.

9.6.9. Storm and Flood Resiliency

Storm and flood resiliency measures are not applicable to this alternative.

9.6.10. Constructability and Schedule

It is expected that rehabilitation of each incinerator would take approximately one (1) year. Rehabilitation would be sequenced so as not to disrupt facility operation. The total project duration would be two (2) years.

9.6.11. Opportunities for Green Infrastructure

There are no opportunities for Green Infrastructure associated with this alternative.

9.6.12. Project Capital Cost

The estimated capital cost of the proposed Alternative 5 improvements is \$56,500,000. This cost includes complete rehabilitation of the incinerators at both plants as detailed above, as well as the installation of large bubble mixing systems in the sludge mixing tanks as detailed in Section 7.3, and the installation of sludge thickening and pumping improvements as detailed in Section 8.2.

9.6.13. Anticipated O&M Costs

Anticipated annual operation and maintenance costs associated with implementation of Scenario 5 improvements are included in the table below. Natural gas, polymer and electricity values are based on historical usage.

Table 9-9: Annual Operating and Maintenance Cost Estimate (Scenario 5)

Item	Total
North Plant	
Dewatering Polymer	\$160,000
Ash management (for both plants)	\$100,000
Natural Gas	\$347,000
Electricity	\$220,000
Caustic	\$20,000
Maintenance (Incinerator; labor, inspection, minor repairs)	\$50,000
South Plant	
Dewatering Polymer	\$60,000
Natural Gas	\$170,000
Electricity	\$150,000
Caustic	\$20,000
Maintenance (Incinerator; labor, inspection, minor repairs)	\$50,000
Total Estimate O&M Cost	\$1,347,000

Operating and maintenance (O&M) manual(s) for the rehabilitated incinerators will be prepared during final project design provided to the County prior to startup. These manuals will include recommendations for the nature and frequency of inspections, maintenance, and replacement of system equipment. These recommendations will help the County to proactively maintain the rehabilitated incinerators. ACWPD's commitment to provide the necessary funds for long term maintenance is outlined in a letter contained in Appendix O.

9.6.14. Short-lived Asset Costs

All improvements included in this alternative have a design life of 30 years. However, certain components, known as short-lived assets, would require replacement one or more times during the design life of the overall system. ACWPD should budget for the repair or replacement of short-lived assets associated with the incinerators, such as furnace refractory systems, wet scrubbers, and booster pumps. Reference BC technical memo for more information regarding equipment which would require rehabilitation or replacement over the design service life of the rehabilitated incinerators. For the lifecycle cost, it is assumed that each incinerator would need minor rehabilitation after

ten years of operation at a cost of 25% of the initial incinerator rehabilitation cost (\$2,130,000/furnace).

9.7. Anaerobic Digester Construction – Both Plants

Under this alternative, anaerobic digestion complexes would be constructed at both the North and South Plants; the existing incinerators would be idled or abandoned in place. This alternative is based on the assumption that sludge consolidation is not implemented, and both facilities are required to maintain parallel sludge management processes. A preliminary review of this alternative indicates that the capital costs of its implementation would be prohibitive (>\$150,000,000); for these reasons, this alternative was not evaluated in further detail.

9.8. Gasification

Due to recent economic pressures in the biosolids disposal market, newer treatment technologies are always being evaluated to manage biosolids. One such technology is called gasification. The proposed gasification process would ultimately convert sludge cake into a renewable “biochar” product via an oxidation process.

This alternative was developed based on the assumption that Alternative 6.2 – Consolidation of Sludge Management has been selected and consists of the following processes:

- Thermal Sludge Drying
- Oxidation
- Gasification

The resulting “biochar” product would be suitable for reuse as a soil fertilizer, renewable fuel, animal bedding, or as an alternative to activated carbon for odor control.

Major equipment components for this process include:

- Rotary Drum Dryer
- Material Conveyors
- Blend Chamber
- Oxidizer
- Fixed-bed Gasifier
- Motor Control Center

Under this alternative, a gasification system would be installed at the North Plant in order to process the consolidated sludge stream from both plants.

A new 7,500 square foot (sf) building would be constructed to contain the gasification equipment; the proposed building would be located in the area currently occupied by ash lagoon no. 2. The North and South Plant incinerators would be decommissioned.

However, there are several unknowns at this stage which make the final life cycle costs and viability of this alternative difficult to project. For one, the technology proposed under this alternative has not been utilized for municipal wastewater facilities in this region. Without similar installations for comparison, it is difficult to ensure the performance and reliability of the system. Further, to mitigate a significant natural gas usage the feed into the gasification process the process needs to have a 30% dried product, while ACWPD's belt filter press solids are typically in the 20 – 24% solids. Therefore an additional gasification feedstock, most likely woodchips, would need to be blended with the sludge cake prior to gasification in order to optimize biochar production and minimize natural gas consumption. Without this additional dry feed stock the gasification process would use more energy than any of the alternatives evaluated as part of this study.

The economic viability of this alternative would thus be dependent on fluctuations in the cost and availability of alternative feedstocks as well as the additional equipment and staffing to operate and maintain this additional equipment. Lastly, it has not been confirmed whether gasification is a reliable means of reducing the concentration of polyfluoroalkyl substances (PFAs) in wastewater solids; this alternative could potentially be rendered insufficient by future regulatory changes regarding PFAs. For these reasons, this alternative was not evaluated in further detail.

This technology should be monitored for future upgrades once the technology is proven.

10.0 SUMMARY AND ALTERNATIVE COMPARISON

10.1. Feasible Alternatives Summary

The alternatives evaluated to meet the requirements of the Order on Consent as well as provide a long-term sludge processing and management plan were combined into the following five (5) viable scenarios. Table 10-1 below summarizes the following:

- Key project components
- Advantages and Disadvantages
- Overall Project Costs
- Non- Monetary Factors

The management of FOG and the installation of a dedicated receiving station is presented separately from the sludge disposal alternative at a total project cost of \$8,500,000.

The Scenarios include:

- Scenario 1 – Rehabilitation of North and South Plant Incinerators independently and replacement of North and South Plant Sludge Mixing Systems
- Scenario 2 – Rehabilitation of North Incinerators, Consolidation of the South Plant Primary and WAS to the North Plant and replacement of North and South Plant Sludge Mixing Systems
- Scenario 3 – Installation of Anaerobic Digesters, Rehabilitation of North Incinerators, Consolidation of the South Plant Primary and WAS to the North Plant and replacement of North and South Plant Sludge Mixing Systems
- Scenario 4 – Installation of Anaerobic Digesters, Installation of Sludge, Consolidation of the South Plant Primary and WAS to the North Plant and replacement of North and South Plant Sludge Mixing Systems
- Scenario 5 – Rehabilitation of both North Incinerators with the addition of afterburners, Rehabilitation of one South Plant Incinerator, and replacement of North and South Plant Sludge Mixing Systems.

Table 10-1: Summary of Alternatives

Wastewater Solids Processing				
Scenario 1: Rehabilitation	Scenario 2: Consolidation with Incineration	Scenario 3: Consolidation with Digestion + Incineration	Scenario 4: Consolidation with Digestion + Sludge Drying	Scenario 5: Enhanced Incinerator Rehabilitation (Both North Incinerators and One Incinerator at South)
Major Construction Elements: - Rehabilitation of North and South Incinerators - Replacement of sludge tank mixers at North and South Plants with large bubble mixing system and structural repairs to the mix tanks	Major Construction Elements: - South Plant Incinerator abandoned; sludge processing consolidated to North Plant via force main and sludge thickening improvements - Rehabilitation of North Incinerator - Installation of 3rd belt filter press - Replacement of sludge tank mixers at North and South Plants with large bubble mixing system and structural repairs to the mix tanks	Major Construction Elements: - Construction of three (3) Anaerobic Digesters at North Plant - Rehabilitation of North Plant Incinerators - Addition of FOG Receiving Station at North Plant - South Plant Incinerator abandoned; sludge processing consolidated to North Plant via force main and sludge thickening improvements - Replacement of sludge tank mixers at North and South Plants with large bubble mixing system and structural repairs to the mix tanks	Major Construction Elements: - Construction of three (3) Anaerobic Digesters at North Plant - Installation of two (2) Thermal Sludge Dryers at North Plant - Addition of FOG Receiving Station at North Plant - North and South Plant Incinerators decommissioned; sludge processing consolidated to North Plant via force main and sludge thickening improvements - Replacement of sludge tank mixers at North and South Plants with large bubble mixing system and structural repairs to the mix tanks	Major Construction Elements: - Rehabilitation of both North and one South Incinerators - Installation of afterburners on both North Plant Incinerators - Replacement of sludge tank mixers at North and South Plants with large bubble mixing system and structural repairs to the mix tanks - Various sludge thickening, pumping, and dewatering improvements at North and South Plants.
Advantages Makes use of existing infrastructure	Advantages: - Makes use of existing infrastructure - Low ash disposal costs and PFAS risk minimization - Lower staffing requirements at South Plant - Lowest Capital Cost - Lowest Life Cycle Cost - No impact to North Plant Aeration system - Potential near elimination of natural gas for incinerators	Advantages: - Provides opportunity to utilize biogas - Reduces ash production and PFAS risk minimization - Lowest ash disposal costs - Lower staffing requirements at South Plant	Advantages: - Provides opportunities to utilize biogas as renewable heating fuel for dryer system - Lower staffing requirements at South Plant - Eliminates risk of incinerator regulatory compliance - Beneficial reuse of solids	Advantages - Makes use of existing infrastructure - Low ash disposal costs and PFAS risk minimization - Lowest Capital Cost - No impact to North Plant Aeration system
Disadvantages: - Maintains two parallel sludge handling processes - Requires full staffing of both Plants	Disadvantages: - Requires significant pumping to convey South Plant liquid sludge to North Plant. Dual force main would provide redundancy to mitigate down time. 3rd belt filter press required - Improvements to scrubber system required	Disadvantages: - Requires significant pumping to convey South Plant liquid sludge to North Plant - New technology (digestion) for operators to manage - Additional side stream loading to head of North Plant	Disadvantages: - Requires significant pumping to convey South Plant liquid sludge to North Plant - Increased complexity - Increased disposal cost for biosolids (8,000 wet tons/year) - Additional side stream loading to head of North Plant	Disadvantages: - Maintains two parallel sludge handling processes - Requires full staffing of both Plants
Total Project Cost (2026): - Opinion of Probable Cost: \$63,400,000 - Annual O&M Costs: \$1,220,000	Total Project Cost (2026): - Opinion of Probable Cost: \$56,500,000 - Annual O&M Costs: \$810,000	Total Project Cost (2026): - Opinion of Probable Cost: \$109,20,000 - Annual O&M Costs: \$1,090,000	Total Project Cost (2026): - Opinion of Probable Cost: \$125,000,000 - Annual O&M Costs: \$1,100,000	Project Cost (2026): - Opinion of Probable Cost: \$56,500,000 - Annual O&M Costs: \$1,347,000
Total Natural Gas Used53,011 Mcf/year Total Bio Gas Generated and Consumed0 Mcf/year <u>Total Biogas Flared0 Mcf/year</u> Total NG Used/Biogas Consumed/Flared53,011,Mcf/year	Total Natural Gas Used20,474 Mcf/year Total Bio Gas Generated and Consumed0 Mcf/year <u>Total Biogas Flared0 Mcf/year</u> Total NG Used/Biogas Consumed/Flared20,474 Mcf/year	Total Natural Gas Used0 Mcf/year Total Biogas Consumed (Dig. and Incin.)96,185 Mcf/year ⁽¹⁾ <u>Total Biogas Flared102,492 Mcf/year⁽²⁾</u> Total NG Used/Biogas Consumed/Flared198,678 Mcf/year	Total Natural Gas Used3,154 Mcf/year Total Bio Gas Generated and Consumed198,678 Mcf/year <u>Total Biogas Flared0 Mcf/year</u> Total NG Used/Biogas Consumed/Flared201,832 Mcf/year	Total Natural Gas Used69,642 Mcf/year Total Bio Gas Generated and Consumed0 Mcf/year <u>Total Biogas Flared0 Mcf/year</u> Total NG Used/Biogas Consumed/Flared69,642,Mcf/year
Non-Monetary Factors: Offers simpler O&M requirements and operator familiarity	Non-Monetary Factors: - Offers simpler O&M requirements and operator familiarity - Sludge force main passes through wetlands and other environmentally sensitive areas - Significant reduction in greenhouse gas emissions (1,780 metric tons of CO₂-equivalent) from reduced natural gas usage	Non-Monetary Factors: Sludge force main passes through wetlands and other environmentally sensitive areas (1) Assume incinerator uses biogas, additional analysis is needed based on IFCO (2) Additional biogas can be utilized, possibly pipeline injection with associated revenue stream, but capital and operational costs will increase significantly.	Non-Monetary Factors: Sludge force main passes through wetlands and other environmentally sensitive areas	Non-Monetary Factors: Offers simpler O&M requirements and operator familiarity

10.2. Non-Monetary Factors

10.2.1. Compliance with Standards

Each of the five (5) sludge management scenarios evaluated above has been designed to achieve full compliance with 10 States Standards and Title V air compliance, if applicable.

10.2.2. WWTP Capacity

Each scenario evaluated above would result in both WWTPs having sufficient capacity to meet projected 20-year flows and loadings.

10.2.3. Recreational Impact

No long-term recreational impacts are anticipated with the exception of during construction the sludge force main.

10.2.4. Local Employment Factors

No changes to local employment are anticipated under any of the four proposed scenarios. Staffing will remain at current levels.

10.2.5. Aesthetics

No long-term aesthetic impacts are anticipated under any of the four proposed scenarios. There may be temporary construction-related aesthetic impacts associated with sludge force main construction under scenarios 2, 3, and 4.

10.2.6. Existing Habitat Impacts

There are no habitat impacts associated with Scenarios 1 and 5. Scenarios 2, 3, and 4 involve the construction of a sludge force main through environmentally sensitive areas. Special consideration would be required during final design to prevent permanent disruption of any sensitive habitats.

10.2.7. Carbon Footprint

The latest version of the Biosolids Emissions Assessment Model (BEAM) was utilized to evaluate projected greenhouse gas (GHG) emissions under each of the proposed scenarios. Existing operating conditions were also modeled to serve as a baseline for comparison. This evaluation only considers GHG emissions from solids handling processes and equipment; emissions related to the preliminary, primary, and secondary treatment processes are not included.

BEAM was first developed in 2011 by the Canadian Council of Ministers of the Environment (CCME) to “allow operators, engineers and managers the ability to assess potential greenhouse gas (GHG) emissions from a range of biosolids management scenarios.” In an effort to improve the model, North East Biosolids and Residuals Association (NEBRA) and Northwest Biosolids developed and released BEAM*2022, an

updated version based on recent research and reviews. Figure 10-1 below displays the results of the BEAM*2022 model. The following assumptions were utilized in the preparation of the model:

- “Current Operations” are based on 2021 natural gas usage.
- 50% of dried biosolids product will be land-applied and 50% will be disposed of in a landfill.
- No credit for avoided Nitrogen and Phosphorus production was applied due to uncertainty regarding the ultimate end-use for dried biosolids product.

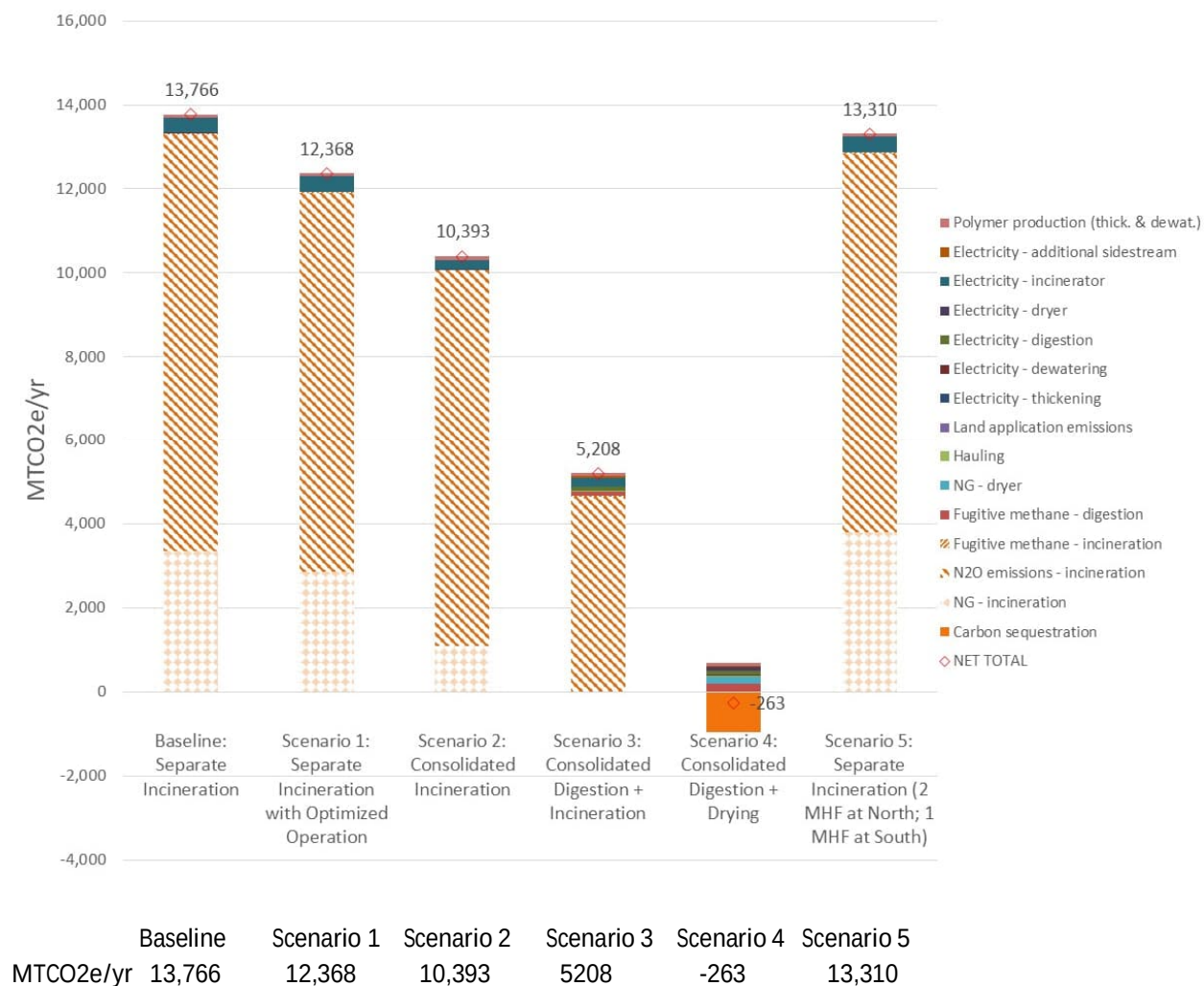


Figure 10-1: Solids Treatment and Management Greenhouse Gas Inventory (MTCO2e/yr)

As shown, Scenarios 1 - 5 would all represent a reduction in annual greenhouse gas emissions when compared to current conditions. The largest projected reduction is associated with Scenario 4 – Anaerobic Digestion & Sludge Drying, which would represent a carbon-negative solids-handling process.

The Separate Incineration (Scenarios 1 and 5): Optimized Operation alternative represents a scenario in which the North Plant and South Plant incinerators remain in service, but the operating conditions (run times, start-up frequency, etc.) are modified to minimize energy usage.

Scenarios 3 and 4 involving anaerobic digestion would involve the production of excess biogas which may provide opportunities for beneficial reuse, reducing natural gas consumption and carbon footprint.

In Scenario 2, Consolidated Incineration would allow the North Plant incinerators to operate with minimal to no natural gas usage reducing ACWPD's carbon footprint. The net reduction in GHG for this Scenario is 3,373 metric-tons of CO₂-equivalent per year, a 24.5% reduction from the current baseline.

Scenario 5, Enhanced Incinerator Rehabilitation will reduce the GHG 456 metric-tons of CO₂-equivalent per year, a 3.3% reduction from the current baseline.

10.2.8. Landfill Disposal Volumes

The table below summarizes the volumes of waste material that would need to be disposed of via landfilling for each of the five scenarios.

Table 10-2: Landfill Disposal Volumes

Scenario	Material to Landfill (wet-tons/yr)
1 – Separate Incineration	3,946
2 – Consolidated Incineration	3,892
3 – Consolidated Digestion + Incineration	3,892
4 – Consolidated Digestion + Drying	7,798
5 – Separate Incineration	3,946

This comparison assumes that 50% of dried biosolids product will be land-applied and 50% will be disposed of in a landfill.

10.2.9. Climate Resiliency

All five (5) scenarios evaluated involve work within identified flood zones. Consideration will be necessary during final design to ensure the proposed improvements are located to withstand projected flood elevations in accordance with TR-16 section 1.2.1(h).

10.2.10. Standardization

Scenarios 3 and 4 involve major changes to the existing treatment process and the addition of new treatment technologies and equipment and would require significant staff training for the new processes.

10.2.11. Personnel Impacts

Scenarios 1 and 5 (Rehabilitation and Enhanced Rehabilitation) would allow ACWPD to continue operation of the North and South Plants with no changes to staffing. This scenario does not introduce any new technologies, so little to no retraining of existing personnel would be necessary.

Scenario 2 (Consolidation – Incineration) also offers technological continuity for existing personnel. It may be necessary to adjust shifts and/or reallocate personnel between the South and North Plants in order to account for the elimination of the South Plant incinerators and increased run times for the North Plant incinerators.

Scenario 3 (Consolidation – Incineration + Digestion) would introduce new technologies and treatment processes to the North Plant. Additional staff may be required to operate the digestion process.

Scenario 4 (Consolidation – Digestion + Sludge Drying) would introduce new technologies and treatment processes to the North Plant. Additional staff may be required to operate the digestion and sludge drying processes, and to manage the biosolids product generated.

10.2.12. Permit Issues

Scenarios 1 and 5 would not require any special permitting considerations beyond NYSDEC plan approval. Scenarios 2, 3, and 4 would require additional permits, including from NYSDOT for the installation of the sludge force main under I-787 and I-90, and from NYSDEC for the installation of the sludge force main through identified wetlands.

10.2.13. Community Objections

Community engagement would be a priority throughout project design. It is expected that the community may be in favor of the consolidation scenarios (2, 3, or 4) which would allow ACWPD to idle or abandon in place the incinerators currently in operation at the South Plant.

10.2.14. Wetlands

Scenarios 2, 3, and 4 involve the construction of a sludge force main from the South Plant to the North Plant. The proposed force main route would potentially pass through wetland areas identified using the NYS DEC Environmental Resource Mapper.

Appropriate measures would be taken during project design and construction to avoid wetland disturbance to the fullest extent possible, including the use of trenchless installation methods.

10.2.15. Traffic Considerations

Under Scenarios 2, 3, and 4, local traffic patterns may be impacted by the re-routing of sludge haulers that previously utilized the South Plant to the North Plant.

10.2.16. Future Flexibility

Consolidation of sludge management presents ACWPD with increased future flexibility. With consolidation infrastructure (force main, pumps, etc.), it will be easier for ACWPD to pivot away from incineration at the North Plant if regulatory conditions change in the future.

10.2.17. Solids Disposal Cost Control

Future regulatory action regarding PFAS in wastewater and biosolids has been the subject of much speculation, however, there is currently little clarity as to what limits, if any, will eventually be imposed by State and/or Federal agencies. As a result, it is difficult to determine what the impact of these regulations on biosolids disposal and/or reuse may be.

Early research on the fate of PFAS in sewage sludge incinerators has indicated that some PFAS destruction does occur via the mineralization of fluorinated compounds.

Preliminary data indicates that this destruction is a function of time, temperature, and turbulence within the incinerator; the extent of this destruction is not yet clear. It is expected that further research will be published in the next few years that will improve understanding of this process.

Available research indicates that anaerobic digestion and sludge drying do not provide any destruction of PFAS. If these technologies were implemented, any future limits imposed on PFAS concentration in Class A biosolids could eliminate the potential for beneficial reuse without further treatment.

At this point in the regulatory cycle, the continued use of incineration for the processing of biosolids presents the least risk in terms of end use and/or disposal.

10.3. Life-Cycle Cost Analysis

Figure 10-2 below shows the Net Present Cost of each of the five (5) scenarios evaluated. Scenarios 2 and 5 – Consolidated Incineration are associated with the lowest capital cost. Scenario 2 has the lowest lifecycle cost.

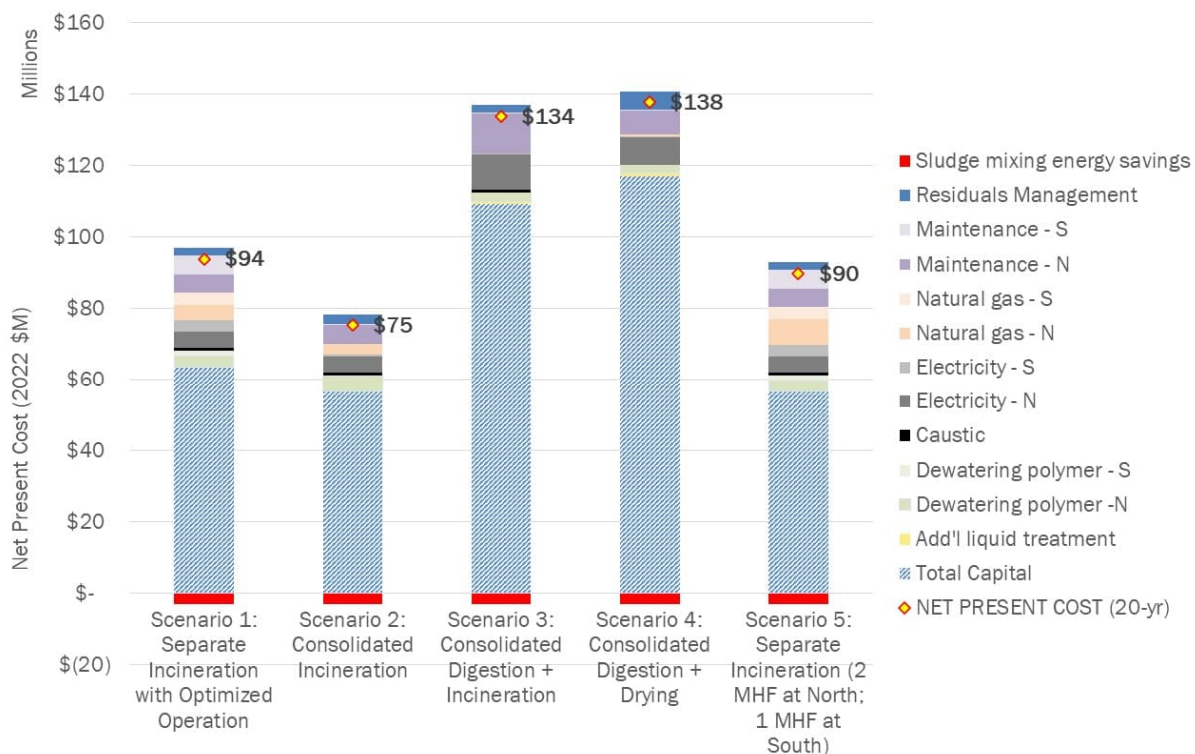


Figure 10-2: Net Present Cost Graph

10.4. Green Infrastructure

Opportunities to incorporate green infrastructure, or green practices, were a primary focus of the alternatives evaluation. The recommended alternatives were selected in large part to reduce the long-term energy needs of the North and South WWTPs.

The NYSEFC Green Innovations Grant Program (GIGP) was expanded under the 2020 round to include three green practices. Consideration was given to each, further described below, as the GIGP program is a viable grant source for the recommended capital improvement project.

- **Green Stormwater Infrastructure:** New buildings and pavement will be constructed which will impact the site's stormwater runoff patterns and rates. Stormwater management will likely include the use of bioswales for treating runoff from expanded paved lots. Additional plantings will also be considered.
- **Energy Efficiency:** The ACWPD received a NYSEFC FlexTech grant to enhance the energy efficiency evaluation for capital improvement evaluations. The recommended capital improvement program includes several energy efficiency measures.
- **Water Efficiency:** Consideration will be given to water reuse during final design. Potential opportunities would include the utilization of plant effluent for flushing, etc. to reduce potable water consumption.

11.0 RECOMMENDED ALTERNATIVE

It is recommended that ACWPD implement Scenario 5 – Enhanced Incinerator Rehabilitation. As discussed above this alternative represents the most cost-effective long-term sludge processing and disposal option for ACWPD while avoiding the regulatory complexity and permitting time needed for the sludge consolidation alternatives. The scope of Scenario 5 as presented herein has been developed following extensive discussions with NYSDEC and NYSEFC to confirm that the proposed improvements comply with all applicable regulatory requirements.

It is also recommended that ACWPD implement Alternative 5.2 – FOG Hydronic Separation System. This system can be installed independently of the main sludge disposal improvements project and was evaluated separately as a result.

11.1. Basis of Selection

The primary basis for selection of Scenario 5 was a combination of cost effectiveness and feasibility. Each of the five scenarios would have allowed ACWPD to treat projected flows and loadings while meeting permit requirements. Consolidation of sludge management offered the potential for significant long-term savings through a reduction in operating costs; however, it also presented a higher risk potential due to the significant regulatory and technical challenges. The rehabilitation of the North Plant and South Plant incinerators presented significantly lower up-front capital costs than the construction of anaerobic digesters and thermal sludge dryers. Additionally, continued incineration would help mitigate growing regulatory concerns associated with emerging contaminants, including PFAS compounds, as recent studies have demonstrated the ability of multiple hearth incinerators to reduce PFAS concentrations in sludge.

11.1.1. Enhanced Efficiency

The recommended Scenario 5 will improve energy and emissions efficiency in the following ways:

- The North Plant FOG receiving and separation improvements would improve liquid stream treatment efficiency by removing FOG from the primary waste stream and thereby reducing its negative impact on treatment efficiency and equipment lifespan.
- The North and South Plant sludge mixing improvements would improve energy efficiency by reducing electricity consumption, and also would improve downstream combined sludge pumping energy efficiency by ensuring the contents of the sludge tank remain well-mixed. In addition, effectively mixed tanks will improve the effectiveness of downstream dewatering and thereby reduce natural gas use in the incinerators.
The improved large bubble mixing system will significantly improve the odors generated from the current emergency aeration system.
- The North and South Plant sludge thickening, pumping, and dewatering improvements would improve energy efficiency by replacing outdated and less efficient solids handling equipment.

- The thickening improvements would improve dewatering efficiency by providing a more consistent and thicker feedstock to the belt filter and screw presses, and the dewatering improvements would likewise improve incineration efficiency by reducing the moisture content of dewatered sludge entering the incinerator, thereby reducing natural gas consumption.
- Installation of the afterburners at the North plant will result in a significant reduction in a wide range of regulated emissions from the incinerators. By introducing additional turbulence, heat, and residence time, the afterburner enhances the treatment of gases produced during the initial incineration process. These include unburned hydrocarbons (particulate and semi volatile), dioxins and furans (D/F), and volatile organic compounds (VOCs) which oxidize the thermodynamically stable endpoint primarily consisting of CO₂ and H₂O. While increasing the combustion zone temperature has helped bring these constituents into compliance, the afterburner will provide an additional safeguard.
- Improved burner efficiency would result in reduced natural gas consumption and reduced emissions. Burners will be “MHF” style burners, with direct spark ignition. This burner is a medium velocity burner, which will provide better mixing of the furnace atmosphere. North American and IFCO developed this burner specifically for the multiple hearth furnaces. It is designed to eliminate many of the problems associated with burners on multiple hearth furnaces such as slag formation and maintenance. Each burner will have an individual flame sensing ultraviolet flame detection device. All the Valves, Ignition Transformers and Flame Sensing devices will interface with the Control System. In conjunction with the controls improvements, the burners will support combustion of the sludge with on the fly air/fuel ratio control. This will allow the system to “lean out” the burner (run with excess air) in the combustion zone to help with flue gas mixing and help reduce emissions.
- The incineration rehabilitation and controls improvements would further improve incineration efficiency by increasing operator control of combustion temperatures, which results in more complete combustion, reduced natural gas consumption, and reduced air emissions at both plants.
- The wet scrubber improvements at the North Plant would further reduce emissions of acid gases due to improved water contact over the larger vessel diameter. The South Plant wet scrubbers are appropriately sized as is.
- The proposed caustic system to maintain scrubber water alkalinity for scrubbing acid gasses will improve acid gas capture including regulated sulfur dioxide (SO₂) and hydrogen chloride (HCl), below levels currently achieved by the wet scrubber alone at the North Plant.

11.2. Cost Estimate

The total opinion of probable cost for the project is \$65,000,000. This cost includes \$56,500,000 for the recommended Scenario 5 – Enhanced Incinerator Rehabilitation, along with \$8,500,000 for Alternative 5.2 – FOG Hydronic Separation System. A brief summary of the overall scope of work, broken out by facility, is included in the table below. Further details on the costs associated with each specific unit process improvement is included in Appendix N.

Table 11-1: Project Scope Summary

Unit Process	North Plant	South Plant	Cost
FOG Receiving	Installation of a dual FOG/Septage receiving station with FOG hydronic separation system	N/A	\$8.5M
Sludge Tank Mixing	Installation of one (1) new large bubble mixing system to serve four (4) existing SHTs	Installation of one (1) new large bubble mixing system to serve three (3) existing SHTs	
Sludge Thickening	Installation of two (2) waste sludge thickening units	Installation of two (2) waste sludge thickening units	
Sludge Pumping	Installation of two (2) combined sludge pumps and two (2) thickened sludge pumps	Installation of two (2) combined sludge pumps and two (2) thickened sludge pumps	\$56.5M
Sludge Dewatering	Installation of one (1) sludge dewatering unit	Installation of one (1) sludge dewatering unit	
Sludge Incineration	Rehabilitation of both sewage sludge incinerators and addition of afterburner to each furnace	Rehabilitation of one sewage sludge incinerator	
Total Project Cost:			\$65.0M

Some portions of the capital construction project may be expedited due to current equipment failures and equipment prepurchase bid contracts may be issued to procure long lead time equipment components. The total project cost of \$65,000,000 will be used amongst various contracts but will be procured in accordance with NYSEFC bidding requirements.

11.3. Preliminary Plan of Finance

There are various funding options for WWTP upgrades. Typically, core funding from government programs such as the NYSEFC CWSRF, NYSEFC – WIIA Grants, or NYSDEC WQIP grants EFC programs provide interest subsidies and grant funding to make municipal sewer improvement projects affordable for the average user. If core funding is not available from these funding agencies, a long-term municipal bond is usually the best option for project

financing. To supplement the bond, smaller grants can be applied for through the New York State Consolidated Funding Application from agencies such as the New York State Energy Research and Development Authority and EFC's Green Innovation Grant Program.

The ACWPD listed the recommended Sludge Processing Improvements project (C4-5419-06-00) on the 2024-2025 NYSEFC, (CWSRF) Final Intended Use Plan (IUP) Annual List and intends to pursue Long-Term financing through EFC. According to the project listing, the project is eligible for \$25,000,000 in BIL grant funding, \$25,000,000 in BIL hardship financing, and \$15,000,000 in BIL subsidized financing. To receive this grant funding and financing, ACWPD is required to close on a financing agreement by September 2025.

11.4. Supplemental Funding – Consolidated Funding Application (CFA) and WIIA Grants
Obtaining outside grant funding is critical for ACWPD to be able to facilitate the construction of this project and meet the requirements of their Order on Consent.

There are various funding opportunities that are available through New York State's Consolidated Funding Application (CFA). The CFA is an avenue where applicants are able to access multiple State funding sources through one (1) application. The eligibility criteria differs between each program, but protection of public health, protection of the environment, energy conservation, and/or economic development are key factors in many applications. The programs, sponsoring agencies and funding types for which this project is or may be eligible are included in the following summary table.

Table 11-2: Summary of Key Funding Programs

Program Name	Sponsoring Agency	Funding Type
Clean Water State Revolving Loan Fund (Base Funding)	New York State Environmental Facilities Corporation (NYSEFC)	
Consolidated Funding Application		
Government Efficiency-Planning/Implementation	Department of State	Grant with local match
Green Innovations Grant Program (GIGP)	NYSEFC	Grant with local match
Water Quality Grant Program	New York State Department of Conservation (NYSDEC)	Grants with local match
Additional Funding Sources		
Water Infrastructure Improvement Grants	NYSEFC	Grants with local match

ACWPD submitted for WQIP and WIIA grants as well a NYSEFC energy grants in 2022, 2023, and 2024 but have not been successful in securing additional grants.

11.5. Project Schedule

Following the completion of this report, the anticipated project schedule for the proposed rehabilitation project is outlined below:

<u>Project Schedule Milestone Item</u>	<u>Schedule Date</u>
Submit Preliminary Engineering Report to DEC	July 2022
CWSRF Project Listing	June 2023
Environmental Review – Consolidated Alternative	June 2024
Submit CWSRF funding application to NYSEFC	June 2024
Submit Revised PER (Version 4) to DEC/EFC	February 2025
Submit Revised PER (Version 5) to DEC/EFC	March 2025
Initiate Design Phase	April 2025 ¹
Submit Amended Environmental Review	March 2025
Close on Short Term Financing (CWSRF)	September 2025
Submit Project Basis of Design Report, Plans and Specifications for Review and Approval	April 2026 ¹
Regulatory Review/Approval	May – July 2026
Bidding Phase/Receive Bids	August – September 2026 ²
Issue Notice to Proceed	December 2026 ²
Construction Start	January 2027 ²
Construction Completion	April 2029 ²

¹Assumes approval of revised PER within 30 days of submission

²Assumes 90 day review/approval period by regulatory and funding agencies (60 days for receipt comments, 30 days to respond to comments and issue final bid documents)

11.6. Next Steps

The following regulatory reviews and/or approvals of the rehabilitation project are anticipated and will be obtained during the project design phase:

- New York State Department of Environmental Conservation (NYSDEC) and NYS Environmental Facilities Corporation (EFC) – Engineering Report and Plan Approval
- State Environmental Quality Review Act (SEQRA) – The proposed rehabilitation project has been identified as a Type I project; a full environmental assessment form was initially completed in May 2024. Amended SEQRA is anticipated in March 2025.

REPORT QUALIFIERS

Class 5 Cost Estimate

In accordance with the Association for the Advancement of Cost Engineering International (AACE) criteria, this is a Class 5 estimate. A Class 5 estimate is defined as a Conceptual Level or Project Viability Estimate. Class 5 estimates are used to prepare planning level cost scopes or evaluation of alternative schemes, long range capital outlay planning and can also form the base work for the Class 4 Estimate. Expected accuracy for Class 5 estimates typically ranges from -50 to +100 percent, depending on the technological complexity of the project, appropriate reference information and the inclusion of an appropriate contingency determination. In unusual circumstances, ranges could exceed those shown.

Limitations

This document was prepared solely for the Albany County Water Purification District in accordance with professional standards at the time the services were performed and in accordance with the contract between ACWPD and B&L/BC. This document is governed by the specific scope of work authorized by the ACWPD; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by ACWPD and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information. Further, B&L and BC makes no warranties, express or implied, with respect to this document, except for those, if any, contained in the agreement pursuant to which the document was prepared. All data, drawings, documents, or information contained this feasibility study have been prepared exclusively for the person or entity to whom it was addressed and may not be relied upon by any other person or entity without the prior written consent.

Appendices

Appendix A
NRCS Soil Mapping



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Albany County, New York**

North Plant



February 16, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Albany County, New York
Survey Area Data: Version 19, Aug 29, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 9, 2020—Sep 16, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Du	Dumps	3.1	9.0%
Mh	Medihemists and Hydraquents, ponded	2.7	7.8%
Te	Teel silt loam	6.4	18.6%
Ug	Udorthents, loamy	3.4	9.8%
Uk	Udorthents, loamy-Urban land complex	0.1	0.3%
Ur	Urban land	18.7	54.4%
W	Water	0.1	0.2%
Totals for Area of Interest		34.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Albany County, New York

Du—Dumps

Map Unit Setting

National map unit symbol: 9pfk
Mean annual precipitation: 36 to 41 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 100 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Dumps: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dumps

Typical profile

H1 - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Mh—Medihemists and Hydraquents, ponded

Map Unit Setting

National map unit symbol: 9pgs
Elevation: 10 to 2,400 feet
Mean annual precipitation: 36 to 41 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 100 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Medihemists, ponded, and similar soils: 45 percent
Hydraquents and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Medihemists, Ponded

Setting

Landform: Marshes, swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material

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Typical profile

H1 - 0 to 70 inches: mucky peat

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.20 to 19.98 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Available water supply, 0 to 60 inches: Very high (about 22.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: A/D

Hydric soil rating: Yes

Description of Hydraquents

Setting

Landform: Marshes

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Talf

Down-slope shape: Concave

Across-slope shape: Concave

Typical profile

H1 - 0 to 9 inches: mucky silty clay

H2 - 9 to 70 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: A/D

Hydric soil rating: Yes

Minor Components

Unnamed soils

Percent of map unit: 10 percent

Fluvaquents

Percent of map unit: 5 percent

Custom Soil Resource Report

Landform: Flood plains

Hydric soil rating: Yes

Granby

Percent of map unit: 4 percent

Landform: Depressions

Hydric soil rating: Yes

Stafford

Percent of map unit: 1 percent

Hydric soil rating: No

Te—Teel silt loam

Map Unit Setting

National map unit symbol: 9phv

Elevation: 600 to 1,800 feet

Mean annual precipitation: 36 to 41 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 100 to 170 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Teel and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Teel

Setting

Landform: Flood plains

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Talf

Down-slope shape: Concave

Across-slope shape: Convex

Parent material: Silty alluvium

Typical profile

H1 - 0 to 8 inches: silt loam

H2 - 8 to 29 inches: silt loam

H3 - 29 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)

Depth to water table: About 18 to 24 inches

Frequency of flooding: OccasionalNone

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Frequency of ponding: None

Calcium carbonate, maximum content: 1 percent

Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B/D

Ecological site: F101XY002NY - Low Floodplain

Hydric soil rating: No

Minor Components

Hamlin

Percent of map unit: 5 percent

Hydric soil rating: No

Wakeland

Percent of map unit: 5 percent

Landform: Flood plains

Hydric soil rating: No

Raynham

Percent of map unit: 3 percent

Landform: Depressions

Hydric soil rating: Yes

Scio

Percent of map unit: 3 percent

Hydric soil rating: No

Unnamed soils

Percent of map unit: 2 percent

Rhinebeck

Percent of map unit: 1 percent

Hydric soil rating: No

Wayland

Percent of map unit: 1 percent

Landform: Flood plains

Hydric soil rating: Yes

Ug—Udorthents, loamy

Map Unit Setting

National map unit symbol: 9pj1

Elevation: 0 to 1,640 feet

Mean annual precipitation: 36 to 41 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 100 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, loamy, and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy

Typical profile

H1 - 0 to 4 inches: loam

H2 - 4 to 70 inches: channery loam

Properties and qualities

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 5.95 in/hr)*

Depth to water table: About 36 to 72 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Minor Components

Unnamed soils

Percent of map unit: 10 percent

Uk—Udorthents, loamy-Urban land complex

Map Unit Setting

National map unit symbol: 9pj3

Elevation: 0 to 1,440 feet

Mean annual precipitation: 36 to 41 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 100 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, loamy, and similar soils: 40 percent

Urban land: 30 percent

Minor components: 30 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy

Typical profile

H1 - 0 to 4 inches: loam

H2 - 4 to 70 inches: channery loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high
(0.06 to 5.95 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Minor Components

Valois

Percent of map unit: 10 percent
Hydric soil rating: No

Nunda

Percent of map unit: 10 percent
Hydric soil rating: No

Riverhead

Percent of map unit: 9 percent
Hydric soil rating: No

Ilion

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Ur—Urban land

Map Unit Setting

National map unit symbol: 9pj8
Mean annual precipitation: 36 to 41 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 100 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Minor Components

Unnamed soils

Percent of map unit: 10 percent

Udorthents

Percent of map unit: 5 percent

Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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United States
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Agriculture

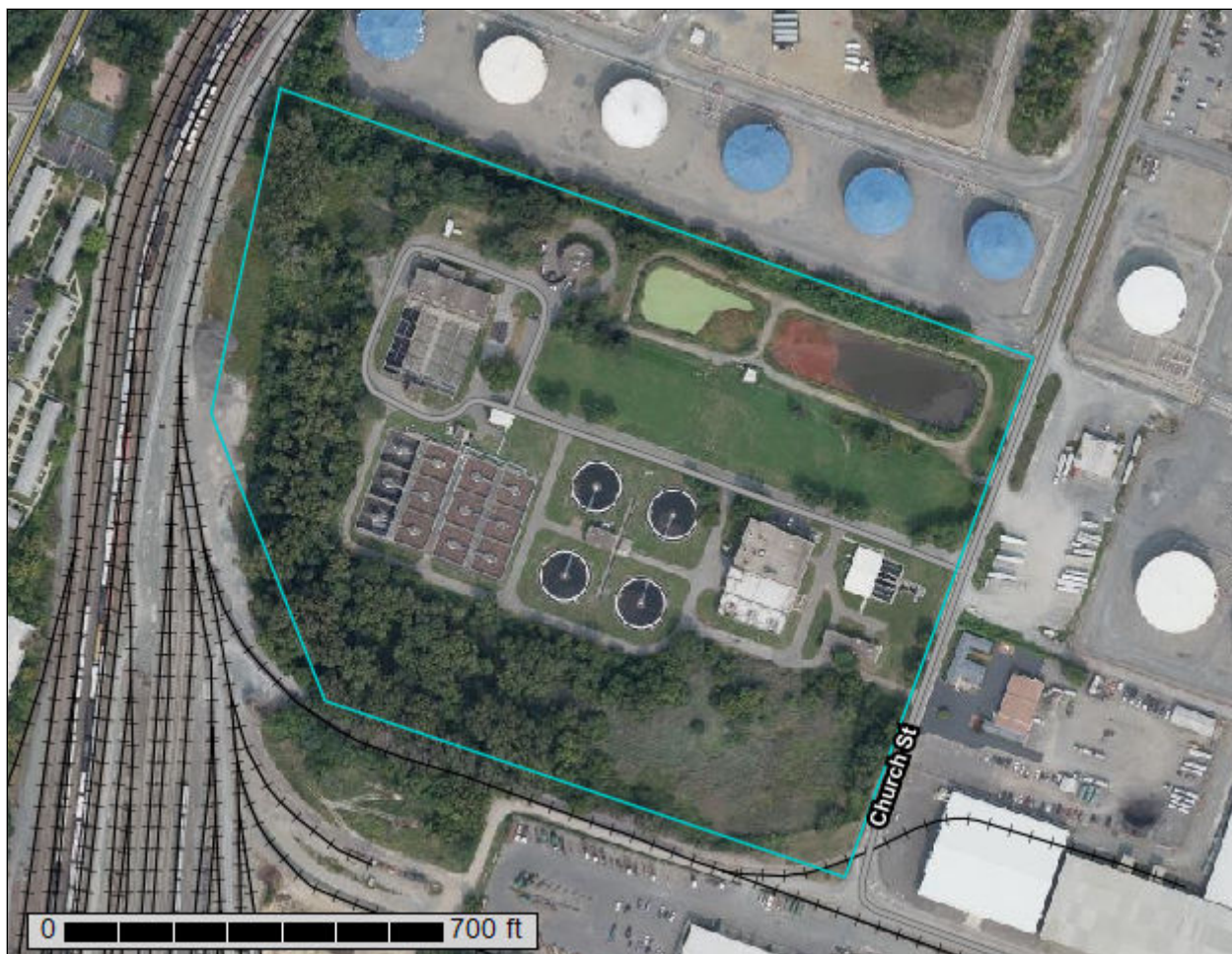
NRCS

Natural
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Conservation
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A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Albany County, New York**

South Plant



February 16, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

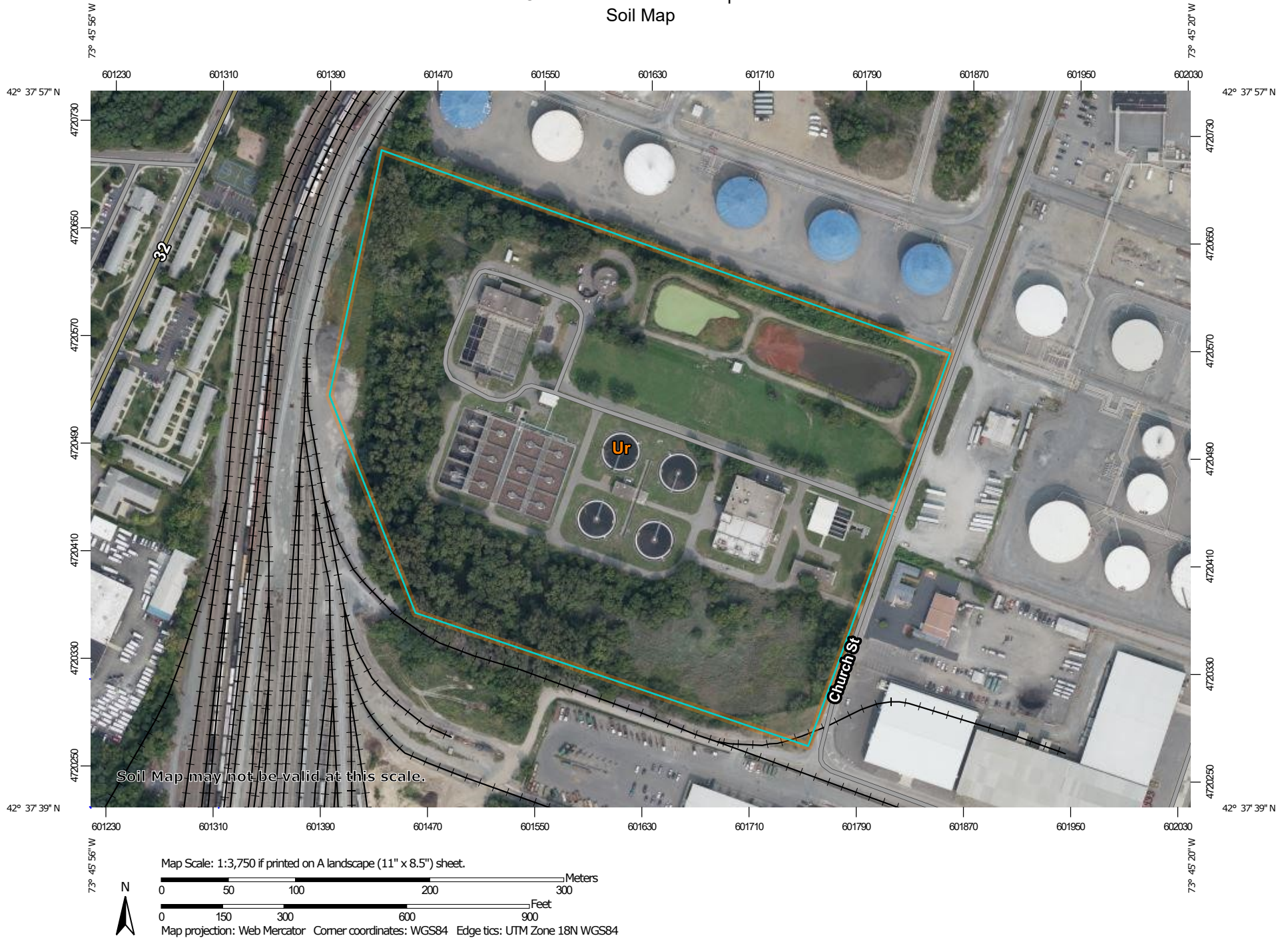
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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

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Survey Area Data: Version 19, Aug 29, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 9, 2020—Sep 16, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ur	Urban land	31.8	100.0%
Totals for Area of Interest		31.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Albany County, New York

Ur—Urban land

Map Unit Setting

National map unit symbol: 9pj8

Mean annual precipitation: 36 to 41 inches

Mean annual air temperature: 45 to 48 degrees F

Frost-free period: 100 to 170 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Minor Components

Unnamed soils

Percent of map unit: 10 percent

Udorthents

Percent of map unit: 5 percent

Hydric soil rating: No

References

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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

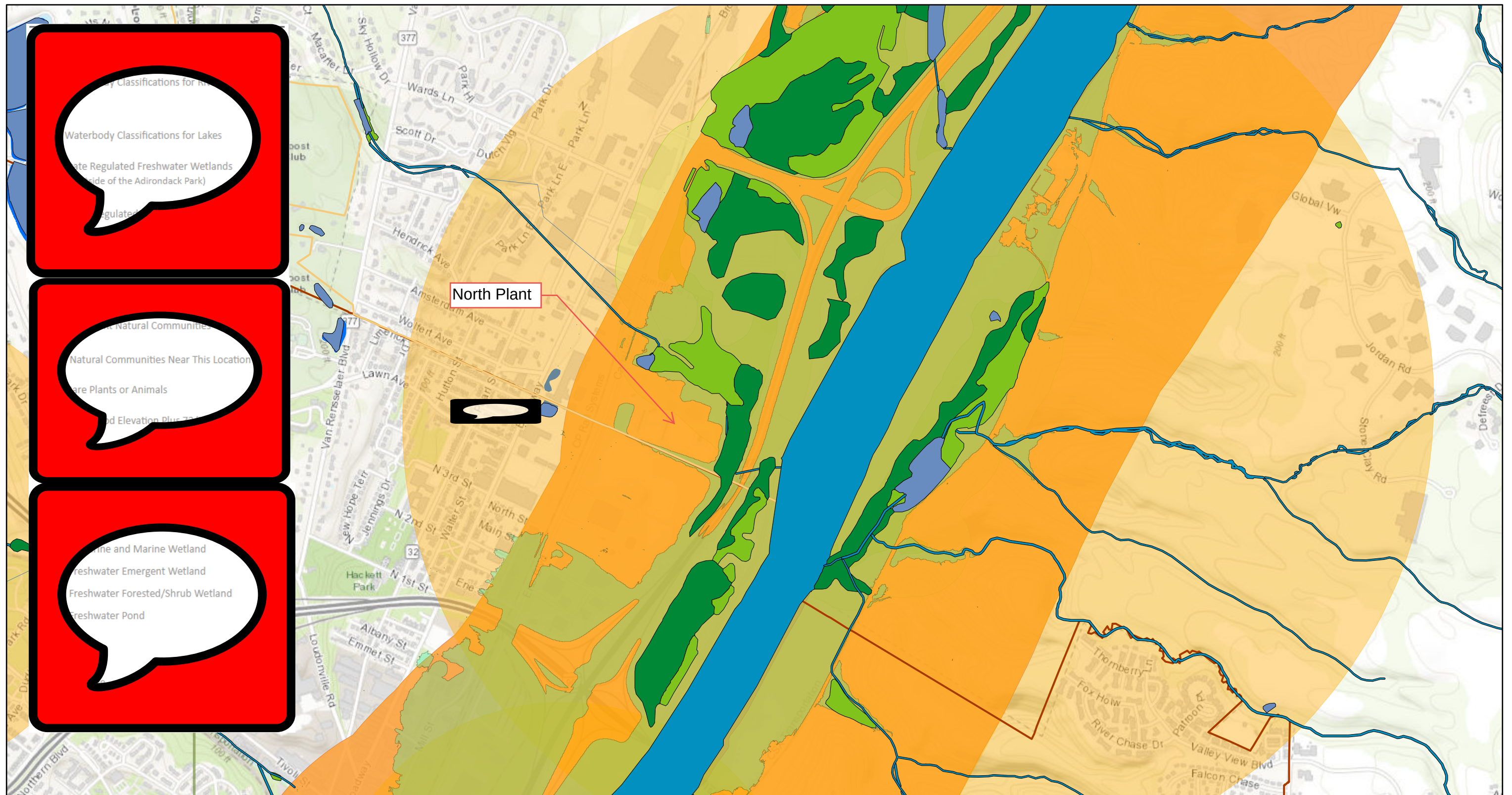
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

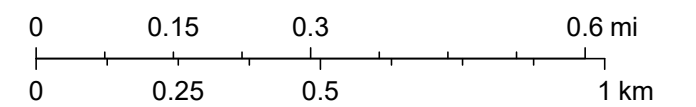
Appendix B
Environmental Resource Mapper

North WWTP



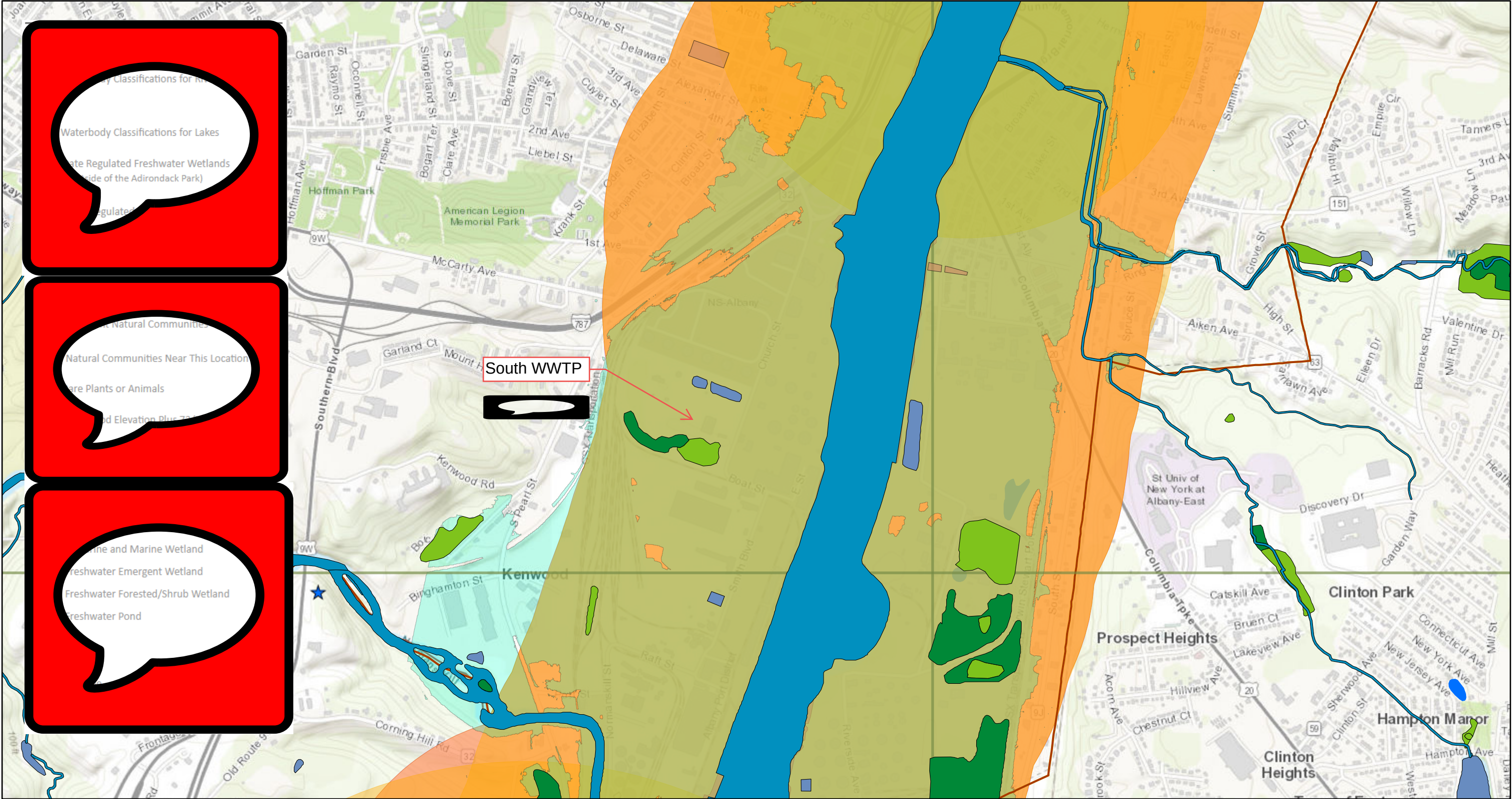
February 17, 2022

1:18,056



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

South WWTP



February 17, 2022

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Appendix C
FEMA FIRM Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18N. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from digital orthophotography provided by the NY Office of Cyber Security and Critical Infrastructure Coordination from photography dated November 2007.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline** in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations** and **floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unreviewed streams may differ from what is shown on previous maps.

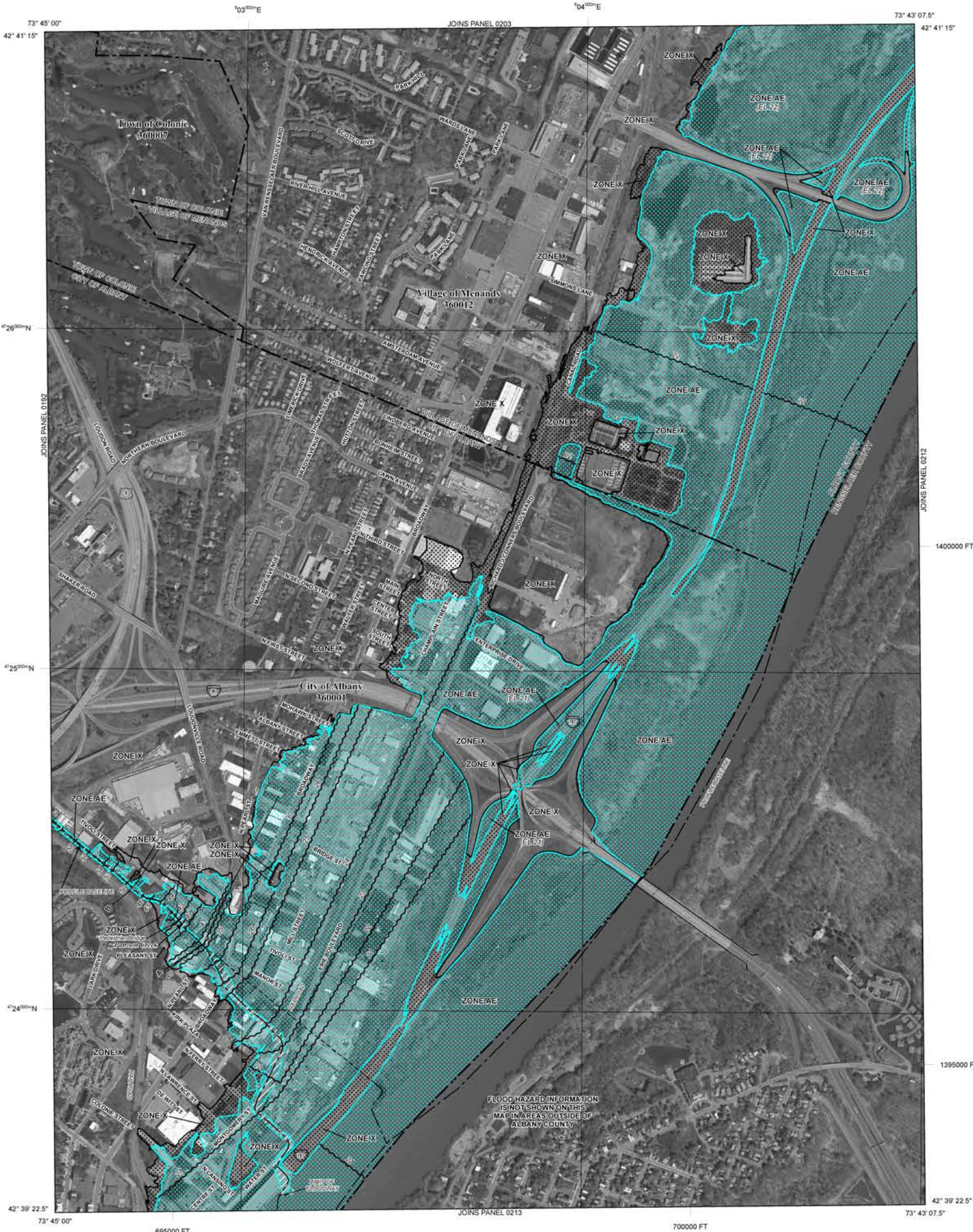
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

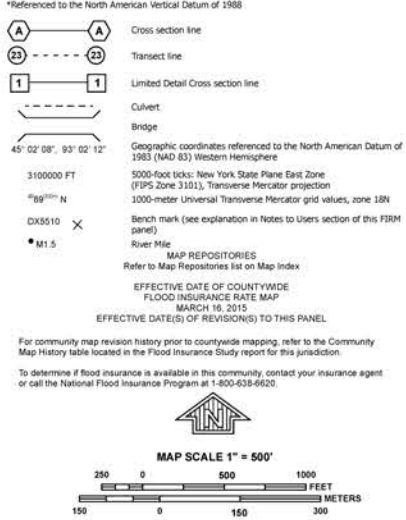


This digital FIRM was produced through a unique cooperative partnership between the New York State Department of Environmental Conservation (NYSDEC) and FEMA. As part of the effort, NYSDEC has joined in a Cooperative Technical Partnership agreement to produce and maintain FEMA's digital FIRM.



LEGEND

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**
- The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AR9, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently deteriorated. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AR9** Area to be protected from 1% annual chance flood by a Federal Flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*



NFIP

PANEL 0211D

FIRM

FLOOD INSURANCE RATE MAP
ALBANY COUNTY,
NEW YORK
(ALL JURISDICTIONS)

PANEL 211 OF 434
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:	COMMUNITY	NUMBERS	PANEL	SUFFIX
	ALBANY CITY OF	360001	0211	D
	COLONIE TOWN OF	360007	0211	D
	MENANDS VILLAGE OF	360012	0211	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
36001C0211D
EFFECTIVE DATE
MARCH 16, 2015

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18N. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline** in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations** and **floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unreviewed streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently deteriorated. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal Flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

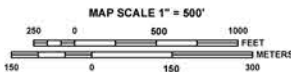
- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A** **A** Cross section line
- 23** **23** Transient line
- 1** **1** Limited Detail Cross section line
- 1** **1** Culvert
- 1** **1** Bridge
- 45° 02' 08", 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 3100000 FT 5000-foot ticks: New York State Plane East Zone (NYS Zone 3101), Transverse Mercator projection
- 89° 00' 00" N 3000-meter Universal Transverse Mercator grid values, zone 18N
- DX5510 X Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile
- MAP REPOSITORIES Refer to Map Repositories list on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP MARCH 16, 2015
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



NFIP

PANEL 0194D

FIRM

FLOOD INSURANCE RATE MAP
ALBANY COUNTY,
NEW YORK
(ALL JURISDICTIONS)

PANEL 194 OF 434
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBANY CITY OF	360001	0194	D
BETHLEHEM TOWN OF	361540	0194	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER

36001C0194D

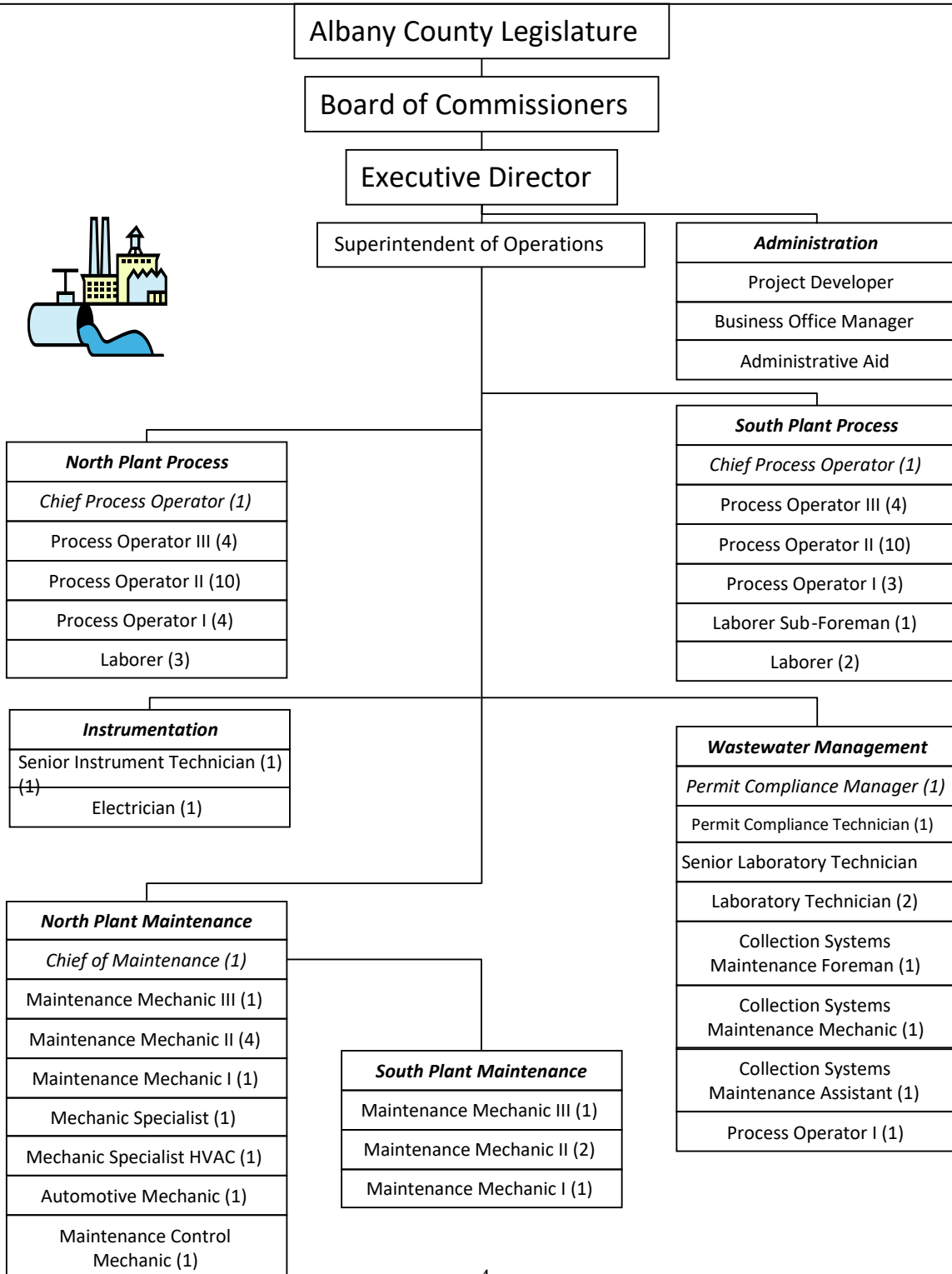
EFFECTIVE DATE

MARCH 16, 2015

Federal Emergency Management Agency

Appendix D
ACWPD Organizational Flow Chart

ALBANY COUNTY WATER PURIFICATION DISTRICT ORGANIZATIONAL FLOW CHART



Appendix E
SPDES Permit



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT

Form 3 99

Industrial Code: 4952
Discharge Class (CI): 05
Toxic Class (TX): N
Major Drainage Basin: 13
Sub Drainage Basin: 01
Water Index Number: HR
Compact Area:

SPDES Number: NY 0026875
DEC Number: 4-0126-00138/00001
Effective Date (EDP): 05/01/05
Expiration Date (ExDP): 04/30/10
Modification Dates: 03/11/09, 12/1/09

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et.seq.)(hereinafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Name: Albany County Sewer District
Street: P.O. Box 4187
City: Albany

Attention: Executive Director

State: NY Zip Code: 12204
is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name: Albany County Sewer District - North WWTP

Location (C,T,V): Menands (V)

County: Albany

Facility Address: P.O. Box 4187

City: Albany

State: NY Zip Code: 12204

NYTM -E: 603.9

NYTM -N: 4725.4

From Outfall No.: 001 at Latitude: 42 ° 40 ' 28 " & Longitude: 73 ° 43 ' 57 "

into receiving waters known as: Hudson River

Class: C

and; (list other Outfalls, Receiving Waters & Water Classifications)

in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth this permit; and 6 NYCRR Part 750-1.2(a) and 750-2.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name: Albany County Sewer District

Street: P.O. Box 4187

City: Albany

State: NY Zip Code: 12204

Responsible Official or Agent: Brian J. Derry, Process Control Engineer Phone: (518) 447-1624

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

RPA/RWE
Bureau of Water Permits
Albany County DOH
EPA Reg. II - Michelle Josilo
Cheryle Webber
NYSEFC

Deputy Chief Permit Administrator: Stuart M. Fox	
Address: Division of Environmental Permits 625 Broadway Albany, NY 12233-1750	
Signature: <i>Stuart M. Fox</i>	Date: 10/21/09

PERMIT LIMITS, LEVELS AND MONITORING DEFINITIONS

OUTFALL	WASTEWATER TYPE		RECEIVING WATER	EFFECTIVE	EXPIRING	
	This cell describes the type of wastewater authorized for discharge. Examples include process or sanitary wastewater, storm water, non-contact cooling water.		This cell lists classified waters of the state to which the listed outfall discharges.	The date this page starts in effect. (e.g. EDP or EDPM)	The date this page is no longer in effect. (e.g. ExDP)	
PARAMETER	MINIMUM		MAXIMUM	UNITS	SAMPLE FREQ.	SAMPLE TYPE
e.g. pH, TRC, Temperature, D.O.	The minimum level that must be maintained at all instants in time.		The maximum level that may not be exceeded at any instant in time.	SU, °F, mg/l, etc.		
PARAMETER	EFFLUENT LIMIT	PRACTICAL QUANTITATION LIMIT (PQL)	ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE
	Limit types are defined below in Note 1. The effluent limit is developed based on the more stringent of technology-based limits, required under the Clean Water Act, or New York State water quality standards. The limit has been derived based on existing assumptions and rules. These assumptions include receiving water hardness, pH and temperature; rates of this and other discharges to the receiving stream; etc. If assumptions or rules change the limit may, after due process and modification of this permit, change.	For the purposes of compliance assessment, the analytical method specified in the permit shall be used to monitor the amount of the pollutant in the outfall to this level, provided that the laboratory analyst has complied with the specified quality assurance/quality control procedures in the relevant method. Monitoring results that are lower than this level must be reported, but shall not be used to determine compliance with the calculated limit. This PQL can be neither lowered nor raised without a modification of this permit.	Type I or Type II Action Levels are monitoring requirements, as defined below in Note 2, that trigger additional monitoring and permit review when exceeded.	This can include units of flow, pH, mass, Temperature, concentration. Examples include µg/l, lbs/d, etc.	Examples include Daily, 3/week, weekly, 2/month, monthly, quarterly, 2/yr and yearly.	Examples include grab, 24 hour composite and 3 grab samples collected over a 6 hour period.

Note 1: DAILY DISCHARGE: The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day.

DAILY MAX: The highest allowable daily discharge. **DAILY MIN:** The lowest allowable daily discharge.

MONTHLY AVG: The highest allowable average of daily discharges over a calendar month, calculated as the sum of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

7 DAY ARITHMETIC MEAN (7 day average): The highest allowable average of daily discharges over a calendar week.

30 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar month, calculated as the antilog of: the sum of the log of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

7 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar week.

RANGE: The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown.

Note 2: ACTION LEVELS: Routine Action Level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If the additional monitoring requirement is triggered as noted below, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharging days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the additional monitoring requirement was triggered. Results may be appended to the DMR or transmitted under separate cover to the same address. If levels higher than the Action Levels are confirmed, the permit may be reopened by the Department for consideration of revised Action Levels or effluent limits. The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards. The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results in excess of the stated Action Level.

FINAL PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	All Year unless otherwise noted	Hudson River	12/01/09	04/30/10

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Location		
								Inf.	Eff.	
Flow	Monthly average	35	mgd			continuous	recorder		X	(2)
CBOD ₅	Monthly average	25	mg/l	7300	lbs/d	1/day	24-hr. comp.	X	X	(1)
CBOD ₅	7 day average	40	mg/l	12000	lbs/d	1/day	24-hr. comp.		X	
Solids, Suspended	Monthly average	30	mg/l	8800	lbs/d	1/day	24-hr. comp.	X	X	(1)
Solids, Suspended	7 day average	45	mg/l	13000	lbs/d	1/day	24-hr. comp.		X	
Solids, Settleable	Daily Max.	0.3	ml/l			6/day	grab		X	
pH	Range	6.0-9.0	SU			6/day	grab		X	
Nitrogen, TKN (as N) (June 1 - October 31)	Monthly average	15.2	mg/l			1/day	24-hr. comp.		X	(5)
Temperature	Daily Maximum	Monitor	Deg.F			6/day	grab		X	
Effluent Disinfection required: [] All Year [X] Seasonal from <u>May 1</u> to <u>October 31</u>										
Coliform, Fecal	30 day geometric mean	200	No./ 100 ml			1/day	grab		X	(4)
Coliform, Fecal	7 day geometric mean	400	No./ 100 ml			1/day	grab		X	(4)
Chlorine, Total Residual	Daily Max.	0.60	mg/l			6/day	grab		X	(3) (4)

FOOTNOTES:

- (1) Effluent shall not exceed 15 % and 15 % of influent concentration values for CBOD₅ & TSS respectively. The permittee is not required to calculate percent removals on days when daily average flows exceed 35 mgd.
- (2) For purposes of the permittee's compliance with 6 NYCRR 750-2.9(c), this permit is being issued consistent with the terms of the attached Stipulation of Settlement (attachment 1).
- (3) Monitoring of this parameter applies only if chlorine is used for disinfection. This is an interim limit. See the TRC Compliance Schedule in this permit.
- (4) Disinfection is not required during the period from November 1 through April 30.
- (5) Monitoring is not required from November 1 through May 31.

ACTION LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
001	Municipal	Hudson River	12/01/09	04/30/10

PARAMETER	EFFLUENT LIMIT		EFFLUENT ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
			TYPE II				
Copper, Total			4.0	lbs/day	1/month	24hr.comp.	
Zinc, Total			12.4	lbs/day	1/month	24hr.comp.	
WET - Acute Invertebrate			16.5	TUa	1/quarter	See footnote	(1)
WET - Acute Vertebrate			16.5	TUa	1/quarter	See footnote	(1)
WET - Chronic Invertebrate			63	TUc	1/quarter	See footnote	(1)
WET - Chronic Vertebrate			63	TUc	1/quarter	See footnote	(1)

FOOTNOTES:**(1) Whole Effluent Toxicity (WET) Testing:**

Testing Requirements - WET testing shall consist of Acute and, if necessary, Chronic testing. WET testing shall be performed in accordance with 40 CFR Part 136 and TOGS 1.3.2 unless prior written approval has been obtained from the Department. The test species shall be *Ceriodaphnia dubia* (water flea - invertebrate) and *Pimephales promelas* (fathead minnow - vertebrate).

Receiving water collected upstream from the discharge should be used for dilution. All tests conducted should be static-renewal (two 24 hr composite samples with one renewal for Acute tests and three 24 hr composite samples with two renewals for Chronic tests). The appropriate dilution series bracketing the IWC and including one exposure group of 100% effluent should be used to generate a definitive test endpoint, otherwise an immediate rerun of the test is required. WET testing shall be coordinated with the monitoring of chemical and physical parameters limited by this permit so that the resulting analyses are also representative of the sample used for WET testing. The ratio of critical receiving water flow to discharge flow (i.e. dilution ratio) is 55:1 for acute, and 63:1 for chronic. Discharges which are disinfected using chlorine should be dechlorinated prior to WET testing or samples shall be taken immediately prior to the chlorination system.

Monitoring Period - WET testing shall be performed at the specified sample frequency: Once each calendar quarter, beginning January 1 and ending December 31, during calendar years ending in 0 and 5.

Reporting - Toxicity Units shall be calculated and reported on the DMR as follows: $TUa = (100)/(48 \text{ hr LC50})$ or $(100)/(48 \text{ hr EC50})$ (note that Acute data is generated by both Acute and Chronic testing) and $TUc = (100)/(NOEC)$ when Chronic testing has been performed or $TUc = (TUa) \times (20)$ when only Acute testing has been performed and is used to predict Chronic test results, where the 48 hr LC50 or 48 hr EC50 and NOEC are expressed in % effluent. This must be done for both species and using the Most Sensitive Endpoint (MSE) or the lowest NOEC and corresponding highest TUc. Report a TUa of 0.3 if there is no statistically significant toxicity in 100% effluent as compared to control.

The complete test report including all corresponding results, statistical analyses, reference toxicity data, daily average flow at the time of sampling and other appropriate supporting documentation, shall be submitted within 60 days following the end of each test period to the Toxicity Testing Unit. A summary page of the test results for the invertebrate and vertebrate species indicating TUa, 48 hr LC50 or 48 hr EC50 for Acute tests and/or TUc, NOEC, IC25, and most sensitive endpoints for Chronic tests, should also be included at the beginning of the test report.

WET Testing Action Level Exceedances - If an action level is exceeded then the Department may require the permittee to conduct additional WET testing including Acute and/or Chronic tests. Additionally, the permittee may be required to perform a Toxicity Reduction Evaluation (TRE) in accordance with Department guidance. If such additional testing or performance of a TRE is necessary, the permittee shall be notified in writing by the Regional Water Engineer. The written notification shall include the reason(s) why such testing or a TRE is required.

BEST MANAGEMENT PRACTICES

The permittee shall implement the following Best Management Practices (BMPs). These BMPs are designed to implement operation & maintenance procedures and utilize the District-owned treatment facilities and interceptors to maximize pollutant capture and minimize water quality impacts from combined sewer overflows. The BMPs shall be developed in accordance with Combined Sewer Overflows, Guidance for Nine Minimum Controls, EPA, 1995.

1. System Maintenance/Inspection - The permittee shall develop a written maintenance and inspection program for all District-owned flow recording devices, interceptors, and regulators. The purpose of this program is to minimize the occurrence of dry weather overflows related to District-owned appurtenances and insure that the maximum amount of wet weather flow is conveyed to the POTW for treatment. This program shall consist of inspections with required repair, cleaning and maintenance done as needed. This program shall consist of a minimum of monthly inspections. Increased maintenance/inspection may be required for problem areas.

Inspection reports shall be completed indicating visual inspection, debris removed, any observed flow, incidence of rain or snowmelt, condition of equipment, repairs performed or work required. These reports shall be in a format approved by the Region 4 Office (see example attachment) and submitted to the Region with the monthly operating report (Form 92-15-7).

2. Maximum Use of Collection System for Storage - Not applicable
3. Industrial Pretreatment - The District will implement its federally approved Pretreatment Program.
4. Maximize Flow to POTW - Not applicable. See BMP #5.
5. Wet Weather Operating Plan - The permittee shall update the existing wet weather operating plan which contains procedures so as to operate unit processes to treat maximum flows while not appreciably diminishing effluent quality or destabilizing treatment upon return to dry weather operation. The revised wet weather operations plan shall be written in accordance with the NYSDEC publication Wet Weather Operating Practices for POTWs With Combined Sewers, and submitted for review and approval by **Approved Phase 1 Albany Pool CSO LTCP + 12 months***.

The treatment plant shall be capable of receiving the peak design flows for all process units. The treatment plant shall be capable of: receiving a minimum of 88 MGD through the plant headworks; a minimum of 55 MGD through the primary treatment works and disinfection works, and a minimum of 55 MGD through the secondary treatment works during wet weather. The interceptor and headworks must be capable of delivering these flows during wet weather. The wet weather operating plan shall be revised and resubmitted any time the treatment plant or operations at the treatment plant are modified.

A revised wet weather operating plan must be submitted whenever the POTW and/or sewer collection system is replaced or modified. However, when this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT", the permittee is not required to repeat the submission. The above due dates are independent of the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT."

6. Prohibition of Dry Weather Overflow - Dry weather overflows from the combined sewer system are prohibited. Upon the permittee's inspection, the permittee shall promptly abate any impairment in the operation or function of a regulator, and report the abated action within 2 hours to (1) the Regional Water Engineer in accordance with 6NYCRR Part 750-2.8(b)(2); and (2) the tributary community. Should the permittee observe a dry weather overflow resulting from any other cause, the permittee will report to the tributary community in order for appropriate action to be taken.

BEST MANAGEMENT PRACTICES – Continued

7. Control of Floatable and Settleable Solids - Not applicable.
8. Combined Sewer System Replacement - Not applicable.
9. Combined Sewer/Extension - Not applicable.
10. Sewage backups - Not applicable.
11. Septage and Hauled Waste - The discharge or release of septage or hauled waste upstream of a CSO is prohibited.
12. Control of Run-off - Not applicable.
13. Public Notification - Not applicable.
14. Characterization and Monitoring - Not applicable.
15. Annual report - The permittee shall submit a comprehensive annual report summarizing implementation of the best management practices (BMPs) required above. The report shall list existing documentation of implementation of the BMPs and shall be prepared using the Department's checklist and Combined Sewer Overflows, Guidance for Nine Minimum Controls, EPA, 1995 as guidance. The permittee must submit a completed copy of the checklist along with the annual report. The actual documentation shall be stored at a central location and be made available to DEC upon request. The annual report shall include, but not be limited to, a summary of bypassed flows at the POTW, including volume and frequency and related rainfall volumes in the service area. The first annual report shall also include: a list of all flow recording devices and pump stations that the permittee owns and/or operates; flow summaries, actual or estimated, from flow recording devices, metering pits and/or service areas; and a current map of the District-owned collection system showing locations of pump stations and regulators. The report shall be submitted by January 31st of each year to the Regional Water Engineer and to the Bureau of Water Permits, 625 Broadway, Albany, NY 12233-3505.

*Upon review and approval of Phase 1 of the Albany Pool CSO LTCP, the Department may approve the section(s) regarding potential modifications to the District's two treatment plants prior to the complete approval of the LTCP. All comments made by the District to the section(s) of the LTCP regarding treatment plant modifications will be addressed to the District by the Department in writing and the Department will provide the District with the commencement date of this action.

LONG TERM CONTROL PLAN

The Albany County Sewer District accepts combined sanitary wastewater and stormwater from the four communities listed below, as indicated by an asterisk (*). The permittee agrees to assist and support the development and implementation of the long term solution to address the CSO discharges from the respective communities as defined in this permit.

The six permittees listed below have entered into an agreement to cooperatively develop a Phase I long-term CSO control plan (LTCP) by September 2009 in accordance with their respective SPDES permits:

NY 002 5747	City of Albany*	NY 003 1046	City of Cohoes*
NY 003 3031	Village of Green Island*	NY 003 0899	City of Watervliet*
NY 009 9309	City of Troy	NY 002 6026	City of Rensselaer

The four communities listed above (as delineated by an asterisk (*)) discharge combined sanitary wastewater and storm water to an interceptor sewer which transports it to the POTWs which are owned and operated by the County Sewer District. The treatment plants are listed below:

NY 002 6875	Albany County Sewer District, North WWTP
NY 002 6867	Albany County Sewer District, South WWTP.

I. In order to develop a complete and comprehensive LTCP, the permittee will participate in the development of the LTCP as delineated in this permit. In order to accomplish this, at a minimum, the permittee shall assist its four member communities with the following elements:

1. Actively participate in the Public Participation Plan developed by the above 6 communities;
2. Regularly attend meetings related to the Albany Pool;
3. Provide all information requested by the four communities necessary to evaluate the possibility of expansion of the POTW's primary and secondary capacity, including increasing the size of the interceptor sewer and modification of regulator structures, as well as any other reasonable alternatives related to the District's facilities;
4. Provide all information requested to the four communities necessary to characterize the Districts owned facilities and to develop cost/performance curves for the alternatives evaluated above;
5. Share any additional information relating to the LTCP with the Albany Pool members and their consultants; and
6. The permittee shall participate in the evaluation of all alternatives assessed by the Albany Pool, whether related to the District owned systems (1) or not. Upon submission of the LTCP to the Department for approval, the District shall identify any disagreements in writing within fourteen days.

II. Phase II

Upon the completion of the Phase I LTCP, the Department may propose a modification to the permittee's SPDES permit which has the potential to include improvements of District-owned and operated facilities (Treatment plants (North and South), interceptors and regulating chambers) in accordance with 6NYCRR – Part 621.

SCHEDULE OF COMPLIANCE

a) Total Residual Chlorine

Action Code	Outfall Number(s)	Compliance Action	Due Date
	001	The Permittee shall submit an approvable Engineering Report that identifies the facilities necessary to achieve compliance with the water quality based effluent limitation of 0.6 mg/l for total residual chlorine (TRC). The department will reevaluate the TRC limit at that time, at the permittee's request, if further information regarding disinfection practices in the Albany Pool area of the Hudson River are available. The Permittee shall submit approvable final plans and specifications, as well as a schedule of construction, for the facilities described in the approved Engineering Report. The Permittee shall commence construction of the facilities described in the approved plans and specifications in accordance with the approved schedule of construction. Beginning with the commencement of construction, the permittee shall submit progress reports every 6 months detailing the work done in accordance with the approved engineering plans and specifications and schedule of construction. The Permittee shall complete construction of the facilities described in the above plans and specifications.	Approved Phase I LTCP + 12 months* DEC Approval of Engineering Report + 6 months DEC Approval of Plans and Specifications + 12 months

**Upon review and approval of Phase 1 of the Albany Pool CSO LTCP, the Department may approve the section(s) regarding potential modifications to the District's two treatment plants prior to the complete approval of the LTCP. All comments made by the District to the section(s) of the LTCP regarding treatment plant modifications will be addressed to the District by the Department in writing and the Department will provide the District with the commencement date of this action.

The above compliance actions are one time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT", the permittee is not required to repeat the submission. The above due dates are independent from the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT."

- b) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice in accordance with 6NYCRR Part 750-2.7. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:
1. A short description of the non-compliance;
 2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
 3. A description of any factors which tend to explain or mitigate the non-compliance; and
 4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.
- c) The permittee shall submit copies of any document required by the above schedule of compliance to NYSDEC Regional Water Engineer and to the Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, unless otherwise specified in this permit or in writing by the Department.

PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS

- A. **DEFINITIONS.** Generally, terms used in this Section shall be defined as in the General Pretreatment Regulations (40 CFR Part 403). Specifically, the following definitions apply to terms used in this Section (PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS):
1. Categorical Industrial User (CIU)- an industrial user of the POTW that is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N;
 2. Local Limits - General Prohibitions, specific prohibitions and specific limits as set forth in 40 CFR 403.5.
 3. The Publicly Owned Treatment Works (the POTW) - as defined by 40 CFR 403.3(p) and that discharges in accordance with this permit.
 4. Program Submission(s) - requests for approval or modification of the POTW Pretreatment Program submitted in accordance with 40 CFR 403.11 or 403.18 and approved by letter dated August 2, 1984.
 5. Significant Industrial User (SIU) -
 - a. CIUs;
 - b. Except as provided in 40 CFR 403.3(v)(3), any other industrial user that discharges an average of 25,000 gallons per day or more of process wastewater (excluding sanitary, non-contact cooling and boiler blowdown wastewater) to the POTW;
 - c. Except as provided in 40 CFR 403.3(v)(3), any other industrial user that contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant;
 - d. Any other industrial user that the permittee designates as having a reasonable potential for adversely affecting the POTW's operation or for violating a pretreatment standard or requirement.
 6. Substances of Concern - Substances identified by the New York State Department of Environmental Conservation Industrial Chemical Survey as substances of concern.
- B. **IMPLEMENTATION.** The permittee shall implement a POTW Pretreatment Program in accordance 40 CFR Part 403 and as set forth in the permittee's approved Program Submission(s). Modifications to this program shall be made in accordance with 40 CFR 403.18. Specific program requirements are as follows:
1. Industrial Survey. To maintain an updated inventory of industrial dischargers to the POTW the permittee shall:
 - a. Identify, locate and list all industrial users who might be subject to the industrial pretreatment program from the pretreatment program submission and any other necessary, appropriate and available sources. This identification and location list will be updated, at a minimum, every five years. As part of this update the permittee shall collect a current and complete New York State Industrial Chemical Survey form (or equivalent) from each SIU.
 - b. Identify the character and volume of pollutants contributed to the POTW by each industrial user identified in B.1.a above that is classified as a SIU.
 - c. Identify, locate and list, from the pretreatment program submission and any other necessary, appropriate and available sources, all significant industrial users of the POTW.

PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS - Continued

2. Control Mechanisms. To provide adequate notice to and control of industrial users of the POTW the permittee shall:
 - a. Inform by certified letter, hand delivery courier, overnight mail, or other means which will provide written acknowledgment of delivery, all industrial users identified in B.1.a. above of applicable pretreatment standards and requirements including the requirement to comply with the local sewer use law, regulation or ordinance and any applicable requirements under section 204(b) and 405 of the Federal Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.
 - b. Control through permit or similar means the contribution to the POTW by each SIU to ensure compliance with applicable pretreatment standards and requirements. Permits shall contain limitations, sampling frequency and type, reporting and self-monitoring requirements as described below, requirements that limitations and conditions be complied with by established deadlines, an expiration date not later than five years from the date of permit issuance, a statement of applicable civil and criminal penalties and the requirement to comply with Local Limits and any other requirements in accordance with 40 CFR 403.8(f)(1).
3. Monitoring and Inspection. To provide adequate, ongoing characterization of non-domestic users of the POTW, the permittee shall:
 - a. Receive and analyze self-monitoring reports and other notices. The permittee shall require all SIUs to submit self-monitoring reports at least every six months unless the permittee collects all such information required for the report, including flow data.
 - b. The permittee shall adequately inspect each SIU at a minimum frequency of once per year.
 - c. The permittee shall collect and analyze samples from each SIU for all priority pollutants that can reasonably be expected to be detectable at levels greater than the levels found in domestic sewage at a minimum frequency of once per year.
 - d. Require, through permits, each SIU to collect at least one 24 hour, flow proportioned composite (where feasible) effluent sample every six months and analyze each of those samples for all priority pollutants that can reasonably be expected to be detectable in that discharge at levels greater than the levels found in domestic sewage. The permittee may perform the aforementioned monitoring in lieu of the SIU except that the permittee must also perform the compliance monitoring described in 3.c.
4. Enforcement. To assure adequate, equitable enforcement of the industrial pretreatment program the permittee shall:
 - a. Investigate instances of noncompliance with pretreatment standards and requirements, as indicated in self-monitoring reports and notices or indicated by analysis, inspection and surveillance activities. Sample taking and analysis and the collection of other information shall be performed with sufficient care to produce evidence admissible in enforcement proceedings or in judicial actions. Enforcement activities shall be conducted in accordance with the permittee's Enforcement Response Plan developed and approved in accordance with 40 CFR Part 403.
 - b. Enforce compliance with all national pretreatment standards and requirements in 40 CFR Parts 406 - 471.
 - c. Provide public notification of significant non-compliance as required by 40 CFR 403.8(f)(2)(vii).
 - d. Pursuant to 40 CFR 403.5(c), when either the Department or the USEPA determines any source contributes pollutants to the POTW in violation of Pretreatment Standards or Requirements the Department or the USEPA shall notify the permittee. Failure by the permittee to commence an appropriate investigation and subsequent enforcement action within 30 days of this notification may result in appropriate enforcement action against the source and permittee.

PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS - Continued

5. Record keeping. The permittee shall maintain and update, as necessary, records identifying the nature, character, and volume of pollutants contributed by SIUs. Records shall be maintained in accordance with 6 NYCRR Part 750-2.5(c).
6. Staffing. The permittee shall maintain minimum staffing positions committed to implementation of the Industrial Pretreatment Program in accordance with the approved pretreatment program.
- C. SLUDGE DISPOSAL PLAN. The permittee shall notify NYSDEC, and USEPA as long as USEPA remains the approval authority, 60 days prior to any major proposed change in the sludge disposal plan. NYSDEC may require additional pretreatment measures or controls to prevent or abate an interference incident relating to sludge use or disposal.
- D. REPORTING. The permittee shall provide to the offices listed on the Monitoring, Reporting and Recording page of this permit and to the Chief-Water Permits and Compliance Branch; USEPA Region 2; 290 Broadway, 20th floor NY, NY 10007-1866; a periodic report, prepared and submitted in accordance with the consistent periodic reporting format established by the Department in the document entitled NYSDEC POTW Periodic Pretreatment Report - 1994, that briefly describes the permittee's program activities over the previous year. This report shall be submitted to the above noted offices within 60 days of the end of the reporting period. The reporting period shall be ANNUAL, with reporting period(s) ending on DECEMBER 31st.

The periodic report shall include:

1. Industrial Survey. Updated industrial survey information in accordance with 40 CFR 403.12(i)(1) (including any NYS Industrial Chemical Survey forms updated during the reporting period).
2. Implementation Status. Status of Program Implementation, to include:
 - a. Any interference, upset or permit violations experienced at the POTW directly attributable to industrial users.
 - b. Listing of significant industrial users issued permits.
 - c. Listing of significant industrial users inspected and/or monitored during the previous reporting period and summary of results.
 - d. Listing of significant industrial users notified of promulgated pretreatment standards or applicable local standards who are on compliance schedules. The listing should include for each facility the final date of compliance.
 - e. Summary of POTW monitoring results not already submitted on Discharge Monitoring Reports and toxic loadings from SIU's organized by parameter.
 - f. A summary of additions or deletions to the list of SIUs, with a brief explanation for each deletion.
3. Enforcement Status. Status of enforcement activities to include:
 - a. Listing of significant industrial users in Significant Non-Compliance (as defined by 40 CFR 403.8(f)(2)(vii)) with federal or local pretreatment standards at end of the reporting period.
 - b. Summary of enforcement activities taken against non-complying significant industrial users. The permittee shall provide a copy of the public notice of significant violators as specified in 40 CFR Part 403.8(f)(2)(vii).

DISCHARGE NOTIFICATION REQUIREMENTS

- a) The permittee shall, except as set forth in (c) below, maintain the existing identification signs at all outfalls to surface waters, which have not been waived by the Department in accordance with 17-0815-a. The sign(s) shall be conspicuous, legible and in as close proximity to the point of discharge as is reasonably possible while ensuring the maximum visibility from the surface water and shore. The signs shall be installed in such a manner to pose minimal hazard to navigation, bathing or other water related activities. If the public has access to the water from the land in the vicinity of the outfall, an identical sign shall be posted to be visible from the direction approaching the surface water.

The signs shall have **minimum** dimensions of eighteen inches by twenty four inches (18" x 24") and shall have white letters on a green background and contain the following information:

N.Y.S. PERMITTED DISCHARGE POINT

SPDES PERMIT No.: NY _____

OUTFALL No. : _____

For information about this permitted discharge contact:

Permittee Name: _____

Permittee Contact: _____

Permittee Phone: () - ### - ####

OR:

NYSDEC Division of Water Regional Office Address :

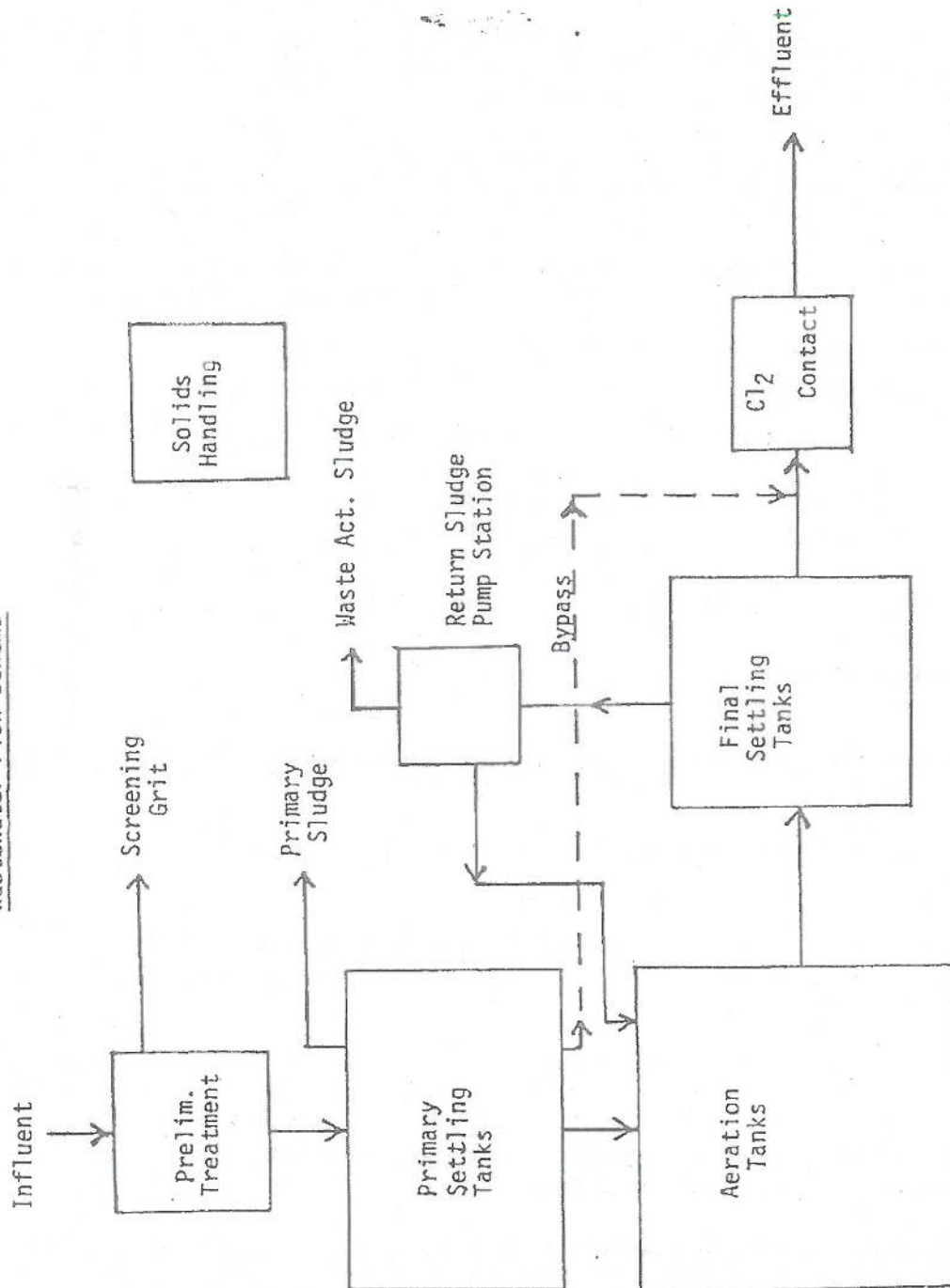
NYSDEC Division of Water Regional Phone: () - ### - ####

- b) For each discharge required to have a sign in accordance with a), the permittee shall provide for public review at a repository accessible to the public, copies of the Discharge Monitoring Reports (DMRs) as required by the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of this permit. This repository shall be open to the public, at a minimum, during normal daytime business hours. The repository may be at the business office repository of the permittee or at an off-premises location of its choice (such location shall be the village, town, city or county clerk's office, the local library or other location as approved by the Department). In accordance with the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of your permit, each DMR shall be maintained on record for a period of three years.
- c) If, upon November 1, 1997, the permittee has installed signs that include the information required by 17-0815-a(2)(a), but do not meet the specifications listed above, the permittee may continue to use the existing signs for a period of up to five years, after which the signs shall comply with the specifications listed above.
- d) The permittee shall periodically inspect the outfall identification signs in order to ensure that they are maintained, are still visible and contain information that is current and factually correct.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) specified below:

Figure 1
Wastewater Flow Scheme



RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

- a) The permittee shall also refer to 6 NYCRR Part 750-1.2(a) and 750-2 for additional information concerning monitoring and reporting requirements and conditions.
- b) The monitoring information required by this permit shall be summarized, signed and retained for a period of at least five years from the date of the sampling for subsequent inspection by the Department or its designated agent. Also, monitoring information required by this permit shall be summarized and reported by submitting;

☒ (if box is checked) completed and signed Discharge Monitoring Report (DMR) forms for each 1 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

☐ (if box is checked) an annual report to the Regional Water Engineer at the address specified below. The annual report is due by February 1 and must summarize information for January to December of the previous year in a format acceptable to the Department.

☒ (if box is checked) a monthly "Wastewater Facility Operation Report..." (form 92-15-7) to the:

☒ Regional Water Engineer and/or ☐ County Health Department or Environmental Control Agency specified below

Send the original (top sheet) of each DMR page to:

Department of Environmental Conservation
Division of Water
Bureau of Watershed Compliance Programs
625 Broadway
Albany, New York 12233-3506
Phone: (518) 402-8177

Send the first copy (second sheet) of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer
1150 North Westcott Road
Schenectady, NY 12306
Phone: (518) 357-2045

Send an additional copy of each DMR page to:

- c) Noncompliance with the provisions of this permit shall be reported to the Department as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2.
- d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.
- e) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculations and recording of the data on the Discharge Monitoring Reports.
- f) Calculation for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.
- g) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period.
- h) Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section five hundred two of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be sent to the Environmental Laboratory Accreditation Program, New York State Health Department Center for Laboratories and Research, Division of Environmental Sciences, The Nelson A. Rockefeller Empire State Plaza, Albany, New York 12201.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
NOTICE / RENEWAL APPLICATION / PERMIT



Please read **ALL** instructions on the back before completing this application form. Please **TYPE** or **PRINT** clearly in ink.

PART 1 - NOTICE

06/12/2009

Permittee Contact Name, Title, Address

Facility and SPDES Permit Information

ALBANY COUNTY SEWER DISTRICT
 EXECUTIVE DIRECTOR
 P O BOX 4187
 ALBANY NY 12204

Name: ALBANY COUNTY SEWER DISTRICT - NO
 Ind. Code: 4952 County: ALBANY
 DEC No.: 4-0126-00138/00001
 SPDES No.: NY 002 6875
 Expiration Date: 04/30/2010
 Application Due By: 11/01/2009

Are these name(s) & address(es) correct? if not, please write corrections above.

The State Pollutant Discharge Elimination System Permit for the facility referenced above expires on the date indicated. You are required by law to file a complete renewal application at least **180 days** prior to expiration of your current permit. Note the "Application Due By" date above.

CAUTION: This short application form and attached questionnaire are the only forms acceptable for permit renewal. Sign Part 2 below and mail only this form and the completed questionnaire using the enclosed envelope. *Effective April 1, 1994 the Department no longer assesses SPDES application fees.*

If there are changes to your discharge, or to operations affecting the discharge, then in addition to this renewal application, you must also submit a separate permit modification application to the Regional Permit Administrator for the DEC region in which the facility is located, as required by your current permit. See the reverse side of this page for instructions on filing a modification request.

PART 2 - RENEWAL APPLICATION

CERTIFICATION: I hereby affirm that under penalty of perjury that the information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to section 210.45 of the Penal Law.

Richard J. Lyons
 Name of person signing application (see instructions on back)

Executive Director
 Title

[Signature]
 Signature

6/22/09
 Date

PART 3 - PERMIT (Below this line - Official Use Only)

Effective Date: 5.1.10

Expiration Date: 4.30.15

William R. Adriance
 Permit Administrator

Address:

NYSDEC - Division of Environmental Permits
 Bureau of Environmental Analysis
 625 Broadway, Albany, NY 12233-1750

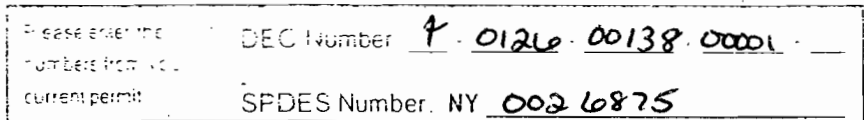
William R. Adriance
 Signature

DEC 9 2009

Date

This permit together with the previous valid permit for this facility issued 5.1.05 and subsequent modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified in the previously issued valid permit, modifications thereof or issued as part of this permit, including any special or general conditions attached hereto. Nothing in this permit shall be deemed to waive the Department's authority to initiate a modification of this permit on the grounds specified in 6NYCRR §621.14, 6NYCRR §754.4 or 6NYCRR §757.1 existing at the time this permit is issued or which arise thereafter.

Attachments: General Conditions dated 1/05



THIS PAGE MUST BE COMPLETED AND RETURNED WITH YOUR COMPLETED APPLICATION

1. Has the SPDES permit for your facility been modified in the past 5 years ☒ YES ☐ NO

2. Dischargers who use, manufacture, store, handle or discharge toxic or hazardous pollutants are subject to Industrial Best Management Practices (BMP) plan requirements for toxic or hazardous substances. A BMP plan prevents or minimizes the potential for release of pollutants to receiving waters from such ancillary industrial activities, including material storage areas; plant site runoff; in-plant transfer; process and material storage areas; loading and unloading operations, and sludge and waste disposal areas.

Does your facility conduct ancillary activities as described above, which are not covered by BMP requirements in your current permit? ☐ YES ☒ NO

☒ None of the concerns on the "Self Evaluation List" seem to apply to my facility at this time and I will not be applying for a modification of the SPDES permit in the foreseeable future.

☐ Yes, some of the items on the "Self Evaluation List" have led me to believe that the permit for this facility needs to be modified. I already have a complete modification application pending with the Department.

☐ Yes, some of the items on the "Self Evaluation List" have led me to believe that the SPDES permit for this facility may need to be Modified. I have requested the appropriate forms by phone OR I have completed and attached the "Request For SPDES Application Forms" (included in this renewal package) to allow me to submit a permittee-initiated Modification application. See The "Request For SPDES Application Forms" page for a toll free 800 number.

☐ The items on the "Self Evaluation List" have left me unable to conclude whether my permit needs to be modified at this time. I am reporting the following general concerns about my permit:

Blank lined paper.

Regional Water Engineer
Regional Permit Administrator
Central Office (BWP)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
NOTICE / RENEWAL APPLICATION / PERMIT



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PART 1 - NOTICE

06/12/2009

Permittee Contact Name, Title, Address

Facility and SPDES Permit Information

ALBANY COUNTY SEWER DISTRICT
 EXECUTIVE DIRECTOR
 P O BOX 4187
 ALBANY NY 12204

Name: ALBANY COUNTY SEWER DISTRICT - NO
 Ind. Code: 4952 County: ALBANY
 DEC No.: 4-0126-00138/00001
 SPDES No.: NY 002 6875
 Expiration Date: 04/30/2010
 Application Due By: 11/01/2009

Are these name(s) & address(es) correct? if not, please write corrections above.

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Richard J. Lyons
 Name of person signing application (see instructions on back)

Executive Director
 Title

[Signature]
 Signature

6/22/09
 Date

PART 3 - PERMIT (Below this line - Official Use Only)

Effective Date: 5.1.10

Expiration Date: 4.30.15

William R. Adriance
 Permit Administrator

Address:

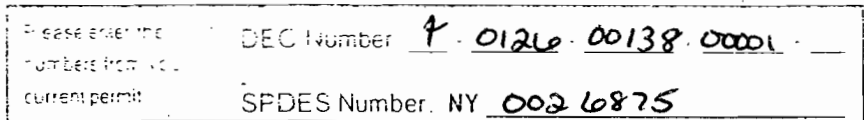
NYSDEC - Division of Environmental Permits
 Bureau of Environmental Analysis
 625 Broadway, Albany, NY 12233-1750

William R. Adriance
 Signature

DEC 9 2009
 Date

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Attachments: General Conditions dated —/—



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Does your facility conduct ancillary activities as described above, which are not covered by BMP requirements in your current permit? ☐ YES ☒ NO

☒ None of the concerns on the "Self Evaluation List" seem to apply to my facility at this time and I will not be applying for a modification of the SPDES permit in the foreseeable future.

☐ Yes, some of the items on the "Self Evaluation List" have led me to believe that the permit for this facility needs to be modified. I already have a complete modification application pending with the Department.

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☐ The items on the "Self Evaluation List" have left me unable to conclude whether my permit needs to be modified at this time. I am reporting the following general concerns about my permit:

Blank lined paper.

Regional Water Engineer
Regional Permit Administrator
Central Office (BWP)

In the Matter of the

Department Initiated Permit Modification
ACSD North Plant – DEC ID Number: 4-0126-00138/00001
SPDES Number: NY 002-6875

ACSD South Plant – DEC ID Number: 4-0101-00020/00001
SPDES Number: NY 002-6867

Stipulation of Settlement

The Stipulation of Settlement is hereby made as of the 13th day of October, 2005 by and between the NYS Department of Environmental Conservation (hereinafter "Department") and the County of Albany, acting by and through the Albany County Sewer District (hereinafter "District").

WHEREAS, the District is required to maintain a State Pollutant Discharge Elimination System ("SPDES") Permit for the operation of each of the two (2) Wastewater Treatment Plants ("WTPP") known as the South Plant and the North Plant, and

WHEREAS, on February 11, 2004 the Department issued a notice of intent to implement the Department Initiated Permit Modifications set forth in the caption above due to the amendment of the regulation governing the administration of SPDES permits (Title 6 of the official compilation of the Codes, Rules and Regulations of the State of New York [6 NYCRR] Part 750); and

WHEREAS, by letter dated October 7, 2004, the District requested that the Department schedule a hearing pursuant to the Uniform Procedures Act (6 NYCRR 621.14); and

WHEREAS, by letter dated October 14, 2004 the Department initiated the hearing process; and

WHEREAS, the Hon. P. Nicholas Garlick, Office of Hearings and Mediation Services, was appointed hearing officer; and

WHEREAS, the parties have engaged in detailed settlement negotiations and are jointly desirous of resolving this matter to avoid the risks and burdens of a protracted administrative proceeding/litigation and to achieve resolution; and

WHEREAS, the District's Board duly approved the terms of this settlement on October 12, 2005.

NOW, THEREFORE, upon the mutual premises stated and in consideration of same, the parties agree as follows:

1. For purposes of compliance with 6 NYCRR section 750-2.9(c), the SPDES permit for the South Plant will be modified with a hydraulic re-rating of its design flow permit limit from 25 mgd, to an annual average of 29 mgd, without requiring the District to submit an engineering report; and, all "other limits" in said permit shall remain unchanged.

Compliance with requirements of Section 750-2.9 [c] for the South plant will be determined by a simple comparison between the annual average flow to the treatment plant, calculated at the end of each calendar year, to 95% of 29 mgd (27.55 mgd).

Compliance with the permit limitation of 29 mgd as a twelve-month rolling average is a separate requirement of the SPDES permit for the South plant and is determined each month. The monthly average flow will be calculated (by dividing the sum of each day's flow by the number of days in the month). This will be reported on the DMR, but there will be no limit for monthly average flow – only a requirement to report it. The twelve-month rolling average will then be calculated by adding the current month and previous 11 months of monthly average flow values and dividing by 12. This value will be reported on the DMR and compared to a numerical limit (29 mgd) to determine permit compliance.

Compliance with the requirements of Part 750-2.9 [c] will be determined once per year. Compliance with the SPDES permit flow limitation will be determined once per month.

This same compliance format shall apply to the North Plant such that compliance with Part 750 will be determined by a simple comparison between annual average flow and permitted flow and compliance with the permit limit will be determined by calculating the monthly average flow and comparing it to the monthly average permit limit of 35 mgd. The District, pursuant to the Uniform Procedures Act (ECL Article 70), may request a modification of the North plant's permit to modify the monthly average flow limitation of 35 mgd to a 12-MRA limit of 35 mgd. The Department agrees that it will not unreasonably withhold the issuance of a permit with this modification.

Nothing herein shall prevent or affect the capability of the Department, pursuant to the Uniform Procedures Act (ECL Article 70), to seek a modification of the permits for the South and North plants.

2. The District hereby withdraws its request for an administrative hearing on the issue of the modification of the District's North and South Plants SPDES Permit, and waives its right to hearing or to otherwise contest the issuance of the draft SPDES Permits.
3. The modification of the SPDES Permit for the North and South Plants shall be issued by the Department within ten (10) days of the effective date of this Stipulation.
4. None of the parties hereto shall be in default of compliance with this Stipulation if such party is unable to comply with any of the provisions set forth herein by reason of a force majeure event. The term force majeure as used herein is defined as acts of God, actions of a national or local government body or court, war, strike or catastrophe as to any of which the negligence or willful misconduct of the party is not a proximate cause.
5. Nothing in this Stipulation precludes any party hereto from seeking to enforce the terms, provisions and conditions of this Stipulation against the other non-complying party hereto.
6. No modification of this Stipulation shall be effective unless and until all the parties to this Stipulation approve such modification in writing.
7. This Stipulation, and the Exhibits annexed hereto, constitute the entire agreement between the parties with respect to the settlement of this hearing request, and supersedes and replaces all prior negotiations, proposed agreements and agreements, whether written or unwritten.
8. This Stipulation is effective as of the date first set forth above.

Dated: October 20, 2005

**NYS DEPARTMENT OF
ENVIRONMENTAL CONSERVATION**

BY: Michael P. Naughton

Michael P. Naughton, Esq.
Associate Counsel

Dated: October 13, 2005

ALBANY COUNTY SEWER DISTRICT

BY: Peter R. Anderson

Peter R. Anderson
Executive Director



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT

FD-113 99

Industrial Code: 4952
Discharge Class (CL): 05
Toxic Class (TX): N
Major Drainage Basin: 13
Sub Drainage Basin: 01
Water Index Number: IIR
Compact Area:

SPDES Number: NY 0026867
DEC Number: 4-0101-00020/00001
Effective Date (EDP): 05/01/05
Expiration Date (ExDP): 04/30/10
Modification Dates: 03/11/09, 12/01/09

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et seq.) (hereinafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Name: Albany County Sewer District
Street: P.O. Box 4187
City: Albany

Attention: Executive Director
State: NY Zip Code: 12204
is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name: Albany County Sewer District - South WWTP
Location (C,T,V): Albany (C)
Facility Address: P.O. Box 4187
City: Albany
County: Albany
State: NY Zip Code: 12204
NYTM -E: From Outfall No.: 001 at Latitude: 42 ° 31 ' 14 " & Longitude: 73 ° 45 ' 34 "
into receiving waters known as: Hudson River
and; (list other Outfalls, Receiving Waters & Water Classifications) Class: C

in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth this permit; and 6 NYCRR Part 750-1.2(a) and 750-2.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name: Albany County Sewer District
Street: P.O. Box 4187
City: Albany

Responsible Official or Agent: Brian J. Derry, Process Control Engineer
State: NY Zip Code: 12204
Phone: (518) 447-1624

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

RPA/RWE
Bureau of Water Permits
Albany County DOH
EPA Reg. II - Michelle Josilo
Cheryle Webber
NYSEFC

Deputy Chief Permit Administrator: Stuart M. Fox	
Address: Division of Environmental Permits 625 Broadway Albany, NY 12233-1750	
Signature: <i>Stuart M. Fox</i>	Date: 10/21/09

PERMIT LIMITS, LEVELS AND MONITORING DEFINITIONS

OUTFALL	WASTEWATER TYPE		RECEIVING WATER	EFFECTIVE	EXPIRING	
	This cell describes the type of wastewater authorized for discharge. Examples include process or sanitary wastewater, storm water, non-contact cooling water.		This cell lists classified waters of the state to which the listed outfall discharges.	The date this page starts in effect. (e.g. EDP or EDPM)	The date this page is no longer in effect. (e.g. ExDP)	
PARAMETER	MINIMUM	MAXIMUM		UNITS	SAMPLE FREQ.	SAMPLE TYPE
e.g. pH, TRC, Temperature, D.O.	The minimum level that must be maintained at all instants in time.	The maximum level that may not be exceeded at any instant in time.		SG, °F, mg/l, etc.		
PARAMETER	EFFLUENT LIMIT	PRACTICAL QUANTITATION LIMIT (PQL)	ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE
	Limit types are defined below in Note 1. The effluent limit is developed based on the more stringent of technology-based limits, required under the Clean Water Act, or New York State water quality standards. The limit has been derived based on existing assumptions and rules. These assumptions include receiving water hardness, pH and temperature; rates of this and other discharges to the receiving stream; etc. If assumptions or rules change the limit may, after due process and modification of this permit, change.	For the purposes of compliance assessment, the analytical method specified in the permit shall be used to monitor the amount of the pollutant in the outfall to this level, provided that the laboratory analyst has complied with the specified quality assurance/quality control procedures in the relevant method. Monitoring results that are lower than this level must be reported, but shall not be used to determine compliance with the calculated limit. This PQL can be neither lowered nor raised without a modification of this permit.	Type I or Type II Action Levels are monitoring requirements, as defined below in Note 2, that trigger additional monitoring and permit review when exceeded.	This can include units of flow, pH, mass, Temperature, concentration. Examples include µg/l, lbs/d, etc.	Examples include Daily, 3/week, weekly, 2/month, monthly, quarterly, 2/yr and yearly.	Examples include grab, 24 hour composite and 3 grab samples collected over a 6 hour period.

Note 1: DAILY DISCHARGE: The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day.

DAILY MAX: The highest allowable daily discharge. **DAILY MIN:** The lowest allowable daily discharge.

MONTHLY AVG: The highest allowable average of daily discharges over a calendar month, calculated as the sum of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

7 DAY ARITHMETIC MEAN (7 day average): The highest allowable average of daily discharges over a calendar week.

30 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar month, calculated as the antilog of: the sum of the log of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

7 DAY GEOMETRIC MEAN: The highest allowable geometric mean of daily discharges over a calendar week.

RANGE: The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown.

Note 2: ACTION LEVELS: Routine Action Level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If the additional monitoring requirement is triggered as noted below, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharging days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the additional monitoring requirement was triggered. Results may be appended to the DMR or transmitted under separate cover to the same address. If levels higher than the Action Levels are confirmed, the permit may be reopened by the Department for consideration of revised Action Levels or effluent limits. The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards. The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results in excess of the stated Action Level.

FINAL PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	All Year unless otherwise noted	Hudson River	12/01/09	04/30/10

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Location		
								Inf.	Eff.	
Flow	12-Month Rolling Average	29	mgd			continuous	recorder		X	(2)
CBOD ₅	Monthly average	25	mg/l	4000	lbs/d	1/day	24-hr. comp.	X	X	(1)
CBOD ₅	7 day average	40	mg/l	6300	lbs/d	1/day	24-hr. comp.		X	
Solids, Suspended	Monthly average	30	mg/l	4800	lbs/d	1/day	24-hr. comp.	X	X	(1)
Solids, Suspended	7 day average	45	mg/l	7100	lbs/d	1/day	24-hr. comp.		X	
Solids, Settleable	Daily Max.	0.3	ml/l			6/day	grab		X	
pH	Range	6.0-9.0	SU			6/day	grab		X	
Nitrogen, TKN (as N) (June 1 - Oct 31)	Monthly average	15.4	mg/l			1/day	24-hr. comp.		X	(5)
Temperature	Daily Maximum	Monitor	Deg F			6/day	grab		X	
Effluent Disinfection required: [] All Year [X] Seasonal from <u>May 1</u> to <u>October 31</u>										
Coliform, Fecal	30 day geometric mean	200	No./ 100 ml			1/day	grab		X	(4)
Coliform, Fecal	7 day geometric mean	400	No./ 100 ml			1/day	grab		X	(4)
Chlorine, Total Residual	Daily Max.	0.60	mg/l			6/day	grab		X	(3)
										(4)

FOOTNOTES:

- (1) Effluent shall not exceed 15 % and 15 % of influent concentration values for CBOD₅ & TSS respectively. The permittee is not required to calculate percent removals on days when daily average flows exceed 29 mgd.
- (2) For purposes of the permittee's compliance with 6 NYCRR 750-2.9(c), this permit is being issued consistent with the terms of the attached Stipulation of Settlement.
- (3) Monitoring of this parameter applies only if chlorine is used for disinfection. This is an interim limit. See the TRC Compliance Schedule in this permit.
- (4) Disinfection is not required during the period from November 1 through April 30.
- (5) Monitoring is not required from November 1 through May 31.

ACTION LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE		RECEIVING WATER		EFFECTIVE		EXPIRING		
001	Municipal		Hudson River		12/01/09		04/30/10		
PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL		UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
					TYPE II				
Copper, Total				4.6		lbs/day	1/month	24hr.comp.	
Zinc, Total				8.2		lbs/day	1/month	24hr.comp.	
WET - Acute Invertebrate				20.1		TUa	1/quarter	See footnote	(1)
WET - Acute Vertebrate				20.1		TUa	1/quarter	See footnote	(1)
WET - Chronic Invertebrate				75		TUc	1/quarter	See footnote	(1)
WET - Chronic Vertebrate				75		TUc	1/quarter	See footnote	(1)

FOOTNOTES:**(1) Whole Effluent Toxicity (WET) Testing:**

Testing Requirements - WET testing shall consist of Acute and, if necessary, Chronic testing. WET testing shall be performed in accordance with 40 CFR Part 136 and TOGS 1.3.2 unless prior written approval has been obtained from the Department. The test species shall be *Ceriodaphnia dubia* (water flea - invertebrate) and *Pimephales promelas* (fathead minnow - vertebrate). Receiving water collected upstream from the discharge should be used for dilution. All tests conducted should be static-renewal (two 24 hr composite samples with one renewal for Acute tests and three 24 hr composite samples with two renewals for Chronic tests). The appropriate dilution series bracketing the IWC and including one exposure group of 100% effluent should be used to generate a definitive test endpoint, otherwise an immediate rerun of the test is required. WET testing shall be coordinated with the monitoring of chemical and physical parameters limited by this permit so that the resulting analyses are also representative of the sample used for WET testing. The ratio of critical receiving water flow to discharge flow (i.e. dilution ratio) is 67:1 for acute, and 75:1 for chronic. Discharges which are disinfected using chlorine should be dechlorinated prior to WET testing or samples shall be taken immediately prior to the chlorination system.

Monitoring Period - WET testing shall be performed at the specified sample frequency: Once each calendar quarter, beginning January 1 and ending December 31, during calendar years ending in 0 and 5.

Reporting - Toxicity Units shall be calculated and reported on the DMR as follows: $TUa = (100)/(48 \text{ hr LC50})$ or $(100)/(48 \text{ hr EC50})$ (note that Acute data is generated by both Acute and Chronic testing) and $TUc = (100)/(NOEC)$ when Chronic testing has been performed or $TUc = (TUa) \times (20)$ when only Acute testing has been performed and is used to predict Chronic test results, where the 48 hr LC50 or 48 hr EC50 and NOEC are expressed in % effluent. This must be done for both species and using the Most Sensitive Endpoint (MSE) or the lowest NOEC and corresponding highest TUc. Report a TUa of 0.3 if there is no statistically significant toxicity in 100% effluent as compared to control.

The complete test report including all corresponding results, statistical analyses, reference toxicity data, daily average flow at the time of sampling and other appropriate supporting documentation, shall be submitted within 60 days following the end of each test period to the Toxicity Testing Unit. A summary page of the test results for the invertebrate and vertebrate species indicating TUa, 48 hr LC50 or 48 hr EC50 for Acute tests and/or TUc, NOEC, IC25, and most sensitive endpoints for Chronic tests, should also be included at the beginning of the test report.

WET Testing Action Level Exceedances - If an action level is exceeded then the Department may require the permittee to conduct additional WET testing including Acute and/or Chronic tests. Additionally, the permittee may be required to perform a Toxicity Reduction Evaluation (TRE) in accordance with Department guidance. If such additional testing or performance of a TRE is necessary, the permittee shall be notified in writing by the Regional Water Engineer. The written notification shall include the reason(s) why such testing or a TRE is required.

BEST MANAGEMENT PRACTICES

The permittee shall implement the following Best Management Practices (BMPs). These BMPs are designed to implement operation & maintenance procedures and utilize the District-owned treatment facilities and interceptors to maximize pollutant capture and minimize water quality impacts from combined sewer overflows. The BMPs shall be developed in accordance with Combined Sewer Overflows. Guidance for Nine Minimum Controls, EPA, 1995.

1. System Maintenance/Inspection - The permittee shall develop a written maintenance and inspection program for all District-owned flow recording devices, interceptors, and regulators. The purpose of this program is to minimize the occurrence of dry weather overflows related to District-owned appurtenances and insure that the maximum amount of wet weather flow is conveyed to the POTW for treatment. This program shall consist of inspections with required repair, cleaning and maintenance done as needed. This program shall consist of a minimum of monthly inspections. Increased maintenance/inspection may be required for problem areas.

Inspection reports shall be completed indicating visual inspection, debris removed, any observed flow, incidence of rain or snowmelt, condition of equipment, repairs performed or work required. These reports shall be in a format approved by the Region 4 Office (see example attachment) and submitted to the Region with the monthly operating report (Form 92-15-7).

2. Maximum Use of Collection System for Storage - Not applicable
3. Industrial Pretreatment - District will implement its federally approved Pretreatment Program.
4. Maximize Flow to POTW - Not applicable. See BMP #5.
5. Wet Weather Operating Plan - The permittee shall update the existing wet weather operating plan which contains procedures so as to operate unit processes to treat maximum flows while not appreciably diminishing effluent quality or destabilizing treatment upon return to dry weather operation. The revised wet weather operations plan shall be written in accordance with the NYSDEC publication Wet Weather Operating Practices for POTWs With Combined Sewers, and submitted for review and approval by **Approved Phase 1 Albany Pool CSO LTCP + 12 months***.

The treatment plant shall be capable of receiving the peak design flows for all process units. The treatment plant shall be capable of: receiving a minimum of 56 MGD through the plant headworks; a minimum of 40 MGD through the primary treatment works and disinfection works, and a minimum of 40 MGD through the secondary treatment works during wet weather. The interceptor and headworks must be capable of delivering these flows during wet weather. The wet weather operating plan shall be revised and resubmitted any time the treatment plant or operations at the treatment plant are modified.

A revised wet weather operating plan must be submitted whenever the POTW and/or sewer collection system is replaced or modified. However, when this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT", the permittee is not required to repeat the submission. The above due dates are independent of the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT".

6. Prohibition of Dry Weather Overflow - Dry weather overflows are prohibited. Upon the permittee's inspection of its regulating chamber, the permittee shall promptly abate any impairment within the regulator. If the impairment has led to a dry weather overflow, the permittee will report it to: 1) the Regional Water Engineer in accordance with 6NYCRR Part 750-2.8(b)(2); and 2) the tributary community. Should the permittee observe a Dry Weather Overflow resulting from any other cause, the permittee will report to the tributary community in order for appropriate abatement action to be taken.
7. Control of Floatable and Settleable Solids - Not applicable.
8. Combined Sewer System Replacement - Not applicable.

BEST MANAGEMENT PRACTICES - Continued

9. Combined Sewer/Extension - Not applicable.
10. Sewage backups - Not applicable.
11. Septage and Hauled Waste - The discharge or release of septage or hauled waste upstream of a CSO is prohibited.
12. Control of Run-off - Not applicable.
13. Public Notification - Not applicable.
14. Characterization and Monitoring - Not applicable.
15. Annual report - The permittee shall submit a comprehensive annual report summarizing implementation of the best management practices (BMPs) required above. The report shall list existing documentation of implementation of the BMPs and shall be prepared using the Department's checklist and Combined Sewer Overflows, Guidance for Nine Minimum Controls, EPA, 1995 as guidance. The permittee must submit a completed copy of the checklist along with the annual report. The actual documentation shall be stored at a central location and be made available to DEC upon request. The annual report shall include, but not be limited to, a summary of bypassed flows at the POTW, including volume and frequency and related rainfall volumes in the service area. The first annual report shall also include: a list of all flow recording devices and pump stations that the permittee owns and/or operates; flow summaries, actual or estimated, from flow recording devices, metering pits and/or service areas; and a current map of the District-owned collection system showing locations of pump stations and regulators. The report shall be submitted by January 31st of each year to the Regional Water Engineer and to the Bureau of Water Permits, 625 Broadway, Albany, NY 12233-3505.

*Upon review and approval of Phase 1 of the Albany Pool CSO LTCP, the Department may approve the section(s) regarding potential modifications to the District's two treatment plants prior to the complete approval of the LTCP. All comments made by the District to the section(s) of the LTCP regarding treatment plant modifications will be addressed to the District by the Department in writing and the Department will provide the District with the commencement date of this action.

LONG TERM CONTROL PLAN

The Albany County Sewer District accepts combined sanitary wastewater and stormwater from the four communities listed below, as indicated by an asterisk (*). The permittee agrees to assist and support the development and implementation of the long term solution to address the CSO discharges from the respective communities as defined in this permit.

The six permittees listed below have entered into an agreement to cooperatively develop a Phase I long-term CSO control plan (LTCP) by September 2009 in accordance with their respective SPDES permits:

NY 002 5747	City of Albany*	NY 003 1046	City of Cohoes*
NY 003 3031	Village of Green Island*	NY 003 0899	City of Watervliet*
NY 009 9309	City of Troy	NY 002 6026	City of Rensselaer

The four communities listed above (as delineated by an asterisk (*)) discharge combined sanitary wastewater and storm water to an interceptor sewer which transports it to the POTWs which are owned and operated by the County Sewer District. The treatment plants are listed below:

NY 002 6875	Albany County Sewer District, North WWTP
NY 002 6867	Albany County Sewer District, South WWTP.

I. In order to develop a complete and comprehensive LTCP, the permittee will participate in the development of the LTCP as delineated in this permit. In order to accomplish this, at a minimum, the permittee shall assist its four member communities with the following elements:

1. Actively participate in the Public Participation Plan developed by the above 6 communities;
2. Regularly attend meetings related to the Albany Pool;
3. Provide all information requested by the four communities necessary to evaluate the possibility of expansion of the POTW's primary and secondary capacity, including increasing the size of the interceptor sewer and modification of regulator structures, as well as any other reasonable alternatives related to the District's facilities;
4. Provide all information requested to the four communities necessary to characterize the Districts owned facilities and to develop cost/performance curves for the alternatives evaluated above;
5. Share any additional information relating to the LTCP with the Albany Pool members and their consultants; and
6. The permittee shall participate in the evaluation of all alternatives assessed by the Albany Pool, whether related to the District owned systems (1) or not. Upon submission of the LTCP to the Department for approval, the District shall identify any disagreements in writing within fourteen days.

II. Phase II

Upon the completion of the Phase I LTCP, the Department may propose a modification to the permittee's SPDES permit which has the potential to include improvements of District-owned and operated facilities (Treatment plants (North and South), interceptors and regulating chambers) in accordance with 6NYCRR -- Part 621.

SCHEDULE OF COMPLIANCE

a) Total Residual Chlorine

Action Code	Outfall Number(s)	Compliance Action	Due Date
	001	The Permittee shall submit an approvable Engineering Report that identifies the facilities necessary to achieve compliance with the water quality based effluent limitation of 0.6 mg/l for total residual chlorine (TRC). The department will reevaluate the TRC limit at that time, at the permittee's request, if further information regarding disinfection practices in the Albany Pool area of the Hudson River are available. The Permittee shall submit approvable final plans and specifications, as well as a schedule of construction, for the facilities described in the approved Engineering Report The Permittee shall commence construction of the facilities described in the approved plans and specifications in accordance with the approved schedule of construction. Beginning with the commencement of construction, the permittee shall submit progress reports every 6 months detailing the work done in accordance with the approved engineering plans and specifications and schedule of construction. The Permittee shall complete construction of the facilities described in the above plans and specifications.	Approved Phase I LTCP + 12 months* DEC Approval of Engineering Report + 6 months DEC Approval of Plans and Specifications + 12 months

**Upon review and approval of Phase 1 of the Albany Pool CSO LTCP, the Department may approve the section(s) regarding potential modifications to the District's two treatment plants prior to the complete approval of the LTCP. All comments made by the District to the section(s) of the LTCP regarding treatment plant modifications will be addressed to the District by the Department in writing and the Department will provide the District with the commencement date of this action.

The above compliance actions are one time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT", the permittee is not required to repeat the submission. The above due dates are independent from the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT."

- b) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice in accordance with 6NYCRR Part 750-2.7. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:
1. A short description of the non-compliance;
 2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
 3. A description of any factors which tend to explain or mitigate the non-compliance; and
 4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.
- c) The permittee shall submit copies of any document required by the above schedule of compliance to NYSDEC Regional Water Engineer and to the Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, unless otherwise specified in this permit or in writing by the Department.

PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS

- A. DEFINITIONS. Generally, terms used in this Section shall be defined as in the General Pretreatment Regulations (40 CFR Part 403). Specifically, the following definitions apply to terms used in this Section (PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS):
1. Categorical Industrial User (CIU)- an industrial user of the POTW that is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N;
 2. Local Limits - General Prohibitions, specific prohibitions and specific limits as set forth in 40 CFR 403.5.
 3. The Publicly Owned Treatment Works (the POTW) - as defined by 40 CFR 403.3(p) and that discharges in accordance with this permit.
 4. Program Submission(s) - requests for approval or modification of the POTW Pretreatment Program submitted in accordance with 40 CFR 403.11 or 403.18 and approved by letter dated August 2, 1984.
 5. Significant Industrial User (SIU) -
 - a. CIUs;
 - b. Except as provided in 40 CFR 403.3(v)(3), any other industrial user that discharges an average of 25,000 gallons per day or more of process wastewater (excluding sanitary, non-contact cooling and boiler blowdown wastewater) to the POTW;
 - c. Except as provided in 40 CFR 403.3(v)(3), any other industrial user that contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant;
 - d. Any other industrial user that the permittee designates as having a reasonable potential for adversely affecting the POTW's operation or for violating a pretreatment standard or requirement.
 6. Substances of Concern - Substances identified by the New York State Department of Environmental Conservation Industrial Chemical Survey as substances of concern.
- B. IMPLEMENTATION. The permittee shall implement a POTW Pretreatment Program in accordance 40 CFR Part 403 and as set forth in the permittee's approved Program Submission(s). Modifications to this program shall be made in accordance with 40 CFR 403.18. Specific program requirements are as follows:
1. Industrial Survey. To maintain an updated inventory of industrial dischargers to the POTW the permittee shall:
 - a. Identify, locate and list all industrial users who might be subject to the industrial pretreatment program from the pretreatment program submission and any other necessary, appropriate and available sources. This identification and location list will be updated, at a minimum, every five years. As part of this update the permittee shall collect a current and complete New York State Industrial Chemical Survey form (or equivalent) from each SIU.
 - b. Identify the character and volume of pollutants contributed to the POTW by each industrial user identified in B.1.a above that is classified as a SIU.
 - c. Identify, locate and list, from the pretreatment program submission and any other necessary, appropriate and available sources, all significant industrial users of the POTW.
 2. Control Mechanisms. To provide adequate notice to and control of industrial users of the POTW the permittee shall:
 - a. Inform by certified letter, hand delivery courier, overnight mail, or other means which will provide written acknowledgment of delivery, all industrial users identified in B.1.a. above of applicable pretreatment standards and requirements including the requirement to comply with the local sewer use law, regulation or ordinance and any applicable requirements under section 204(b) and 405 of the Federal Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS – Continued

- b. Control through permit or similar means the contribution to the POTW by each SIU to ensure compliance with applicable pretreatment standards and requirements. Permits shall contain limitations, sampling frequency and type, reporting and self-monitoring requirements as described below, requirements that limitations and conditions be complied with by established deadlines, an expiration date not later than five years from the date of permit issuance, a statement of applicable civil and criminal penalties and the requirement to comply with Local Limits and any other requirements in accordance with 40 CFR 403.8(f)(1).
 - 3. Monitoring and Inspection. To provide adequate, ongoing characterization of non-domestic users of the POTW, the permittee shall:
 - a. Receive and analyze self-monitoring reports and other notices. The permittee shall require all SIUs to submit self-monitoring reports at least every six months unless the permittee collects all such information required for the report, including flow data.
 - b. The permittee shall adequately inspect each SIU at a minimum frequency of once per year.
 - c. The permittee shall collect and analyze samples from each SIU for all priority pollutants that can reasonably be expected to be detectable at levels greater than the levels found in domestic sewage at a minimum frequency of once per year.
 - d. Require, through permits, each SIU to collect at least one 24 hour, flow proportioned composite (where feasible) effluent sample every six months and analyze each of those samples for all priority pollutants that can reasonably be expected to be detectable in that discharge at levels greater than the levels found in domestic sewage. The permittee may perform the aforementioned monitoring in lieu of the SIU except that the permittee must also perform the compliance monitoring described in 3.c.
 - 4. Enforcement. To assure adequate, equitable enforcement of the industrial pretreatment program the permittee shall:
 - a. Investigate instances of noncompliance with pretreatment standards and requirements, as indicated in self-monitoring reports and notices or indicated by analysis, inspection and surveillance activities. Sample taking and analysis and the collection of other information shall be performed with sufficient care to produce evidence admissible in enforcement proceedings or in judicial actions. Enforcement activities shall be conducted in accordance with the permittee's Enforcement Response Plan developed and approved in accordance with 40 CFR Part 403.
 - b. Enforce compliance with all national pretreatment standards and requirements in 40 CFR Parts 406 - 471.
 - c. Provide public notification of significant non-compliance as required by 40 CFR 403.8(f)(2)(vii).
 - d. Pursuant to 40 CFR 403.5(e), when either the Department or the USEPA determines any source contributes pollutants to the POTW in violation of Pretreatment Standards or Requirements the Department or the USEPA shall notify the permittee. Failure by the permittee to commence an appropriate investigation and subsequent enforcement action within 30 days of this notification may result in appropriate enforcement action against the source and permittee.
 - 5. Record keeping. The permittee shall maintain and update, as necessary, records identifying the nature, character, and volume of pollutants contributed by SIUs. Records shall be maintained in accordance with 6 NYCRR Part 750-2.5(c).
 - 6. Staffing. The permittee shall maintain minimum staffing positions committed to implementation of the Industrial Pretreatment Program in accordance with the approved pretreatment program.
- C. SLUDGE DISPOSAL PLAN. The permittee shall notify NYSDEC, and USEPA as long as USEPA remains the approval authority, 60 days prior to any major proposed change in the sludge disposal plan. NYSDEC may require additional pretreatment measures or controls to prevent or abate an interference incident relating to sludge use or disposal.

PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS – Continued

- D. REPORTING. The permittee shall provide to the offices listed on the Monitoring, Reporting and Recording page of this permit and to the Chief-Water Permits and Compliance Branch; USEPA Region 2; 290 Broadway, 20th floor NY, NY 10007-1866; a periodic report, prepared and submitted in accordance with the consistent periodic reporting format established by the Department in the document entitled NYSDEC POTW Periodic Pretreatment Report - 1994, that briefly describes the permittee's program activities over the previous year. This report shall be submitted to the above noted offices within 60 days of the end of the reporting period. The reporting period shall be ANNUAL, with reporting period(s) ending on DECEMBER 31st.

The periodic report shall include:

1. Industrial Survey. Updated industrial survey information in accordance with 40 CFR 403.12(i)(1) (including any NYS Industrial Chemical Survey forms updated during the reporting period).
2. Implementation Status. Status of Program Implementation, to include:
 - a. Any interference, upset or permit violations experienced at the POTW directly attributable to industrial users.
 - b. Listing of significant industrial users issued permits.
 - c. Listing of significant industrial users inspected and/or monitored during the previous reporting period and summary of results.
 - d. Listing of significant industrial users notified of promulgated pretreatment standards or applicable local standards who are on compliance schedules. The listing should include for each facility the final date of compliance.
 - e. Summary of POTW monitoring results not already submitted on Discharge Monitoring Reports and toxic loadings from SIU's organized by parameter.
 - f. A summary of additions or deletions to the list of SIUs, with a brief explanation for each deletion.
3. Enforcement Status. Status of enforcement activities to include:
 - a. Listing of significant industrial users in Significant Non-Compliance (as defined by 40 CFR 403.8(f)(2)(vii)) with federal or local pretreatment standards at end of the reporting period.
 - b. Summary of enforcement activities taken against non-complying significant industrial users. The permittee shall provide a copy of the public notice of significant violators as specified in 40 CFR Part 403.8(f)(2)(vii).

DISCHARGE NOTIFICATION REQUIREMENTS

- a) The permittee shall, except as set forth in (c) below, maintain the existing identification signs at all outfalls to surface waters, which have not been waived by the Department in accordance with 17-0815-a. The sign(s) shall be conspicuous, legible and in as close proximity to the point of discharge as is reasonably possible while ensuring the maximum visibility from the surface water and shore. The signs shall be installed in such a manner to pose minimal hazard to navigation, bathing or other water related activities. If the public has access to the water from the land in the vicinity of the outfall, an identical sign shall be posted to be visible from the direction approaching the surface water.

The signs shall have minimum dimensions of eighteen inches by twenty four inches (18" x 24") and shall have white letters on a green background and contain the following information:

N.Y.S. PERMITTED DISCHARGE POINT

SPDES PERMIT No.: NY _____

OUTFALL No. : _____

For information about this permitted discharge contact:

Permittee Name: _____

Permittee Contact: _____

Permittee Phone: () - ### - ####

OR:

NYSDEC Division of Water Regional Office Address :

NYSDEC Division of Water Regional Phone: () - ### -####

- b) For each discharge required to have a sign in accordance with a), the permittee shall provide for public review at a repository accessible to the public, copies of the Discharge Monitoring Reports (DMRs) as required by the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of this permit. This repository shall be open to the public, at a minimum, during normal daytime business hours. The repository may be at the business office repository of the permittee or at an off-premises location of its choice (such location shall be the village, town, city or county clerk's office, the local library or other location as approved by the Department). In accordance with the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of your permit, each DMR shall be maintained on record for a period of three years.
- c) If, upon November 1, 1997, the permittee has installed signs that include the information required by 17-0815-a(2)(a), but do not meet the specifications listed above, the permittee may continue to use the existing signs for a period of up to five years, after which the signs shall comply with the specifications listed above.
- d) The permittee shall periodically inspect the outfall identification signs in order to ensure that they are maintained, are still visible and contain information that is current and factually correct.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) specified below:

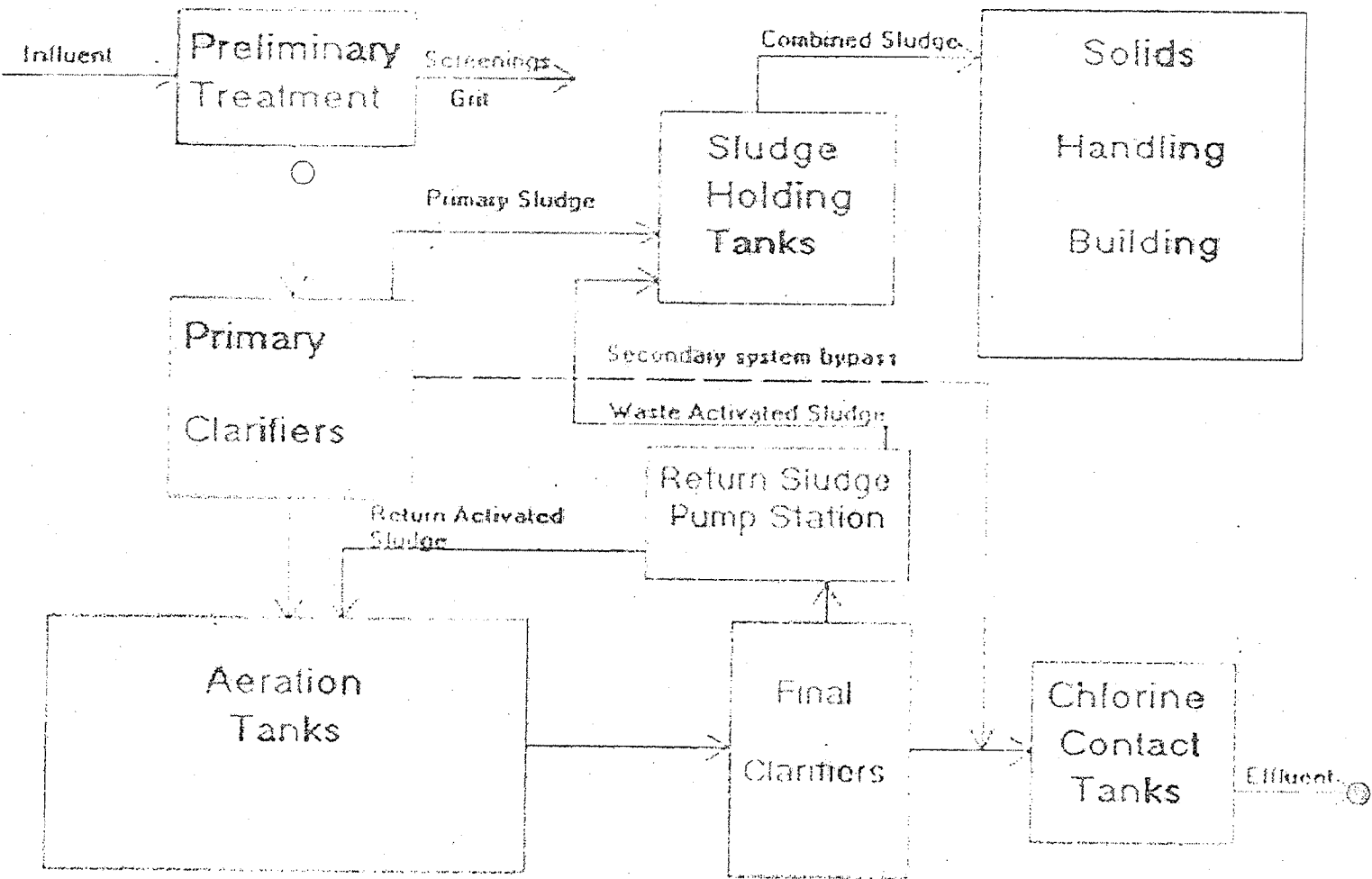


Figure 1 Wastewater Flow Scheme

RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

- a) The permittee shall also refer to 6 NYCRR Part 750-1.2(a) and 750-2 for additional information concerning monitoring and reporting requirements and conditions.
- b) The monitoring information required by this permit shall be summarized, signed and retained for a period of at least five years from the date of the sampling for subsequent inspection by the Department or its designated agent. Also, monitoring information required by this permit shall be summarized and reported by submitting:

☒ (if box is checked) completed and signed Discharge Monitoring Report (DMR) forms for each 1 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

☐ (if box is checked) an annual report to the Regional Water Engineer at the address specified below. The annual report is due by February 1 and must summarize information for January to December of the previous year in a format acceptable to the Department.

☒ (if box is checked) a monthly "Wastewater Facility Operation Report..." (form 92-15-7) to the:

☒ Regional Water Engineer and/or ☐ County Health Department or Environmental Control Agency specified below

Send the original (top sheet) of each DMR page to:

Department of Environmental Conservation
Division of Water
Bureau of Watershed Compliance Programs
625 Broadway
Albany, New York 12233-3506

Phone: (518) 402-8177

Send the first copy (second sheet) of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer
1150 North Westcott Road
Schenectady, NY 12306

Phone: (518) 357-2045

Send an additional copy of each DMR page to:

- c) Noncompliance with the provisions of this permit shall be reported to the Department as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2.
- d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.
- e) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculations and recording of the data on the Discharge Monitoring Reports.
- f) Calculation for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.
- g) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period.
- h) Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section five hundred two of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be sent to the Environmental Laboratory Accreditation Program, New York State Health Department Center for Laboratories and Research, Division of Environmental Sciences, The Nelson A. Rockefeller Empire State Plaza, Albany, New York 12201.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
NOTICE / RENEWAL APPLICATION / PERMIT



Please read **ALL** instructions on the back before completing this application form. Please **TYPE** or **PRINT** clearly in ink.

PART 1 - NOTICE

06/12/2009

Permittee Contact Name, Title, Address

Facility and SPDES Permit Information

ALBANY COUNTY SEWER DISTRICT
 EXECUTIVE DIRECTOR
 P O BOX 4187
 ALBANY NY 12204

Name: ALBANY COUNTY SEWER DISTRICT - SO
 Ind. Code: 4952 County: ALBANY
 DEC No.: 4-0101-00020/00001
 SPDES No.: NY 002 6867
 Expiration Date: 04/30/2010
 Application Due By: 11/01/2009

Are these name(s) & address(es) correct? if not, please write corrections above.

The State Pollutant Discharge Elimination System Permit for the facility referenced above expires on the date indicated. You are required by law to file a complete renewal application at least **180 days prior to expiration of your current permit**. Note the "Application Due By" date above.

CAUTION: This short application form and attached questionnaire are the only forms acceptable for permit renewal. Sign Part 2 below and mail only this form and the completed questionnaire using the enclosed envelope. *Effective April 1, 1994 the Department no longer assesses SPDES application fees.*

If there are changes to your discharge, or to operations affecting the discharge, then in addition to this renewal application, you must also submit a separate permit modification application to the Regional Permit Administrator for the DEC region in which the facility is located, as required by your current permit. See the reverse side of this page for instructions on filing a modification request.

PART 2 - RENEWAL APPLICATION

CERTIFICATION: I hereby affirm that under penalty of perjury that the information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to section 210.45 of the Penal Law.

Name of person signing application (see instructions on back) Richard J Lyons Title Executive Director
 Signature [Signature] Date 6/22/09

PART 3 - PERMIT (Below this line - Official Use Only)

Effective Date: 5.1.10 Expiration Date: 4.30.15

William R. Adriance
 Permit Administrator

Address: NYSDEC - Division of Environmental Permits
 Bureau of Environmental Analysis
 625 Broadway, Albany, NY 12233-1750

William R. Adriance
 Signature

DEC 9 2009
 Date

This permit together with the previous valid permit for this facility issued 5.1.05 and subsequent modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified in the previously issued valid permit, modifications thereof or issued as part of this permit, including any special or general conditions attached hereto. Nothing in this permit shall be deemed to waive the Department's authority to initiate a modification of this permit on the grounds specified in 6NYCRR §621.14, 6NYCRR §754.4 or 6NYCRR §757.1 existing at the time this permit is issued or which arise thereafter.

Attachments: General Conditions dated 1/1/05

RECEIVED
 ENVIRONMENTAL PERMITS
 JUN 23 2009
 9:22

Please enter the
numbers from your
current permit:

DEC Number, 4 - 0101 - 00020 - 00001 -

SPDES Number: NY 002 6867

SPDES RENEWAL APPLICATION QUESTIONNAIRE

THIS PAGE MUST BE COMPLETED AND RETURNED WITH YOUR COMPLETED APPLICATION

Please TYPE or PRINT neatly using adequate pressure to make ALL copies legible. Keep a copy for your records.

1. Has the SPDES permit for your facility been modified in the past 5 years ☒ YES ☐ NO
2. Dischargers who use, manufacture, store, handle or discharge toxic or hazardous pollutants are subject to Industrial Best Management Practices (BMP) plan requirements for toxic or hazardous substances. A BMP plan prevents or minimizes the potential for release of pollutants to receiving waters from such ancillary industrial activities, including material storage areas; plant site runoff; in-plant transfer; process and material storage areas; loading and unloading operations, and sludge and waste disposal areas.

Does your facility conduct ancillary activities as described above, which are not covered by BMP requirements in your current permit? ☐ YES ☒ NO

Please indicate which of the following best describes the situation at your facility:

- ☒ None of the concerns on the "Self Evaluation List" seem to apply to my facility at this time and I will not be applying for a modification of the SPDES permit in the foreseeable future.
- ☐ Yes, some of the items on the "Self Evaluation List" have led me to believe that the permit for this facility needs to be modified. I already have a complete modification application pending with the Department.
- ☐ Yes, some of the items on the "Self Evaluation List" have led me to believe that the SPDES permit for this facility may need to be Modified. I have requested the appropriate forms by phone OR I have completed and attached the "Request For SPDES Application Forms" (included in this renewal package) to allow me to submit a permittee-initiated Modification application. See The "Request For SPDES Application Forms" page for a toll free 800 number.
- ☐ The items on the "Self Evaluation List" have left me unable to conclude whether my permit needs to be modified at this time. I am reporting the following general concerns about my permit:

[illegible]

DISTRIBUTION:

Regional Water Engineer
Regional Permit Administrator
Central Office (BWP)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
NOTICE / RENEWAL APPLICATION / PERMIT



Please read **ALL** instructions on the back before completing this application form. Please **TYPE** or **PRINT** clearly in ink.

PART 1 - NOTICE

06/12/2009

Permittee Contact Name, Title, Address

Facility and SPDES Permit Information

ALBANY COUNTY SEWER DISTRICT
 EXECUTIVE DIRECTOR
 P O BOX 4187
 ALBANY NY 12204

Name: ALBANY COUNTY SEWER DISTRICT - SO
 Ind. Code: 4952 County: ALBANY
 DEC No.: 4-0101-00020/00001
 SPDES No.: NY 002 6867
 Expiration Date: 04/30/2010
 Application Due By: 11/01/2009

Are these name(s) & address(es) correct? if not, please write corrections above.

The State Pollutant Discharge Elimination System Permit for the facility referenced above expires on the date indicated. You are required by law to file a complete renewal application at least **180 days prior to expiration of your current permit**. Note the "Application Due By" date above.

CAUTION: This short application form and attached questionnaire are the only forms acceptable for permit renewal. Sign Part 2 below and mail only this form and the completed questionnaire using the enclosed envelope. *Effective April 1, 1994 the Department no longer assesses SPDES application fees.*

If there are changes to your discharge, or to operations affecting the discharge, then in addition to this renewal application, you must also submit a separate permit modification application to the Regional Permit Administrator for the DEC region in which the facility is located, as required by your current permit. See the reverse side of this page for instructions on filing a modification request.

PART 2 - RENEWAL APPLICATION

CERTIFICATION: I hereby affirm that under penalty of perjury that the information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to section 210.45 of the Penal Law.

Richard J Lyons Executive Director
 Name of person signing application (see instructions on back) Title
 Signature Date 6/22/09

PART 3 - PERMIT (Below this line - Official Use Only)

Effective Date: 5/1/10 Expiration Date: 4/30/15

William R. Adriance
 Permit Administrator

Address: NYSDEC - Division of Environmental Permits
 Bureau of Environmental Analysis
 625 Broadway, Albany, NY 12233-1750

Signature William R. Adriance

DEC 9 2009
 Date

This permit together with the previous valid permit for this facility issued 5/1/05 and subsequent modifications constitute authorization to discharge wastewater in accordance with all terms, conditions and limitations specified in the previously issued valid permit, modifications thereof or issued as part of this permit, including any special or general conditions attached hereto. Nothing in this permit shall be deemed to waive the Department's authority to initiate a modification of this permit on the grounds specified in 6NYCRR §621.14, 6NYCRR §754.4 or 6NYCRR §757.1 existing at the time this permit is issued or which arise thereafter.

Attachments: General Conditions dated / /

RECEIVED
 ENVIRONMENTAL PERMITS
 JUN 23 2009
 9:22

Please enter the
numbers from your
current permit:

DEC Number, 4 - 0101 - 00020 - 00001 -

SPDES Number: NY 002 6867

SPDES RENEWAL APPLICATION QUESTIONNAIRE

THIS PAGE MUST BE COMPLETED AND RETURNED WITH YOUR COMPLETED APPLICATION

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Does your facility conduct ancillary activities as described above, which are not covered by BMP requirements in your current permit? ☐ YES ☒ NO

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This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

DISTRIBUTION:

Regional Water Engineer
Regional Permit Administrator
Central Office (BWP)

Appendix F
ECHO Detailed Facility Report



Detailed Facility Report

Facility Summary

ALBANY CO SD NORTH PLT
1 CANAL ROAD, MENANDS, NY 12204

FRS (Facility Registry Service) ID: 110019445616
EPA Region: 02
Latitude: 42.676083
Longitude: -73.72925
Locational Data Source: NPDES
Industries: Utilities
Indian Country: N

Enforcement and Compliance Summary

Statute	CAA
Compliance Monitoring Activities (5 years)	4
Date of Last Compliance Monitoring Activity	02/28/2023
Compliance Status	No Violation Identified
Qtrs in Noncompliance (of 12)	0
Qtrs with Significant Violation	0
Informal Enforcement Actions (5 years)	--
Formal Enforcement Actions (5 years)	--
Penalties from Formal Enforcement Actions (5 years)	--
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--

Statute	CWA
Compliance Monitoring Activities (5 years)	9
Date of Last Compliance Monitoring Activity	10/05/2022
Compliance Status	Violation Identified
Qtrs in Noncompliance (of 12)	10
Qtrs with Significant Violation	1
Informal Enforcement Actions (5 years)	2
Formal Enforcement Actions (5 years)	1
Penalties from Formal Enforcement Actions (5 years)	\$0
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--
Statute	RCRA
Compliance Monitoring Activities (5 years)	--
Date of Last Compliance Monitoring Activity	01/22/2003
Compliance Status	No Violation Identified
Qtrs in Noncompliance (of 12)	0
Qtrs with Significant Violation	0
Informal Enforcement Actions (5 years)	--
Formal Enforcement Actions (5 years)	--
Penalties from Formal Enforcement Actions (5 years)	--
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--

Regulatory Information

Clean Air Act (CAA): Operating Major (NY0000004012600138)

Clean Water Act (CWA): Non-Major, Permit Effective (NYR00B262), Non-Major, Permit Not Needed (NYG996875), Major, Permit Admin Continued (NY0026875), Non-Major, Permit Effective (NYR00B263)

Resource Conservation and Recovery Act (RCRA): Inactive Other, (NYD000860536)

Safe Drinking Water Act (SDWA): No Information

Other Regulatory Reports

Air Emissions Inventory (EIS): 17125811

Greenhouse Gas Emissions (eGGRT): No Information

Toxic Releases (TRI): No Information

Compliance and Emissions Data Reporting Interface (CEDRI): No Information

Go To Enforcement/Compliance Details
Known Data Problems <https://epa.gov/resources/echo-data/known-data-problems>

Facility/System Characteristics

Facility/System Characteristics

System	Statute	Identifier	Universe	Status	Areas	Permit Expiration Date	Indian Country	Latitude	Longitude
FRS		110019445616					N	42.676083	-73.72925
ICIS-Air	CAA	NY0000004012600138	Major Emissions	Operating	CAACFC, CAAGACTM, CAANESH, CAANSPS, CAAPARGDC, CAASIP, CAATVP		N	42.676425	73.7293512
EIS	CAA	17125811					N	42.67641	-73.729361
ICIS-NPDES	CWA	NYR00B262	Non-Major: General Permit Covered Facility	Effective	Industrial Stormwater	03/07/2028	N	42.63115	-73.761209
ICIS-NPDES	CWA	NYG996875	Non-Major: General Permit Covered Facility	Not Needed			N	42.676083	-73.72925
ICIS-NPDES	CWA	NY0026875	Major: NPDES Individual Permit	Admin Continued	POTW, Pretreatment	04/30/2015	N	42.676083	-73.72925
ICIS-NPDES	CWA	NYR00B263	Non-Major: General Permit Covered Facility	Effective	Industrial Stormwater	03/07/2028	N	42.676137	-73.729404
RCRAInfo	RCRA	NYD000860536	Other	Inactive ()			N		

Facility Address

System	Statute	Identifier	Facility Name	Facility Address	Facility County
FRS		110019445616	ALBANY CO SD NORTH PLT	1 CANAL ROAD, MENANDS, NY 12204	Albany County
ICIS-Air	CAA	NY0000004012600138	ALBANY COUNTY WATER PURIFICATION DISTRICT - NORTH PLANT	1 CANAL RD S OFF JONES RD, MENANDS, NY 12204	Albany County
EIS	CAA	17125811	ALBANY COUNTY SEWER DISTRICT - NORTH PLANT	1 CANAL ROAD SOUTH, MENANDS, NY 12204	Albany County
ICIS-NPDES	CWA	NYR00B262	ALBANY COUNTY SOUTH PLANT	209 CHURCH STREET, ALBANY, NY 12204	Albany County
ICIS-NPDES	CWA	NYG996875	ALBANY CO. SD NORTH WWTP	UNKNOWN, MENANDS, NY 00000	Albany County
ICIS-NPDES	CWA	NY0026875	ALBANY CO SD - NORTH WWTP	ONE CANAL ROAD, MENANDS, NY 12204	Albany County
ICIS-NPDES	CWA	NYR00B263	ALBANY COUNTY NORTH PLANT	1 CANAL ROAD SOUTH, MENANDS, NY 12204	Albany County
RCRAInfo	RCRA	NYD000860536	ALBANY COUNTY SEWER DISTRICT-NORTH PLANT	CANAL RD, MENANDS, NY 12204	Albany County

Facility SIC (Standard Industrial Classification) Codes

System	Identifier	SIC Code	SIC Description
ICIS Air	NY0000004012600138	4952	Sewerage Systems
ICIS-NPDES	NY0026875	4952	Sewerage Systems
ICIS-NPDES	NYG996875	4952	Sewerage Systems
ICIS-NPDES	NYR00B262	4952	Sewerage Systems
ICIS-NPDES	NYR00B263	4952	Sewerage Systems

Facility Industrial Effluent Guidelines

Identifier	Effluent Guideline (40 CFR Part)	Effluent Guideline Description
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No data records returned

Facility NAICS (North American Industry Classification System) Codes

System	Identifier	NAICS Code	NAICS Description
EIS	17125811	221320	Sewage Treatment Facilities
ICIS-Air	NY0000004012600138	221320	Sewage Treatment Facilities
RCRAInfo	NYD000860536	22132	Sewage Treatment Facilities

Facility Tribe Information

Reservation Name	Tribe Name	EPA Tribal ID	Distance to Tribe (miles)
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No data records returned

Enforcement and Compliance

Compliance Monitoring History

Last 5 Years

Statute	Source ID	System	Activity Type	Compliance Monitoring Type	Lead Agency	Date	Finding (if applicable)
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Stack Test	State	02/29/2024	Findings: Pass
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE On-Site Record/Report Review	State	01/12/2024	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Stack Test	State	11/03/2023	Findings: Pass
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE On-Site Record/Report Review	State	09/21/2023	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE On-Site	State	09/21/2023	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Stack Test	State	06/13/2023	Findings: Pass
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	FCE On-Site	EPA	02/28/2023	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/26/2023	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/26/2023	Reviewed: 01/30/2023 Facility Reported Deviations
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	EPA	01/19/2023	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	FCE On-Site	State	08/11/2022	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	07/28/2022	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Stack Test	State	05/10/2022	Findings: Fail
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/25/2022	Reviewed: 03/15/2022 Facility Reported Deviations
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/25/2022	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	07/23/2021	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	FCE On-Site	EPA	07/15/2021	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Stack Test	EPA	07/07/2021	Findings: Pass
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Stack Test	EPA	07/07/2021	Findings: Pass
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Stack Test	State	05/25/2021	Findings: Pass
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/25/2021	Reviewed: 01/30/2021 Facility Reported Deviations
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/25/2021	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/25/2021	Reviewed: 01/30/2021 Facility Reported Deviations
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/25/2021	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/25/2021	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	FCE On-Site	State	08/20/2020	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE On-Site	State	08/20/2020	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	07/24/2020	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Stack Test	State	05/28/2020	Findings: Pass
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/23/2020	Reviewed: 01/30/2020 Facility Reported Deviations
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/23/2020	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE On-Site	EPA	10/09/2019	
CAA	NY0000004012600138	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	07/11/2019	
CWA	NY0026875	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	10/05/2022	
CWA	NY0026875	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	03/10/2022	
CWA	NY0026875	ICIS-NPDES	Offsite Record Review	Pretreatment - Desk Audit	EPA	10/06/2021	

Statute	Source ID	System	Activity Type	Compliance Monitoring Type	Lead Agency	Date	Finding (if applicable)
CWA	NY0026875	ICIS-NPDES	Inspection/Evaluation	Base Program - Audit	EPA	08/18/2021	
CWA	NY0026875	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	09/23/2020	
CWA	NY0026875	ICIS-NPDES	Inspection/Evaluation	Pretreatment - Audit	EPA	09/19/2019	
CWA	NYR00B262	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	10/05/2022	
CWA	NYR00B262	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	09/23/2020	
CWA	NYR00B263	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	10/05/2022	
CWA	NYR00B263	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	09/23/2020	

Entries in *italics* are not included in ECHO's Compliance Monitoring Activity counts because they are not compliance monitoring strategy <<https://www.epa.gov/compliance/compliance-monitoring-programs>> activities or because they are not counted as inspections within EPA's Annual Results <<https://www.epa.gov/enforcement/enforcement-data-and-results>>.

Compliance Summary Data

Statute	Source ID	Current SNC (Significant Noncompliance)/HPV (High Priority Violation)	Current As Of	Qtrs with NC (Noncompliance) (of 12)	Data Last Refreshed
CAA	NY0000004012600138	No	06/01/2024	0	05/31/2024
CWA	NYR00B262	No	12/31/2023	0	05/31/2024
CWA	NYG996875	No	12/31/2023	0	05/31/2024
CWA	NY0026875	No	12/31/2023	10	05/31/2024
CWA	NYR00B263	No	12/31/2023	0	05/31/2024
RCRA	NYD000860536	No	06/01/2024	0	05/31/2024

Three-Year Compliance History by Quarter

Statute	Program/Pollutant/Violation Type				QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12+
CAA (Source ID: NY0000004012600138)					07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23	01/01-03/31/24	04/01-06/30/24
	Facility-Level Status				No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified
	HPV History															
	Violation Type	Agency	Programs	Pollutants												

Statute	Program/Pollutant/Violation Type				QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12	QTR 13+
CWA (Source ID: NYR00B262)					01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23	01/01-05/31/24
Facility-Level Status					No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	Undetermined
Quarterly Noncompliance Report History															Resolved		
Benchmark Threshold Exceedances (No Violation): Pollutant				Disch Point	Mon Loc	Freq											
CWA	Chemical Oxygen Demand [COD] <effluent-charts#nyr00b262/81017> <https://epa.gov/effluent-charts#nyr00b262/81017>				002 - A	Effluent Gross	NMth	10%							27%		

Statute	Program/Pollutant/Violation Type				QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12	QTR 13+
Late or Missing Discharge Monitoring Report (DMR) Measurements																	
Counts of Late DMR Measurements														1			
CWA (Source ID: NYG996875)					01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23	01/01-05/31/24
	Facility-Level Status				Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Quarterly Noncompliance Report History																
CWA (Source ID: NY0026875)					01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23	01/01-05/31/24
	Facility-Level Status				No Violation Identified	Violation Identified	Violation Identified	Violation Identified	Violation Identified	Violation Identified	No Violation Identified	Significant/ Category I Noncompliance	No Violation Identified	Violation Identified	Violation Identified	Violation Identified	Violation Identified
	Quarterly Noncompliance Report History					Other Violation	Other Violation	Other Violation	Other Violation	Other Violation		Effluent - Non-monthly Average Limit	Resolved	Other Violation	Other Violation	Other Violation	
	Pollutant		Disch Point	Mon Loc	Freq												
CWA	Coliform, fecal general <effluent-charts#ny0026875/74055>  <https://epa.gov/effluent-charts#ny0026875/74055>		001 - A	Effluent Gross	Mthly		LIMIT VIOLATION	LIMIT VIOLATION	LIMIT VIOLATION		LIMIT VIOLATION		LIMIT VIOLATION		LIMIT VIOLATION	LIMIT VIOLATION	LIMIT VIOLATION
CWA	Coliform, fecal general <effluent-charts#ny0026875/74055>  <https://epa.gov/effluent-charts#ny0026875/74055>		001 - A	Effluent Gross	NMth		LIMIT VIOLATION	LIMIT VIOLATION	LIMIT VIOLATION		LIMIT VIOLATION		LIMIT VIOLATION		LIMIT VIOLATION	LIMIT VIOLATION	LIMIT VIOLATION
CWA	Nitrogen, Kjeldahl, total [as N] <effluent-charts#ny0026875/00625>  <https://epa.gov/effluent-charts#ny0026875/00625>		001 - A	Effluent Gross	Mthly		LIMIT VIOLATION										
CWA	Solids, settleable <effluent-charts#ny0026875/00545>  <https://epa.gov/effluent-charts#ny0026875/00545>		001 - A	Effluent Gross	NMth				39900%				9900%				
CWA	Solids, total suspended <effluent-charts#ny0026875/00530>  <https://epa.gov/effluent-charts#ny0026875/00530>		001 - A	Effluent Gross	Mthly			LIMIT VIOLATION					17%				

Statute	Program/Pollutant/Violation Type				QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12	QTR 13+
CWA	Solids, total suspended <effluent-charts#ny0026875/00530>																
	 <https://epa.gov/effluent-charts#ny0026875/00530>				001 - A	Effluent Gross	NMth	LIMIT VIOLATION				36%					16%

pH <effluent-charts#ny0026875/00400>																	
CWA	 <https://epa.gov/effluent-charts#ny0026875/00400>				001 - A	Effluent Gross	Neither	LIMIT VIOLATION									

CWA (Source ID: NYR00B263)					01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23	01/01-05/31/24
	Facility-Level Status				No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	Undetermined
	Quarterly Noncompliance Report History																
	Benchmark Threshold Exceedances (No Violation):		Disch Point	Mon Loc	Freq												
	Pollutant																
CWA	Chemical Oxygen Demand [COD] <effluent-charts#nyr00b263/81017>  <https://epa.gov/effluent-charts#nyr00b263/81017>		001 - A	Effluent Gross	NMth					258%							
CWA	Chemical Oxygen Demand [COD] <effluent-charts#nyr00b263/81017>  <https://epa.gov/effluent-charts#nyr00b263/81017>		003 - A	Effluent Gross	NMth					217%							

Statute	Program/Pollutant/Violation Type		QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12+
RCRA (Source ID: NYD000860536)			07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23	01/01-03/31/24	04/01-06/30/24
	Facility-Level Status		No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified
	Violation	Agency												

Informal Enforcement Actions

Last 5 Years

Statute	System	Source ID	Type of Action	Lead Agency	Date
CWA	ICIS-NPDES	NYR00B262	Industrial Stormwater - Notice of Violation	State	09/12/2023
CWA	ICIS-NPDES	NYR00B263	Industrial Stormwater - Notice of Violation	State	07/30/2020

Entries in italics are not counted as "informal enforcement actions" in EPA policies pertaining to enforcement response tools.

Formal Enforcement Actions

Last 5 Years

Statute	System	Law/ Section	Source ID	Type of Action	Case No.	Lead Agency	Case Name	Issued/ Filed Date	Settlements/ Actions	Settlement/ Action Date	Federal Penalty Assessed	State/ Local Penalty Assessed	Penalty Amount Collected	SEP Value	Comp Action Cost
CWA	ICIS-NPDES	OTHER	NPDES/NY0026875	Administrative - Formal	NY-CO42012091101	State	ALBANY POOL CSO LTCP	06/05/2023	2	01/15/2014	\$0	\$99,900	\$99,900	--	\$0
										06/05/2023	\$0	--	--	--	\$0

Environmental Conditions

Watersheds

12-Digit WBD (Watershed Boundary Dataset) HUC (RAD Reach Address Database))	WBD (Watershed Boundary Dataset) Subwatershed Name (RAD Reach Address Database))	State Water Body Name (ICIS (Integrated Compliance Information System))	Beach Closures Within Last Year	Beach Closures Within Last Two Years	Pollutants Potentially Related to Impairment	Watershed with ESA (Endangered Species Act)-listed Aquatic Species?
020200030604	Green River	HUDSON RIVER (CLASS C)	No	No	--	No
020200060206	Vly Creek-Normans Kill	HUDSON RIVER (CLASS C)	No	No	--	No
020200060302	Rensselaer Lake-Hudson River	HUDSON R, HUDSON RIVER (CLASS C)	No	No	--	No
020200060305	Papscanee Creek-Hudson River	HUDSON RIVER (CLASS C)	No	No	--	No

Assessed Waters From Latest State Submission (ATTAINS)

State	Report Cycle	Assessment Unit ID	Assessment Unit Name	Water Condition	Cause Groups Impaired	Drinking Water Use	Ecological Use	Fish Consumption Use	Recreation Use	Other Use
NY	2018	NY1301-0002	Hudson River (Class C)	Impaired - 303(d) Listed	POLYCHLORINATED BIPHENYLS (PCBS)	--	Insufficient Information	Not Supporting	Insufficient Information	--

Air Quality Nonattainment Areas

Pollutant	Within Nonattainment Status Area?	Nonattainment Status Applicable Standard(s)	Within Maintenance Status Area?	Maintenance Status Applicable Standard(s)
Ozone	Yes	1-Hour Ozone (1979); 8-Hour Ozone (1997)	No	--
Lead	No	--	No	--
Particulate Matter	No	--	No	--
Carbon Monoxide	No	--	No	--
Sulfur Dioxide	No	--	No	--

Pollutants

Toxics Release Inventory History of Reported Chemicals Released or Transferred in Pounds per Year at Site

Air Pollutant Report

TRI Facility ID	Year	Air Emissions	Surface Water Discharges	Off-Site Transfers to POTWs (Publicly Owned Treatment Works)	Underground Injections	Disposal to Land	Total On-Site Releases	Total Off-Site Transfers
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No data records returned

Toxics Release Inventory Total Releases and Transfers in Pounds by Chemical and Year

Chemical Name

No data records returned

CWA (Clean Water Act) Discharge Monitoring Report (DMR) Pollutant Loadings

DMR and TRI Multi-Year Loading Report

NPDES ID	Description	2019	2020	2021	2022	2023
NY0026875	DMR Pollutant Loadings (lb/year)	816,690	932,444	1,358,208	1,452,543	606,631
NY0026875	DMR Pollutant Loadings - Load Over Limit (lb/year)	0	0	0	0	0
NY0026875	DMR Conventional Loadings (lb/year)	--	--	--	684,995	--
NY0026875	DMR Conventional Loadings - Load Over Limit (lb/year)	--	--	--	0	--
NY0026875	DMR Toxic-Weighted Loadings (lb-eq/year)	16,969	14,147	16,868	14,971	8,115
NY0026875	DMR Toxic-Weighted Loadings - Load Over Limit (lb-eq/year)	0	0	0	0	0

e-Manifest Hazardous Waste History (Public)

Hazardous Waste Shipped in Kilograms by Year (Through 3/2/2024)

Source ID	Waste Description	2021	2022	2023	2024
NYD000860536	Hazardous Waste	111	--	--	--
NYD000860536	Acute Hazardous Waste	0	--	--	--
NYD000860536	Pharmaceutical Hazardous Waste	0	--	--	--

“Pharmaceutical Hazardous Waste” refers to quantities managed under 40 CFR part 266 subpart P and thus excluded from the Hazardous and Acute Hazardous Waste quantities shown above.

Community

Environmental Justice

This section shows indexes from EJScreen, EPA's screening tool for environmental justice (EJ) concerns. EPA uses these indexes to identify geographic areas that may warrant further consideration or analysis for potential EJ concerns. Use of these indexes does not designate an area as an "EJ community" or "EJ facility." EJScreen provides screening level indicators, not a determination of the existence or absence of EJ concerns. For more information, see the EJScreen home page.

Potential Environmental Justice Concerns

Supplemental/EJ index percentiles >= 90 (1-mile average)

EJScreen Indexes Shown

Index Type

Supplemental (default)

Related Reports

EJScreen Community Report

Download Data

Census Block Group ID: 360010136021	US (Percentile)			State (Percentile)		
	Facility Census Block Group	1-mile Avg	1-mile Max	Facility Census Block Group	1-mile Avg	1-mile Max
Count of Indexes At or Above 90th Percentile	0	1	8	0	1	5
Particulate Matter 2.5	26	41	61	42	57	73
Ozone	10	16	27	23	36	53
Diesel Particulate Matter	58	79	93	46	63	80
Air Toxics Cancer Risk	27	42	50	33	47	54
Air Toxics Respiratory Hazard Index	17	52	81	25	60	83
Toxic Releases to Air	31	49	71	40	56	76
Traffic Proximity	66	84	98	53	76	96
Lead Paint	59	79	96	34	55	83
Risk Management Plan (RMP) Facility Proximity	69	89	98	76	92	99
Hazardous Waste Proximity	72	90	98	58	84	97
Superfund Proximity	72	88	97	57	81	95
Underground Storage Tanks (UST)	61	84	97	51	72	90
Wastewater Discharge	57	75	91	51	67	83

Map Display Based on: ☒ US ☐ State

Display Map Layer

Summary - Number of Indexes

☐ Facility 1-mile Radius ☐ Facility Census Block Group



Demographic Profile of Surrounding Area (1-Mile Radius)

This section provides demographic information regarding the community surrounding the facility. ECHO compliance data alone are not sufficient to determine whether violations at a particular facility had negative impacts on public health or the environment. Statistics are based upon the 2010 U.S. Census and 2017 - 2021 American Community Survey (ACS) 5-year Summary and are accurate to the extent that the facility latitude and longitude listed below are correct. Census boundaries and demographic data for U.S. Territories are based on the "2020 Island Areas Demographic Profiles" from the U.S. Census Bureau. EPA's spatial processing methodology considers the overlap between the selected radii and the census blocks (for U.S. Census demographics) and census block groups (for ACS demographics) in determining the demographics surrounding the facility. For more detail about this methodology, see the DFR Data Dictionary <<https://epa.gov/help/reports/dfr-data-dictionary#demographic>>.

General Statistics (U.S. Census)	
Total Persons	4,634
Population Density	1,656/sq.mi.
Housing Units in Area	2,314
General Statistics (ACS (American Community Survey))	
Total Persons	5,898
Percent People of Color	58%
Households in Area	2,480
Households on Public Assistance	58
Persons With Low Income	1,906
Percent With Low Income	33%
Geography	
Radius of Selected Area	1 mi.
Center Latitude	42.676083
Center Longitude	-73.72925
Land Area	90%
Water Area	10%
Income Breakdown (ACS (American Community Survey)) - Households (%)	
Less than \$15,000	266 (10.73%)
\$15,000 - \$25,000	173 (6.98%)
\$25,000 - \$50,000	534 (21.54%)
\$50,000 - \$75,000	534 (21.54%)
Greater than \$75,000	972 (39.21%)

Age Breakdown (U.S. Census) - Persons (%)	
Children 5 years and younger	303 (7%)
Minors 17 years and younger	1,036 (22%)
Adults 18 years and older	3,598 (78%)
Seniors 65 years and older	645 (14%)
Race Breakdown (U.S. Census) - Persons (%)	
White	2,133 (46%)
African-American	1,716 (37%)
Hispanic-Origin	288 (6%)
Asian/Pacific Islander	510 (11%)
American Indian	12 (0%)
Other/Multiracial	263 (6%)
Education Level (Persons 25 & older) (ACS (American Community Survey)) - Persons (%)	
Less than 9th Grade	191 (5.05%)
9th through 12th Grade	201 (5.31%)
High School Diploma	779 (20.6%)
Some College/2-year	585 (15.47%)
B.S./B.A. (Bachelor of Science/Bachelor of Arts) or More	1,665 (44.02%)



Detailed Facility Report

Facility Summary

ALBANY COUNTY SEWER DISTRICT - SOUTH PLANT

CHURCH ST, ALBANY, NY 12202

FRS (Facility Registry Service) ID: 110007155210

EPA Region: 02

Latitude: 42.630306

Longitude: -73.759667

Locational Data Source: NPDES

Industries: Utilities

Indian Country: N

Enforcement and Compliance Summary

Statute	CAA
Compliance Monitoring Activities (5 years)	4
Date of Last Compliance Monitoring Activity	03/01/2023
Compliance Status	No Violation Identified
Qtrs in Noncompliance (of 12)	0
Qtrs with Significant Violation	0
Informal Enforcement Actions (5 years)	--
Formal Enforcement Actions (5 years)	--
Penalties from Formal Enforcement Actions (5 years)	--
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--

Statute	CWA
Compliance Monitoring Activities (5 years)	3
Date of Last Compliance Monitoring Activity	10/05/2022
Compliance Status	Violation Identified
Qtrs in Noncompliance (of 12)	11
Qtrs with Significant Violation	0
Informal Enforcement Actions (5 years)	--
Formal Enforcement Actions (5 years)	1
Penalties from Formal Enforcement Actions (5 years)	\$0
EPA Cases (5 years)	--
Penalties from EPA Cases (5 years)	--

Regulatory Information

Clean Air Act (CAA): Operating Major (NY0000004010100020)

Clean Water Act (CWA): Major, Permit Admin Continued (NY0026867)

Resource Conservation and Recovery Act (RCRA): No Information

Safe Drinking Water Act (SDWA): No Information

[Go To Enforcement/Compliance Details](#)

[Known Data Problems <https://epa.gov/resources/echo-data/known-data-problems>](https://epa.gov/resources/echo-data/known-data-problems)

Other Regulatory Reports

Air Emissions Inventory (EIS): 17124311

Greenhouse Gas Emissions (eGGRT): No Information

Toxic Releases (TRI): No Information

Compliance and Emissions Data Reporting Interface (CEDRI): CEDRI98988

Facility/System Characteristics

Facility/System Characteristics

System	Statute	Identifier	Universe	Status	Areas	Permit Expiration Date	Indian Country	Latitude	Longitude
FRS		110007155210					N	42.630306	-73.759667
ICIS-Air	CAA	NY0000004010100020	Major Emissions	Operating	CAACFC, CAAMACT, CAANESH, CAANSPS, CAAPARGDC, CAASIP, CAATVP		N	42.630273	-73.7606453
CEDRI	CAA	CEDRI98988					N	42.630306	-73.759667
EIS	CAA	17124311					N	42.62988	-73.75975
ICIS-NPDES	CWA	NY0026867	Major: NPDES Individual Permit	Admin Continued	POTW, Pretreatment	04/30/2015	N	42.630278	-73.760639

Facility Address

System	Statute	Identifier	Facility Name	Facility Address	Facility County
FRS		110007155210	ALBANY COUNTY SEWER DISTRICT - SOUTH PLANT	CHURCH ST, ALBANY, NY 12202	Albany County
ICIS-Air	CAA	NY0000004010100020	ALBANY COUNTY WATER PURIFICATION DISTRICT - SOUTH PLANT	209 CHURCH ST, ALBANY, NY 12204	Albany County
CEDRI	CAA	CEDRI98988	ALBANY COUNTY SEWER DISTRICT - SOUTH PLANT	CHURCH ST, ALBANY, NY 12202	Albany County
EIS	CAA	17124311	ALBANY COUNTY SEWER DISTRICT - SOUTH PLANT	209 CHURCH STREET, ALBANY, NY 12204	Albany County
ICIS-NPDES	CWA	NY0026867	ALBANY CO SD - SOUTH WWTP	CHURCH ST, PORT OF ALBANY, ALBANY COUNTY, NY 12202	Albany County

Facility SIC (Standard Industrial Classification) Codes

System	Identifier	SIC Code	SIC Description
ICIS-Air	NY0000004010100020	4952	Sewerage Systems
ICIS-NPDES	NY0026867	4952	Sewerage Systems

Facility Industrial Effluent Guidelines

Identifier	Effluent Guideline (40 CFR Part)	Effluent Guideline Description
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No data records returned

Facility NAICS (North American Industry Classification System) Codes

System	Identifier	NAICS Code	NAICS Description
EIS	17124311	221320	Sewage Treatment Facilities
ICIS-Air	NY0000004010100020	221320	Sewage Treatment Facilities

Facility Tribe Information

Reservation Name	Tribe Name	EPA Tribal ID	Distance to Tribe (miles)
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No data records returned

Enforcement and Compliance

Compliance Monitoring History

Last 5 Years

Statute	Source ID	System	Activity Type	Compliance Monitoring Type	Lead Agency	Date	Finding (if applicable)
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Stack Test	State	06/14/2023	Findings: Pass
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	FCE On-Site	EPA	03/01/2023	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/26/2023	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/26/2023	Reviewed: 01/30/2023 Facility Reported Deviations
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	07/28/2022	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	FCE On-Site	State	05/11/2022	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Stack Test	State	05/11/2022	Findings: Pass
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE On-Site	EPA	03/30/2022	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/25/2022	Reviewed: 01/30/2022 Facility Reported Deviations
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/25/2022	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	07/23/2021	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	FCE On-Site	EPA	07/13/2021	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Stack Test	EPA	07/06/2021	Findings: Pass
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Stack Test	EPA	07/06/2021	Findings: Pass
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/25/2021	Reviewed: 01/30/2021 Facility Reported Deviations
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/25/2021	Reviewed: 01/30/2021 Facility Reported Deviations
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/25/2021	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/25/2021	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE On-Site	State	08/20/2020	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	FCE On-Site	State	08/20/2020	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	07/24/2020	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	01/23/2020	
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Title V CCR	State	01/23/2020	Reviewed: 01/30/2020 Facility Reported Deviations
CAA	NY0000004010100020	ICIS-Air	Inspection/Evaluation	PCE Off-Site	State	07/11/2019	
CWA	NY0026867	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	10/05/2022	
CWA	NY0026867	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	03/10/2022	
CWA	NY0026867	ICIS-NPDES	Inspection/Evaluation	Base Program - Evaluation	State	09/23/2020	

Entries in italics are not included in ECHO's Compliance Monitoring Activity counts because they are not compliance monitoring strategy <<https://www.epa.gov/compliance/compliance-monitoring-programs>> activities or because they are not counted as inspections within EPA's Annual Results <<https://www.epa.gov/enforcement/enforcement-data-and-results>>.

Compliance Summary Data

Statute	Source ID	Current SNC (Significant Noncompliance)/HPV (High Priority Violation)	Current As Of	Qtrs with NC (Noncompliance) (of 12)	Data Last Refreshed
CAA	NY0000004010100020	No	06/01/2024	0	05/31/2024
CWA	NY0026867	No	12/31/2023	11	05/31/2024

Three-Year Compliance History by Quarter

Statute	Program/Pollutant/Violation Type				QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12+
	CAA (Source ID: NY0000004010100020)				07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23	01/01-03/31/24	04/01-06/30/24
	Facility-Level Status				No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified	No Violation Identified
	HPV History															
	Violation Type	Agency	Programs	Pollutants												

Statute	Program/Pollutant/Violation Type				QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12	QTR 13+
	CWA (Source ID: NY0026867)				01/01-03/31/21	04/01-06/30/21	07/01-09/30/21	10/01-12/31/21	01/01-03/31/22	04/01-06/30/22	07/01-09/30/22	10/01-12/31/22	01/01-03/31/23	04/01-06/30/23	07/01-09/30/23	10/01-12/31/23	01/01-05/31/24
	Facility-Level Status				Violation Identified	Violation Identified	Violation Identified	No Violation Identified	No Violation Identified	Violation Identified	Violation Identified	Violation Identified	Violation Identified	Violation Identified	Violation Identified	Violation Identified	Violation Identified
	Quarterly Noncompliance Report History				Other Violation	Other Violation	Other Violation			Other Violation	Other Violation	Other Violation	Other Violation	Other Violation	Other Violation	Other Violation	
	Pollutant		Disch Point	Mon Loc	Freq												
CWA	BOD, carbonaceous [5 day, 20 C] <effluent-charts#ny0026867/80082>  <https://epa.gov/effluent-charts#ny0026867/80082>		001 - A	Effluent Gross	Mthly	LIMIT VIOLATION											LIMIT VIOLATION
CWA	BOD, carbonaceous [5 day, 20 C] <effluent-charts#ny0026867/80082>  <https://epa.gov/effluent-charts#ny0026867/80082>		001 - A	Effluent Gross	NMth												LIMIT VIOLATION
CWA	Coliform, fecal general <effluent-charts#ny0026867/74055>  <https://epa.gov/effluent-charts#ny0026867/74055>		001 - A	Effluent Gross	Mthly	LIMIT VIOLATION				LIMIT VIOLATION	LIMIT VIOLATION				LIMIT VIOLATION	LIMIT VIOLATION	
CWA	Coliform, fecal general <effluent-charts#ny0026867/74055>  <https://epa.gov/effluent-charts#ny0026867/74055>		001 - A	Effluent Gross	NMth	LIMIT VIOLATION	LIMIT VIOLATION			LIMIT VIOLATION	LIMIT VIOLATION						

Statute	Program/Pollutant/Violation Type				QTR 1	QTR 2	QTR 3	QTR 4	QTR 5	QTR 6	QTR 7	QTR 8	QTR 9	QTR 10	QTR 11	QTR 12	QTR 13+
CWA	Nitrogen, Kjeldahl, total [as N] <effluent-charts#ny0026867/00625>  <https://epa.gov/effluent-charts#ny0026867/00625>	001 - A	Effluent Gross	Mthly		LIMIT VIOLATION						LIMIT VIOLATION					
CWA	Solids, settleable <effluent-charts#ny0026867/00545>  <https://epa.gov/effluent-charts#ny0026867/00545>	001 - A	Effluent Gross	NMth	67%									LIMIT VIOLATION			LIMIT VIOLATION
CWA	pH <effluent-charts#ny0026867/00400>  <https://epa.gov/effluent-charts#ny0026867/00400>	001 - A	Effluent Gross	Neither								LIMIT VIOLATION					
Benchmark Threshold Exceedances (No Violation): Pollutant		Disch Point	Mon Loc	Freq													
CWA	Zinc, total [as Zn] <effluent-charts#ny0026867/01092>  <https://epa.gov/effluent-charts#ny0026867/01092>	001 - V	See Comments	NMth								67%					

Informal Enforcement Actions

Last 5 Years

Statute	System	Source ID	Type of Action	Lead Agency	Date
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No data records returned

Entries in *italics* are not counted as "informal enforcement actions" in EPA policies pertaining to enforcement response tools.

Formal Enforcement Actions

Last 5 Years

Statute	System	Law/ Section	Source ID	Type of Action	Case No.	Lead Agency	Case Name	Issued/ Filed Date	Settlements/ Actions	Settlement/ Action Date	Federal Penalty Assessed	State/ Local Penalty Assessed	Penalty Amount Collected	SEP Value	Comp Action Cost
CWA	ICIS-NPDES	OTHER	NPDES/NY0026867	Administrative - Formal	NY-CO42012091101	State	ALBANY POOL CSO LTCP	06/05/2023	2	01/15/2014	\$0	\$99,900	\$99,900	--	\$0
										06/05/2023	\$0	--	--	--	\$0

Environmental Conditions

Watersheds

12-Digit WBD (Watershed Boundary Dataset) HUC (RAD (Reach Address Database))	WBD (Watershed Boundary Dataset) Subwatershed Name (RAD (Reach Address Database))	State Water Body Name (ICIS (Integrated Compliance Information System))	Beach Closures Within Last Year	Beach Closures Within Last Two Years	Pollutants Potentially Related to Impairment	Watershed with ESA (Endangered Species Act)-listed Aquatic Species?
020200060305	Papscanee Creek-Hudson River	HUDSON R	No	No	--	No

Assessed Waters From Latest State Submission (ATTAINS)

State	Report Cycle	Assessment Unit ID	Assessment Unit Name	Water Condition	Cause Groups Impaired	Drinking Water Use	Ecological Use	Fish Consumption Use	Recreation Use	Other Use
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No data records returned

Air Quality Nonattainment Areas

Pollutant	Within Nonattainment Status Area?	Nonattainment Status Applicable Standard(s)	Within Maintenance Status Area?	Maintenance Status Applicable Standard(s)
Ozone	Yes	1-Hour Ozone (1979); 8-Hour Ozone (1997)	No	--
Lead	No	--	No	--
Particulate Matter	No	--	No	--
Carbon Monoxide	No	--	No	--
Sulfur Dioxide	No	--	No	--

Pollutants

Toxics Release Inventory History of Reported Chemicals Released or Transferred in Pounds per Year at Site

Air Pollutant Report

TRI Facility ID	Year	Air Emissions	Surface Water Discharges	Off-Site Transfers to POTWs (Publicly Owned Treatment Works)	Underground Injections	Disposal to Land	Total On-Site Releases	Total Off-Site Transfers
-----------------	------	---------------	--------------------------	--	------------------------	------------------	------------------------	--------------------------

No data records returned

Toxics Release Inventory Total Releases and Transfers in Pounds by Chemical and Year

Chemical Name

No data records returned

CWA (Clean Water Act) Discharge Monitoring Report (DMR) Pollutant Loadings

DMR and TRI Multi-Year Loading Report

NPDES ID	Description	2019	2020	2021	2022	2023
NY0026867	DMR Pollutant Loadings (lb/year)	547,757	715,947	834,301	785,531	397,924
NY0026867	DMR Pollutant Loadings - Load Over Limit (lb/year)	0	0	0	0	0
NY0026867	DMR Conventional Loadings (lb/year)	--	--	--	501,799	--
NY0026867	DMR Conventional Loadings - Load Over Limit (lb/year)	--	--	--	0	--
NY0026867	DMR Toxic-Weighted Loadings (lb-eq/year)	0	0	0	0	0
NY0026867	DMR Toxic-Weighted Loadings - Load Over Limit (lb-eq/year)	0	0	0	0	0

Community

Environmental Justice

This section shows indexes from EJScreen, EPA's screening tool for environmental justice (EJ) concerns. EPA uses these indexes to identify geographic areas that may warrant further consideration or analysis for potential EJ concerns. Use of these indexes does not designate an area as an "EJ community" or "EJ facility." EJScreen provides screening level indicators, not a determination of the existence or absence of EJ concerns. For more information, see the EJScreen home page.

Potential Environmental Justice Concerns

Supplemental/EJ index percentiles ≥ 90 (1-mile average)

EJScreen Indexes Shown

Index Type

Supplemental (default)

Related Reports

EJScreen Community Report

Download Data

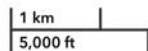
Census Block Group ID: 360010026004	US (Percentile)			State (Percentile)		
	Facility Census Block Group	1-mile Avg	1-mile Max	Facility Census Block Group	1-mile Avg	1-mile Max
Count of Indexes At or Above 90th Percentile	0	5	9	0	2	7
Particulate Matter 2.5	38	46	68	54	61	77
Ozone	13	17	32	31	38	57
Diesel Particulate Matter	75	84	1 96	61	68	85
Air Toxics Cancer Risk	40	45	51	46	50	55
Air Toxics Respiratory Hazard Index	25	50	85	36	58	88
Toxic Releases to Air	78	75	1 93	88	88	1 99
Traffic Proximity	87	1 92	1 99	81	86	1 99
Lead Paint	66	1 90	1 98	30	78	1 95
Risk Management Plan (RMP) Facility Proximity	83	1 90	1 98	88	1 94	1 99
Hazardous Waste Proximity	89	1 94	1 99	84	1 91	1 99
Superfund Proximity	84	1 90	1 98	72	82	1 96
Underground Storage Tanks (UST)	82	87	1 99	70	76	1 96
Wastewater Discharge	60	82	1 97	59	74	1 93

Map Display Based on: ☒ US ☐ State

Display Map Layer

Summary - Number of Indexes

☐ Facility 1-mile Radius ☐ Facility Census Block Group



New York State, Earthstar Geographics



Powered by Esri <<http://www.esri.com/>>

Demographic Profile of Surrounding Area (1-Mile Radius)

This section provides demographic information regarding the community surrounding the facility. ECHO compliance data alone are not sufficient to determine whether violations at a particular facility had negative impacts on public health or the environment. Statistics are based upon the 2010 U.S. Census and 2017 - 2021 American Community Survey (ACS) 5-year Summary and are accurate to the extent that the facility latitude and longitude listed below are correct. Census boundaries and demographic data for U.S. Territories are based on the "2020 Island Areas Demographic Profiles" from the U.S. Census Bureau. EPA's spatial processing methodology considers the overlap between the selected radii and the census blocks (for U.S. Census demographics) and census block groups (for ACS demographics) in determining the demographics surrounding the facility. For more detail about this methodology, see the DFR Data Dictionary <<https://epa.gov/help/reports/dfp-data-dictionary#demographic>>.

General Statistics (U.S. Census)	
Total Persons	8,299
Population Density	3,017/sq.mi.
Housing Units in Area	4,285
General Statistics (ACS (American Community Survey))	
Total Persons	7,328
Percent People of Color	66%
Households in Area	3,409
Households on Public Assistance	297
Persons With Low Income	3,655
Percent With Low Income	50%
Geography	
Radius of Selected Area	1 mi.
Center Latitude	42.630306
Center Longitude	-73.759667
Land Area	89%
Water Area	11%
Income Breakdown (ACS (American Community Survey)) - Households (%)	
Less than \$15,000	665 (19.51%)
\$15,000 - \$25,000	249 (7.3%)
\$25,000 - \$50,000	846 (24.82%)
\$50,000 - \$75,000	751 (22.03%)
Greater than \$75,000	898 (26.34%)

Age Breakdown (U.S. Census) - Persons (%)	
Children 5 years and younger	679 (8%)
Minors 17 years and younger	2,333 (28%)
Adults 18 years and older	5,966 (72%)
Seniors 65 years and older	665 (8%)
Race Breakdown (U.S. Census) - Persons (%)	
White	2,476 (30%)
African-American	4,785 (58%)
Hispanic-Origin	1,062 (13%)
Asian/Pacific Islander	180 (2%)
American Indian	28 (0%)
Other/Multiracial	831 (10%)
Education Level (Persons 25 & older) (ACS (American Community Survey)) - Persons (%)	
Less than 9th Grade	457 (8.92%)
9th through 12th Grade	351 (6.85%)
High School Diploma	1,663 (32.47%)
Some College/2-year	673 (13.14%)
B.S./B.A. (Bachelor of Science/Bachelor of Arts) or More	1,491 (29.11%)

Appendix G
DEC Consent Order

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Office of General Counsel, Region 4
1130 North Westcott Road, Schenectady, NY 12306-2014
P: (518) 357-2048 | F: (518) 357-2087
www.dec.ny.gov

CERTIFIED - RETURN RECEIPT REQUESTED

7017 1070 0001 0125 8800

July 24, 2018

Daniel C. Lynch
Albany County Attorney
County of Albany
Department of Law
112 State Street, Room 600
Albany, NY 12207

Re: Order on Consent
R4-2017-0426-210

Dear Mr. Lynch:

Enclosed please find a copy of the fully executed Order on Consent referenced above.

Pursuant to Paragraph I payment of \$5,000 is due within 90 calendar days of the effective date of this order.

Sincerely,



Richard Ostrov
Regional Attorney
Region 4

Enclosure

cc: M. Lanzafame
R. Leone



Department of
Environmental
Conservation

STATE OF NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of Violations of Article 19
of the Environmental
Conservation Law of the State of
New York and Title 6 of the Official
Compilation of the Codes, Rules and
Regulations of the State of New York

DEC CASE NO.
R4-2017-0426-210

ORDER ON CONSENT

Albany County Water Purification District
P.O. Box 4187
Albany, NY 12204

Respondent.

1. The New York State Department of Environmental Conservation (DEC or Department) is the State agency with jurisdiction over the environmental law and policy of the State pursuant to §3-0301 of the Environmental Conservation Law (ECL). DEC is and has been responsible for the protection of air resources of the State pursuant to ECL Article 19 and the rules and regulations promulgated thereunder.
2. Respondent operates two Waste Water Treatment Plants ("WWTPs") designated as the North Plant and South Plants in the Village of Menands and City of Albany pursuant to Title V facility permits (Title V permits) with effective dates of June 6, 2016, (Permit ID: 4-0126-00138/00012) and June 21, 2016 (4-0101-00020/00012), respectively.
3. Respondent operates two sewage sludge incinerators (SSI) at each of its North and South plants with a wet scrubber on each incinerator.
4. The SSIs are subject to federal Clean Air Act regulations (40 CFR Part 60, Subpart MMMM) which are incorporated by reference at 6 NYCRR Part 200.10 and 6 NYCRR Part 219-9.
5. Respondent established initial operating parameters for each incinerator during its 2015 stack test. The operating parameters include minimum incinerator temperature, minimum scrubber pressure drop, minimum scrubber liquid flow rate, and minimum scrubber effluent pH.
6. Respondent is required to submit semi-annual monitoring and deviation reports for exceedances of emission standards and operating parameters (40 CFR §60.5235(d) (1) and (2)).

7. Respondent submitted 2016 deviation reports identifying operating parameter exceedances at both plants.

8. Respondent reported operational parameter exceedances resulting from more stringent than necessary operating parameters previously established by the Respondent during higher than normal feed rates during a 2015 stack test.

9. Respondent conducted stack tests in 2016 and 2017 to evaluate whether less stringent operating parameters would ensure continuous compliance with permit emission limits.

10. Respondent reported that the 2016 and 2017 stack tests demonstrated that less stringent operating parameters will ensure compliance with existing permit emission limits and had these less stringent operating parameters been in effect in 2015, the number of reported operating parameter exceedances reported by the Respondent would have been significantly lower.

11. Respondent reported that it took the following actions to mitigate the occurrence of subsequent operating parameter exceedances:

Implemented improved electronic tracking procedures to provide operators with real time information to adjust operating conditions reducing operating parameter exceedances.

Adjusted the wet scrubber to provide a greater range of acceptable operating conditions to reduce scrubber water flow rate operating parameter exceedances

Modified startup and shutdown procedures to reduce pressure drop operating parameter exceedances.

Relocated the combustion zone temperature monitor to a more appropriate location to reduce temperature operating parameter exceedances.

Provided additional training to incinerator operators on operating parameters and procedures to minimize operating parameter exceedances.

12. Respondent's first 2017 semiannual deviation report included significantly fewer operating parameter exceedances and no reported air emission violations.

WAIVER OF HEARING

13. Respondent has affirmatively waived its right to notice and hearing in the manner provided by law, has consented to the issuing and entering of this Order, and agrees to be bound by the terms, provisions and conditions contained therein.

NOW, having considered this matter and being duly advised, it is **ORDERED THAT:**

I. Civil Penalty

Respondent is hereby assessed a civil penalty in the amount of FIVE THOUSAND DOLLARS (\$5,000) for exceedances of operating parameters reported by Respondent in deviation reports prior to the effective date of this Order. The civil penalty shall be paid to the Department of Environmental Conservation by check within 90 days of the effective of the Order

II. Environmental Benefit Project

In addition to the civil penalty payable pursuant to Section I, Respondent agrees to a fund TWENTY THOUSAND DOLLARS (\$20,000) Environmental Benefit Project ("EBP") in accordance with the Commissioner's EBP Policy. Respondent shall establish a budget line for the 2019 fiscal year in the amount of TWENTY THOUSAND DOLLARS (\$20,000) for the sole purpose of funding the EBP ("EBP account"). The Department has approved the use of the EBP funds for the engineering costs associated with the anaerobic digesters to replace the four Respondent owned and operated Multiple Hearth Incinerators because the anaerobic digesters will result in a reduction in air emissions, and an improvement in surface water quality due to a reduction in scrubber water recirculated constituents and atmospheric deposition. Additionally, materials that can clog pipes and pumps both in the public sewer lines as well as in wastewater treatment facilities will be diverted from the wastewater infrastructure to anaerobic digesters thus preventing the potential for combined sewer overflows and which protects water quality while saving money.

III. Settlement

The timely payment of the civil penalty and the implementation of the approved EBP will be considered full compliance with the terms and conditions of this Order and Schedule of Compliance and is accepted as full settlement of the exceedances of permit operating parameters reported by the Respondent, and that have occurred prior to the effective date of this Order that are not based on the failure to properly: operate the facility control equipment; implement procedures as required by the permit; and operate monitoring equipment.

IV. Schedule of Compliance

The attached Schedule of Compliance is incorporated into the Order on Consent.

V. Communications

All communications required herein shall be made to: Department -- DEC Region 4, 1130 North Westcott Road, Schenectady, NY 12306, Attn: Regional Engineer; and Respondent -- Albany County Water Purification District, P.O. Box 4187, Albany, NY 12204, Attn: Plant Operator.

VI. Access

Respondent shall allow duly authorized representatives of DEC access to the facilities without prior notice, at such times as may be desirable or necessary for DEC to inspect and determine the status of Respondent's compliance with this Order and the ECL.

VII. Summary Abatement

This Order shall not be construed to prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers, either at common law or as granted pursuant to statute or regulation.

VIII. Indemnification

Respondent shall indemnify and hold DEC, New York State, and their representatives and employees harmless for all claims, suits, damages, and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of the provisions hereof by Respondent, its directors, officers, employees, servants, agents, successors or assigns.

IX. Entire Agreement; Modification

This Order constitutes the entire agreement of the parties, and no provision of the agreement shall be deemed waived or otherwise modified except as is specifically set forth in a writing executed by the Commissioner or Regional Director of DEC indicating an intent to modify this Order.

X. Document Reviews

1. All documents, which Respondent must submit pursuant to this Order, are subject to Department approval.

2. The Department shall review each of the submittals Respondent makes pursuant to this Order to determine whether it was prepared, and whether the work done

to generate the data and other information in the submittal was done, in accordance with this Order and generally accepted technical and scientific principles. The Department shall notify Respondent in writing of its approval or disapproval of the submittal. All Department-approved submittals shall be incorporated into and become an enforceable part of this Order; and Respondent shall implement them in accordance with their respective schedules and terms, as approved.

3. a. If the Department disapproves a submittal, it shall so notify Respondent in writing and shall specify the reasons for its disapproval. Within the time frame set forth in that written notification, Respondent shall make a revised submittal to the Department that addresses and resolves all the Department's stated reasons for disapproving the first submittal.

b. After receipt of the revised submittal, the Department shall notify Respondent in writing of its approval or disapproval. If the revised submission is not approvable as submitted, the Department, at its option, may disapprove it or may approve it on condition that Respondent accepts such modifications as may be specified by Department to make it approvable. If Respondent does not accept such modifications, the revised submission will be disapproved. If the Department disapproves the revised submittal, Respondent shall be in violation of this Order. If the Department approves the revised submittal, it shall be incorporated into and become an enforceable part of this Order.

c. Respondent shall modify and/or amplify and expand a submittal upon the Department's direction to do so if the Department determines, because of reviewing data generated by an activity required under this Order or because of reviewing any other data or facts, that further work is necessary. The Department agrees that any modifications it specifies will be reasonable and consistent with customary engineering standards.

XI. Effective Date

The effective date of this Order shall be the date it is signed by the Regional Director.

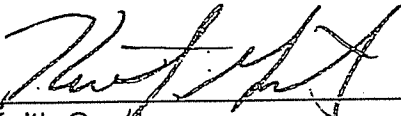
XII. Termination Date

This Order shall terminate upon the Department's determination that Respondent has complied with all the requirements of this Order.

DATED: Rotterdam, New York
July 23 2018

Basil Seggos
Commissioner
New York State Department of
Environmental Conservation

BY:



Keith Goeltz
Regional Director
Region 4

CONSENT BY RESPONDENT

Respondent hereby consents to the issuing and entering of this Order on Consent, waives its rights to notice and hearing herein and agrees to be bound by the provisions, terms and conditions contained herein.

BY: John R. Adams Jr.

TITLE: Chairman

DATE: 7/11/18

STATE OF NEW YORK)

) ss.:

COUNTY OF Albany

On the 11th day of July in the year 2018, before me, the undersigned, John R. Adams, Jr., personally known to me who, being duly sworn, did depose and say that he resides at

54 KAKELY ST., ALBANY, N.Y. 12208
(Full mailing address)

and that he has the full legal authority to execute this Order on Consent.

Melanie J. Bunzey
Notary Public, State of New York

MELANIE J. BUNZEY
Notary Public, State of New York
Qualified in Albany County
No. 01BU6048902
Commission Expires Oct. 2, 2019

Schedule of Compliance

- 1) Within 60 days of the effective date of this Order, Respondent shall submit a report to the Department detailing the actions taken to mitigate operating parameter exceedances.
- 2) Within 180 days of the effective date of this Order, Respondent shall submit a schedule to the Department describing the timetable for the replacement of all sewage sludge incineration units at the North and South plants with anaerobic digesters. The schedule shall include intermediate milestones that the Respondent shall use to demonstrate that progress is being made on the project, and a projected in-service date for the anaerobic digesters.
- 3) During the period commencing with the effective date of this Order and ending on its termination, Respondent shall comply with a minimum scrubber effluent pH of 4.5 at each scrubber at the North and South plants. Respondent shall continue to monitor and record the scrubber effluent pH as described in 40 CFR §60.5210, and using the averaging times described in Table 4 of 40 CFR 60 Subpart M. Respondent shall continue to report deviations from this limit on a semiannual basis as required by 40 CFR §60.5235(d). Respondent shall continue to comply with the performance testing schedule described in 40 CFR §60.5205 during this period.
- 4) Respondent shall continue to use the electronic recording system for operating parameters, and shall state the cause and corrective action taken for each deviation in its operating log.



DANIEL P. MCCOY
COUNTY EXECUTIVE

COUNTY OF ALBANY
WATER PURIFICATION DISTRICT
1 CANAL ROAD, SOUTH
ALBANY, NEW YORK 12204

REMITTANCE: 112 STATE ST., BASEMENT, ALBANY, NY 12207
PHONE: (518) 447-1611 FAX: (518) 433-0369
www.albanycounty.com

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CHAIRMAN

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SEAN E. WARD

ANGELO GAUDIO, P.E.
EXECUTIVE DIRECTOR

March 12, 2021

Mark Lanzafame, P.E.
Regional Air Pollution Control Engineer
NYS Department of Environmental Conservation
625 Broadway
Albany, NY 12233

Re: ACWPD Order On Consent
DEC Case # R4-2017-0426-210

Dear Mr. Lanzafame

As a condition of the above referenced 2017 Order on Consent, the Water Purification District (District) had proposed replacing the active sewage sludge incinerators (SSIs) with anaerobic digesters. The digesters were to be located at the District's North Plant as part of a new Regional Biosolids Facility that was being cost shared with the Saratoga County Sewer District (SCSD).

In 2020, SCSD completed an engineering evaluation for the upgrade of their secondary treatment process. As part of that evaluation it was determined that SCSD's sludge production was projected to increase significantly above the volumes outlined in the 2018 Regional Biosolids Feasibility Report. In addition, there has been increasing concern with per and polyfluoralkyl substances (PFAS) and emerging contaminants in municipal biosolids. As the market for biosolids disposal is continuing to shift away from disposal via landfill and land application, the cost for the disposal of these materials has increased considerable in the northeast. This trend is projected to continue in the coming years as the EPA and states adopt more stringent PFAS regulations.

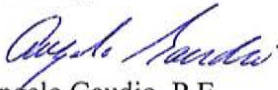
Due to the projected sludge volume and disposal cost increases, the financial metrics and recommendation outlined in 2018 Feasibly Report need to be reviewed. We are currently evaluating the impacts as it relates to the proposed Regional Biosolids Facility project as well as evaluating options for improvements to our existing SSIs. As incineration is a proven technology for PFAS destruction and would result in the greatest solids reduction, the continued use of the District's SSIs would provide an environmental benefit, provided the emissions treatment is managed appropriately.

At this time, we would ask for an extension to the current project schedule provided under the Order on Consent until these additional evaluations can be completed. The District will provide periodic updates as details become available. The District is committed to meeting the obligations outlined in the Order on Consent. To that end the District has already paid the civil penalty of \$5000 and the Environmental Benefit Project (EBP) fee of \$20,000 to Arcadis for work completed for the Regional Digester Facility. Copies of these payment are enclosed for your records

We appreciate your continued understanding and guidance as we work towards a solution that is both economically sound and environmentally beneficial to our member communities.

If you have any questions or concerns you may reach me at (518) 447-1617.

Sincerely,

A handwritten signature in blue ink, appearing to read "Angelo Gaudio".

Angelo Gaudio, P.E.
Executive Director

Enc: Civil Fee Check (\$5k)
EBP Fee Check (\$20k)

cc: Anthony Luisi, DEC (via email)

THIS DOCUMENT IS PRINTED IN TWO COLORS. DO NOT ACCEPT UNLESS BLUE AND BURGUNDY ARE PRESENT.



County of Albany
Albany NY 12207
Sewer G

Vendor Number 63181 Check Date 08/08/2018 Check Number 10-4/220

0255897

VOID AFTER
30 DAYS

\$5,000.00

Pay *****5,000 DOLLARS AND NO CENTS

REGION IV WATER ENGINEER ATT: PETRO
1130 NORTH WESCOTT ROAD
SCHENECTADY NY 12306

To The
Order Of
M&T Bank
Manufacturers and
Traders Trust
Company
Commercial banking

Michael Flannery
Albany County Comptroller MP

⑈0255897⑈ ⑆022000046⑆ 985415514⑈

For Deposit Only to

State Of New York

Nys Dept Of Environmental Conserv

NYSDEC-Region 4

Deposited by: JIM

DO NOT WRITE, STAMP OR ENDORSE BELOW THIS LINE

Seq: 25

Dep: 008308

Date: 08/23/18

SEP 22 08/23/18 DEPOSITED BY JIM CUST 4317 USER

1104862

THIS DOCUMENT IS PRINTED IN TWO COLORS. DO NOT ACCEPT UNLESS BLUE AND BURGUNDY ARE PRESENT.



County of Albany
Albany, NY 12207
Sewer - G

VOID AFTER
30 DAYS

Vendor Number 26942
Check Date 03/04/2020
Check Number 10-4/220

0257118

\$20,000.00

Pay *****20,000 DOLLARS AND NO CENTS

To The Order Of
M&T Bank
Manufacturers and
Traders Trust
Company
Commercial banking

ARCADIS US, INC.

62638 COLLECTIONS CENTER DRIVE
CHICAGO IL 60693-0626


Albany County Comptroller MP

⑈0257118⑈ ⑆022000046⑆ 9854155141⑈

D-3409 46
20200308
8188093937
318 CHI-062638
END OF LINE

DON'T WRITE STAMP OR ENDORSE ON THIS LINE

>111000025<
CR PAYEE ACCT
LACK END GTD
BANK OF AMERICA

1161976



DANIEL P. MCCOY
COUNTY EXECUTIVE

COUNTY OF ALBANY
WATER PURIFICATION DISTRICT
1 CANAL ROAD, SOUTH
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ANGELO GAUDIO, P.E.
EXECUTIVE DIRECTOR

April 29, 2021

Anthony Luisi
Regional Attorney and Acting Regional Director
NYS Department of Environmental Conservation
625 Broadway
Albany, NY 12233

Re: Order on Consent
DEC Case No. R4-2017-0426-210

Dear Mr. Luisi,

Please accept this letter as the Albany County Water Purification District's (ACWPD) formal request to modify the above referenced Order on Consent to allow for the continued operation of ACWPD's sewage sludge incinerators (SSIs) for biosolids management.

As a result of the Order on Consent, ACWPD entered into an intermunicipal agreement (IMA) with Saratoga County Sewer District (SCSD) with the intent to replace the SSIs with anaerobic digesters as part of the Regional Biosolids Facility Project (Project). The cost of the Project was estimated to be \$48,500,000 in the March 2018 Feasibility Study that was completed by Arcadis of New York, Inc. (Arcadis). During the design phase Arcadis conducted a biosolids market analysis and concluded the disposal cost for Class B biosolids was continuing to escalate in large part due to polyfluoralkyl substances (PFAS) concerns. The projected disposal cost increases resulted in the decision to amend the Project scope to incorporate a sludge dryer to produce Class A biosolids. The addition of the sludge dryer increased the Project cost to \$56,000,000. To control the Project cost and minimize the capital expenditure, the combined heat power (CHP) system for onsite electric generation, which had been included in the initial Project, was eliminated from the scope.

In September 2020, SCSD informed ACWPD that its facility's sludge production was projected to increase considerably due to a proposed plant expansion required to accommodate high ammonia loads from a large industrial user within Saratoga County. To evaluate the impacts from SCSD's increased sludge volumes and resulting high ammonia side stream loads, Arcadis was tasked with analyzing ACWPD's North Plant aeration system. Arcadis completed the evaluation in March of 2021 and determined that a full aeration upgrade would be required at the North Plant to manage the anticipated side stream loads. The aeration expansion would require use of all six aeration trains as compared to the

three trains currently being used. The addition of a sludge dryer, required aeration system upgrades and the elimination of the CHP system are significant changes to the original Project scope and have resulted in the project cost increasing to \$68,950,000. Based on the current cost estimate, the payback period for ACWPD is above the expected life of the proposed equipment.

At this time, ACWPD feels the significant cost increase together with the impacts to the secondary treatment process would place an undue burden on the eight member communities it serves and limit its future operations. Accordingly, ACWPD has elected to withdraw from the IMA and evaluate options for improving the existing incinerators, which for ACWPD and its eight member communities, is considered a more a cost effective alternative and environmentally sound process for sludge management. This evaluation will include an option for consolidating both the South and North Plant sludge processing to the North Plant as consolidating the sludge operations will allow the two existing South Plant SSIs be taken offline. The evaluation will also look into operational improvements to maximize incinerator efficiencies and address the pH exceedances referenced in the Order on Consent

A preliminary schedule for the improvements to the incinerators is provided below.

<i>Milestone #</i>	<i>Estimated Dates</i>
1. Request to Modified Order on Consent	4/30/2021
2. Modified Order on Consent	5/28/2021
3. Issue Engineering RFP	1 month after milestone 2
4. Award Engineering Contract	6 months after milestone 2
5. Engineering Study/Design	23 months after milestone 2
6. DEC/EFC Review	24 month after milestone 2
7. Bidding	26 months after milestone 2
8. Contract Award	28 months after milestone 2
9. Construction	43 months after milestone 2

As project scheduling is of the utmost importance ACWPD respectfully requests that immediate attention be given to this request to modify the Order on Consent. Please call me at (518) 447-1617 with any questions or concerns you have regarding this matter.

Sincerely,



Angelo Gaudio, P.E.
Executive Director

cc: Donald Canestrari, DEC (via email)
Derek Thorsland, DEC (via email)
Bonnie Star, DEC (via email)
Mark Lanzafame, DEC (via email)
Tracy Murphy, County (via email)
Tyler Masick, ACWPD (via email)

Letter Agreement to Order on Consent
R4-2017-0426-210

Albany County Water Purification District (Respondent) and the New York State Department of Environmental Conservation (DEC) executed and entered into an Order on Consent, dated July 23, 2018, DEC Case No. R4-2014-0902-145 (Order). Respondent has requested, and DEC has found good cause to approve, a modification to the Order as set forth herein.

1. Respondent and DEC agree that all previously approved construction milestone deadlines arising from the Order are hereby suspended.
2. Respondent and DEC agree that the Schedule of Compliance to the Order is hereby modified to add a new Paragraph 5:

Notwithstanding anything contained in Paragraph 2 to the contrary, by ~~June 30, 2022~~, Respondent shall submit to DEC an engineering plan for a proposed project to provide for operational improvements and increased efficiencies at the North plant and the South plant. The engineering plan shall include intermediate construction milestones and a projected service date. DEC's review of the engineering plan shall be subject to Section X of this Order.

July 29, 2022 (AG)

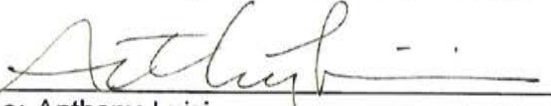
3. This Letter Agreement is incorporated into the Order. The effective date of this Letter Agreement is the date the Regional Director signs it. All terms and conditions of the Order remain in full force and effect except as expressly modified by this Letter Agreement. This Letter Agreement may be executed in counterparts, and signatures transmitted by electronic means shall be deemed originals for all purposes.

Albany County Water Purification District

By: 
Name: Angelo Gaudio
Title: Executive Director

Date: 1/10/2022

Basil Seggos
Commissioner
New York State Department of Environmental Conservation

By: 
Name: Anthony Luisi
Title: Regional Director

Date: 1/10/2022

Appendix H

Sludge Production Basis of Design

Baseline Conditions: 2015-2021 Averages

North Plant					South Plant				
Year	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)	Year	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)
Average	35,951	53,679	48,854	44,487	Average	17,309	26,695	24,503	23,092
Max	43,185	67,742	58,114	52,761	Max	21,161	32,840	29,102	26,391

Both Plants				
Year	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)
Average	53,260	80,374	73,357	67,579
Max	64,346	100,582	87,216	79,152

Projected Growth	1.5	MGD
Assume BOD mg/L	200	mg/L
Assume TSS mg/L	300	mg/L
Assume lb BOD/ dry lb	0.5	
Assume lb TSS/ dry lb	1	

Projected solids growth = 5004 dry lb/day *Apply historic peaking factors

North Plant + Growth (75%)					South Plant + Growth (25%)				
Year	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)	Year	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)
Average	39,704	59,282	53,954	49,131	Average	18,560	28,625	26,274	24,761
Max	46,938	73,630	63,164	57,347	Max	22,412	34,781	30,822	27,951

Both Plants + Growth				
Year	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)
Average	58,264	87,907	80,228	73,892
Max	69,350	108,411	93,987	85,298

Projected FOG Increase	25,000	gpd
Assume FOG %TS	6%	%
Assume FOG mg/L	60,000	mg/L

Projected solids growth = 12510 ppd *No peaking factors applied to FOG

North Plant + Growth + FOG					Baseline - 2 Incinerators	South Plant + Growth				
Year	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)		Year	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)
Average	52,214	71,792	66,464	61,641		Average	18,560	28,625	26,274	24,761
Max	59,448	86,140	75,674	69,857		Max	22,412	34,781	30,822	27,951

Future Solids Loading for Both Plants					Consolidation
Year	Average (dry-lb/day)	Max 7-day Average (dry-lb/day)	Max 14-day Average (dry-lb/day)	Max 28-day Average (dry-lb/day)	
Average	70,774	100,417	92,738	86,402	
Max	81,860	120,921	106,497	97,808	

Use this table for sizing solids handling equipment

Appendix I
FOG Receiving



Purchase Proposal for FOG Receiving Station

Breakdown GZ-HSS 20K-2-C

Purchase Proposal Summary for a Greasezilla System

Greasezilla™ FOG Hydronic Separation System (HSS)

HSS 20K-C-2 480V 3-Phase Dual Reactor 20K / Boiler & Control System

-
- | | | |
|------------|---|------------------|
| I. | Base System | \$900,000 |
|
 | | |
| | A. 1 x 20,000-gallon FOG process tank (2 x 10,000-gallon) | |
| | B. 2 x ethylene glycol hydronic systems, one inside each FOG process tank | |
| | C. 4 x Process tank carbon filter lid inserts | |
| | D. Complete Containerized control skid; | |
| | a. hydronic system (transfer pump, air separator, triple duty valve, expansion tank) | |
| | b. ABF boiler & fuel system (bio-fuel pump, heated hoses, bio-fuel boiler feed tank, bio-fuel tank heater, bio-fuel strainer, bio-fuel strainer heater) | |
| | c. system control cabinet | |
| | E. Complete bio-fuel offtake system | |
| | a. Offtake pump, strainer, and BG flow sensor | |
| | b. Brown Grease skimmer | |
| | F. 1 x air compressor | |
| | G. Access stairway and Catwalk | |
|
 | | |
| II. | Automation, Connectivity, Storage, and Integration | \$350,000 |
|
 | | |
| | H. Allen Bradley 15" HMI (2715P-T15CD) and Allen Bradley CompactLogix PLC (5069-L320ER) PLC | |
| | a. Automated actuated valves for process tank hydronic line switching. | |
| | I. Integrated SCADA | |
| | J. Full Set of System P&IDs, PFDs and GL Drawings (in ACAD & PDF)-Electronic Only | |
| | K. System Sensor Package (including electronic submittal of sensors used) | |
| | a. 2 x process tank level sensors | |
| | b. 6 x process tank temperature sensors | |
| | c. 1 x bio-fuel tank level sensors | |
| | d. 2 x hydronic system temperature sensors | |
| | e. 2 x hydronic system pressure sensors | |
| | f. 1 x hydronic system flow sensor | |
|
 | | |
| | L. 1 x Electrically heated Hydronic storage tanker trailer with fluid level monitoring system | |
|
 | | |
| | M. HSS 20K-1 – M (Additional Equipment/ Process Options) | |
| | N. Two (2) Trips for On-Site Installation, Start-Up and Training Support | |
| | a. Assumes Eight (8) hrs/day on-site Tuesday-Thursday; Monday & Friday (Travel Days Included). | |
| | b. Training PowerPoint Presentations-Electronic Only | |
| | c. Full System O & M Manuals-Electronic Only | |

TOTAL \$1,250,000



III. Additional Required Components

Provided by Site (THIS VARIES)

- O. Equalization/Decant Tank (~13Kgal Usable or Greater) As per option schedule
 - a. EQ Tank Influent Flow Meter
 - b. EQ Tank Auto Decant Valve (Possibly just use a manual valve here?)
 - c. EQ Tank Decant Flow Meter
- P. Transfer Pump (s) from EQ Tank to Process Tanks
 - a. Flow Meter
 - b. Auto Valve(s) to control which process tank is being fed.
- Q. Process Tank Discharge Flow Meters
 - a. Decant/Clear Water Flow Meter
 - b. Recovered Grease to Boiler Feed Fuel Tank Flow Meter
 - c. Recovered Grease to Boiler Feed Fuel Tank Auto valve
 - d. Solids/Batter/Cake to Sludge Storage Tank Flow Meter
- R. Solids/Sludge/Batter/Cake Storage Tank
- S. All Piping to/from Containerized System
- T. Transfer Pumps from Screen Sump Basin to EQ Tank and Process Tanks
- U. Local Site Preparation (Access, Foundations, Etc) Site responsibility
- V. System Hook-up & Installation
- W. Local Engineering, Permitting, Etc
- X. Provide qualified operations team members to be trained for system operation while Greasezilla is on-site.
- Y. Remote IO slave panel for all automated valves, flow meters, etc. that are not natively included in the Greasezilla system

To provide a turnkey set of equipment, the following additional equipment categories and pricing have been compiled for review.

** Final pricing will vary depending on the precise equipment/volume/specs/configuration to be determined with WM Engineering

Additional Boiler (aux heating)	\$100,000
Screenco Trash Master System	\$50,000 w/screw (Addder)
Conical Decant tanks (17K/gal)	\$75,000-100,000/ea
Storage DOT rated tanker/trailers	\$75,000
Additional Engineering	TBD



Order Information

Z. Fabrication Time from approval of shop drawings

- 120-160 days

AA. Estimated time for shipment from factory to jobsite

- Max 7 days

BB. Equipment information (e.g., cutsheets, drawings, brochures)

- Available upon request

CC. Maintenance Program

- \$1,500 - \$2,000 /month (depending on model)



a Downey Ridge
Environmental
Company

ADVANTAGES

TURNKEY

- Fully automated
- Ideal for sites with 10-50,000 gallons of FOG per day
- Available in flexible configurations that are designed to be expandable and scalable
- Small footprint of 1000 square feet

ECOLOGICAL

- No polymers, flocculants or other chemicals required
- Drastically reduces waste and landfilling
- Runs on 5% of the Advanced Biofuel it produces

COST-EFFECTIVE

- Low operational costs
- ROI is less than 2 years
- High EBITDA
- Remote monitoring capabilities require minimal staffing
- Creates profitable new revenue streams

Contact Us

304-658-4778

info@greasezilla.com

www.greasezilla.com



GREASEZILLA FOG SEPARATION SYSTEMS

THE LEADING FOG SEPARATION SYSTEM FOR LIQUID WASTE PROCESSORS, WASTEWATER TREATMENT FACILITIES AND HAULERS INDUSTRY-WIDE

THE GREASEZILLA SYSTEM



Greasezilla® is a turnkey standalone system that separates and processes FOG waste. The system's ecological grease-separating process removes FOG from the waste stream, reduces waste disposal expenses and creates new revenue. The system operates without dewatering, leaves nothing to be landfilled and has a total operating cost of 1-2 cents per gallon.

No chemicals. No landfilling. No waste.

FOG Separation Layers



Greasezilla® separates FOG into three layers:

8-10%

Low-moisture (<1%) Brown Grease Advanced Biofuel and feedstock

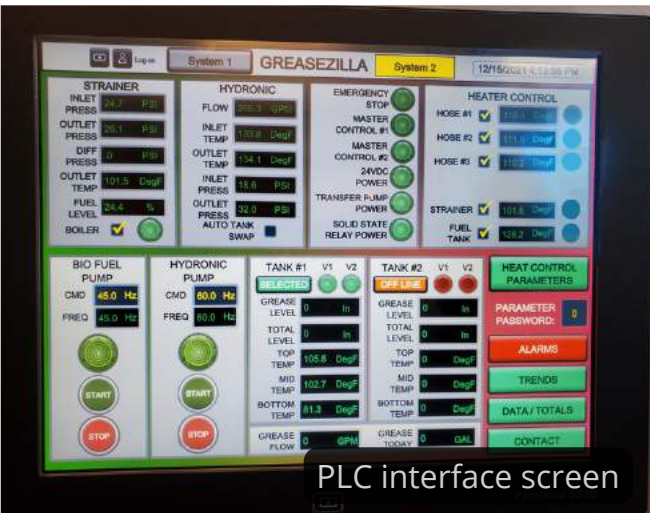
5-10%

Batter for anaerobic digestion or composting

80-85%

Pasteurized water ready for wastewater treatment plants

Greasezilla®
solves FOG
treatment
and disposal
challenges
worldwide



Greasezilla® patented technology effectively separates FOG from grease trap waste (GTW), while removing over 99% of the water (MIU) from the Brown Grease. Greasezilla®, running on its own fuel, is the purely ecological alternative to chemically treating, lagooning, landfilling, incineration or dumping FOG waste.

Greasezilla® is modular and scalable, available in configurations for interior or exterior placement. Easy to operate and maintain, the system is equipped with an Allen Bradley® Programmable Logic Controller with SCADA integration for remote monitoring.





Greasezilla for POTW Sites

Greasezilla is growing quickly within municipalities that are experiencing increasing FOG volume with limited disposal sites/options, coupled with high discharge costs.

Greasezilla is expanding in both private, commercial, and public-private site operations worldwide.



Greasezilla patented system and services assure

<https://greasezilla.com/advantages/>

- Complete turnkey system and services
- Low operational cost while running on its own Advanced Biofuel (ABF)
- Low staffing (1 person part time)
- Complete remote monitoring and operational capabilities
- Low Maintenance less than \$5,000 or parts, minimal cleaning of reactors required.
- System only 2000 square feet inside or exterior placement
- Landfill Mitigation (all Greasezilla offtake materials have value)
- Biofuel Sales (Greasezilla can manage all Advance Biofuel sales)
- Complete maintenance plan available
- Roundest Fuel, Purely Ecological Process

Some of the key metrics when identifying effective sites with significant net gain can be viewed as follows.

- Territories with an excess of 500,000 people in a 100 mi radius
- Territories with fewer than 3-5 full-service disposal sites in 50 mi radius and tipping fee of >.12
- Fog volumes from commercial operations in the area adding to increased infrastructure cost and maintenance.

Good to know when assessing a site.

- Current private options and cost
- Regulations regarding grease trap pumping
- Number of service providers for trap pumping, volume and for what price
- Is grease currently collected from clarifiers and hauled away? Annual Cost
- Available space for processing storage and receiving.
- Is the plant currently accepting GTW? Volume? Treated how?



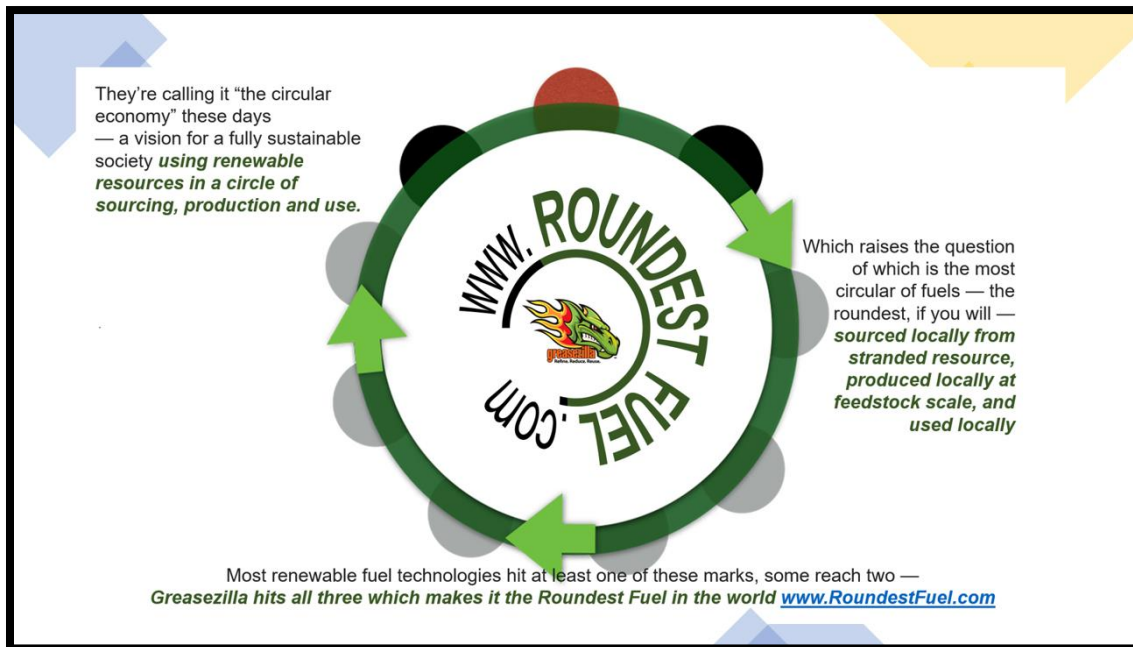
Particulars – nice to know.

- Size of plant Million Gallons/per day (MGD) *average and max capacity*
- Population size
 - Within the municipality
 - Within 100-mile radius
 - Growth rate
- *Estimated Current FOG volume in the region*
- Current FOG volume coming to plant *from outside haulers.*
- Current FOG from clarifiers requiring disposal.
- # of facilities that receive FOG in their area
- Current tipping fees in their area
- Grease Trap maintenance regulations in their area - Do they have a FOG discharge management program?
- # of registered haulers in a/b proximity
- Industrial wastewater impact currently at the plant i.e. Food Processors discharging to the facility
 - *Who are main pre-treatment organic waste dischargers?*
 - *Volume (monthly, annually) of major dischargers?*
- Age of Plant
- Number of commissaries / hospitals / factories / restaurants / Mass merchants that sell prep food.
 - *How many registered locations with grease interceptors/traps?*
 - *By size? (less than 500 gal/1000 gal/2500 gal)*
- Landfill mitigation regulations (and other like considerations)
- Availability of storage and decant tanks on site.
- *Size of SCUM tank/ponds?*
 - *How often skimmed/disposed of?*
 - *How treated? (dried/landfilled/chemically treated)*
 - *Cost of treatment?*
- Available land and building, structure to accommodate system and receiving.
- Interior or exterior placement (low high temp on avg for summer/winter)
- Current disposal practices for commercial FOG and FOG from clarifiers
- Bio diesel production in the area and the need for Brown Grease reselling services



Wastewater Treatment Plants: Protect your infrastructure and know FOG is being processed responsibly in your community.

- Assists in compliance with CFR 40 403.2a" and 403.5b(3)"
 - No introduction of pollutants into the plant that may inhibit operations
- Keep headworks and entire plant free from Grease
- Reduce maintenance headaches and costs.
- Only treat pasteurized effluent and water
- Collect tipping fees to offset plant costs
- Provide a heat source for other processes and facilities at the plant
- Create a revenue stream by marketing your own biofuel
- Reclaim a valuable energy source from a waste stream
- Have confidence FOG is being treated responsibly in your city



Helpful Links

- What is Greasezilla (Greasezilla Video YouTube)
- Small Site Installation
- P.E.O. (Press Engine Optimization) Media Coverage
- FAQ
- <https://greasezilla.com/poised-for-record-growth-greasezilla-to-kick-off-2021-with-new-installations/>

Greasezilla Purchasing Programs

Systems are sold worldwide available for

- Outright Sale
- Finance
- Profit Sharing JV
- Build-Own-Operate

Budget Proposal

Project:

Albany County WPD, NY

Equipment:

SAVI Beast Septage/FOG Receiving Station Model VFA-1400-DM

Represented By:

GP Jager, Inc.

Dave Boshart

Phone: 315-632-4259

Email: dboshart@jagerinc.com

Regional Sales Manager:

SAVECO North America, Inc.

Formerly Enviro-Care

Brian Serio

Phone: 224-302-0315

Email: bserio@savecowaterna.com

Project No.: WEC219394

Date: April 19, 2022



SAVECO® North America, Inc.
Formerly Enviro-Care®
1570 St. Paul Ave.
Gurnee, IL 60031
P: 815.636.8306 • F: 847.672.7968
www.enviro-care.com • ecsales@enviro-care.com

ITEM: "A" - One (1) SAVI Beast Septage/FOG Receiving Station Model VFA-1400-DM



BASIS OF DESIGN

Number of Units:	One (1)
Application:	Septage/FOG Receiving
Influent Solids Concentration:	2-3 %
Peak Nominal Flow:	300-875 gpm (dependent upon TSS and viscosities)
Maximum Clean Water Flowrate:	6,700 gpm
Screen Perforated Opening:	6 mm
Nominal Screen Basket dia.:	55 inches
Nominal Screw Conveyor dia.:	10 inches
Screenings Discharge Height:	6.0 feet above operating floor
Drum Drive motor HP:	2.0 HP
Screw Drive motor HP:	2.0 HP
Spray wash water requirement:	51 gpm @ 40-60 psi
Hot water spray requirement:	33 gpm @ 40 psi, 120°F
Inlet pipe size:	Two (2) – 4 inch flanged
Outlet pipe size:	10 inch flanged

DESCRIPTION OF EQUIPMENT:

- Fully automatic, self-cleaning, dual drive, septage/FOG receiving system incorporating a perforated plate rotating drum screen and an integral screenings washing, conveying, and dewatering/compacting contained within a tank from type 304 stainless steel.
- The septage/FOG receiving unit shall be a dual drive system which allows the drum and screw to be driven independently.
- A cylindrical drum screen shall be constructed of perforated plate media in type 304 stainless steel with 6 mm perforations around the entire basket.
- The drum screen shall be mounted on the drive end using a large diameter, single row, heavy duty industrial slewing ring bearing assembly with integral ring gear comprising part of the screen drive system.

- Drum gear reducer drive unit with 2.0 HP TEFC motor suitable for 460/3/60 electrical supply.
- The tank mounted rotating drum screen, conveying and dewatering system shall be positioned at a 25° angle of inclination from horizontal and includes a pivoting/retraction assembly to allow the drum to be retracted for seal replacement or rotated out of the tank for full maintenance.
- A cleaning brush and hot and cold-water spray bars shall be located on the outside of the screen drum to prevent small solids from passing through the screen.
- Angled lifting vanes shall be positioned inside the drum screen to retain and lift solids into the screw trough.
- The screw trough shall extend beyond the drum screen opening at the influent end to maximize solids capture and reduce screenings recycle.
- The drive assembly for the screw shall be attached via a drive support flange welded to the upper end of the screenings transport tube.
- Screw drive unit with 2.0 HP TEFC motor suitable for 460/3/60 electrical supply.
- The shafted screenings screw conveyor to be constructed from high strength alloy steel with a two-part epoxy coating.
- Compaction zone integral to the screw conveyor and with perforated drainage section, latched & hinged cover from type 304 stainless steel and safety interlock switch.
- Dewatering zone drain flush spray system from type 304 stainless steel with manual ball valve.
- Transport tube spray system from type 304 stainless steel and rubber hose with manual ball valves.
- The septage/FOG receiving unit shall be supplied with a two-stage tank. The inlet section of the tank shall slope toward the screen to prevent sedimentation. The second stage of the tank shall house the rotating drum screen.
- Tank flush wash system from type 304 stainless steel with manual ball valve.
- All covers will be gasketed and either hinged, bolted, or latched.

HARDWARE (EACH)

- Assembly fasteners from type 304 stainless steel.
- Anchor rods from type 304 stainless steel.

CONTROL PANEL AND INSTRUMENTATION (EACH)

- One (1) NEMA 4X type 304 stainless steel wall mount main control panel suitable for 480/3/60 electrical supply. Control panel shall contain the following control devices for operation of the Beast unit.
 1. Main disconnect with through door interlock handle.
 2. Control Power Transformer, 480/120VAC w/branch circuit protection.
 3. Surge Protection Device, 120 VAC.
 4. Motor starter w/ overload (drum motor)

5. Motor starter, reversing w/ overload (screw motor)
 6. Load monitors (drum and screw motors).
 7. Pilot lights, (Motor Run & Fault, Control Power, High Water Level).
 8. Push buttons (E-Stop, System Reset).
 9. Selector Switches (Motor HOA, Wash Solenoid and Electrically Actuated Ball Valves HOA).
 10. Programmable Logic Controller, Allen-Bradley MicroLogix 1400, with Ethernet and Required IO.
 11. Operator Interface Unit, Allen Bradley PanelView 800 with 4 inch screen.
 12. Panel Heater, with Thermostat.
 13. Reset pushbutton.
 14. Intrinsically safe barrier relay for level sensor.
 15. UL Label.
- One (1) Safety Microswitch: 120 volt safety interlock switch suitable for the area classification shall be factory mounted to the compaction/discharge zone. Interlock switch shall prevent operation of the screen while the door is open.
 - Two (2) NEMA 4X brass body solenoid valves, 120-volt, single phase, 60 Hz, to control flow to the dewatering zone spray wash assembly.
 - Two (2) NEMA 4X full port stainless steel electric actuated ball valves to control flow to the drum spray wash and tank flush assemblies. Ball valve electric actuator shall be NEMA 4X 120 volt, single phase, 60 Hz.
 - One (1) non-contacting radar transmitter to detect start and high level.

HAULER STATION, CONTROL AND MONITORING, AND FLO-LOGIC SOFTWARE (TOTAL)

- One (1) Hauler Station, Control and Monitoring for Two (2) inlets, and Flo-Logic Software Package:
 1. The manufacturer shall provide a secured Hauler Access Station that shall identify waste haulers and be configurable to interface with associated equipment such as doors, gates, valves, samplers, and screens & washers.
 - a. Enclosure, NEMA 4X 304 stainless steel w/interior door and sub-panel.
 - b. Power Required: 120VAC, 5A.
 - c. Heavy Duty Key Lockable enclosure handle, with 3 Point door mechanism.
 - d. Panel Heater Kit, Heavy Duty with Thermostat.
 - e. Keypad, Stainless Steel, USB Type, for PIN number hauler identification.
 - f. User Display, Stainless Steel Bezel, Full Color, 1000 NIT Brightness.
 - g. Thermal Printer, Large Capacity paper roll and feeder, with illuminated print done chute.
 - h. Power Supply, 24 VDC.
 - i. Communication Controller, Solid State Storage, Dual LAN.
 - j. Local I/O Control as required.
 - k. UL Label, Industrial Control Assembly.

- I. Full Flo-Logic Hauler Management Software including the following features -
The data from each hauler transaction shall be collected and stored in a secure SQL database. The following data shall be collected:
 - i. Site ID
 - ii. Station ID
 - iii. Ticket Number (On Hauler Receipt)
 - iv. Hauler ID
 - v. Date and Time of Transaction
 - vi. Volume Unloaded
 - vii. Additional Process Analyzer Data
 - viii. Product Type ID
 - ix. Alarm ID
2. Two (2) influent valve and flow meter packages (one for each inlet), complete with:
 - a. Two (2) 4-inch flanged electrically actuated Ball Valves, NEMA 4X. (Shipped loose)
 - b. Two (2) 4-inch Flow meters, NEMA 4X rated with integral mount transmitter. (Shipped loose)
3. The Flo-Logic™ software shall allow the facility to manage each customer, who shall receive a Hauler ID number and 4-digit PIN number for each truck. PIN number assignment can be unique per truck or common to multiple trucks, depending on the facility and customer preference. The software shall allow the administrator to manually assign PIN numbers to trucks.
 - The Flo-Logic™ software shall allow the facility to enable or disable a truck's access privilege. Once disable, a hauler's access will immediately be denied at all sites. A message shall be displayed at log-in at the hauler station informing the hauler to contact the office.
 - The Flo-Logic™ software shall allow the facility to define the Hauler Access Station's operating time schedule. If the station is closed, a message will alert the hauler that the station is closed.
 - The Flo-Logic™ software shall have a pre-formatted reporting feature that will, at a minimum, show activity with daily totals and truck usage. The reports shall be easily exported into an Adobe PDF, Microsoft Excel spreadsheet, or Word document.
 - Remote (phone) support for orientation and installation assistance for the software system.

SPARE PARTS (TOTAL)

- None.

FIELD SERVICE (TOTAL)

- Site service of one (1) trip for a total of two (2) days for installation inspection, startup, and operator training.

OPTIONAL ITEMS

- Item A-1: Addition of a second Hauler Station with Flo-Logic for simultaneous hauler unloading.

CLARIFICATIONS/COMMENTS

- Please note that the base offering includes a single Hauler Station for dual inlet chains. This configuration allows for dual Hauler hook-up but does not allow for simultaneous dual Hauler unloading. A second Hauler Station has been offered as an option so that each inlet chain would have a designated Hauler Station, this allowing for simultaneous dual Hauler unloading.

NOTE: ANY ITEM NOT LISTED ABOVE TO BE FURNISHED BY OTHERS.

EXCLUSIONS

Taxes, electrical wiring, conduit or electrical equipment, piping, valves, or fittings, shimming material, lubricating oil or grease, shop or field painting, field welding, erection, hoist or lifting apparatus, detail shop fabrication drawings, performance testing, unloading, storage, concrete work, civil design, grating, platforms, stairs, hand railing, dumpster (except as specifically noted).

This proposal section has been reviewed for accuracy and is approved for issue:

By: Beth Emmelot Date: April 19, 2022

BUDGET

Item	Equipment	Budget Price
A	One (1) SAVI Beast Septage/FOG Receiving Station Model VFA-1400-DM	\$ 351,100
A-1	Adder – Include a second Hauler Station with Flow-Logic for simultaneous hauler unloading.	\$ 54,200

Validity:

Prices are valid for a period of 30 days from the date of this proposal.

Warranty Statement and Term:

SAVÉCO North America, Inc. warrants the supplied equipment to the original end user against defects in workmanship or material under normal use and service in compliance with the original design specifications and the maintenance requirements and instructions as found in the Operations & Maintenance Manual. All SAVÉCO North America supplied equipment is warranted for 12 months from date of start-up or 18 months from date of shipment, whichever occurs first.

Warranty Exclusions:

This warranty does not cover costs for standard and/or scheduled maintenance performed, nor does it cover consumables and SAVÉCO North America parts that, by virtue of their operation, require replacement through normal wear (aka: Wear Parts), unless a defect in material or workmanship can be determined by SAVÉCO North America. Wear parts are defined as brushes, rollers, spray nozzles, drum seals and other items specifically identified in the Operations & Maintenance Manual.

Warranty Coverage:

SAVÉCO North America's liability is limited to the supply or repair of defective parts returned, freight prepaid by buyer to a location specified by SAVÉCO North America. Repaired or replacement parts will be shipped to buyer prepaid via standard ground freight. Express or expedited shipments will be at the expense of the buyer.

Exclusions and Exceptions:

This Warranty excludes damage or wear to equipment caused by misapplication of product, improper maintenance, accident, abuse, unauthorized alteration or repair, Acts of God, or installation or operation that is non-compliant with SAVÉCO North America installation and operations instructions.

Limited Liability:

SAVÉCO North America shall not under any circumstances be liable for any incidental or consequential damages arising from loss, damage to property, personal injury or other damage or losses owing to the failure of SAVÉCO North America's equipment. The liability of SAVÉCO North America, Inc. is limited as set forth above within the time period set forth above.

Term: 15% with Submittal Approval
80% Net 30 Days after Shipment
5% Net 30 days after Startup. Startup not to exceed 180 days from equipment delivery.

Taxes: No sales or use taxes have been included in our pricing.

Freight: Prices quoted are F.O. B. shipping point with freight allowed to a readily accessible location nearest jobsite. Any claims for damage or loss in shipment to be initiated by purchaser.

Submittals: Full submittals will be supplied approximately **4 to 6 weeks** after receipt and acceptance of purchase order at the SAVÉCO North America offices.

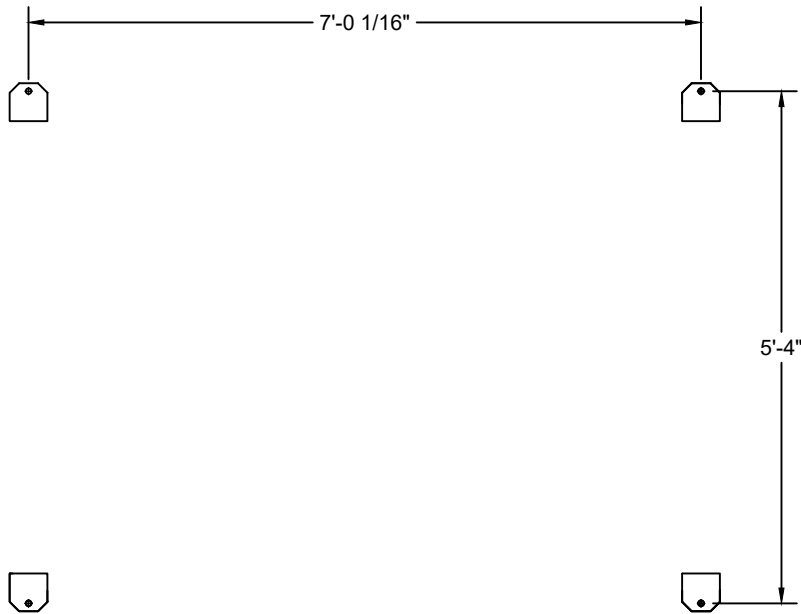
Shipment: Shipment time is approximately **18 to 20 weeks** after approved submittal is received at the SAVÉCO North America offices. Under no circumstances will verbal approval be accepted.

Additional Field Service: This service may be scheduled at \$1,250.00 per day plus expenses or is available through a yearly service contract.

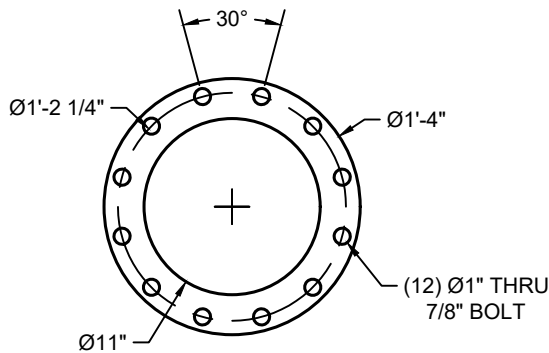
Material of Construction: SAVÉCO North America is providing the equipment from the type of material specified for this project. If from 304L stainless steel the concentration of chloride and hydrogen sulfide (H₂S) in the equipment operating environment shall be kept below the following values:

- Chloride <200 mg/L
- Hydrogen Sulfide (H₂S) <6ppm

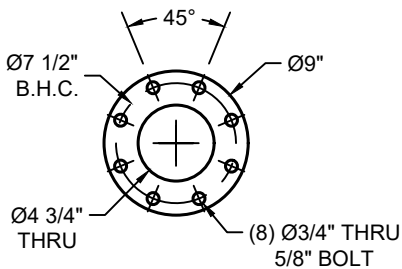
If not already done so, SAVÉCO North America can provide the equipment from 316L stainless steel for a price adder for environments that exceed the values noted above.



MOUNTING DETAIL
SCALE: 1/2" = 1'-0"

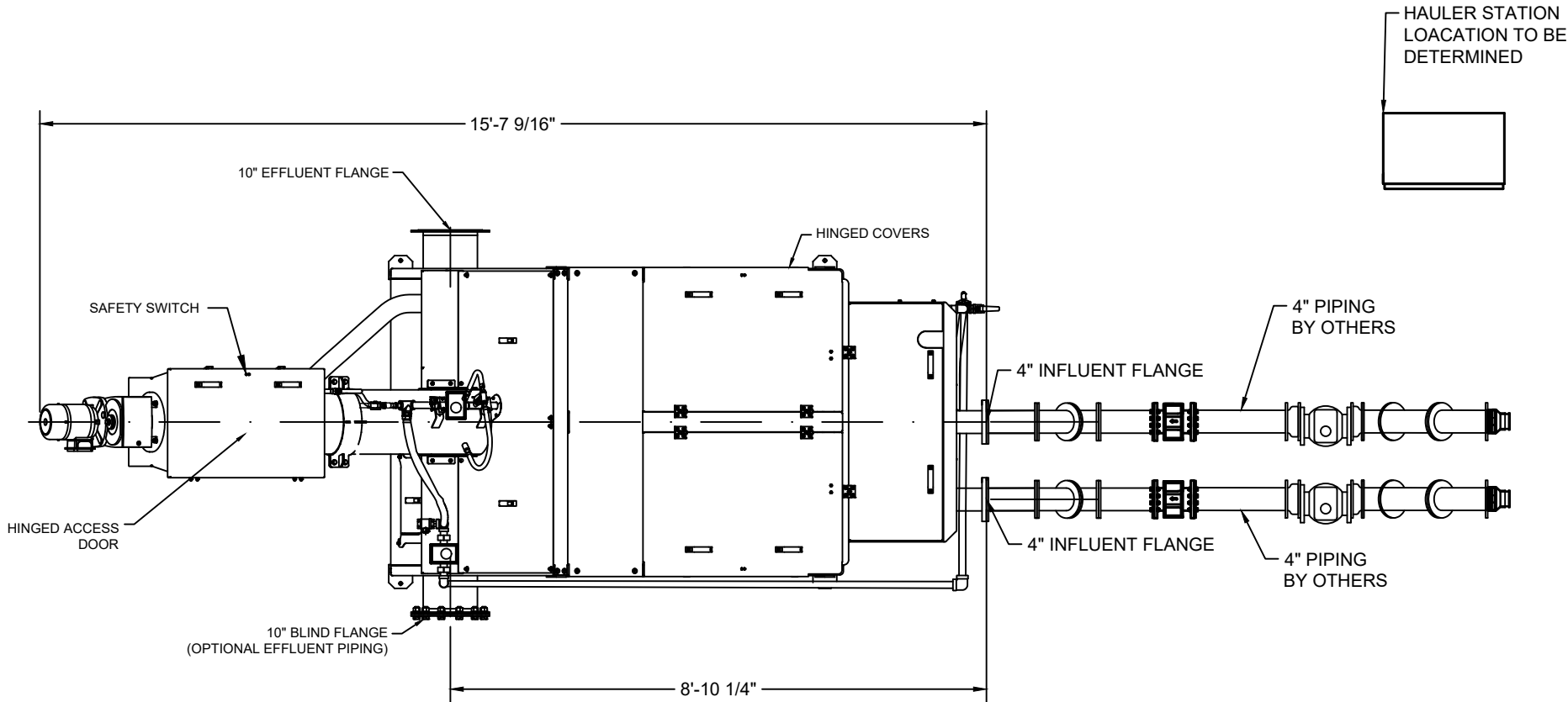


10" FLANGE - EFFLUENT
SCALE: 3/4" = 1'-0"

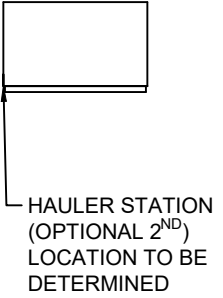
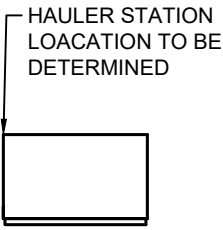


4" FLANGE - INLET
SCALE: 3/4" = 1'-0"

- NOTES:
- 1. CONCRETE, GROUT, INTERCONNECTING PIPING NOT BY SAVECO
 - 2. ALL INTERCONNECTING PIPING TO BE SELF SUPPORTING
 - 3. DRAWING NOT FOR CONSTRUCTION



PLAN
SCALE: 3/8" = 1'-0"



PROCESS DESIGN INFORMATION (EACH SCREEN):

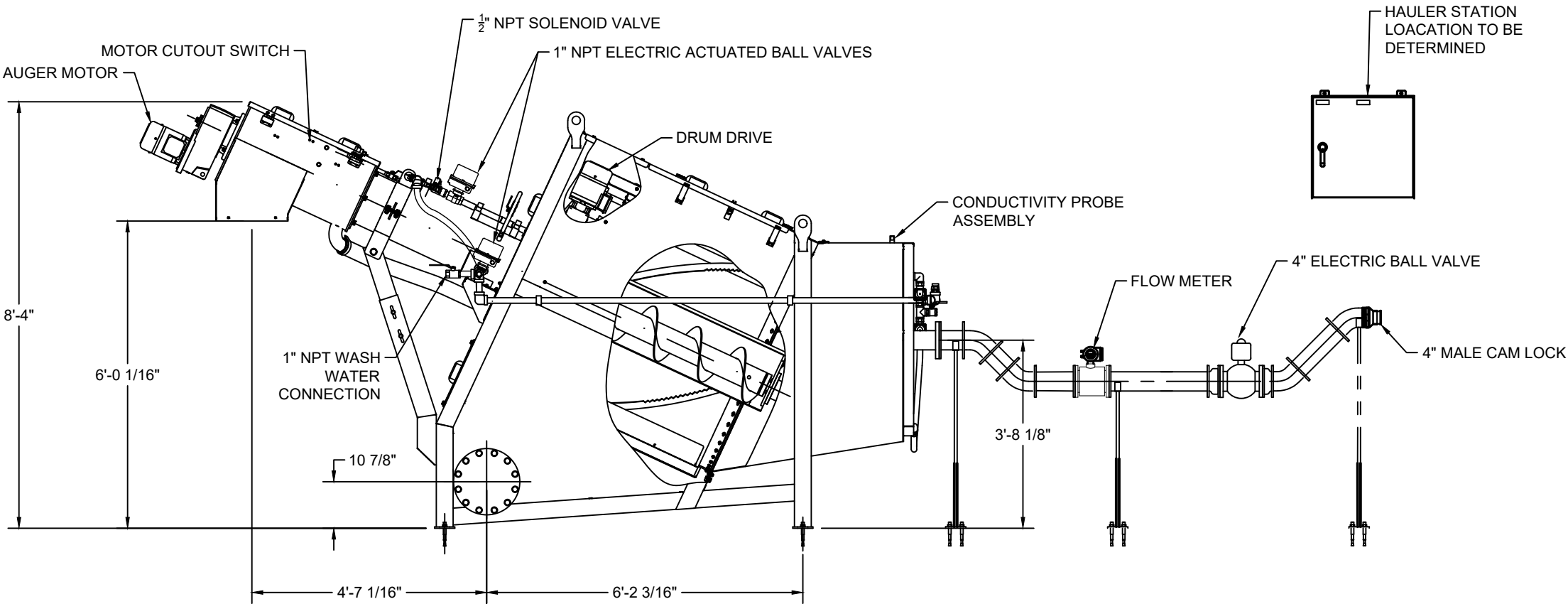
NUMBER OF UNITS:	ONE (1)
APPLICATION:	SEPTAGE/FOG RECEIVING
INFLUENT SOLIDS CONCENTRATION:	2-3 %
PEAK NOMINAL FLOW:	875 GPM
MAXIMUM CLEAN WATER FLOWRATE:	6,700 GPM
SCREEN PERFORATED OPENING:	6 MM
NOMINAL SCREEN BASKET DIA.:	55 INCHES
NOMINAL SCREW CONVEYOR DIA.:	10 INCHES
SCREENINGS DISCHARGE HEIGHT:	6.0 FEET ABOVE OPERATING FLOOR
DRUM DRIVE MOTOR HP:	2.0 HP
SCREW DRIVE MOTOR HP:	2.0 HP
SPRAY WASH WATER REQUIREMENT:	51 GPM @ 40-60 PSI
HOT WATER SPRAY REQUIREMENT:	33 GPM @ 40 PSI, 120°F



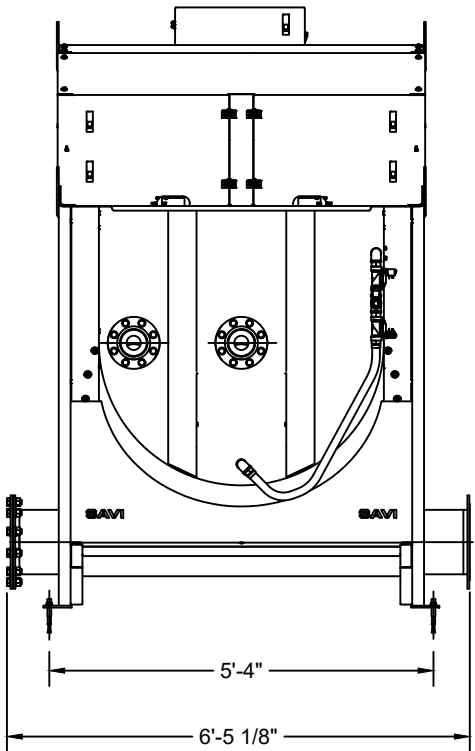
Project Information	
PROJECT NAME: ALBANY COUNTY WPD, NY	
Third Angle Projection	
PROPRIETARY AND CONFIDENTIAL	
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SAVECO NORTH AMERICA, INC. (FORMALLY ENVIRO-CARE COMPANY). ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SAVECO IS PROHIBITED. SAVECO RESERVES THE RIGHT TO ALTER DATA OR THE DESIGN OF ITS EQUIPMENT AT ANY TIME WITHOUT PRIOR NOTICE AND WITHOUT ANY OBLIGATION WHATSOEVER.	

Status: SALES DRAWING			
Title VFA-1400-DM SAVI BEAST FOG RECEIVING STATION			
Designer MB29	Checker JW24	Date 04-19-2022	Sheet 1 OF 2
Scale	Drawing Number WEC219394-A	Revision -	

- NOTES:
- 1. CONCRETE, GROUT, INTERCONNECTING PIPING NOT BY SAVECO
 - 2. ALL INTERCONNECTING PIPING TO BE SELF SUPPORTING
 - 3. DRAWING NOT FOR CONSTRUCTION



ELEVATION VIEW



INLET ELEVATION VIEW



SAVECO
Member of WAMGROUP®
Formerly Enviro-Care®

Project Information
PROJECT NAME: ALBANY COUNTY
WPD, NY


Third Angle
Projection

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Status: SALES DRAWING			
Title VFA-1400-DM SAVI BEAST FOG RECEIVING STATION			
Designer MB29	Checker JW24	Date 04-19-2022	Sheet 2 OF 2
Scale 3/8"=1'-0"	Drawing Number WEC219394-A		Revision -

Appendix J
Sludge Consolidation Alternative



Models:

HE3P6

PE3P6

SE3P / S3P

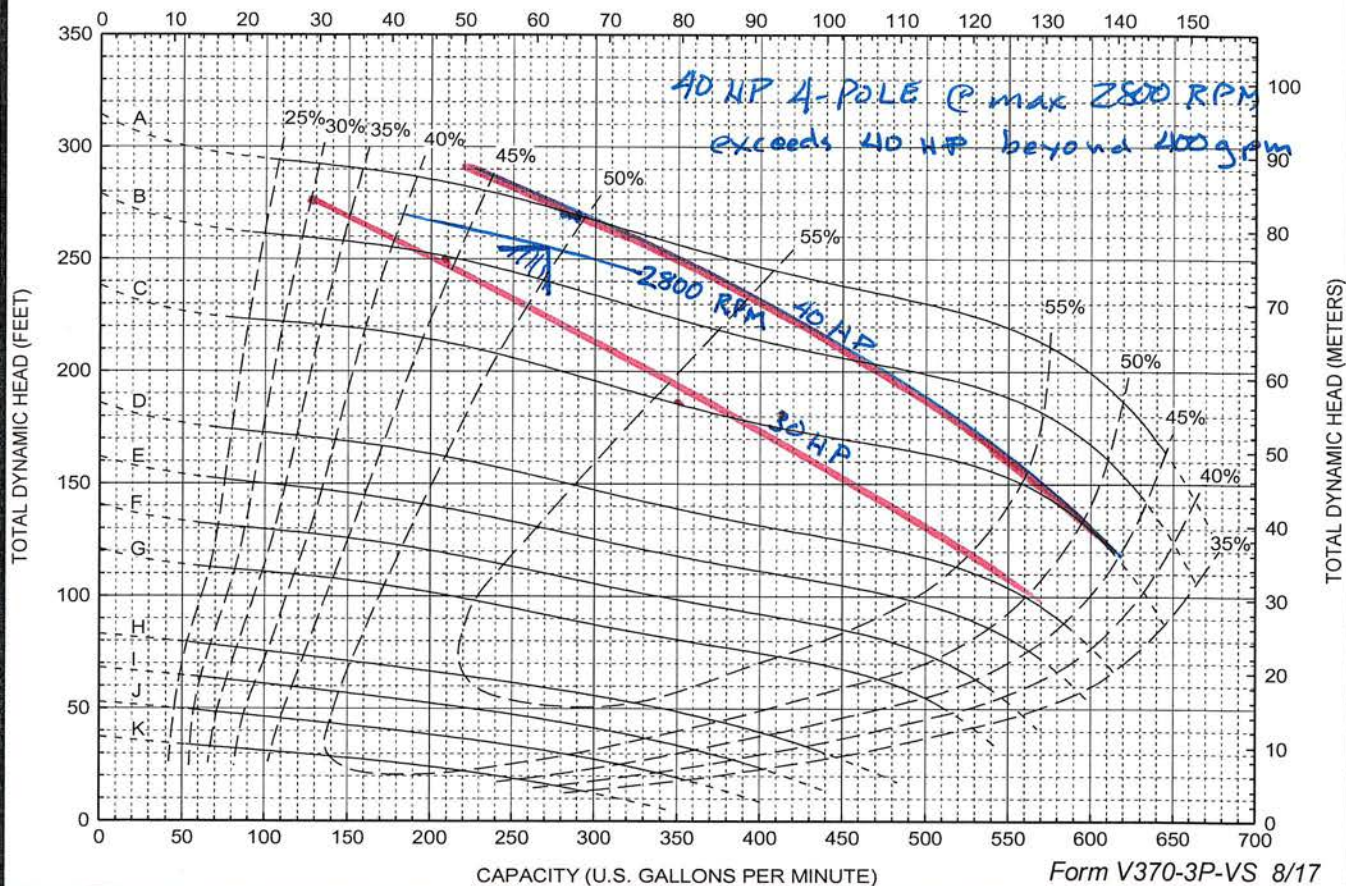
DP

Back-Pull-Out Casing
3-Blade Impeller
3" Discharge
6" Suction
Variable Speed Curve

CURVE	POWER (HP/KW)	SPEED (RPM)	IMPELLER DIAMETER
A	60 / 45	2900	10.30" (262mm)
B	50 / 37	2720	10.30" (262mm)
C	40 / 30	2500	10.30" (262mm)
D	30 / 22	2200	10.30" (262mm)
E	25 / 18.5	2050	10.30" (262mm)
F	20 / 15	1900	10.30" (262mm)
G	20 / 15	1750	10.30" (262mm)
H	10 / 7.5	1460	10.30" (262mm)
I	7.5 / 5.5	1325	10.30" (262mm)
J	7.5 / 5.5	1170	10.30" (262mm)
K	5 / 4	970	10.30" (262mm)

DO NOT OPERATE PUMP IN DOTTED PORTION OF CURVES. PUMPS MAY EXCEED HP SHOWN IF OPERATED IN DOTTED PORTION OF CURVE. CURVES ARE SUBJECT TO CHANGE WITHOUT NOTICE. EFFICIENCIES SHOWN ARE NOMINAL BOWL. GUARANTEED MINIMUM EFFICIENCIES PER H.I. LEVEL A.

CAPACITY (CUBIC METERS PER HOUR)



BUDGET PROPOSAL



Albany, NY

Equipment:

HUBER Sludgcleaner STRAINPRESS® 290

Represented by:

Koester Associates, Inc.
Rob Samuels
(315) 697-3800
rsamuels@koesterassociates.com

Regional Sales Director:

Brian Baker
704-840-3085
Brian.Baker@hhusa.net

Project Number: 420086
Revision: 0
Date: 5/23/2022

Design Information

Technical Data			
Sludge Type	Waste Activated Sludge		
Upstream Biological Process	Activated Sludge with Secondary Clarifier		
Upstream Digestion Process	Anaerobic Digester	with 30 day sludge age	
Design Feed Rate (given)	450		gpm
Feed Sludge Concentration	0.5		%
Calculated Hydraulic Loading Rate (per unit)	450 at 0.5% feed solids		gpm
Nominal Hydraulic Loading Rate (per unit)	485 at 0.5% feed solids		gpm
Nominal Alternate Hydraulic Loading Rate (per unit)	440 at 1% feed solids		gpm
Estimated Screenings Solids Content ¹	25-35		%
Sludge Inlet Diameter	4		inch
Sludge Outlet Diameter	4		inch
Approximate Sludgeline Empty Weight	1525		lbs
Approximate Sludgeline Full Weight	2425		lbs

¹All performance is estimated based on typical sludgeline performance. Pilot testing is recommended to provide guaranteed performance values.

Equipment Details

Model	HUBER Sludgeline STRAINPRESS® 290
Quantity	1
Material	304L stainless steel construction; pickled and passivated in acid bath
Basket Material	5 mm, perforated plate; 304L stainless steel
Auger Material	304L stainless steel, stellite tipped screening section for wear protection
Pressure Sensor	IFM pressure sensor
Moisture Sensor	Baumer moisture sensor
Support Legs	304L stainless steel
Anchor Bolts	M12, 316L stainless steel
Motor Data	5 hp drive motor, 460 VAC, 60 Hz, 3 ph

Control Details

One (1) Main Control Panel	
Enclosure	NEMA 4X, Stainless Steel
PLC	Allen Bradley MicroLogix
HMI	Allen Bradley PanelView 4"
Pre-programmed and Factory Tested	

Pricing

Equipment	Model	Quantity	Pricing
HUBER Screw Press	STRAINPRESS® 290	1	Included
HUBER Control Panel	HUBER Standard	1	Included
Freight and Startup Services	Standard HUBER Start-up Services	2 days, 1 trips	Included
TOTAL:			\$196,000.00

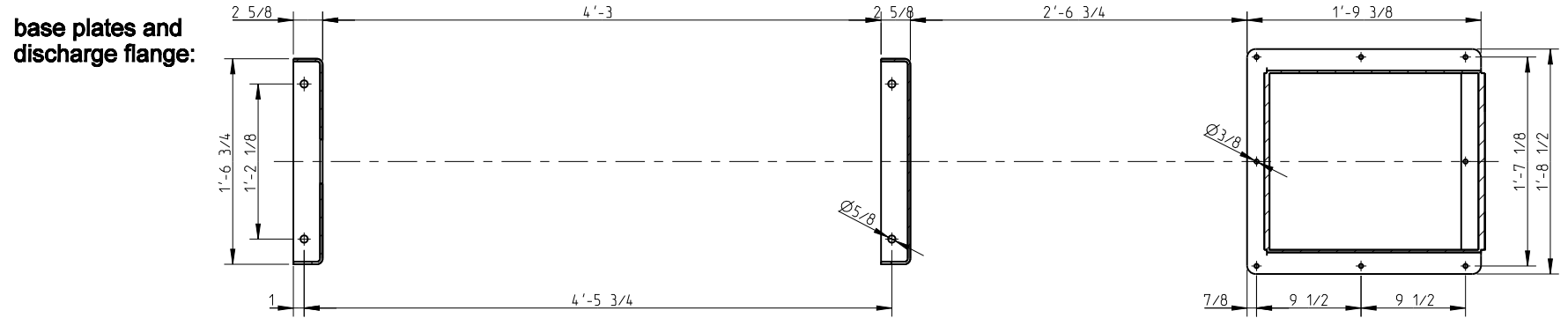
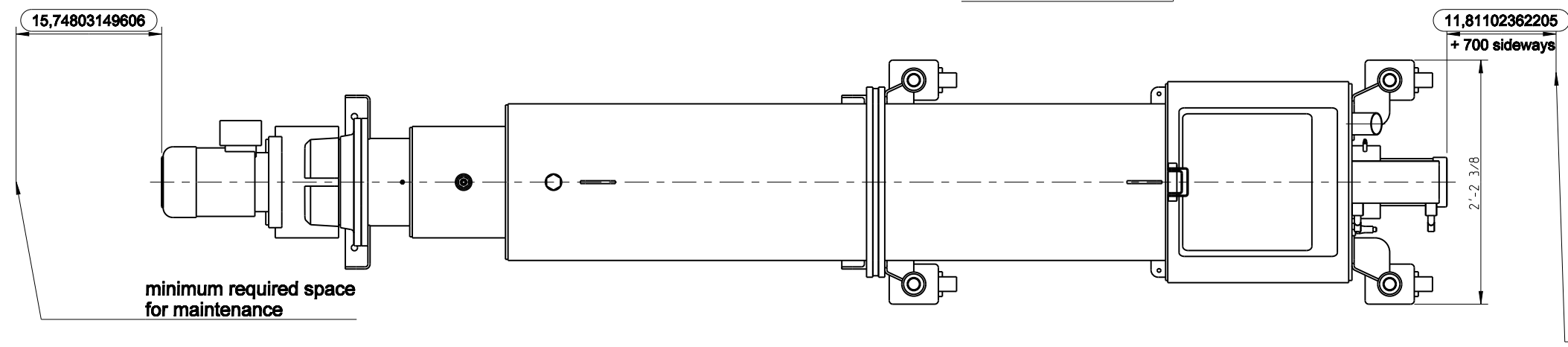
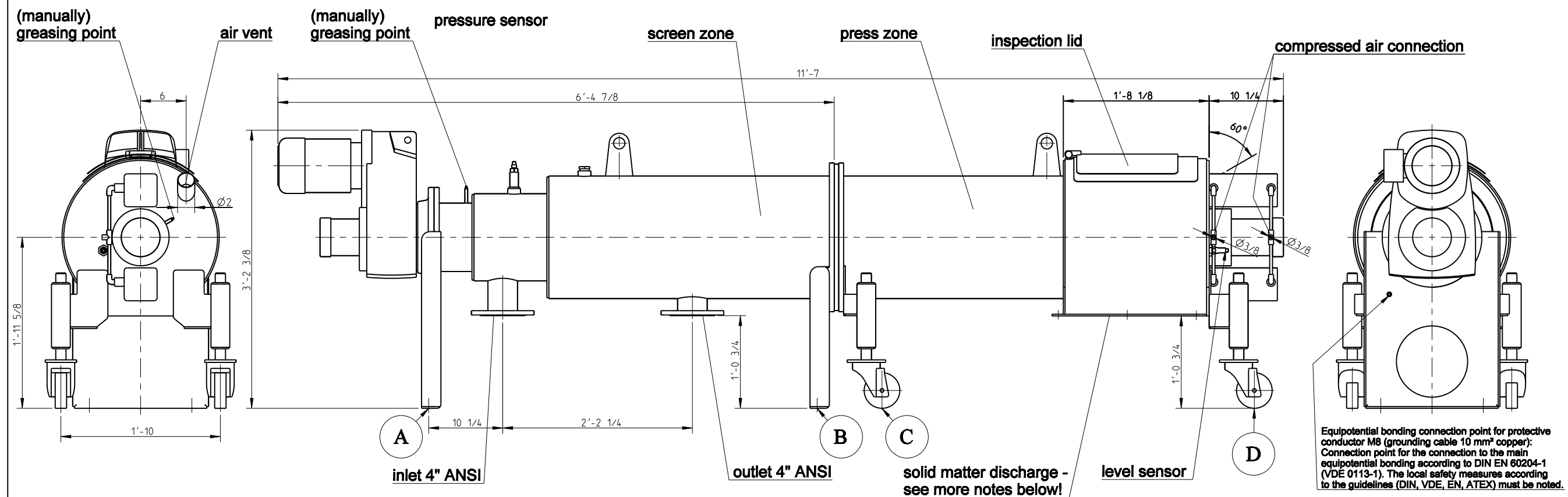
Standard delivery is 22-26 weeks from approval of submittals.

Thank you for your interest in HUBER Technology, Inc. If you have any questions, please do not hesitate to contact our Regional Sales Director or our local sales representative.

This proposal has been reviewed for accuracy and approved for issue by: CP

Notes and Technical Clarifications

- Equipment specification and drawings are available upon request.
- If there are site-specific hydraulic constraints that must be applied, please consult the manufacturer's representative to ensure compatibility with the proposed system.
- Electrical disconnects required per local NEC code are not included in this proposal.
- All electrical interconnections, wirings, junction boxes, and terminations between the equipment and electrical components are to be provided by installing contractor.
- HUBER Technology warrants all components of the system against faulty workmanship and materials for a period of 12 months from date of start-up or 18 months after shipment, whichever occurs first.
- Budget estimate is based on HUBER Technology's standard Terms & Conditions and is quoted in US dollars unless otherwise stated.
- Equipment recommendations are based on information provided to HUBER Technology. Subsequent information which differs from what has been provided may alter the equipment recommendation.
- Any item not specifically listed is not considered part of this scope of supply. Please contact the HUBER Technology representative listed for further clarification.



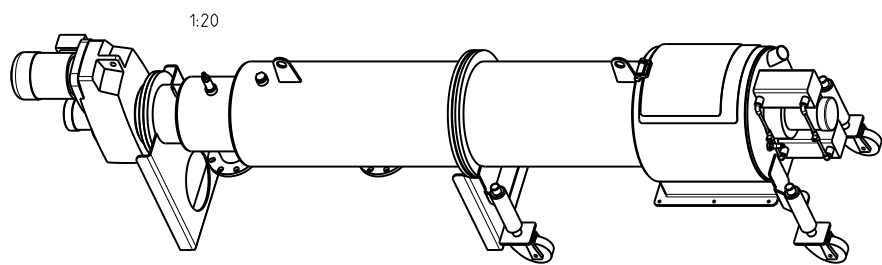
empty weight: 1525 Lbs

weight with filling: 2425 Lbs

load distribution at point:

A	B	C	D
≈ 35 %	≈ 20 %	≈ 20 %	≈ 25 %

inlet / outlet flange drilled according to DIN and ANSI (4")



- Compliance of the machinery directive: For the planning and building construction security precautions, safety requirements as well as country specific regulations must be respected.
- Comply with safety distances for reaching and passing through to solid discharge: Chute / shaft (H > 850 mm) closed on all sides optionally or customer supplied (slot opening at flange < 10 mm). Alternatively provide protective structures!
- Anchor base: Normal reinforced concrete, concrete strength minimal C20/25 up to a maximum of C50/60.
- Anchor type: Company Hilti AG, type bolt anchor HST2-R M12x105/10 (minimal component thickness 140 mm)
- The firm standing of the machine is only guaranteed after anchoring!

Intellectual property of HUBER Technology, Inc. Technical information subject to change.			HUBER TECHNOLOGY WASTE WATER Solutions 9735-A Northcross Center Ct., Huntersville, NC		HUBER Sludgescleaner		
Designed:	ak	18.09.2009	Scale: 1:10		STRAINPRESS® 290		
Approved:	II	II	Fig. No: 1/1		Dimension Sheet		Size: C
Modified:	ak	15.07.19	And.: 3190		Masssblatt - sheet of dimensions		Drawing No: 51208976
Rev.	Modification						



354 State Route 29, Greenwich, New York 12834
Phone No 518-695-6851
E-mail: dan@bdpindustries.com

Date: Monday, May 23, 2022

To: Barton & Loguidice

Attn: Nicholas Despart
(518) 218-1801
ndespart@bartonandloguidice.com

Re: Albany County, NY – Thickening Upgrades
Two (2) 2.0m GBT Gravity Belt Thickener
BDP Quotation # 052322-1332

BDP Industries, Inc. is pleased to offer our quotation for Two (2) (one duty and one standby) GBT Gravity Belt Thickener and accessories. The GBT will be designed to thicken WAS or co-thicken a blend of primary wastewater solids and WAS. Below is a summary of our scope of work.

EQUIPMENT DESCRIPTION

The GBT equipment package includes Two (2) complete gravity belt thickener and appurtenant equipment described as follows:

1. Two (2) 2.0m GBT with the following design features:
 - a. Hot Dipped Galvanized tubular frame.
 - b. Polyurethane clear coat on the gravity zone slide decks zone.
 - c. Machined bearing pads.
 - d. Up-flow feedbox.
 - e. Sixteen foot, variable speed gravity section at operator level.
 - f. 1/4" x 3" stainless steel gravity deck support spaced every 12 inches.
 - g. Ten (10) rows of adjustable, furrowing plows with 304 stainless steel support bars.
 - h. Automatic plow lifts for unattended operation.
 - i. UHMW scraper blades.
 - j. Nylon covered rollers.
 - k. 304 stainless steel wetted parts.
 - l. 304 stainless steel hardware.
 - m. 40 PLI hydraulic tensioning and tracking.
 - n. 304 stainless steel sludge dam.
 - o. Corrosion resistant composite cylinders with 316 stainless steel rods and stainless steel hardware.
 - p. Self-cleaning, adjustable angle belt showers with Victualic connections.
 - q. Dodge, closed end, split case bearings rated for 1,000,000 hours at 40 PLI at 15 ft/min.
 - r. TEFC, IP 65 severe duty variable speed motors.
 - s. PVC conduit.
 - t. Zero speed switches for the gravity belts.
 - u. Low water pressure switch.
 - v. Electrically actuated full port valve for shower bar.
 - w. NEMA 4X low voltage junction boxes.
 - x. Main incoming power 460/3/60

2. Two (2) complete Control Panel for thickening system control function and drives.
 - a. NEMA 4X
 - b. 304 stainless steel
 - c. UL 508
 - d. PLC: Allen Bradley Compact Logix
 - e. HMI: Allen Bradley 12" Color Panelview Plus 7 OIT
 - f. Ethernet communication
 - g. 460/3/60
 - h. Contains all interlocks and controls for the GBT, booster pump, hydraulic unit and press mounted drives.
3. Two (2) 316L stainless steel polymer injection and polymer/sludge mixing system consisting of an injection ring, variable vortex mixer and reducing fittings.
4. Two (2) 2 HP hydraulic power units with a 20-gallon, 304 stainless steel reservoir.
5. Two (2) 5 HP Goulds model SSH wash water booster pumps capable of boosting from 50 to 120 PSI at a flow rate of 40 GPM. The wash water system will include a low water pressure switch and pressure gauge.
6. Two (2) 304 stainless steel discharge hopper with level control sensor.
7. One (1) lot of start-up spare parts.
8. All start-up, mechanical checkout and operator training as specified. Service to include four (4) separate trips with ten (10) days of on-site services.
9. One-year machine warranty three year warranty for the hydraulic system, bearings, frame, frame coating, rollers and roller coatings.
10. Freight to the jobsite.

Optional and Ancillary:

11. Two (2) 304 stainless steel odor control hoods with clear Lexan sliding doors and explosion proof lights.
12. Two (2) 304 stainless steel, 3/8" thick plate frame, Enclosed GBT design to contain odor and filtrate.
13. Two (2) TSS meter capable of monitoring inlet feed solids of the sludge and will be capable of auto pacing the polymer feed to each unit.
14. Two (2) Polymer System with the following components:
 - a. Two (2) BDP Mannich Polymer blending units with 50 GPH progressive cavity pump with 2400 GPH dilution water capability.
 - b. Two (2) 500-gallon 316L stainless steel polymer age tanks. Each age tank with have a pressure sensor for level control and a separate high level capacitance probe.
 - c. Three (3) 2 HP Seepex Progressive Cavity Polymer solution pumps capable of 7 GPM at 50 PSI and 300 RPM.
 - d. Two (2) complete polymer system control panel with the following features:
 - 1) 304 stainless steel, NEMA 4X.
 - 2) Allen Bradley Compact Logix PLC.



354 State Route 29, Greenwich, New York 12834

Phone No 518-695-6851

E-mail: dan@bdpindustries.com

- 3) Allen Bradley 12" color Panelview Plus OIT.
- 4) IEC motor starters.
- 5) Allen Bradley 525 Variable Frequency Drives.
- 6) 460/3/60
- 7) UL508
- 8) Ethernet communication.

The model GBT will come completely factory-assembled, tested and will be shipped in one piece. The polymer injection device, hydraulic unit, and belt media will be packed separately. This quotation is for furnishing equipment only and does not include any other installation labor or field services other than checkout, start up and testing services as listed above. All installation, on-site assembly, anchorage, pads and other work required to facilitate the setting of the equipment is to be by others. All labor and material for interconnecting between the press and the auxiliary equipment is to be completed by others.

ITEMS NOT INCLUDED IN THIS SCOPE OF SUPPLY

1. Sludge feed pumps.
2. TWAS pump.
3. Flow meter.
4. Temporary thickening.
5. Unloading at the jobsite.
6. Installation.
7. Operator platforms.
8. Sump grating.
9. Anchor bolts.
10. Applicable taxes of any kind.

SUBMITTAL DATA

Submittals will be made in the number of copies specified and will be available within 8 to 10 weeks after firm purchase order and all information is received at the factory.

SHIPMENT

Approximate shipping weight of each unit is 9,000 pounds. Estimated shipping time is 24 to 30 weeks after receipt of submittal approval.

FIELD SERVICE

Installation observation, testing and operator instruction services as listed above will be supplied. Additional service can be supplied at a service rate of \$1,200 per day plus travel expenses.

BUDGET PRICING

The total price for the above equipment is listed below (US Dollars). This price includes the shipping cost to the job site or nearest unloading point. The price does not include unloading cost and applicable taxes of any kind. This quotation will be valid for sixty (60) days from the date of this proposal.



354 State Route 29, Greenwich, New York 12834
Phone No 518-695-6851
E-mail: dan@bdpindustries.com

Qty	Description	Unit Price	Total Price
2	2.0m GBT	\$195,000	\$390,000
2	Control Panel	\$35,000	\$70,000
2	Discharge Hopper	\$7,500	\$15,000
2	Wash Water Booster Pump	\$7,500	\$15,000
1	Lot of Spare Parts	\$12,500	\$12,500
1	Start Up Service & Freight	\$15,500	\$15,500
	Total		\$518,000.00
	<i>Optional and Ancillary</i>		
2	304 Stainless Steel Odor Control Hoods	\$20,000	\$40,000
2	304 Stainless Steel Enclosed GBT Frame	\$40,000	\$80,000
2	Inlet Consistency Meters	\$40,000	\$80,000
2	Polymer Age System, Polymer Pumps, VFDs and Control Panels	\$130,000	\$260,000
	Total Cost		\$978,000.00

TERMS

Terms of payment are 30% with purchase order, 60% upon shipment of equipment and 10% upon start up. The attached Conditions of Sale are hereby made a part of this proposal.

We appreciate this opportunity to extend our quotation. If we can answer questions or supply additional information, please do not hesitate to contact Rich Suriano with Koester Associates at 518-888-4413.

Sincerely,

A.J. Schmidt
BDP Industries, Inc.

cc: Dan Fronhofer, P.E., BDP Industries, Inc.
Rich Suriano, Koester Associates, Inc.

CONDITIONS OF SALE - COS 5-86

1.1. General –

This contract will exist between BDP Industries, Inc. (hereafter referred to as BDP) and the buyer only when accepted in writing by an officer of BDP. The prices quoted herein are firm for a period of 60 days if a contract is entered within thirty (30) days from the date on the face of this proposal. Any amendment to this contract must be in writing and acknowledged by both parties.

1.2. Terms of Payment –

Payment is to be made on a net basis within thirty (30) days after invoice, subject to credit approval by BDP. The buyer's payment obligation is not dependent upon the buyer's receipt of payment from any other party. BDP reserves the right to invoice on partial shipments. Any balance owed by the buyer beyond thirty (30) days or more after due is subject to delinquency charges of 1.5% per month or any fraction thereof. This shall be in addition to any other amounts due and buyer shall reimburse BDP for all collection costs, including attorney's fees BDP may incur with respect to collection of past due amounts from the buyer.

1.3. Taxes –

This proposal does not include any Federal, State or Local Sales, Privilege, Use or any other taxes of any kind applicable to the sale of the equipment covered under this agreement. The buyer shall pay these taxes or the buyer shall provide BDP with a tax exemption certificate applicable to proper taxing authority.

1.4. Shipment –

All shipment will be F.O.B. factory. Shipping estimates contained herein are based on time of receipt at BDP's factory of all details pertaining to the order which are essential to contract completion.

1.5. Force Majeure –

BDP shall not be liable for any loss or damage of any nature whatsoever incurred or suffered as a result of any failures or delays in performance due to any cause or circumstances beyond its, or its subcontractors' or suppliers' control, including, but not by way of limitation, failure or delays in performance caused by strikes, lockouts or labor disputes, acts of purchaser, fires, acts of God or the public enemy, riots, incendiaries, interferences by civil or military authorities, compliance with the laws of the United States or with the orders or policies of any Governmental authority, delays in transit or delivery on the part of transportation companies or communication facilities or failure of sources of raw material. In the event of such delay, the time of delivery or completion shall be extended by a period of time equal to the period of delay plus such time as needed for start-up and/or remobilization, provided however, should the Force Majeure situation extend beyond six months the contract may be canceled by either party. Purchaser shall reimburse BDP for all costs and expenses including overhead costs which BDP may have reasonably incurred in terminating the contract, plus an amount as reasonable profits on that portions to the contract which has been completed.

1.6. Warranty –

BDP warrants the equipment manufactured by it to be free from defects in materials and workmanship for a period of 24 months from the date of shipment or 18 months from the date of start-up, whichever occurs first. BDP will repair or replace, at its option, F.O.B. its factory, any defective part or material, provided prompt notification is rendered in writing. The repair or replacement of items such as light bulbs, grease, oil, drive belts or chains, pump seals, etc. are not covered by this warranty and are considered normal consumption and routine maintenance items. In addition to the replacement of defective parts, BDP will also provide such labor as it deems necessary, to repair a defect in the main frame structure. BDP will not assume the cost of any modification or repair of its equipment unless it specifically gives authority for such action. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS. BDP MAKES NO WARRANTY AS TO FITNESS OF ITS PRODUCTS FOR PARTICULAR PURPOSE OR MERCHANTABILITY.

1.7. Limitation of Liability –

In no event, be it due to breach of any warranty hereunder or any other cause rising out of performance or non-performance of the obligations herein, whether any such breach or cause be or sound in tort, contract or otherwise, shall BDP be liable for:

- a) Indirect, special or consequential damages (such as, but not limited to, loss of profits, plant downtime, fines, penalties, or cost of replacement services) or suet by third parties against the purchaser (excluding suits regarding patents on title to the goods furnished hereunder).
- b) BDP's total cumulative liability for any and all reasons, shall not exceed an amount equal to the contract price.

1.8. Claims –

The buyer shall immediately inspect equipment within ten (10) days after receipt, BDP is not obligated to consider any claim for shortages or non-conformance unless notified by the buyer within ten (10) days after his receipt of the



354 State Route 29, Greenwich, New York 12834
Phone No 518-695-6851
E-mail: dan@bdpindustries.com

goods in question, BDP is not responsible for loss of damage in transit, however they will lend any possible assistance to the buyer in his pursuit of claim recovery.

1.9. Cancellation –

BDP will accept cancellation of this order upon receipt of payment for percentage of the contract equal to a percentage of the work completed. This shall be, at a minimum, 20% of the contract price.

1.10. Storage –

If the buyer delays shipment, then the buyer agrees to pay all invoices as they become due. The buyer further agrees to pay, in addition, storage charges computed at 1.5% per month of the invoice price of equipment stored.

1.11. Permits –

The buyer shall assume full cost and responsibility to obtain all permits or licenses with respect to the installation and operation of the equipment covered under this agreement. This shall include all requirements by Federal, State and Local governmental bodies.

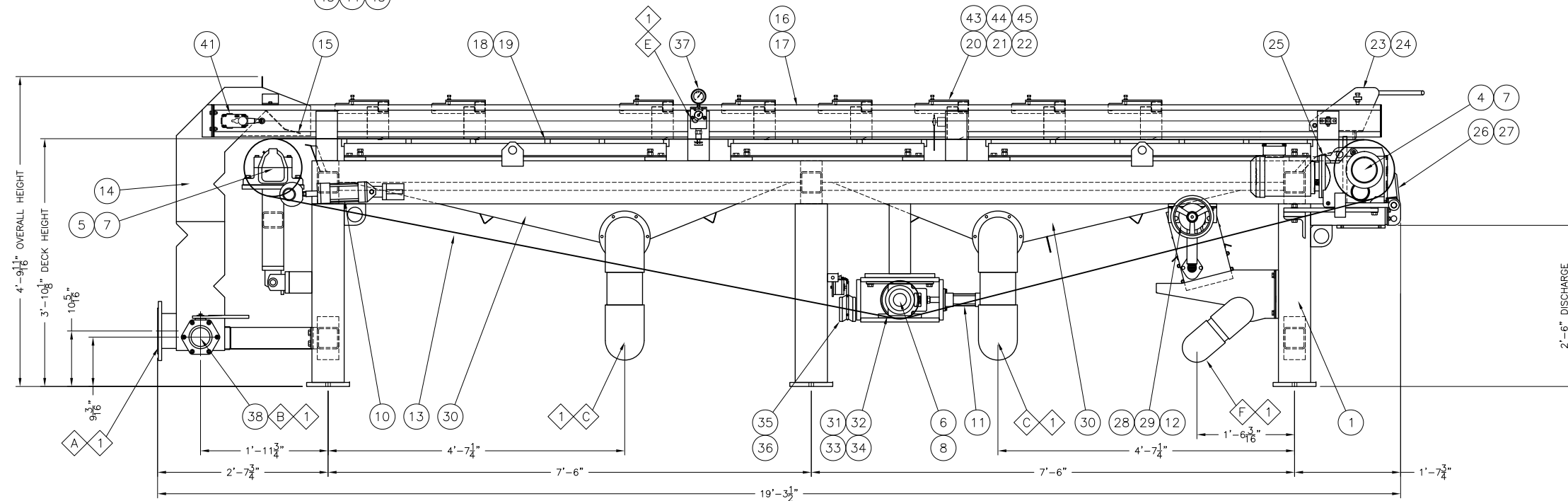
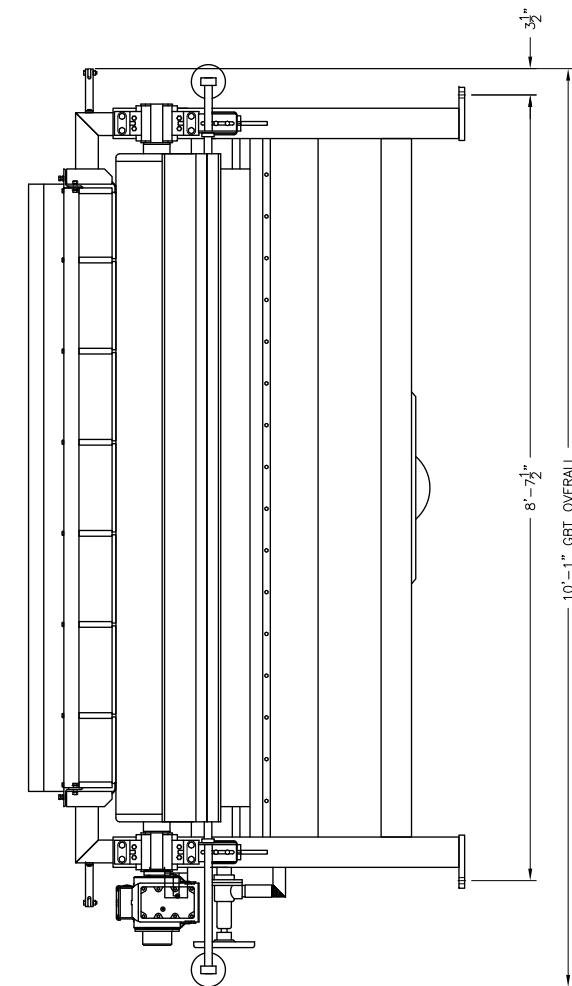
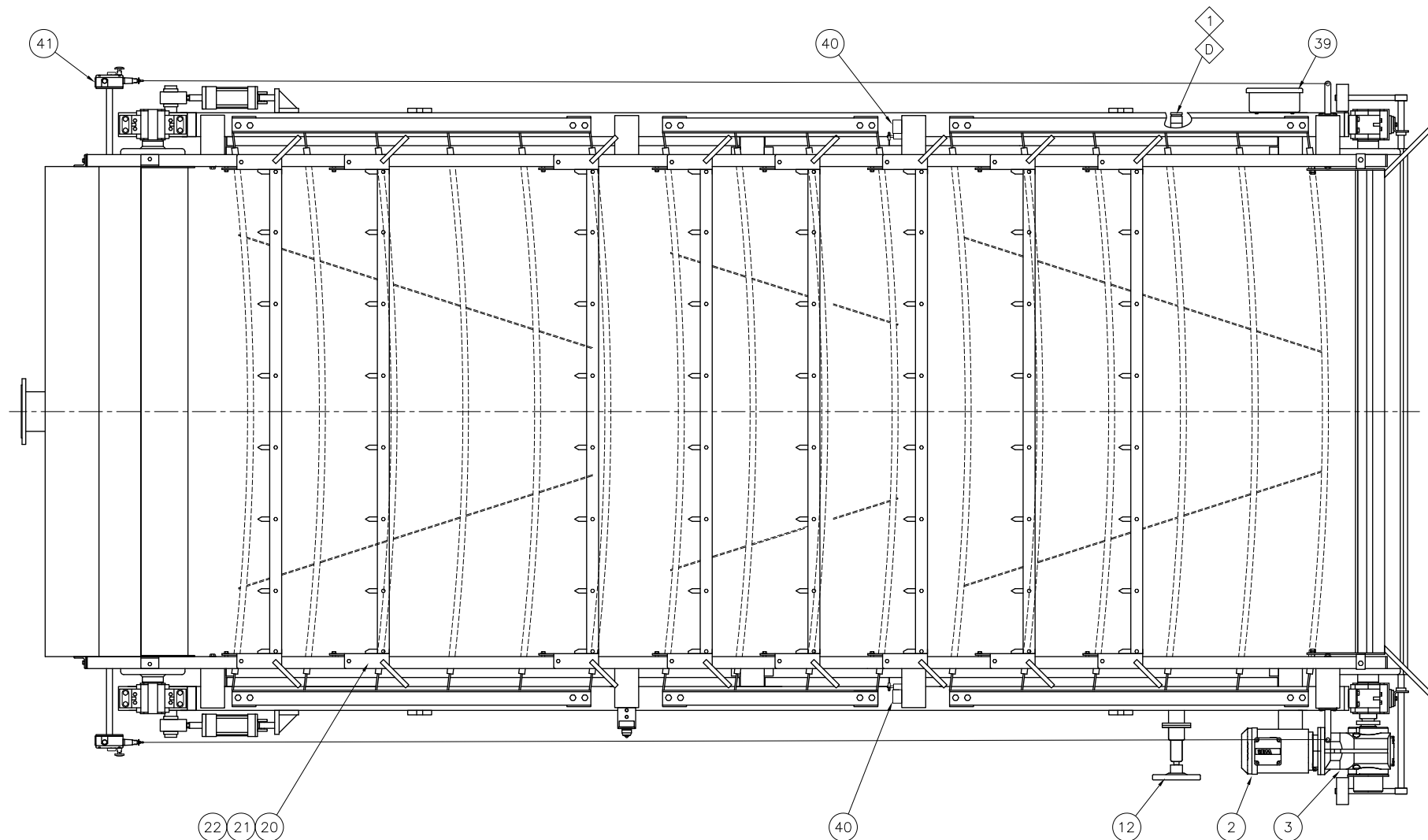
This contract shall be governed in accordance with the laws of the State of New York. These conditions and terms are the only terms and conditions that will be binding upon the parties unless amended, and acknowledged, in writing by both parties. No assignment of this proposal or any purchase order resulting here from shall be binding on BDP unless accepted in writing by BDP.

**Albany County, NY
THICKENING SYSTEM
DESIGN CALCULATIONS
Gravity Belt Thickener
South Plant Blended Sludge**

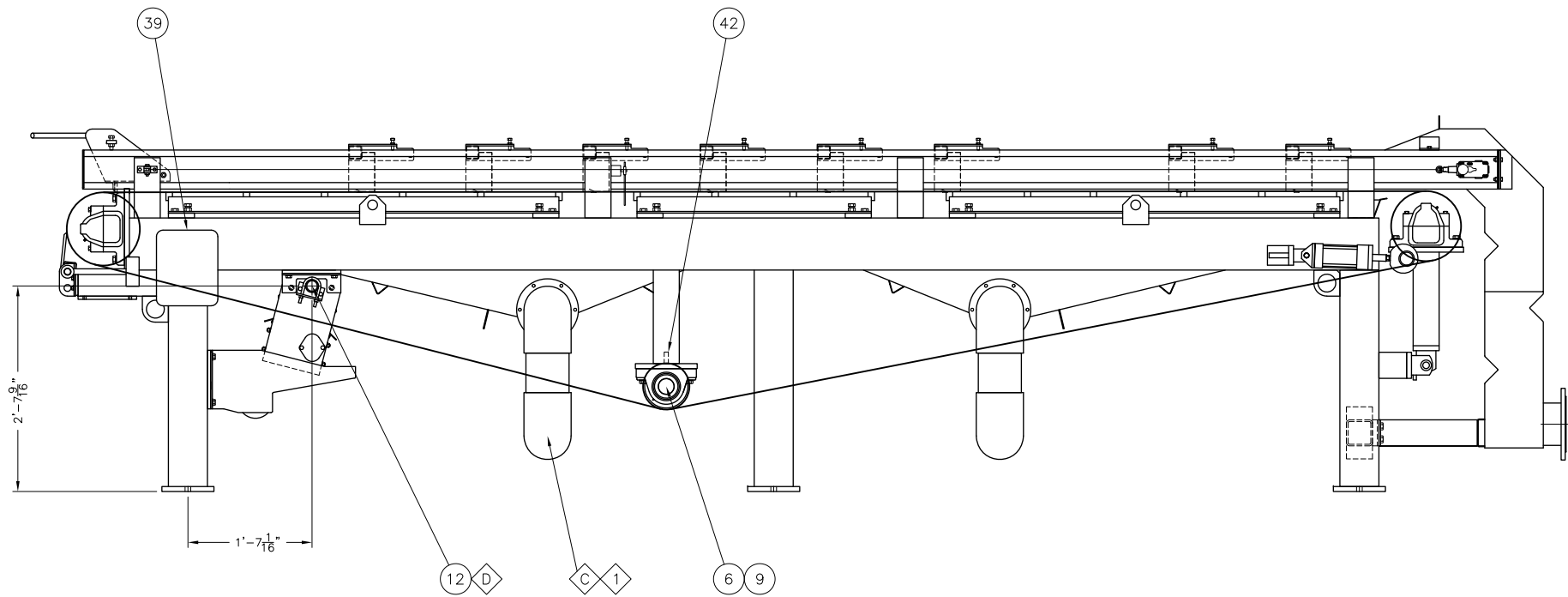
Description	Average Day	Max Month	UNITS
Primary Sludge Quantity	58,525	74,117	Gallons per Day
WAS Quantity	165,231	227,607	Gallons per Day
Primary Sludge Concentration	2.00	2.00	%TS
WAS Sludge Concentration	0.63	0.63	%TS
Blended Daily Thickening Volume	223,756	301,724	Gallons per Day
Blended Sludge Concentration	0.99	0.97	%TS
Daily Operating Schedule	24	24	Hours per Day
Weekly Operating Schedule	7	7	Days per Week
Weekly Thickening Operation	168	168	Hours per Week
Daily Solids Loading Rate	18,486	24,424	Pounds per Day
Weekly Solids Loading Rate	129,400	170,965	Pounds per Week
Yearly Solids Production	3,364	4,445	Dry Tons per Year
Total Weekly Thickening Volume	1,566,292	2,112,068	Gallons per Week
Total Solids Loading	770	1,018	Pounds per Hour
Total Hydraulic Loading	155	210	Gallons per Minute
Number of Units in Operation	1	1	No. of Units
Size of Units	2.0	2.0	Meters
Hydraulic Loading Rate Per Meter	78	105	Gallons per Minute per Meter
Expect Polymer Dosage	6 - 10*	6 - 10*	Pounds per Dry Ton Active
Expected Discharge Solids	5 - 8*	5 - 8*	%

*Polymer Dosage and Discharge Solids can be confirmed with Bench Testing

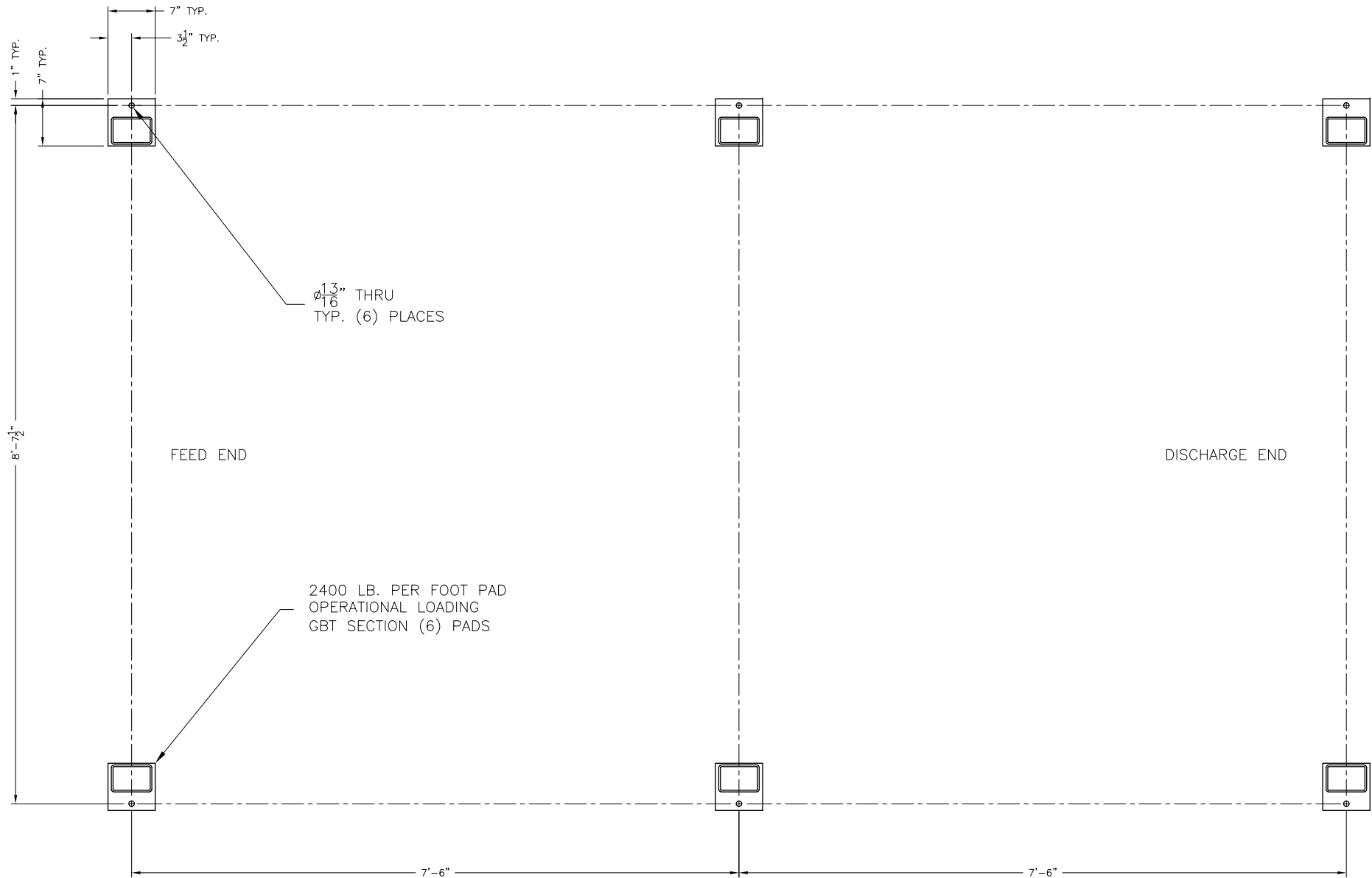
Operating Costs			UNITS
Total Hours per Week of Operation	168	168	Hours
Total Hours per year	8,736	8,736	Hours (total of all operating units)
Polymer Costs			
Total Polymer Usage	25,233	33,338	Pounds of Active Polymer per Year
Total Polymer Cost (\$1.10/lb of Neat)	\$61,680.67	\$81,493.08	\$ per Year
Wear Parts Cost			
Set of Media - Annual Cost	\$1,638.00	\$1,638.00	Replaced every 3,000 - 5,000 hours
Hydraulic oil, Grease and Filters	\$436.80	\$436.80	\$ per Year
Total Maintenance Cost	\$2,074.80	\$2,074.80	\$ per Year
Energy Consumption			
Hydraulic Unit	1	1	HP
Belt Drive	3	3	HP
Washwater Booster Pump	3	3	HP
Total kW	4.69	4.69	kW per Hour
Yearly Energy Cost	\$4,916.62	\$4,916.62	\$ per Year (at \$0.12 / kW-hr)
Water Consumption			
Wash Water Requirement Per Unit	46	46	GPM
Total Costs	\$68,672.09	\$88,484.51	\$ per Year



QTY.	DESCRIPTION	MAT.	ITEM	REMARKS
 BDP INDUSTRIES, INC. GREENWICH, N.Y. 12834				
CUSTOMER: ZEELAND, MI		MACHINE: 2.0m GBT		DWG TITLE GENERAL ARRANGEMENT 2.0m GRAVITY BELT THICKENER
BDP JOB NO. 1579	DWN BY: MJG	DATE: 3/21/21		
APPD BY:	SCALE:	SHT. OF 1 3	DWG NO. 1-1579-1	REV. 3



QTY.	DESCRIPTION	MAT.	ITEM	REMARKS
		BDP INDUSTRIES, INC. GREENWICH, N.Y. 12834		
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BDP JOB NO. 1579	DWN BY: MJG	DATE: 3/21/21		
APPD BY:	SCALE:	SHT. OF 2 3	DWG NO. 1-1579-1	REV. 3



FOOT PAD LAYOUT

NOTES:

1. PIPING BEYOND THIS POINT INDEPENDENTLY SUPPORTED (NOT BY BDP).
2. FRAME IS HOT DIP GALVANIZED PER ASTM A123.
3. ALL WETTED STAINLESS STEEL SHEET AND PLATE IS TYPE 304 SS. ALL FASTENERS AND HARDWARE ARE TYPE 304 SS.
4. ITEMS NOT OTHERWISE PROTECTED ARE COATED WITH 8 MILS URETHANE ENAMEL PER BDP PAINT SPECIFICATION QA94-006.
5. HYDRAULIC TUBING AND FITTINGS ARE TYPE 316 SS.
6. ELECTRICAL LINES ARE ENCLOSED IN PVC CONDUIT.
7. APPROXIMATE WEIGHT: 11,000 LB. DRY
14,400 LB. OPERATING
8. SEW EURODRIVE GEAR DRIVE KT77DRN100LM4-IP66; 3 HP, 58.34:1, 460V/60Hz, 2.00" BORE, SHAFT ENTRY 'A', NON-SYMMETRICAL, MOUNTING POSITION M1, CONDUIT BOX AT 270°, CABLE ENTRY LOCATION 'X'
9. THREE (3) 75mm BEARING ASSEMBLY CONSISTS OF A CLOSED END HOUSING (CH4S-215-USAF), BEARING INSERT (22215C3), AND SEAL (38TTDN307). ONE (1) DRIVE BEARING ASSEMBLY WITH OPEN END HOUSING (H4S-215-USAF) AND WITH ADDITIONAL SEAL (24TTDN213).

CONNECTION LEGEND:

- A 6" FEED INLET FLANGE; HOLE PATTERN PER A.S.A. 150# FLANGE
- B 3" FEED BOX DRAIN WITH BALL VALVE
- C (4) 6" FILTRATE COLLECTION PAN OUTLET
- D 1-1/2" VICTAULIC SHOWER INLET
- E 1/2" SAE-8 HYDRAULIC MANIFOLD PRESSURE/RETURN
- F 4" SHOWER PAN DRAIN

8	EXCELSIOR UPRIGHT (LEFT)	UHMW	45	3-310-790 (P3)
8	EXCELSIOR UPRIGHT (RIGHT)	UHMW	44	3-310-790 (P2)
48	EXCELSIOR UPRIGHT (CENTER)	UHMW	43	3-310-790 (P1)
1	ZERO SPEED	A. B.	42	871TM-BH8N18-H2
2	EMERGENCY STOP ASSEMBLY	A. B.	41	440E-L13133
2	BELT MISALIGNMENT SWITCH	A. B.	40	802MC-AY5
1	ELECTRICAL JUNCTION BOX	304 SS	39	NEMA 4X
1	3" BALL VALVE DRAIN	PVC	38	
1	HYDRAULIC CONTROL MANIFOLD	R.W. EARL	37	06056A
1	BELT ALIGNING PADDLE	316 SS	36	3-710-1000 (P2)
1	BELT ALIGNING VALVE	MICROTORK	35	375SST
1	ALIGNING SLED SLIDE SURFACE	UHMW	34	3-710-547 (P1)
1	ALIGNING BEARING SLED	304 SS	33	3-710-1659 (G1)
1	ALIGNING BEARING RAIL	BRASS	32	3-710-547 (P2)
1	BELT ALIGNING ASSEMBLY	304 SS	31	
2	FILTRATE COLLECTION PAN	304 SS	30	6" OUTLET
4	SHOWER ENCLOSURE SEAL	RUBBER	29	3-710-1494 (P2)
1	BELT SHOWER ENCLOSURE	304 SS	28	
1	DOCTOR BLADE	UHMW	27	3-310-98 (P3)
1	DOCTOR BAR	304 SS	26	
1	DRIVE ROLL SEAL	RUBBER	25	3-310-678 (P6)
1	SLUDGE DAM BLADE	UHMW	24	3-310-1101
1	SLUDGE DAM ASSEMBLY	304 SS	23	
16	EXCELSIOR END BLADE	UHMW	22	3-310-794 (P4)
40	EXCELSIOR CENTER BLADE	UHMW	21	3-310-793
8	EXCELSIOR PLOW SUPPORT BAR	STEEL	20	HDG
16	SLIDE BAR	UHMW	19	3-310-91 (P3)
3	SLIDE BAR SUPPORT ASSEMBLY	304 SS	18	
2	GUIDE RAIL SEAL	RUBBER	17	3-310-261 (P2)
2	GUIDE RAIL ASSEMBLY	304 SS	16	
1	FEED BOX/BELT SEAL	RUBBER	15	3-310-944
1	FEED BOX ASSEMBLY	304 SS	14	6"-150# INLET
1	DEWATERING BELT; 86" x 448"	CLEAR EDGE	13	66650B , NO.1 SEAM
1	BELT WASH SHOWER, .079"	APPLETON	12	149720
1	ALIGNING CYLINDER, Ø2"x2"	SPRINGVILLE	11	S000164
2	TENSION CYLINDER, Ø3-1/4"x4"	SPRINGVILLE	10	S000162
1	2-7/16" TAKE-UP BEARING	LINKBELT	9	TB22439E7E7CSS
1	2-7/16" UNIBLOCK BEARING	LINKBELT	8	PB22439E7E7CSS
4	75mm USAF BEARING	DODGE	7	NOTE 9
1	7" ALIGNING ROLL	EAA	6	3-710-1876
1	11" TENSION ROLL	NYLON	5	2-310-454
1	11" DRIVE ROLL	EAA	4	2-310-455
1	GBT REDUCER; 58.34:1	SEW	3	NOTE 8
1	BELT DRIVE MOTOR, 3HP	SEW	2	NOTE 8
1	TUBULAR STEEL FRAME	A500 GR.B	1	HDG
QTY.	DESCRIPTION	MAT.	ITEM	REMARKS



BDP INDUSTRIES, INC.
GREENWICH, N.Y. 12834

CUSTOMER: ZEELAND, MI		MACHINE: 2.0m GBT		DWG TITLE GENERAL ARRANGEMENT 2.0m GRAVITY BELT THICKENER	
BDP JOB NO. 1579		DWN BY: MJG		DATE: 3/21/21	
APPD BY:		SCALE:		SHT. OF 3 3	
DWG NO. 1-1579-1				REV. 3	

3	UPDATE BOM PART NUMBERS	SKD	5/20/21
2	ADD DIMS TO DRAINS	MJG	4/26/21
REV.	DESCRIPTION	BY	DATE

Appendix K
Sludge Mixing Equipment

Rebuild-it Services Group
4188 W Nike Drive
West Jordan, Utah 84088
www.rebuild-it.com



RSG
Clarifier Experts



PROPOSAL DATE: August 18, 2021

PROPOSAL NUMBER: Q123022-D

PREPARED FOR:

Albany County Water Purification District
1 Canal Road, South
Albany, New York 12204
PH: 518.447.1624
Attention: Angelo Gaudio
E-Mail: angelo.gaudio@albanycountyny.gov

SCOPE OF WORK:

Replacement clarifier/mixer drive unit and underwater steel including turn-key labor services.

PREPARED BY:

Rebuild-it Services Group, LLC.
4188 West Nike Drive
West Jordan, Utah 84088
Terry A. Reyburn
Main: (888) 709-5676
Direct: (385) 235-6924
Mobile: (801) 828-5369
E-Mail: treyburn@rebuild-it.com
Website: rebuild-it.com

REPRESENTED BY:

Grundeen & Associates
Richard Suriano
PH: 518-888-4413
E-Mail: rich@grundeen.com
www.grundeen.com



PROJECT SUMMARY:

Rebuild-it Services Group, LLC. (RSG) is pleased to offer the following proposal for the installation of the new drive mixer and the underwater steel for an existing 39' dia. paddle agitator mechanism. We also included our turn-key labor services. Original Dorr-Oliver serial no. 80358-01.

SCOPE OF WORK:

New Clarifier/ Paddle Agitator- 39' Dia. Underwater steel and new drive:

- New PRE shaft drive unit- DS-P062-147-87
 - o 50,000 ft lbs.
 - o 2.7 RPM – 40HP 230/460/3/60
 - o Two switch overload control device.
 - o Same model as supplied on SO # 51025
- Rake Shaft
- Rake Arm with blades
- Stirring Upright
- Stirring horizontal
- Bracing
- Tie Rods
- Squeegees, 304SS with stainless-steel fasteners
- Steady bearing
- Assembly fasteners 304SS
- Engineering- Field service visit may be needed to verify dimensions.
- Engineering drawings and O&M manual
- Freight to job site.
- Coating: (2) coats see details below.

Submerged steel: Surface preparation of SSPC-SP10 followed by Two (2) coats of Thnemec N69 hi-build epoxy to 4-6 mils DFT.

EXCLUDED ITEMS FROM SCOPE OF SUPPLY:

- Walkway or platform
- Electrical controls, mounting plates, brackets, conduit, wiring, mounting channels, light posts, photocells, etc.
- Concrete work
- Lubricating oils / greases

- Bi-metallic protection for aluminum handrail, floor plating.
- Access stairways, walkways, gratings, handrailing, etc. outside the tank.
- Scum spray systems, or other water piping.
- Parts not mentioned above



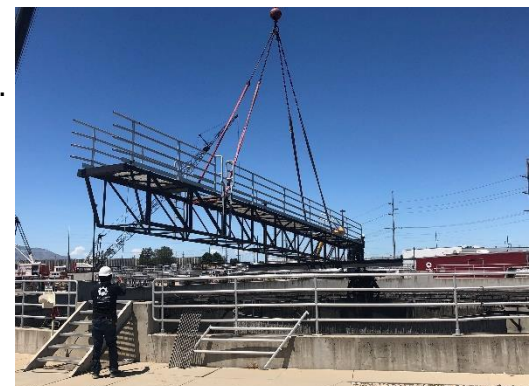
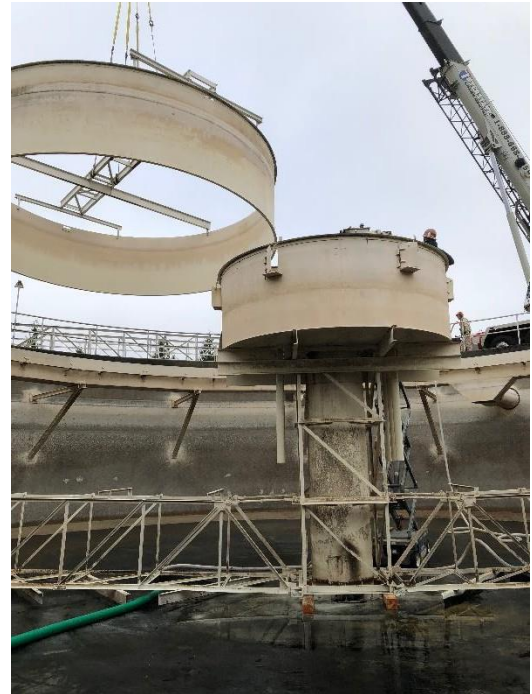
Albany, NY Bridge Supported Drive Unit supplied by RSG

RSG TURN-KEY LABOR SERVICES:

- The scope of work for this project is as follows:
- Site mobilization and travel time to the job site.
- Removal of drive unit
- Removal of underwater steel
- Installation of new drive unit.
- Installation of new steel components
- Crane, mats, rigging equipment as needed.
- Rake and drive leveling.
- Touch up paint only
- Prevailing wage
- Provide assistance during start-up & testing
- Provide all required confined space entry equipment, hoisting & rigging.
- A foreman/safety QC manager will be on site throughout the project.
- Work to be performed in one (1) mobilization.
- Demobilization of personnel and equipment.
- Field service start-up and check out services.

This proposal excludes the following items:

- Electrical disconnect and reconnect
- Permits, fees, and/or stamped engineering documents
- Provision of Full-Time Safety & QA/QC manager.
- Overtime premiums or weekend work
- Temp facilities including porta-johns and disposal bins.
- Concrete demolition and/or repair.
- Covered tank or dome: Removal of dome or access panels.
- Grouting of the tank or concrete work.
- Assumes reasonable access to basins.
- No coating on site- touch up paint only if needed.
- Hazardous material abatement, handling and/or disposal.
- Any work not specifically included.
- Draining and cleaning of the tank
- Disposing of old debris/parts.
- Lubrication for drive unit.





PRICING:

Pricing for one replacement 39' dia. paddle mixer clarifier with drive unit as described above.....\$207,496.00

Pricing for turn-key labor services as described above.....\$97,342.00

SCHEDULE:

Submittals: 2-3 weeks.

Delivery of drive unit and steel components: 13-16 weeks

Labor services: 3-4 days on site

Check-out services: 1 day

Please be sure to reference this quotation number and date on your purchase order.

Remit order to:

Rebuild-it Services Group, LLC.

P.O. Box 1493

West Jordan, Utah 84084

Attention: Candace King, cking@rebuild-it.com



PRICING AND PAYMENT TERMS:

We appreciate the opportunity to offer our parts & services. Upon receipt of an order, we assure you of our continued interest and service. RSG will provide the best service possible to ensure we exceed your expectations. The actual lead-times are based on the schedule and inventory at the time of ordering as lead times are subject to change according to the current job schedule.

This proposal, including all terms and conditions contained herein, shall become part of any resulting contract or purchase order. Changes to any terms and conditions, including but not limited to submittal and shipment days, payment terms, and escalation clause shall be negotiated at order placement, otherwise the proposal terms and conditions contained herein shall apply.

Terms: If not outline otherwise in the proposal, terms for the parts and/or equipment are 100% due after shipment or service is completed. Net 30 days from shipment or after service is completed. If the project exceeds \$50,000.00 for materials, then the payment terms are 50% up front for engineering and raw materials and 50% due shipment, still net 30 days. The prices are good for 60 days.

Sales Tax: No sales taxes, use taxes, or duties have been included in our pricing. We are required to collect sales tax for the following states: Utah, California, and Washington. If you are not tax exempt, please remit taxes directly to the governing authorities.

Freight: Prices quoted are F.O.B. shipping point with freight prepaid and shipped to a readily accessible location nearest to the jobsite, unless otherwise indicated, unless otherwise noted. All claims for damage or loss in shipment shall be initiated by purchaser.

Shipment: Shipping times noted within this proposal are estimated and will be finalized once an order has been received and accepted.

Field Service: Prices do not include field service unless noted in the rebuild scope of work description. Additional field service is available at \$1,200.00 per day plus expenses.

Carbon and Stainless-Steel Escalation: Any material price increase from the proposal date to material procurement that is greater increase from the stated price of more than 5% are herein subject to price escalation. The escalation shall be based on the increase of cost, without additional profit. Any revisions or changes requested by the customer will be priced on a case-by-case basis. The steel pricing and escalations are based on the material index located at www.steelbb.com.

WARRANTY & TERMS AND CONDITIONS:

Parts and/or Equipment manufactured or rebuilt and sold by Rebuild-it Services Group, once paid for in full, is backed by the following warranty:



Proposal No. Q123022-D

For the benefit of the original user, RSG warrants all new parts and equipment sold or rebuilt by RSG, LLC. to be free from defects in material and workmanship, and will replace or repair, F.O.B. its

factories or other location designated by it, any part or parts returned to which RSG's examination shall show to have failed under normal use and service by the original user within three (3) years following initial start-up, or three (3) years and six (6) months from shipment to the purchaser, whichever occurs first, unless otherwise mentioned.

Such repair or replacement shall be free of charge for all items except for those items such as resin, filter media and the like that are consumable and normally replaced during maintenance, with respect to which, repair or replacement shall be subject to a pro-rata charge based upon RSG's estimate of the percentage of normal service life realized from the part. RSG's obligation under this warranty is conditioned upon its receiving prompt notice of claimed defects, which shall in no event be later than thirty (30) days following expiration of the warranty period, and is limited to repair or replacement as aforesaid.

This warranty is expressly made by RSG and accepted by purchaser in lieu of all other warranties, including warranties of merchantability and fitness for particular purpose, whether written, oral, express, implied, or statutory. RSG shall not be liable for normal wear and tear, corrosion, or any contingent, incidental, or consequential damage or expense due to partial or complete inoperability of its equipment for any reason whatsoever.

This warranty shall not apply to equipment or parts thereof which have been altered or repaired outside of a RSG factory, or damaged by improper installation, application, or maintenance, or subjected to misuse, abuse, neglect, accident, or incomplete adherence to all manufacturer's requirements, including, but not limited to, Operations & Maintenance Manual guidelines & procedures. When buying a drive or drive rebuild, if the drive control has not been hooked up or disabled, the warranty on the drive is not valid. If the recommended or equivalent oil is not used or correct quantity is not applied, it will void the warranty. It is the customers responsibility to grease and lubricate the drives, if this is not done on a regular basis it will void the warranty.

This warranty applies only to equipment made or sold by Rebuild-it Services Group, LLC (RSG). RSG makes no warranty with respect to parts, accessories, or components purchased by the customer from others. The warranties which apply to such items are those offered by their respective manufacturers.

CONFIDENTIALITY:

All the information in this quotation is confidential and has been prepared for your use solely in considering services described. Transmission of all or any parts of this information to others or use by you for other purposes is unauthorized without our written consent.

TERMS AND CONDITIONS:

Terms and Conditions appearing in any order based on this proposal which are inconsistent herewith shall not be binding on Rebuild-it Services Group (RSG). The sale and purchase of equipment described herein shall be governed exclusively by the foregoing proposal and the following provisions:



Proposal No. Q123022-D

1. SPECIFICATIONS: RSG is furnishing its standard equipment as outlined in the proposal and as will be covered by final approved drawings if applicable. The equipment will, however, meet the general intention of the mechanical specifications of these documents.

2. ITEMS INCLUDED: This proposal includes only the equipment specified herein and does not include erection, installation, accessories, nor associated materials such as controls, piping, etc., unless specifically listed.

3. PRICE AND DELIVERY: All selling prices quoted are subject to change without notice after 30 days from the date of this proposal unless specified otherwise. Unless otherwise stated, all prices are F.O.B. RSG or its supplier's shipping points. All claims for damage, delay or shortage arising from such equipment shall be made by Purchaser directly against the carrier. When shipments are quoted F.O.B. job site or other designation, Purchaser shall inspect the equipment shipped, notifying RSG of any damage or shortage within forty-eight hours of receipt, and failure to so notify RSG shall constitute acceptance by Purchaser, relieving RSG of any liability for shipping damages or shortages.

4. PAYMENTS: All invoices are net 30 days. Delinquencies are subject to a 1.5 percent service charge per month or the maximum permitted by law, whichever is less on all past due accounts. Pro rata payments are due as shipments are made. If shipments are delayed by the Purchaser, invoices shall be sent on the date when RSG is prepared to make shipment and payment shall become due under standard invoicing terms. If the work to be performed hereunder is delayed by the Purchaser, payments shall be based on the purchase price and percentage of completion. Products held for the Purchaser shall be at the risk and expense of the Purchaser. Unless specifically stated otherwise, prices quoted are for equipment only. These terms are independent of and not contingent upon the time and manner in which the Purchaser receives payment from the owner.

5. INSTALLATION SUPERVISION: Prices quoted for equipment do not include installation supervision, unless otherwise noted. RSG recommends and will, upon request, make available, RSG's then current rate, an experienced installation supervisor to act as the Purchaser's employee and agent to supervise installation of the equipment. Purchaser shall at its sole expense furnish all necessary labor equipment, and materials needed for installation.

Responsibility for proper operation of equipment, if not installed by RSG or installed in accordance with RSG or original manufacture instructions and inspected and accepted in writing by RSG or manufacture representing RSG.

RSG will supply the safety devices described in this proposal or shown in RSG's or manufacture represented drawings furnished as part of this order but excepting these, RSG shall not be required to supply or install any safety devices whether required by law or otherwise. The Purchaser hereby agrees to indemnify and hold harmless RSG from any claims or losses arising due to alleged or actual insufficiency or inadequacy of the safety devices offered or supplied hereunder, whether specified by RSG or Purchaser, and from any damage resulting from the use of the equipment supplied hereunder.

6. ACCEPTANCE OF PRODUCTS: Products will be deemed accepted without any claim by Purchaser unless written notice of non-acceptance is received by RSG within 30 days of delivery if shipped F.O.B. point of shipment, or 48 hours of delivery if shipped F.O.B. point of destination. Such written notice shall not be considered received by RSG unless it is accompanied by all freight bills for said shipment, with Purchaser's notations as to damages, shortages and conditions of equipment, containers, and seals. Non-accepted products are subject to the return policy stated below.

7. TAXES: Any federal, state, or local sales, use or other taxes applicable to this transaction, unless specifically included in the price, shall be for Purchaser's account.

8. INSURANCE: From date of shipment until the invoice is paid in full, Purchaser agrees to provide and maintain at its expense, but for RSG benefit, adequate insurance including, but not limited to, builders risk insurance on the equipment against any loss of any nature whatsoever.

9. SHIPMENTS: Any shipment of delivery dates recited represent RSG's best estimate but no liability, direct or indirect, is assumed by RSG for failure to ship or deliver on such dates.

RSG shall have the right to make partial shipments; and invoices covering the same shall be due and payable by Purchaser in accordance with the payment terms thereof. If Purchaser defaults in any payment when due hereunder, RSG may, without incurring any liability therefore to Purchaser or Purchaser's customers, declare all payments immediately due and payable with maximum legal interest thereon from due date of said payment, and at its option, stop all further work and shipments until all past due payments have been made, and/or require that any further deliveries be paid for prior to shipment.



Proposal No. Q123022-D

If Purchaser requests postponements of shipments, the purchase price shall be due and payable upon notice from RSG that the equipment is ready for shipment; and thereafter any storage or other charge RSG incurs on account of the equipment shall be for the Purchaser's account.

If delivery is specified at a point other than RSG or its supplier's shipping points, and delivery is postponed or prevented by strike, accident, embargo, or other cause beyond RSG reasonable control and occurring at a location other than RSG or its supplier's shipping points, RSG assumes no liability in delivery delay. If Purchaser refuses such delivery, RSG may store the equipment at Purchaser's expense. For all purposes of this agreement such tender of delivery or storage shall constitute delivery.

10. SURFACE PREPARATION AND PAINTING: If furnished, shop primer paint is intended to serve only as minimal protective finish. RSG will not be responsible for the condition of primed or finish painted surfaces after equipment leaves its shops. Purchasers are invited to inspect paint in shops for proper preparation and application prior to shipment. RSG assumes no responsibility for field surface preparation or touch-up of shipping damage to paint. Painting of fasteners and other touch-up to painted surfaces will be by Purchaser's painting contractor after mechanism installation.

11. RETURN OF PRODUCTS: No products may be returned to RSG without RSG's prior written permission. Said permission may be withheld by RSG at its sole discretion.

12. BACK CHARGES: RSG will not approve or accept back charges for labor, materials, or other costs incurred by Purchaser or others in modification, adjustment, service, or repair of RSG furnished materials unless such back charge has been authorized in advance in writing by a RSG employee and a purchase order, or work requisition signed by RSG.

13. INDEMNIFICATION: Purchaser agrees to indemnify RSG from all costs incurred, including but not limited to court costs and reasonable attorney fees, from enforcing any provisions of this contract, including but not limited to breach of contract or costs incurred in collecting monies owed on this contract.

14. ENTIRE AGREEMENT: This proposal expresses the entire agreement between the parties hereto superseding any prior understandings and is not subject to modification except by a writing signed by an authorized officer of each party.

15. EXTENDED STORAGE: Extended storage instructions will be part of information provided to shipment. If equipment installation and start-up is delayed more than 30 days, the provisions of the storage instructions must be followed to keep WARRANTY in force.

16. LIABILITY: Professional liability insurance, including but not limited to, errors and omissions insurance, is not included. In any event, liability for errors and omissions shall be limited to the lesser of 25,000USD or the value of the particular piece of equipment (not the value of the entire order) supplied by RSG against which a claim is sought.

17. ARBITRATION NEGOTIATION: Any controversy or claim arising out of or relating to the performance of any contract resulting from this proposal or contract issued, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator(s) may be entered to any court having jurisdiction.

ACCEPTED BY PURCHASER

Customer Name: _____

Customer Address: _____

Contact Name: _____

Contact Phone: _____

Contact Email: _____

Signature: _____

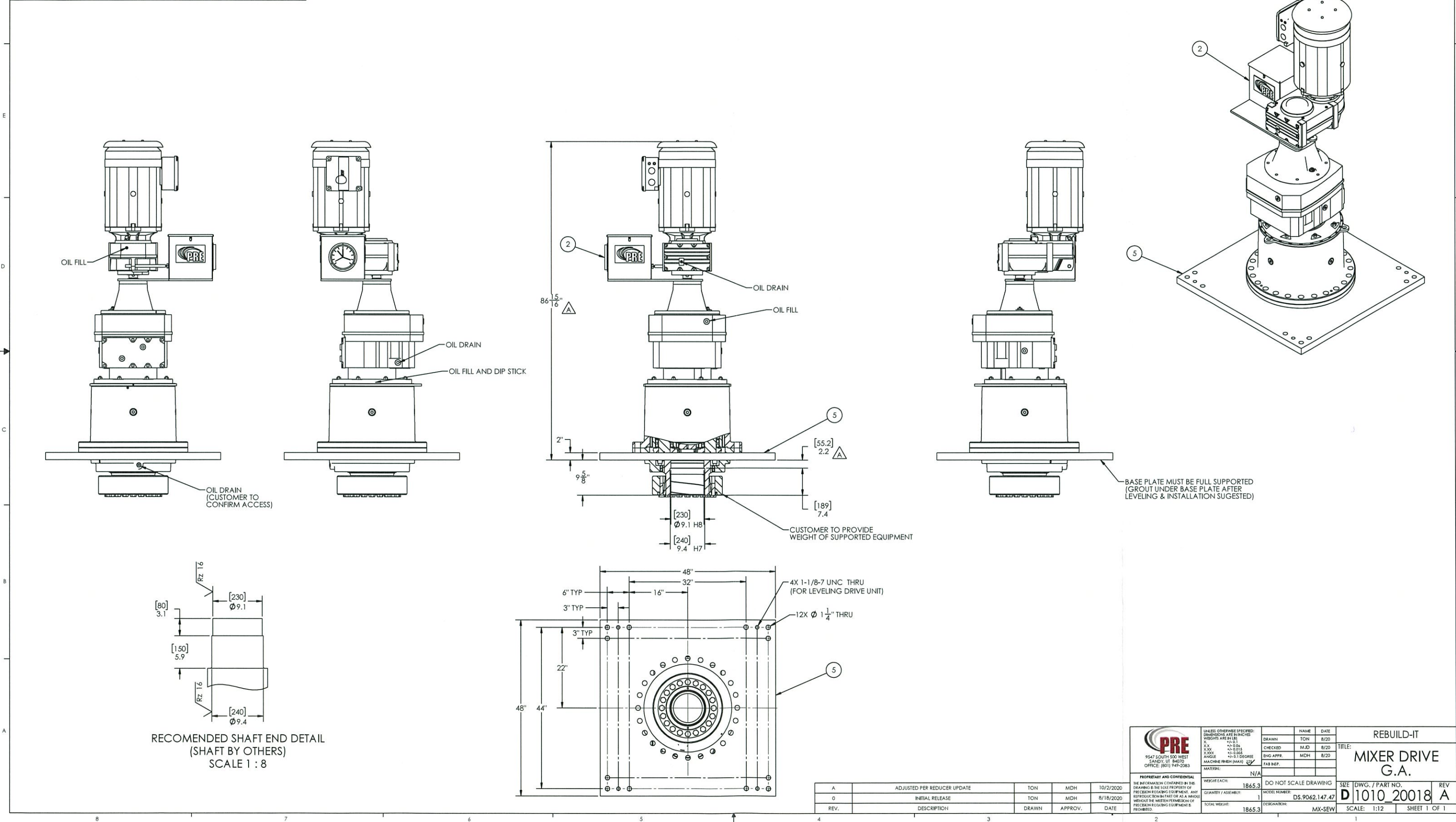
Printed Name: _____

Title: _____

Date: _____

DRIVE SUMMARY INFORMATION		
CONTINUOUS TORQUE	62,644	100%
ALARM TORQUE	34,454	55%
CUTOUT TORQUE	46,983	75%
MOTOR	40HP, 230/460/3/60, 1783 RPM	
DRIVE OUT PUT	2.968	
ROTATION	CLOCKWISE ROTATION (LOOKING DOWN)	

PART DESCRIPTION	
ITEM NO.	PART NAME
1	PRIMARY REDUCER
2	TORQUE BOX
3	SECONDARY REDUCER
4	TERTIARY REDUCER
5	BASE PLATE



PRE 9547 SOUTH 500 WEST SANDY, UT 84703 OFFICE: (801) 945-2063		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES WEIGHTS ARE IN LBS X.X ±.01 X.XX ±.005 X.XXX ±.0005 ANGLE ±0.1 DEGREE MACHINE FINISH (MAX) 125		NAME DATE DRAWN TON 8/20 CHECKED MJD 8/20 ENG APPR. MDH 8/20 FAB INP.		REBUILD-IT TITLE: MIXER DRIVE G.A.	
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF PRECISION ROTATING EQUIPMENT. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF PRECISION ROTATING EQUIPMENT IS PROHIBITED.		WEIGHT EACH: 1865.3 QUANTITY / ASSEMBLY: 1 TOTAL WEIGHT: 1865.3		DO NOT SCALE DRAWING MODEL NUMBER: DS.9062.147.47 DESIGNATION: MX-SEW		SIZE DWG. / PART NO. D 1010_20018	
REV. DESCRIPTION		TON MDH		DATE		SCALE: 1:12 SHEET 1 OF 1	
A ADJUSTED PER REDUCER UPDATE		TON MDH		10/2/2020		REV	
O INITIAL RELEASE		TON MDH		8/18/2020		A	



**ENERGY
EFFICIENCY**



**STRAIGHTFORWARD
OPERATION**



**PROCESS
OPTIMIZATION**



**UNPARALLELED
FLEXIBILITY**



BioMix™

Compressed Gas Mixing System

Albany County Water Purification District,
NY

Preliminary Proposal

EnviroMix Proposal Number:

OM-22-125287

Engineering Firm:

Barton & Loguidice

EnviroMix Representative:

GP Jager

Date:

1/13/22

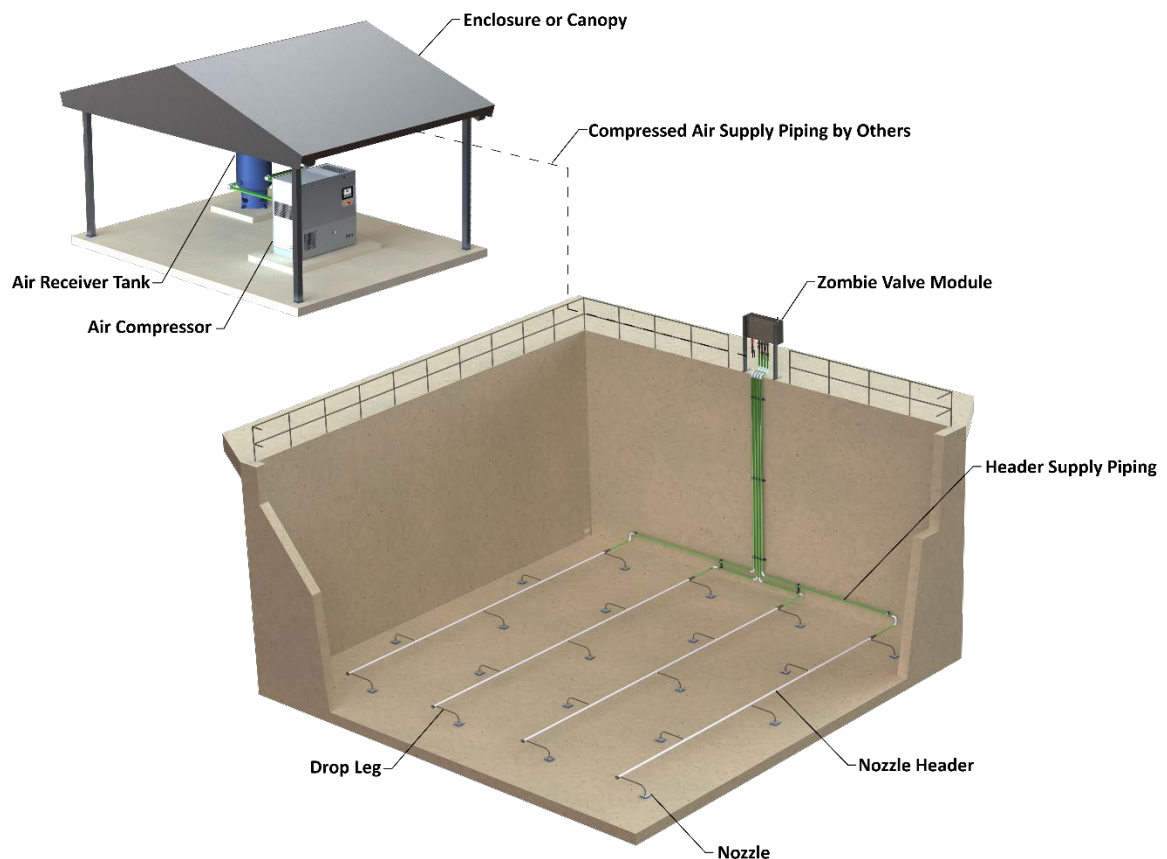
701 East Bay St. Suite 502 • Charleston, SC 29403

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Product Description

BioMix™ Compressed Gas Mixing System provides uniform mixing of tank contents by firing programmed, short-duration bursts of compressed air through patented, engineered nozzles located near the tank floor. The mixing parameters may be adjusted to optimize mixing and power utilization, either through operator input or automated process feedback. The small surface area of the large gas volumes and their rapid upward velocity enable BioMix to provide efficient mixing.

Zombie™ Valve Modules (ZVM) mounted near the basin, will control the firing of compressed air through the BioMix nozzles. Potentiometers for firing Frequency and Duration allow user input to optimally control the mixing intensity in the tank.



System Benefits

ROBUST EQUIPMENT DESIGN WITHOUT SACRIFICING ENERGY EFFICIENCY OR FLEXIBILITY



ENERGY EFFICIENCY

- Energy savings of 50% or greater over mechanical mixing or diffused aeration
- Unequaled mixing efficiency of less than 0.11 hp / 1000 ft³
- Unlimited turn-down capability



STRAIGHTFORWARD OPERATION

- Zero in-tank maintenance
- No mechanical or electrical components in the wastewater
- Minimal maintenance items located in accessible locations



PROCESS OPTIMIZATION

- Guaranteed uniform mixing with onsite performance testing
- Operator-adjustable firing parameters that enable ideal mixed conditions without deposition and minimum energy input
- Bottom-up mixing to develop a homogeneous mixture as opposed to simply stirring



UNPARALLELED FLEXIBILITY

- Variable mixing intensity based on process parameters
- Compatible with any tank geometry, configuration, or depth
- Eliminates the need for multi-technology redundancy

APPLICATION HIGHLIGHTS:

The following pages highlight application-specific benefits related to the proposed BioMix system.



BioMix™ Compressed Gas Mixing System

MIXING LIMITED AERATION

BioMix provides mixing of tank contents by firing **programmed, short bursts of compressed air through patented, engineered nozzles** located at the floor of the tank. The mixing parameters may be adjusted to optimize mixing and power utilization, either manually or through automated process feedback.

▶ WHAT DOES "MIXING LIMITED" MEAN?

In aerobic tanks, the aeration equipment is designed to both deliver oxygen and mix the contents of the basin. Under mixing limited conditions, more air is required to mix the basin contents than is needed to satisfy the oxygen demand.

▶ WHAT CAUSES MIXING LIMITED CONDITIONS?

- Underloading compared to design conditions
- Daily or seasonal load fluctuations
- Hydraulic limitations that prevent taking trains out of service
- Oxygen demand that is diminished by upstream aerobic zones

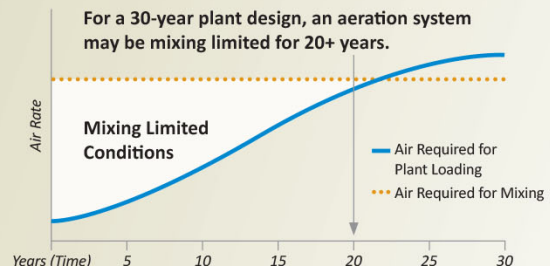
▶ HOW DOES EXCESSIVE AERATION IMPACT A TREATMENT PLANT?

- Residual dissolved oxygen in RAS and mixed liquor return that inhibit biological nutrient removal (BNR)
- Poor settling
- Excess treatment chemicals in post-anoxic zones
- Wasted energy

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▶ WHY IS BIOMIX THE RIGHT SOLUTION?

Decoupling oxygen demand from mixing requirements provides the operational flexibility to reduce the airflow rate to meet the air required for plant loading. BioMix compressed gas mixing system can be interlaced with diffused aeration grids, allowing simultaneous operation at a wide range of airflow rates. This results in:

- Promotion of anoxic and anaerobic conditions to enable BNR
- Conditions that promote good settling
- Stable dissolved oxygen profile throughout the aeration tank
- Significant energy savings

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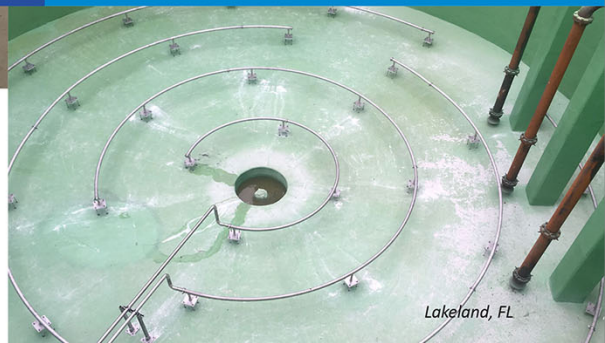
TO DISCUSS HOW BIOMIX CAN OPTIMIZE
YOUR MIXING LIMITED SOLUTIONS.



BioMix™ Compressed Gas Mixing System

SLUDGE TANKS

BioMix provides uniform mixing of tank contents by firing **programmed, short-duration bursts of compressed air through patented, engineered nozzles** located near the tank floor. The mixing parameters may be adjusted to optimize mixing and power utilization, either through operator input or automated process feedback.



KEY ADVANTAGES FOR SLUDGE TANKS:



Energy Efficiency:

- Significant reduction in operating power

60%
ENERGY SAVINGS

Tank Dimensions	90' diameter, 27' side water depth	
Solids Concentration	4.50%	
Mixing Solution	Jet Mix System	BioMix System
Operating Power	55 BHP	22.4 BHP



Unparalleled Flexibility:

- Mixing suitable for concentrations up to 8% solids
- Integration with any tank geometry or configuration
- Circular header that conforms to the slope of the floor, eliminating "dead spots"
- Variable mixing intensity based on operating depth
- No low water level limitations — able to mix at any depth



Straightforward Operation:

- Non-clogging, self-cleaning components in tank
- No mechanical or electrical components in the sludge
- Zero wall penetrations, eliminating the risk of leaking



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TO DISCUSS HOW BIOMIX CAN OPTIMIZE YOUR MIXING SOLUTIONS FOR SLUDGE TANKS.



BioMix™ Compressed Gas Mixing System

AERATED SLUDGE TANKS

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KEY ADVANTAGES FOR AERATED SLUDGE TANKS:



Energy Efficiency:

- Ability to mix at less than 20% of the energy compared to jet or diffused air mixing
- Comparative energy savings increase with increased depth and solids concentration applications



Unparalleled Flexibility:

- Mixing suitable for uniformly mixing sludge at nearly any concentration
- Ideal for sloped floor or conical tank bottom configuration, thereby eliminating dead zones below aeration system
- No low water level limitations — able to mix at any depth



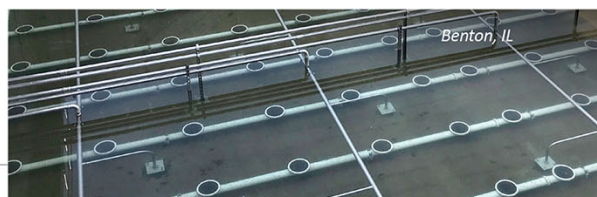
Process Optimization:

- Seamless integration with aeration equipment
- De-coupled aeration from mixing facilitates independent control over oxygen delivery and mixing
- Ability to operate concurrent or independent of aeration for optimized process conditions



Straightforward Operation:

- Non-clogging, maintenance free components in the tank
- Mixing operation that can be manually controlled or initiated by process instrumentation feedback



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TO DISCUSS HOW BIOMIX CAN OPTIMIZE YOUR MIXING SOLUTIONS FOR AERATED SLUDGE TANKS.

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Design Summary

Site Conditions	Elevation	Max Ambient Temp
Albany County Water Purification District, NY	140 FASL	95 °F

Designation		Sludge Holding Tanks
Quantity of Tanks		4
Length	ft	40.0
Width	ft	40.0
Side Water Depth	ft	24.0
Design Solids Conc.	%	5.0
BioMix Configuration		
Header Layout		Straight
Headers per Tank		5
Nozzles per Header		6
Nozzles per Tank		30
Nozzle Count		120
Nozzle Density	ft ² /nozzle	53.3
Pipe Diameter	in	2

Total Project Nozzle Count

120

ZOMBIE VALVE MODULE CONFIGURATION

Tank(s)	No. Valves/ Valve Module	Module Qty	Valve Total
Sludge Holding Tanks	12	1	12

POWER REQUIREMENTS

	No Operating	Hours of Operation	BHP	Total kWh/d
BioMix Compressor	1	24	17.64	316

Economic Analysis

Our initial analysis estimates annual operation and maintenance savings of approximately \$35,872 and 20-year present worth savings of over \$667,278 realized through the use of BioMix versus submersible mixers. This results in a Payback Period of 1.84 years to purchase BioMix Compressed Gas Mixing!

EnviroMix O&M Analysis					
Comparison: BioMix Vs. Submersible Mixers					
Electrical - Submersible Mixers					
Equipment	Duty Qty (per tank)	Unit Operating HP	Operating Hours/Day	kWh/Day (all tank)	kWh/Year (all tanks)
(4) Anoxic Zones	4	38.4	24	687	250,841.55
Electrical - BioMix					
BioMix Compressor - All Tanks	1	17.6	24	316	115,230.34
Maintenance & Replacement					
Submersible Mixers		BioMix Compressor			
Total Quantity		4	Duty Quantity		1
Avg. Replacement Cost		\$15,000.00	Avg. Replacement Cost		\$15,000.00
Avg. Annual Maintenance Cost		\$1,500.00	Avg. Annual Maintenance Cost		\$2,500.00
Avg. Service Life (yrs)		10	Avg. Service Life (yrs)		20
Annualized Maintenance Cost		\$12,000.00	Annualized Maintenance Cost		\$3,250.00
Totals					
Annual Electrical Cost	20				
	\$50,168.31		\$23,046.07		
Annual Maintenance Cost	\$12,000.00		\$3,250.00		
TOTAL ANNUAL O&M COST	\$62,168.31		\$26,296.07		
	BioMix Annual O&M Savings		\$35,872		

20-Year Present Worth Analysis	
Submersible Mixer System	
Initial Capital Cost (incl. controls, starters, and appurtenances)	\$120,000
Installation (by others)	\$24,000
Energy Cost*	\$1,069,447
Maintenance Cost*	\$212,720
TOTAL	\$1,426,167
BIOMIX	
Initial Capital Cost	\$175,000
Installation (by others)	\$35,000
Energy Cost*	\$491,277
Maintenance Cost*	\$57,612
TOTAL	\$758,889

*Present Worth Cost: 20 years, 3% loan rate, 4% energy cost increase/year, 2% maintenance cost increase/year

BioMix Present Worth Savings	\$667,278
Payback Period† (Years)	1.84

† Difference of respective initial purchase plus installation, freight, and startup divided by yearly O&M savings.

Scope of Supply

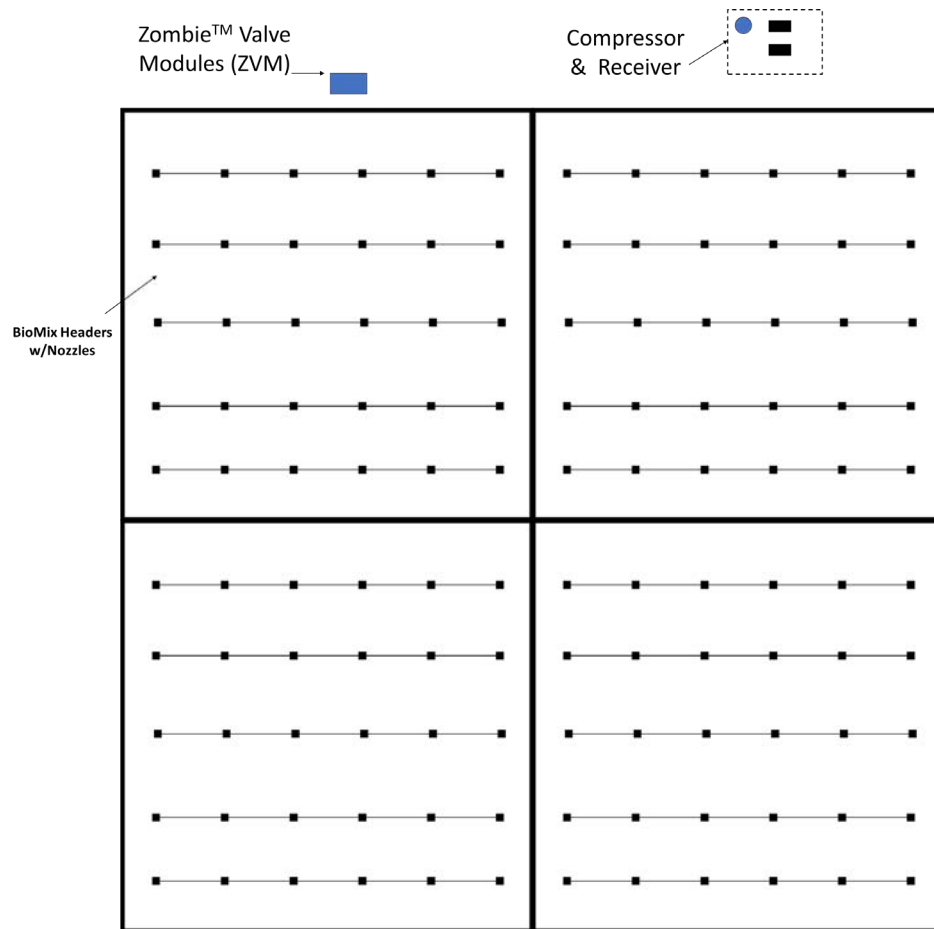
EQUIPMENT SUMMARY

Item	Quantity	Description
Zombie Valve Modules (ZVM)	1	Type 304SS NEMA 4X enclosure - Electrically actuated valves - Local control through potentiometers - Zombie Controller
BioMix Nozzles	120	Type 304 SS engineered nozzles to be threaded onto header piping
Headers	20	Type 304 SS prefabricated headers with radial offsets or drop legs
Header Supply Piping	1 lot	Type 304 SS Sch 5 press-technology from VMs to BioMix Headers includes fittings, 304 SS wall/pipe supports and anchors
Compressor	1 Duty / 1 Spare	25 HP Rotary Screw Compressor(s) capacity 128 CFM at 104 PSIG Each compressor package includes: - Inlet filter - Refrigerated dryer - Particulate and oil coalescing filter
Receiver Tanks	1	Vertical Receiver(s) with auto drain valve: Qty 1 @ 240-gallons

CLARIFICATIONS

- Electrical connection to each compressor (460/3/60) and VM/receiver auto-drain valve (120/1/60) by others
- Interconnecting piping between each compressor, receiver and VM by others
- Control wiring (if required) between each VM and compressor by others
- compressors, and receivers to be installed in a building

Preliminary BioMix Configuration

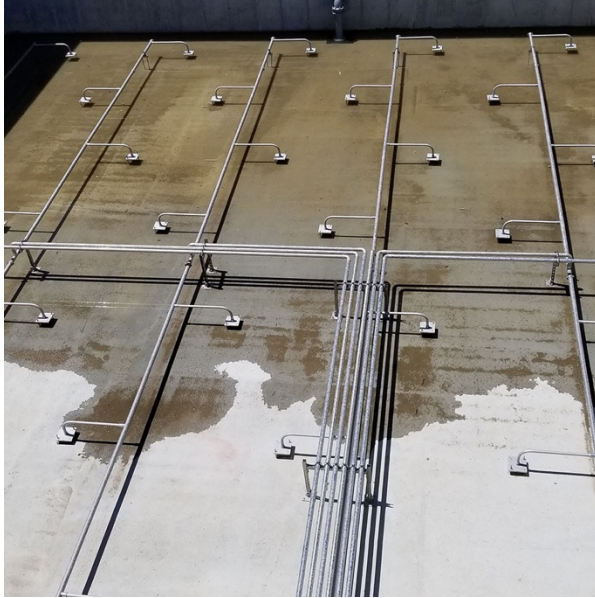


Example BioMix Layout for the Sludge Holding Tanks

Each tank will have five headers with 6 nozzles each
 One operating compressor and one standby compressor
 One Receiver and one Zombie Valve Module

Pictures from Similar Installations

STRAIGHT HEADERS



Straight headers with offset nozzles

COMPRESSORS



Compressors can be located indoors for weather protection and ease of maintenance

COMPRESSOR



The compressor can be located indoors for weather protection and ease of maintenance in a climate-controlled environment

INDOOR RECEIVER TANK



Indoor receiver tank

ZOMBIE™ VALVE MODULE



Zombie valve module (ZVM), with throttling valve and individual air control valve (ACV) isolation valves

ZOMBIE™ VALVE MODULE



The Zombie™ Valve Module facilitates local adjustment of mixing parameters for fine tuning

BIOMIX COMPRESSED GAS MIXING



Biomix provides uniform mixing in thickened sludge with verified performance via onsite testing

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BioMix provides uniform mixing in thickened sludge with verified performance via onsite testing.



Service

The services of a qualified representative are included for two (2) trips with two (2) days per trip onsite to inspect installation, oversee testing and start-up and provide operations and maintenance training. Additional EnviroMix field service is available at a cost of \$1,500.00 per day plus travel and living expenses.

Pricing

This estimate does not include equipment installation, electrical wiring, conduit, or taxes, if applicable. The preliminary price for the EnviroMix equipment and service outlined in this proposal, FOB jobsite is \$540,000.00.

Patents

The proposed Compressed Gas Mixing System for this project, including the specific layout of header piping, nozzles, air distribution and its operation is covered by US Patents 8,323,498 / 8,505,881 / 8,702,070 / 9,416,037 / 9,567,245 and any pending patent applications. EnviroMix reserves all rights and remedies for any unauthorized and infringing activity covered by any of its patents and those subsequently issued that are currently pending with the USPTO.

Contact

Upon acceptance of this Preliminary Proposal, the EnviroMix Team would be pleased to assist in the development of a more detailed design package including drawings and specifications. We appreciate your consideration of BioMix Compressed Gas Mixing System for this application and look forward to the opportunity of working further with you.

EnviroMix Contact:

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Director of Regional Sales
fkade@enviro-mix.com
(414) 949-6361

EnviroMix Representative Contact:

Dave Boshart
GP Jager
Cell: 315 256-3071

BioMix™ Compressed Gas Mixing

Sample Installations

Proven Performance

EnviroMix has implemented the use of its BioMix™ Compressed Gas Mixing System across a wide range of water and wastewater applications. The innovative mixing system offers a rare combination of reduced energy consumption coupled with reduced maintenance as compared to other mixing alternatives.

EnviroMix offers a comprehensive mixing solution and provides a single-source of responsibility throughout all phases of the project. Consultative application support from our expert Engineering Team and delivery of a complete mixing system with all integral components ensures a mixing solution that optimizes both energy efficiency and overall process performance.

BioMix™ Compressed Gas Mixing Systems offer guaranteed mixing performance substantiated through Field Performance Testing to validate mixing effectiveness and efficiency.

The following identifies a sample of BioMix installations with pertinent contact information:

Project	MGD	Mixing Application	Contact	Phone No.	Design Engineer
Gwinnett County, GA F. Wayne Hill WRC	60	Sludge Mixing: Primary (3%) and WAS (2%)	Brandon Brown	(678) 232-5732	Hazen & Sawyer
City of Hopewell, VA Hopewell Regional WWTF	50	Chlorine Contact Chamber	Harold Walker	(804) 541-2219 ext. 214	HDR
Little Rock, AR Fourche Creek WWTP	16	Anaerobic Digestion (2%)			Hawkins–Weir
Chambersburg, PA FCGA WWTP	4.0	Equalization			Century Engineering
Warren, MI Warren WWTP	36	BNR Mixing: Anaerobic/Anoxic	Bryan Clor	(586) 264-2530	Johnson Controls/AECOM
Abington, PA RWA WWTP	2.5	BNR Mixing: Anoxic/Swing	Lauren Elliott	(570) 587-2830	Gannett Fleming
Russellville, AR City Corporation PCWTP	6.5	BNR Mixing: Anoxic	Randy Bradley	(479) 857-2451	CDM Smith
Philadelphia, PA Southwest WPCP	200	Channels	Tony Elberti	(610) 650-8101	Gannett Fleming
Providence, RI Bucklin Point WWTP	116	Sludge Mixing: WAS (2%) and TWAS (4-6%)	Tony Calenda	(401) 434-6350 ext. 191	CDM Smith
Mount Pleasant, SC Center Street WWTP	4.0	BNR Mixing: Anoxic Equalization	Greg Hill	(843) 884-9626	Black & Veatch
McBee, SC Alligator Rural Water	2.0	Potable Water: Ground Storage	Myron Kellahan	(843) 355-9285	Kellahan & Associates
Butner, NC SGWASA WWTP	6.0	BNR Mixing: Anaerobic/Anoxic/Swing/ Post Anoxic	Cody Norwood	(919) 575-3111	CDM Smith
Abilene, TX Hargesheimer WTP	9.0	Sludge Mixing: Alum (0.3%)			Enprotec Hibbs & Todd
Lakeland, FL Glendale WWTP	10.2	BNR Mixing: Anaerobic/Anoxic	Scott Lewis	(863) 834-8277	King Engineering/Trane
Largo, FL Largo WWTP	15.0	Sludge Mixing: WAS (2-3%)	Rosalyn Matthews	(407) 514-2688	Hazen & Sawyer

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Nashua, NH Nashua WWTP	16	Sludge Mixing: Primary (4%) and WAS (2%)			Wright-Pierce
Bradford, PA Bradford STP	8.8	Channels	Donnie Hayden Treatment Plant Foreman	(814)-368-7105	Gannett Fleming
Norfolk, VA HRSD VIP	40	BNR Mixing: Anoxic/Swing/Aeration	Chris Raleigh	(757) 440-2505	HDR
Parker, CO Stonegate Village WWTP	1.1	BNR Mixing: Anaerobic/Anoxic/DeOx Sludge Mixing: Digester	Ger Whelan	(303) 768-0179	Burns & McDonnell
Helena, MT Montana LEA		Potable Water: Elevated Storage	Scott Anderson	(406) 449-3303	Anderson Montgomery
Winchester, VA Opequon WRF	12.6	Sludge Mixing: WAS (2%) High Strength Waste	Bob Wimmer	(410) 259 6274	Black & Veatch
Glens Falls, NY Glens Falls STP	9.5	BNR Mixing: Anoxic/Swing	Jason Vilander	(518) 361-1923	Arcadis
Henderson, CO SACWSD	8.0	BNR Mixing: Anaerobic/Anoxic	Mark Cubbon	(303) 289-5769	Burns & McDonnell
Lubbock, TX Northwest WRP	3.0	Equalization			Alan Plummer Associates
Opheim, MT		Potable Water: Elevated Storage	Greg Lukasik	(406) 652-5000	Great West Engineering, Inc.
Resolute Forest Products Catawba, SC		Sludge Mixing; Primary (2.5%)	Ronnie Usher	(803) 981-8259	Resolute Forest Products
Orlando, FL – Conserv II WRF	21	BNR Mixing: Anaerobic/Anoxic	Steve Shellnut	(407) 246-4119	Hazen & Sawyer
Wadsworth, OH WWTP	5.0	BNR Mixing: Anaerobic/Anoxic			Honeywell/Tetra Tech
Volusia County, FL – SWRWRF	2.9	BNR Mixing: Anaerobic/Anoxic	Gerald Cox	(407) 322-6841 ext. 1007	CPH, Engineers
Farmington, CT – WPCF	4.08	Sludge Mixing: Thickened Primary (4%) and WAS (1.5%)			Wright-Pierce

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Project	MGD	Mixing Application	Contact	Phone No.	Design Engineer
Benton, IL Benton WWTF	2.5	Sludge Mixing: Aerobic Digester WAS (2%)	Kevin Vandiver	(618) 790-4351	HMG Engineers
Norton, MA MFN Regional WPCF	4.1	BNR Mixing: Anaerobic/Anoxic	Megan Moody	(401) 457-0383	CDM Smith
BJWSA, SC Hardeeville WRF	2.7	BNR Mixing: Anoxic Equalization	Anthony Sauls	(843) 812-6174	HDR
BJWSA, SC Port Royal WRF	4.8	Equalization	Brian Chemsak	(843) 987-9292	BJWSA
South Bend, IN South Bend WWTP	48	Channels	Ken Smith Director of Maintenance	(574) 235-5787	Donohue
Brunswick, ME Brunswick WWTP	3.85	Septage Mixing			Wright Pierce
MWRD - Chicago, IL Kirie WRP	110	BNR Mixing: Anaerobic	Matthew Jurjovec	(847) 375-2502	MWRD
Clairton, PA Clairton STP	6.0	Sludge Mixing: Aerobic Digester	Brian Secrest Superintendent	(412) 233-3246	KLH, Engineers
Polson, MT Polson WRRF	0.47	Sludge Mixing: Aerobic Digester WAS (2%)	Kevin Johnson	(406) 551-1449	Dowl HKM
Cromwell, IN Cromwell WWTP	0.15	Equalization			DLZ Indiana, LLC
Manatee County, FL North WRF	8.0	Equalization	Dana Mills	(941) 792-8811 ext. 8056	Kimley Horn
Cut Bank, MT	0.5	BNR Mixing: Anaerobic/Anoxic			Great West/Tetra Tech
St. Petersburg, FL Southwest WRF	20	Channels			Brown & Caldwell
Exeter, NH	4.5	BNR Mixing: Anaerobic/Anoxic	Matt Berube	(603) 773-6157 Ext. 167	Wright Pierce
Duke Energy Dan River Facility		Channels			HDR
City of Billings, MT Billings WWTP	40	BNR Mixing: Anaerobic/Anoxic/DeOx	Mike Hecker	(406) 598-9100	HDR
City of Emporia, KS	4.6	BNR Mixing: Anaerobic/Anoxic/DeOx Sludge Mixing: Aerobic Digester WAS (2%)			Burns & McDonnell

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Canberra, AU - Lower Molonglo WQCC		Equalization			MWH
Fresno, CA - Valley Children's Hospital WWTF		Equalization			AECOM
Brookville Municipal Authority, PA	1.25	BNR Mixing: Anaerobic/Anoxic/Swing			Gwin, Dobson & Foreman
City of Beckley, WV - Piney Creek WWTF	8.0	Sludge Mixing: WAS (2%)	Bob Wimmer	(410) 259 6274	Energy Systems Group
City of Loveland, CO Loveland WWTP	10.0	BNR Mixing: Anaerobic/Anoxic/Swing	Joe Creaghe	(970) 962-2572	Carollo Engineers, Inc.
Lakeland, FL Glendale WWTP	10.2	Sludge Mixing: Anaerobic Digested (2%)	Scott Lewis	(863) 834-8277	HDR
Invista Kingston, ON, Canada		Chemical Mixing: Hexamethylenediamine Railcar Tanker			Invista
ODAWA Casino Petosky, MI		Equalization	Mark Hurley	(231) 620-6711	Gosling Czubak
Detroit Lakes WWTP Detroit Lakes, MN	3.0	Sludge Mixing: Aerobic Digester WAS (2%)	Rob Bredeson	(218) 846-7102	SEH
Mount Pocono MA Mount Pocono, PA	0.4	Equalization			RKR Hess
UMJA STP Pennsburg, PA	2.0	BNR Mixing: Anoxic/Swing			Woodard & Curran
Widefield WSD Fountain, CO	2.5	BNR Mixing: Anoxic	Jason Dreessen	(719) 491-0216	JDS Hydro Consultants, Inc.
Mount Pleasant, SC Rifle Range Road WWTP	10.6	BNR Mixing: Anoxic			Black & Veatch
Garland, TX Rowlett Creek WWTP	24.0	Channel Mixing	Malcolm Parker	(972) 205-2715	Carollo Engineers, Inc.
Kerry Ingredients & Flavours Affton, MO		Equalization			Horner & Shifrin
Fairbury, IL	2.4	BNR Mixing: Anaerobic/Anoxic/Swing			Farnsworth Group
Irving Consumer Products, Inc. - Macon, GA		Equalization Sludge Mixing (3%)			Stantec
Indianapolis International Airport		Equalization			Wessler Engineering
Castle Rock, CO Plum Creek WRA	6.44	Sludge Mixing: Aerobic Digester WAS (1-5%)	Joshua Watkins	(720) 291-1250	Burns & McDonnell

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Atlanta, GA Utoy Creek WRF	20	Channel Mixing			Arcadis
Atlanta, GA South River WRF	41	Sludge Mixing: Anaerobic Digester (3%)			Arcadis
Little Rock, AR WRA Adams Field WRF	36	BNR Mixing: Anoxic/Swing			Black & Veatch
Materne North America Grawn, MI		Equalization	Mark Hurley	(231) 620-6711	Gosling Czuback
Kansas City, MO Westside Facility	22.5	Channels			Carollo Engineers, Inc.
South Fort Collins Sanitary District – Fort Collins, CO	4.5	BNR Mixing: Anoxic	Steve Tamburini	(303) 818-7515	CH2M Hill/Jacobs
Mullins Cheese Inc. Mosinee, WI	1.0	BNR Mixing: Anaerobic Aeration Supplemental Mixing			
MCB Camp Lejeune , NC French Creek WWTP	7.5	Sludge Mixing: 3-4% ATAD Sludge			Davis & Floyd
North Charleston SD, SC	18	Sludge Mixing: 3-4%	Chad Maurer	(843) 764-3072	City Staff
Schwan Food Company Salina, KS		Equalization			Burns & McDonnell
Adairsville, GA	2	Sludge Mixing: Aerobic Digester WAS (2%)			Rindt McDuff
Boxelder Sanitation District Fort Collins, CO	6	Sludge Mixing: Aerobic Digester WAS (2%)	Craig Hibbard	(970) 237-2112	Burns & McDonnell
Mebane Bridge WWTP Eden, NC	13.5	Sludge Mixing: WAS (2%)			WK Dickson
Pluris Webb Creek WWTF Hubert, NC	0.35	BNR Mixing: Anoxic			Michael C. Gallant
East Valley WD – Sterling NRC - Highland, CA	8.4	BNR Mixing: Anoxic Channels Equalization	Mike Broyles	(317) 410-5339	Arcadis
Simi Valley WWTF Simi Valley, CA	7.46	BNR Mixing: Anoxic Channels			Schneider Electric / Carollo Engineers, Inc.
Broomfield WRF Broomfield, CO	5.72	Sludge Mixing: WAS Holding (2%)			Tetra Tech
Highland Water Reclamation Highland, IL	4.35	Sludge Mixing: Aerobic Digester WAS (2%)	Bill Zimmer	(618) 977-6616	Crawford, Murphy & Tilly

BioMix™ Compressed Gas Mixing

Sample Installations

Proven Performance

EnviroMix has implemented the use of its BioMix™ Compressed Gas Mixing System across a wide range of water and wastewater applications. The innovative mixing system offers a rare combination of reduced energy consumption coupled with reduced maintenance as compared to other mixing alternatives.

EnviroMix offers a comprehensive mixing solution and provides a single-source of responsibility throughout all phases of the project. Consultative application support from our expert Engineering Team and delivery of a complete mixing system with all integral components ensures a mixing solution that optimizes both energy efficiency and overall process performance.

BioMix™ Compressed Gas Mixing Systems offer guaranteed mixing performance substantiated through Field Performance Testing to validate mixing effectiveness and efficiency.

The following identifies a sample of BioMix installations with pertinent contact information:

Project	MGD	Mixing Application	Contact	Phone No.	Design Engineer
Pleasant Hills Authority STP Clairton, PA	3.45	Channels			Gannett Fleming, Inc.
Pontiac WWTP Pontiac, IL	3.99	BNR Mixing: Anoxic Sludge Mixing WAS (2%) Channels			Farnsworth Group
LOTT Clean Water Alliance Olympia, WA	16.7	BNR Mixing: Anoxic/Swing/DeOx			Parametrix
Monroe, NC John Glenn WTP		PAC Mixing	Russell Colbath		Black & Veatch
Pittsfield WWTF Pittsfield, MA	17	BNR Mixing: Anoxic			Kleinfelder / AECOM
Wilmington WTP, OH		PAC Mixing			Strand Associates, Inc.
Village of Clear Lake, WI	0.33	Sludge Mixing: Aerobic Digester (Prim & WAS)			Sambatek
Lewiston, ID	5.7	BNR Mixing: Anaerobic/Anoxic Sludge Mixing: 2% WAS			Keller Associates, Inc.
Bath Borough Authority Bath, PA	0.51	Equalization			Alfred Benesch & Company
Buzzards Bay WWTF Bourne, MA	0.1	Equalization			Weston & Sampson
Altamonte Springs RWRF Altamonte Springs, FL	12.5	BNR Mixing: Anoxic			Atkins
EWSU - East WWTP Evansville, IN	18	Channels			Clark Dietz
Glenwood Water Facility Glenwood, IN		Elevated Water Storage			RLM Engineering
South Coastal RWF Sussex County, DE	2.3	BNR Mixing: Swing Chemical Mixing: MgOH ₂			GHD
Somersworth WWTF Somersworth, NH	2.4	BNR Mixing: Anaerobic/Anoxic			Wright Pierce
Fargo WWTF Fargo, ND	18.4	BNR Mixing: Anaerobic/Anoxic/DeOx			Apex Engineering Group
BioGreen Investments LLC Coosawhatchie, SC		Septage Mixing			BioGreen
Provo WATRR Center Provo, UT	21	BNR Mixing: Fermentation/Anoxic/DeOx Equalization			Arcadis / Waterworks

BioMix™ Compressed Gas Mixing

Sample Installations

Proven Performance

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The following identifies a sample of BioMix installations with pertinent contact information:

Project	MGD	Mixing Application	Contact	Phone No.	Design Engineer
Copper Mountain CMD Copper Mountain, CO	1.1	Equalization			Owner
West Jefferson CMD Evergreen, CO	0.7	BNR Mixing: Anaerobic/Anoxic			JVA, Inc.
Clearwater Northeast WRF Clearwater, FL	13.5	Equalization			King Engineering
Big Creek WPCP Fulton County, GA	24	BNR Mixing: Anoxic/Swing/DeOx Channels			Brown & Caldwell
Flint WWTP Flint, MI	20	Channels			Tetra Tech
Howell WWTP Howell, MI	1.37	BNR Mixing: Anaerobic/Anoxic			Hubbell, Roth & Clark, Inc.
Altoona Westerly Altoona, PA	16.2	Digestate Storage			ESG
Central WWTP Nashville, TN	125	Channels			Brown & Caldwell
Roberts WWTF Village of Roberts, WI	0.15	Algae & RAS			Weston Solutions



P.O. BOX 562, BELLEVUE, WA 98009-0562 USA
TEL: (425) 455-1263 FAX: (425) 451-7312
EMAIL: sales@pulsair.com www.pulsair.com

Date: November 1, 2021

Quote No. 1021-39C

Customer: North Wastewater Treatment Plant – Albany, NY

Executive Summary:

The purpose of this proposal is to provide a large bubble, compressed air equipment mixing solution for the following wastewater tank basin:

Main tank basins

Description	Dimensions	Qty
Sludge Mixing Tank	40' x 40' with fillet corners	4

The solution is a Pulsair PPC Mixing System Kit. The goal of the Pulsair large bubble mixing process is to create a homogenous solution through uniform mixing in each respective tank basin leaving no areas of low velocity for any solids to collect or accumulate on the tank floor and prevent any buoyant solids from forming on the surface.

The patented Pulsair mixing system works by sequentially injecting compressed air or inert gas [the “pulse”] beneath round flat plates on the bottom of the tank. The high-pressure gas [25 to 60 psi] forms large single, oval shaped bubbles that rise to the top of the tank, moving the entire contents in a powerful mixing motion using no moving parts inside the tank.

[Pulsair Systems, Inc. is a veteran owned company. Certificate is available upon request.](#)

The pricing associated with this package is valid until December 31, 2021.

List of Equipment & Services:

1. One (1) Pre-plumbed NEMA 4X stainless steel valve enclosure
 - a. Pulsair Mixing Controllers (one per enclosure)
 - i. OIT/HMI color touchscreen interface
 - ii. Adjustable mixing modes
 - iii. Adjustable mixing speed
 - iv. Adjustable air injection time
 - v. SCADA outputs
 1. Programmable fault detection
 2. Run signal broadcast
 3. Remote on/off
 - vi. Pre-programmed mixing controller
 1. Electrical requirements – 120V
 - vii. Operator password protection
 - viii. Administrator password protection
 - b. Lockable enclosure
 - c. Stainless steel nameplate
 - d. Enclosure heater & insulation
 - i. 120v
2. Four (4) Pre-plumbed NEMA 4X stainless steel valve enclosure
 - a. One EPI-CMG (Electro-pneumatic interface)
 - b. Seven (7) 1" air injection valves on air manifold
 - c. One (1) adjustable air regulator
 - d. One (1) air filter
 - e. One (1) air pressure transducer
 - f. One (1) enclosure heater with thermostat & insulation
 - g. Lockable enclosure
 - h. Stainless nameplate
3. Air compressor package
 - a. Two (2) 25-hp rotary screw air compressor (based mounted)
 - b. Integrated refrigerated air dryer
 - c. Air filter package
 - d. Auto restart
 - e. SCADA ready
 - f. Communication link between compressors for lead/lag or duty/standby
 - g. Electrical: 480v / 3-phase / 60 Hz
 - h. One (1) 500 gallon air receiver tank with electronic drain valves & tank kits
 - i. Oil/water separator
 - j. O&M Manual
 - k. Shipping to jobsite
 - l. Onsite startup

4. Seventy-six (76) 16" diameter double 304SS accumulator plates (floor mounted, bolt down)
 - a. 20-year warranty
 - b. ½" x 4" long 316 stainless steel anchors (lot)
5. Two (2) year warranty on Pulsair mixing system equipment package & air compressor
6. Standard equipment shop drawings & equipment submittals
7. Spare parts package
8. O&M Manual
 - a. Installation instructions
 - b. Maintenance instruction
 - c. Custom shop drawings
9. Insured shipping costs of Pulsair equipment, and air compressor to jobsite
10. Onsite (multiple) official startup of Pulsair mixing system equipment and compressor

Pulsair Mixing System Kit – Main tanks	\$250,000.00
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Exclusions:

1. Any equipment, materials, and labor necessary to securely mount and install the Pulsair Valve Enclosures
2. Any equipment, tools, and labor necessary to securely mount and install all the Pulsair accumulator plates on the tank floor. Anchor bolts shall be provided.
3. The labor and installation of all air supply pipe and related parts necessary to convey compressed air between the air compressor system and the Pulsair Valve Enclosures.
4. All electrical wiring, conduit, hookup, testing and permits associated with supplying electrical power to the Pulsair PPC controller inside Pulsair Valve Enclosures.
5. All communication wiring, conduit, hookup, testing and permits associated with connecting the Pulsair PPC controller to the customer's DCS/SCADA or plant PLC system and between Pulsair valve enclosures and PPC controller.
6. All necessary permits associated with this project and associated work to comply with state, county and city codes and laws
7. Any associated labor costs for installation and electrical work of Pulsair's supplied equipment and air compressor.
8. Any associated labor costs for installation, cabling, conduit, and communication work of Pulsair's supplied equipment.
9. Storage and protection of all Pulsair supplied equipment at the job site after delivery.
10. Pulsair System is excluding any other related items, equipment, tools, services and/or documentation not mentioned and outside the scope of the List of Equipment & Deliverables
11. Purchase, shipping, installation and startup of air compressor unit.
12. Clean up of packing material on jobs site.
13. Pulsair Systems excludes responsibility for concealed or visible damage to the equipment that is discovered by the consignee after the equipment has been signed for as undamaged goods upon delivery and the damage inspection period provided by the freight shipper has expired.

Thank you for your interest in Pulsair and this opportunity to quote. We look forward to working with you and trust the above is as requested. If there are additional questions, please feel free to call Pulsairystems Inc., at 800/582-7797.

Charles Parks

Pulsair Systems Inc.

PO Box 562

Bellevue, WA 98009

Tel: 425.460.2403

Email: charlie@pulsair.com



STANDARD TERMS AND CONDITIONS OF SALE

1. **General** Any written or oral order received from Buyer by Pulsair Systems Incorporated ("Company") is governed by the Standard Terms and Conditions of Sale outlined herein ("Terms"). COMPANY'S ACCEPTANCE OF BUYER'S ORDER IS EXPRESSLY CONDITIONED ON BUYER'S ACCEPTANCE OF THESE TERMS. Company rejects any terms and conditions inconsistent with these Terms and to any other terms proposed by Buyer in accepting Company's proposal. No agreement, oral or written, in any way claiming to modify these Terms and Conditions will be binding on Company unless agreed to in writing by an authorized representative of Company.

2. **Taxes** Prices do not include any present or future Federal, State, or local property, license, privilege, sales, use, excise, gross receipts or other like taxes or assessments applicable to this order ("Taxes"). All Taxes will be itemized separately. Buyer will be responsible for the payment of any Taxes to Company unless Buyer provides a valid exemption certificate. If the exemption certificate is not recognized by the governmental taxing authority, Buyer will reimburse Company for any Taxes, including any interest or penalty assessed against Company.

3. **Title and Risk of Loss** Title and risk of loss or damage to equipment will pass to Buyer upon tender of delivery FOB Company facility, except that Buyer grants Company a lien on and a purchase money security interest in and to all of the right, title, and interest of Buyer in the equipment purchased hereunder until full payment has been made.

4. Credit Terms

a. **Payment.** Buyer shall pay the amounts due and owing to Company identified on each invoice in full and in accordance with the terms specified on each invoice.

b. **Invoice Disputes.** Buyer shall notify Company in writing of any dispute with any invoice (along with substantiating documentation) prior to the invoice due date. Invoices for which no such timely notification is received shall be deemed accepted by Buyer as true and correct. The parties shall seek to resolve all such disputes expeditiously and in good faith. Should any dispute arise with respect to any goods delivered by Company to Buyer, Buyer shall nevertheless pay all invoices covering goods not in dispute, without setoff, defense or counter-claim.

c. **Late Payments.** On any invoice not paid when due, Buyer shall pay a late charge from the due date to the date of actual payment at the lesser of the simple interest rate of 12% per annum calculated monthly or the highest rate permissible under applicable law. Buyer shall reimburse Company for all costs incurred in collecting any late payments, including,

without limitation, attorneys' fees. In addition to all other remedies available under these Terms and Conditions or at law (which Company does not waive by the exercise of any rights hereunder), Company shall be entitled to suspend the delivery of any goods if Buyer fails to pay any amounts when due.

d. **Acceleration.** Should Buyer fail to make any payment required hereunder, Company may, without notice, declare all obligations of Buyer to Company ("Obligations") immediately due and payable, whether or not such late charges are included in any statement of account rendered by Company to Buyer.

e. **No Partial Payments.** Buyer irrevocably agrees that it will not, without Company's prior written consent in each instance, tender any payments for less than the full amount of the invoices to which said payment applies ("Partial Payments"). Any Partial Payments tendered by or for the account of Buyer shall not extinguish or otherwise affect any unpaid portion of the subject invoices, despite any notation on or accompanying said payment such as "in full payment," "in full satisfaction," or words of similar effect.

f. **Sufficient Funds.** Buyer represents that all checks issued to Company will be honored by the drawee bank, and that no checks will be so issued unless Buyer then has funds on deposit in an amount sufficient to cover all checks issued by Buyer. Buyer acknowledges that this representation will be materially relied upon by Company in extending credit to Buyer.

g. **Right to Set Off.** Any payment received by Company from Buyer may be applied by Company against any obligation owing by Buyer to Company, regardless of any statement appearing on or referring to such payment, without discharging Buyer's liability for any additional amounts owing by Buyer to Company. The acceptance by Company of such payment shall not constitute a waiver of Company's right to pursue any remaining balance. With respect to any monetary obligations of Company to Buyer, including without limitation, volume rebates and advertising rebates, Company may, at any time, setoff and appropriate and apply such amounts against any sums that are, or will become, owing, due or payable to Company by Buyer under these Terms and Conditions or any other agreement.

5. Financial Condition of Buyer

a. **Receipt of Goods While Insolvent** In the event that Buyer receives any goods from Company while Buyer is insolvent (as such term is used in

§2- 702 of the Uniform Commercial Code, United-States of America), this writing and the invoices received from Company

relating to such goods shall constitute Company's demand for reclamation of such goods.

b. **Withdraw of Credit Approval** Company reserves the right before shipment of any goods ordered by Buyer from Company, to require that all or a portion of the purchase price relating thereto be paid to Company, in good funds, prior to shipment.

c. **Material Adverse Change in Financial Condition**

Notwithstanding the stated due date of any obligations, all Obligations shall become immediately due and payable, without notice, in the event that Company determines there to have been a material adverse change in the financial condition or business affairs of Buyer so that in Company's reasonable judgment Buyer's ability to pay the Obligations has become impaired.

d. **Verification of Credit References.** Company is authorized to contact any credit references provided by Buyer, and to disclose any information reasonably necessary to determine Buyer's credit worthiness. Company is also authorized to obtain personal credit reports on any partner, principal, officer, or potential guarantor in determining Buyer's creditworthiness. Company may also disclose any information concerning its relationship with Buyer which is requested by anyone identifying themselves as an existing or potential creditor of Buyer.

e. **Disclosure of Buyer's Right to a Statement of Reasons for Action.** If this application is not approved in full or if any other adverse action is taken with respect to Buyer's credit, Buyer has the right to request within 60 days of Company's notification of such adverse action, a statement of specific reasons for such action, which statement will be provided within 30 days of said request.

6. **Delivery** Company will deliver goods within a reasonable time after receipt of Buyer's order and in no event will delivery dates be construed as falling within the meaning of "time is of the essence."

7. **Force Majeure** Company will not be liable for any loss or damage due to delays arising from causes beyond the reasonable control of Company, including but not limited to any acts of God, fire, flood, earthquake or explosion, strikes or other labor difficulties, wars, riots, terrorist threats, national emergencies, or acts of governments. In such events, Company will have additional time within which to deliver or perform as may be reasonably necessary under the circumstances. If Buyer requires drawings, procedures, standards or similar material for approval, delivery schedules will be calculated from the time such approvals are received by Company. Any hold points, witness points, or Buyer inspection requirements must be identified by Buyer at the time of quotation and/or order placement. Additional inspection or testing required by Buyer will extend delivery dates accordingly.

8. **Storage Fee** If Buyer is not able to accept delivery on the date agreed to by the parties, Buyer will pay Company a storage fee equivalent to one and one half percent (1.5%) of the total order value per calendar month or fraction thereof (calculated and charged on a per day basis) until the date of delivery ("Storage Fee"). Additionally, if Company is performing installation services and at the time of delivery Buyer's location is not ready or is unsafe for installation, Company reserves the right to postpone or to discontinue work. In such event, Company may charge Buyer an amount equivalent to the Storage Fee until such time that the location is ready and safe for installation, as determined by Company.

9. **Warranty** Company warrants that the equipment manufactured by it and services provided by it will be free from defects in material and workmanship, for the duration of the specified Warranty Period. For new equipment, a period of twelve (12) months from the date of initial operation not to exceed eighteen (18) months from shipment, whichever first occurs; for parts and services, six (6) months from the date of shipment; for services, six (6) months from the date of installation, inclusive of transportation and installation costs if installed by Company or six (6) months from the date of delivery exclusive of transportation and

Pulsair Systems Incorporated Standard Terms and Conditions of Sale 03.17

installation costs if not installed by Company (each a "Warranty Period"). Equipment or parts manufactured by others are warranted only to the extent of the original manufacturer's warranty to Company.

If equipment, parts or services are nonconforming, Buyer must provide prompt written notice to Company within the Warranty Period, and Company will, at its option, correct such nonconformity by suitable repair or replacement to equipment or part or correction to defective workmanship. If repair or replacement is not feasible, Company will, at its option, refund the full purchase price for such equipment, part or service.

Company will have no responsibility to repair or replace defective equipment, parts or service resulting from Buyer's failure to store, install, maintain, or operate the equipment according to Company's specific recommendations or in accordance with good industry practices. Company will not be liable for any repairs, replacements or adjustments or any costs of labor performed by Buyer or any third-party without Company's prior written approval. This warranty will not apply to any non-standard component which Buyer directs Company to use or add to the equipment. The effects of corrosion, erosion, deterioration occasioned by chemical and abrasive action or excessive heat, and normal wear and tear are specifically excluded from the warranty.

COMPANY MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE,

AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

Correction of defects whether patent or latent, in the manner and for the duration of the Warranty Period, will constitute fulfillment of all Company's liabilities for such defects with respect to or arising out of equipment, parts, or services provided hereunder. Warranty work does not assure uninterrupted operation of equipment.

10. Order Cancellation If Buyer cancels an order, Buyer will pay a cancellation fee to Company in an amount equal to Company's direct out of pocket costs incurred plus a percentage of the order value to cover sales and administrative expenses. The percentage is based on the proportion of time which has elapsed from the date the order is placed to the originally scheduled shipment date as follows:

Percent of time elapsed from PO date to scheduled ship date

Cancellation fee % of PO Value

Percent of time elapsed from PO date to schedule ship date	Cancellation fee & of PO Value
0-10%	5%
11-20%	15%
21-30%	25%
31-40%	35%
41-50%	45%
51-60%	55%
61-70%	65%
71-80%	75%
81-90%	85%
91-100%	95%

11. Compliance with Laws Company will comply with all applicable laws and regulations in effect in the location of manufacture on the date an order is placed. Compliance with any local governmental laws or regulations relating to location, use, or operation of the equipment, or its use in conjunction with other equipment, will be the sole responsibility of Buyer. Equipment purchased hereunder is produced in accordance with all applicable requirements of Section 6, 7, and 12 of the Fair Labor Standards Act as amended and of regulations and orders of the United States Department of Labor issued under Section 14 thereof. Where applicable, the Federal Equal Credit Opportunity Act prohibits creditors from discrimination against credit applicants on the basis of race, color, religion, national origin, sex, marital status, or age (provided that the applicant has the capacity to enter into a binding contract); because of all or part of the applicant's income derives from any public assistance programs; or because the applicant has in good faith exercised any right under the Consumer Protection Act. The federal agency that administers compliance with this law concerning the creditor is the Federal Trade Commission, Washington, D.C.

12. Export Control Buyer agrees not to disclose or export, either directly or indirectly, any Company technology or information, or the direct product thereof, to any destination or person if such disclosure or export is prohibited by U.S. laws and regulations. In particular, Buyer will not use and will not permit any third party to use Company technology or information in connection with the design, production, use or storage of chemical, biological or nuclear weapons or missiles of any kind. This paragraph will survive the termination of this contract.

13. Patent Indemnity Company will defend Buyer against any proceeding based upon a claim that the equipment manufactured by Company infringes any U.S. patent, provided that Company is promptly notified in writing and given authority, information, and assistance for defense of the same. If any claim materially interferes with Buyer's use of the equipment, Company will, at its option, procure for Buyer the right to continue to use such equipment, modify it so that it becomes non-infringing, replace it with non-infringing equipment, or will remove the equipment and refund the purchase price. Company does not accept any liability whatsoever in respect to patents claiming more than the equipment furnished hereunder or claiming methods or processes to be carried out with the aid of such equipment. The foregoing states the entire liability of Company with regard to patent infringement.

14. Limitation of Liability THE REMEDIES OF BUYER SET FORTH HEREIN ARE EXCLUSIVE, AND THE TOTAL LIABILITY OF COMPANY WITH RESPECT TO THIS CONTRACT, WHETHER BASED ON CONTRACT, WARRANTY, NEGLIGENCE, INDEMNITY, STRICT LIABILITY OR OTHERWISE, WILL NOT EXCEED THE PURCHASE PRICE FOR THE EQUIPMENT, PART OR SERVICE THAT IS THE BASIS FOR THE CLAIM.

IN NO EVENT WILL COMPANY BE LIABLE TO BUYER, ANY SUCCESSORS IN INTEREST, OR ANY BENEFICIARY OR ASSIGNEE OF THIS CONTRACT FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES, OR LOST PROFITS OR REVENUE ARISING OUT OF THIS CONTRACT OR ANY BREACH THEREOF, OR ANY DEFECT IN, OR FAILURE OF, OR MALFUNCTION OF THE EQUIPMENT, PART OR SERVICE HEREUNDER, WHETHER OR NOT SUCH LOSS OR DAMAGE IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, INDEMNITY, STRICT LIABILITY, OR OTHERWISE.

15. Assignment Buyer will not assign or transfer this contract without the prior written consent of Company, and such consent will not be unreasonably withheld. Additionally, Buyer will not sell all or a substantial portion of its assets to another entity (the "Successor") without the prior written consent of Company. In the event that Buyer does not provide such notice to Company and the business previously conducted by Buyer is or may be continued by the Successor, Buyer shall be liable for and shall pay on demand the amount of all accounts receivable due by Successor to Company arising from the date of such sale of assets to the date Company learns of such asset sale.

16. No Waiver No waiver by Company of any of the provisions of this Contract is effective unless explicitly set forth in writing and signed by Company. No failure to exercise, partial exercise, or delay in exercising, any right, remedy, power or privilege arising from this Contract operates, or may be construed, as a waiver thereof.

17. Governing Law The rights and obligations of the parties will be governed by the laws of the State of Washington excluding any conflict of law provisions. The United Nations Convention on Contracts for the International Sale of Goods will not apply to this contract.

18. No Reference Required Buyer and Company agree that each order shall constitute a separate contract, the performance of which will be governed exclusively by these Terms. This Agreement shall govern an order regardless of whether or not this document is attached to or referenced in the order. Excluded from applicability to an order include, but are not limited to: (i) any other terms and conditions contained in the order, including terms contained on the reverse side of the order; (ii) any reference in an order to Buyer's Internet site for terms and conditions; (iii) any reference in an order to any other agreement, document or terms unless agreed to in writing by the Parties. In the event of a conflict between any terms and conditions of an order (except (iii) above), Terms shall prevail and govern the order.



Pulsair Systems Incorporated

Proposal for Equipment Sales

Americas Region

TERMS AND CONDITIONS OF SALE: This proposal and any resulting order shall be governed by Pulsair Systems Incorporated Standard Terms and Conditions of Sale, attached hereto and incorporated by reference. Unless previously agreed to in writing, any different Terms & Conditions appearing on the PO, including preprinted terms, shall not be accepted and may cause delays in acceptance of the Purchase Order.

TERMS OF PAYMENT:

Payment	Amount	Description
1	5%	Acceptance of Purchase Order
2	30%	Approved engineered submittals
3	60%	Equipment delivery
4	5%	Successful and approved startup of equipment

All invoices are due Net 30 from the date of shipment with approved credit. All payments are to be made in USD. Above amounts apply to the entire PO value. Pro rata payments on the last milestone to apply as shipments are made. Progress Payments on any special installations will be included in our proposal. Missing or different Payment Terms on the Purchase Order may cause delays in acceptance of the Purchase Order.

SHIPMENT: Shipments will be made in (see proposal) weeks after acceptance of the PO by Pulsair Systems and receipt of complete information necessary for manufacturing. All Shipments are FOB Shipping Point. Freight will be charged at the rate quoted if shown on a separate line on the Purchase Order. Otherwise, freight will be added to the PO value on each shipment invoice. Any different shipment or freight terms on the Purchase Order may cause delays in acceptance of the Purchase Order.

DRAWINGS: Drawings will be submitted in within two (2) weeks after acceptance of the PO by Pulsair Systems and receipt of complete information necessary for manufacture.

PRICE POLICY: Prices are firm for shipments scheduled not more than 360 days from date of order. If shipment is scheduled beyond 360 days from the date of order, escalation is required.

All Proposals are valid for a period not to exceed 60 days from the date of Proposal. The Company reserves the right to amend such Proposals at any time. All orders are considered taxable unless a valid tax exemption certificate is supplied at the time of order.

SCOPE CHANGES: Price and lead time are based on the accompanying quote. Changes to this scope either at time of order or any time before delivery may result in changes to price and / or lead time.

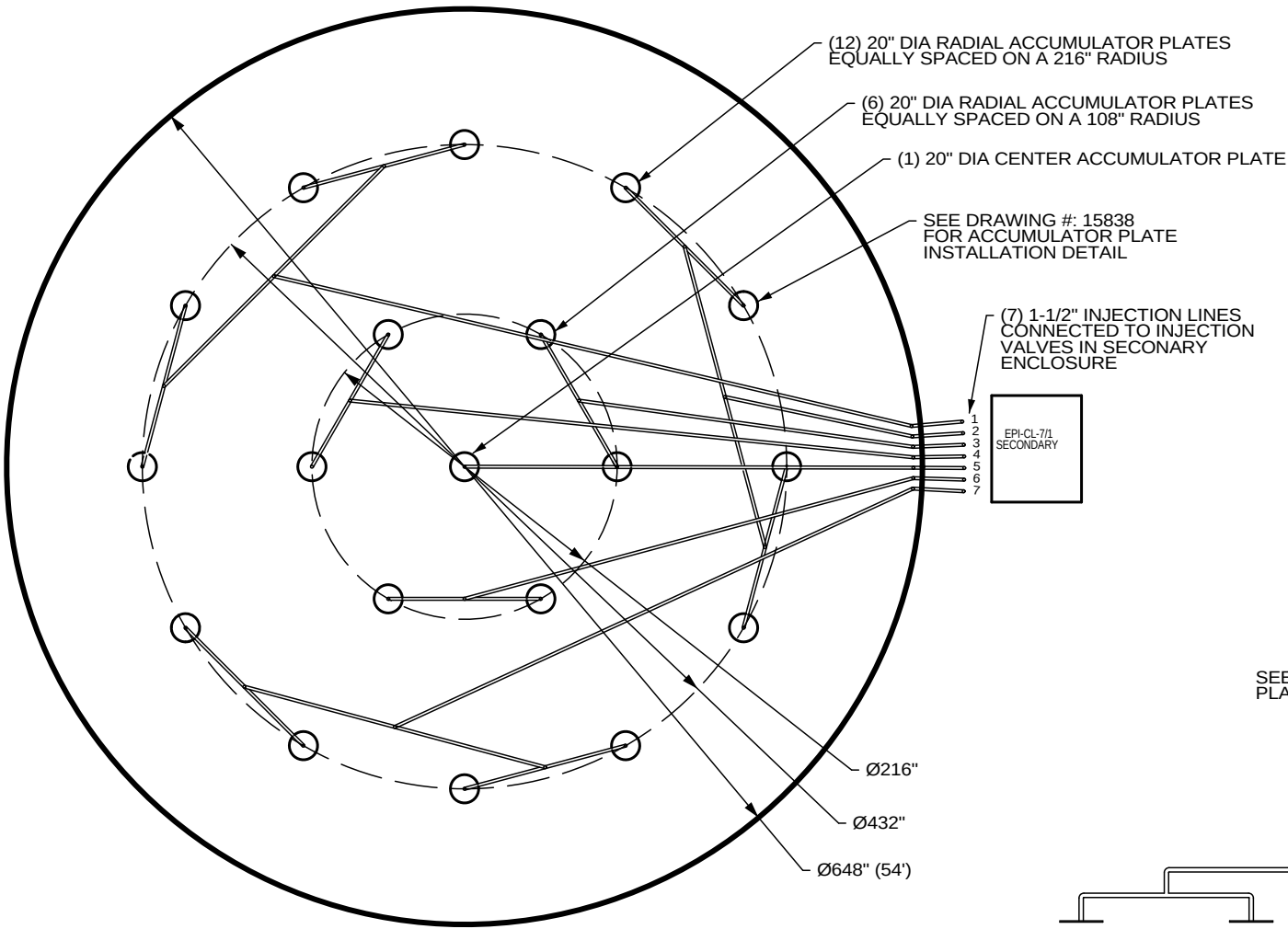
RETAINAGE: Pulsair does not agree to retainage or holdback of any payments so long as the equipment provided is successfully started up and meets the approval of the Owner and / or Owner's representative.

CANCELLATION & ORDER HOLDS: as specified in the Pulsair Systems Standard Terms and Conditions of Sale.

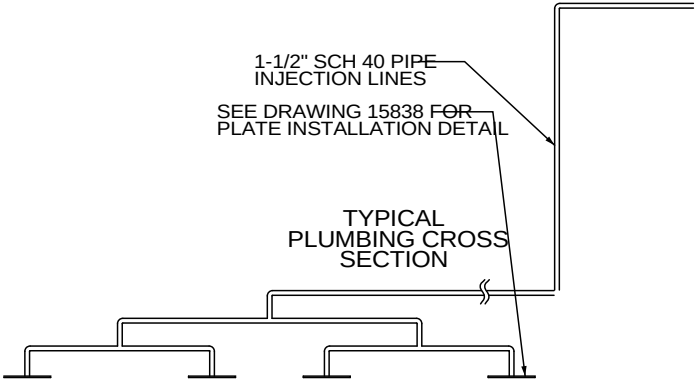
Please reference the quotation number and revision level provided by Pulsair Systems on your PO.

Example Drawing of accumulator plate layout for 54' diameter sludge tank

ACCUMULATOR PLATE INSTALLATION DETAIL



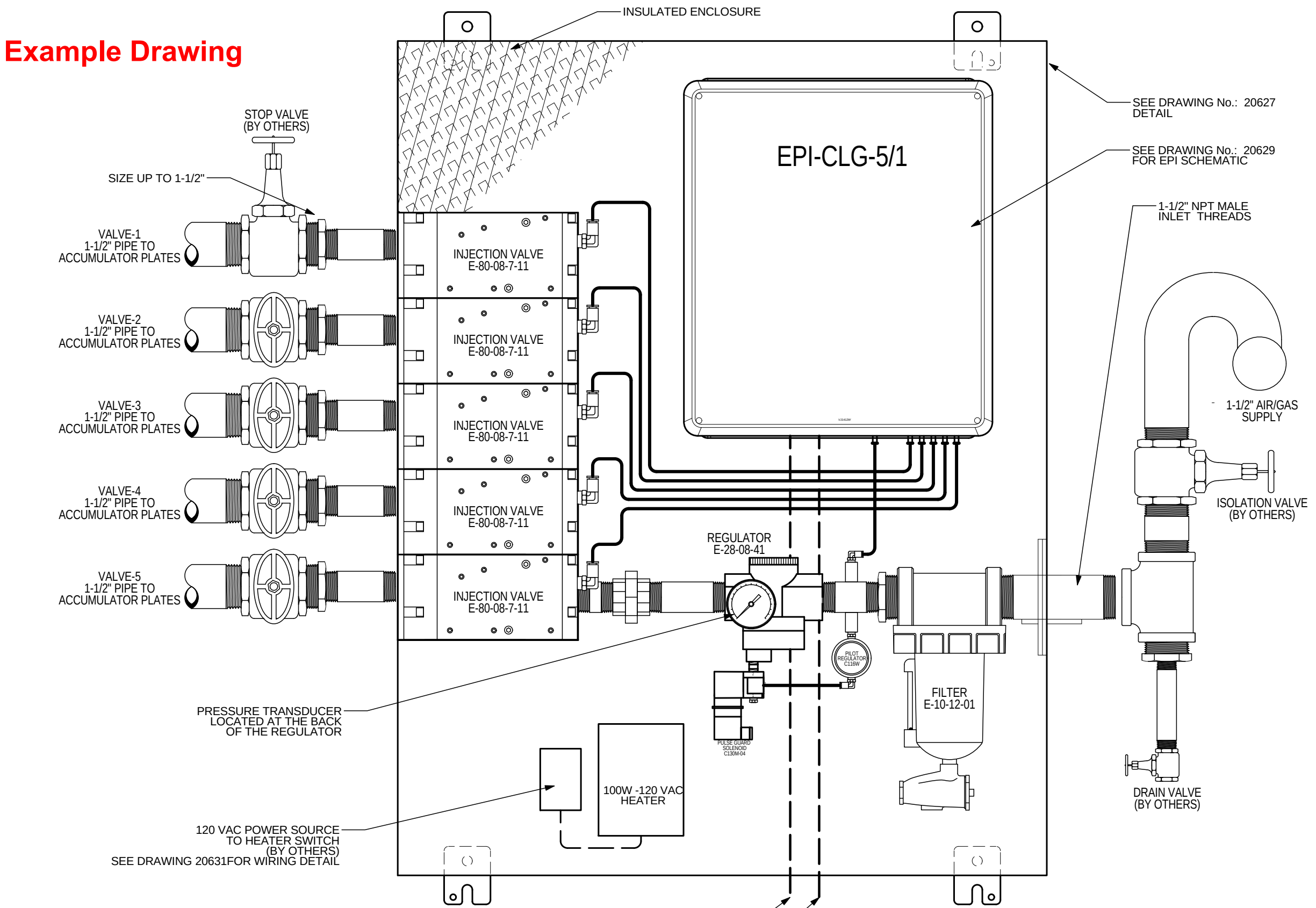
1. The accumulator plates are made from carbon steel. The plates are 20" in diameter, have 1-1/22" schedule 40 pipe nipples and have welding tabs which have been designed to fit the shape of the tank bottom. However, since there can often be variations or irregularities in the tank bottom it may be necessary to grind the tabs in order to level them before they are welded to the bottom of the tank.
2. The plates are positioned for maximum mixing efficiency. However, if necessary, their locations may be moved slightly to avoid existing in-tank components such as heating coils or other piping.
3. Piping is installed after the plates are level and secured in position. The air lines to the accumulator plates are all 1-1/2" and are sized to insure adequate and equal air flow to all the plates. The injection valves have flow characteristics to provide this air flow. It is important to follow the piping layout plan and pipe size to insure proper distribution of air to all of the plates.
4. The supply lines to the accumulator plates are to be run up inside of the tank and penetrate the tank roof. The secondary enclosures with the injection valves and other components are installed are to be installed on the tank circumference on opposite sides of the tank. It is important that no torque be applied to the piping system when making the connection to the accumulator plates.
5. Attach the horizontal and vertical piping to the tank bottom and wall every 6' to prevent vibration during mixing.
6. Install an air line drain valve below the air inlet to the secondary enclosure.



This drawing is confidential and the property of Pulsair Systems. Pulsair equipment and software is proprietary technology protected by patents and copyright law. Any use or reproduction without Pulsair's written authorization is strictly prohibited. Pulsair is not liable for any unauthorized use of its equipment or software program. All rights reserved. Pulsair is a registered US trademark. US Patent No. 4,595,296. Foreign patents issued and pending.

ACCUMULATOR PLATE INSTALLATION DETAIL			
SALEM WWTP SLUDGE TANK, SALEM, OH			
SCALE: NONE	DRAWN BY: J.R. PARKS		
DATE: 10-06-2015	JOB NUMBER: S151221		
PULSAIR SYSTEMS INC., P.O. BOX 562			
BELLEVUE, WA 98009-0562			
DRAWING NUMBER			15837

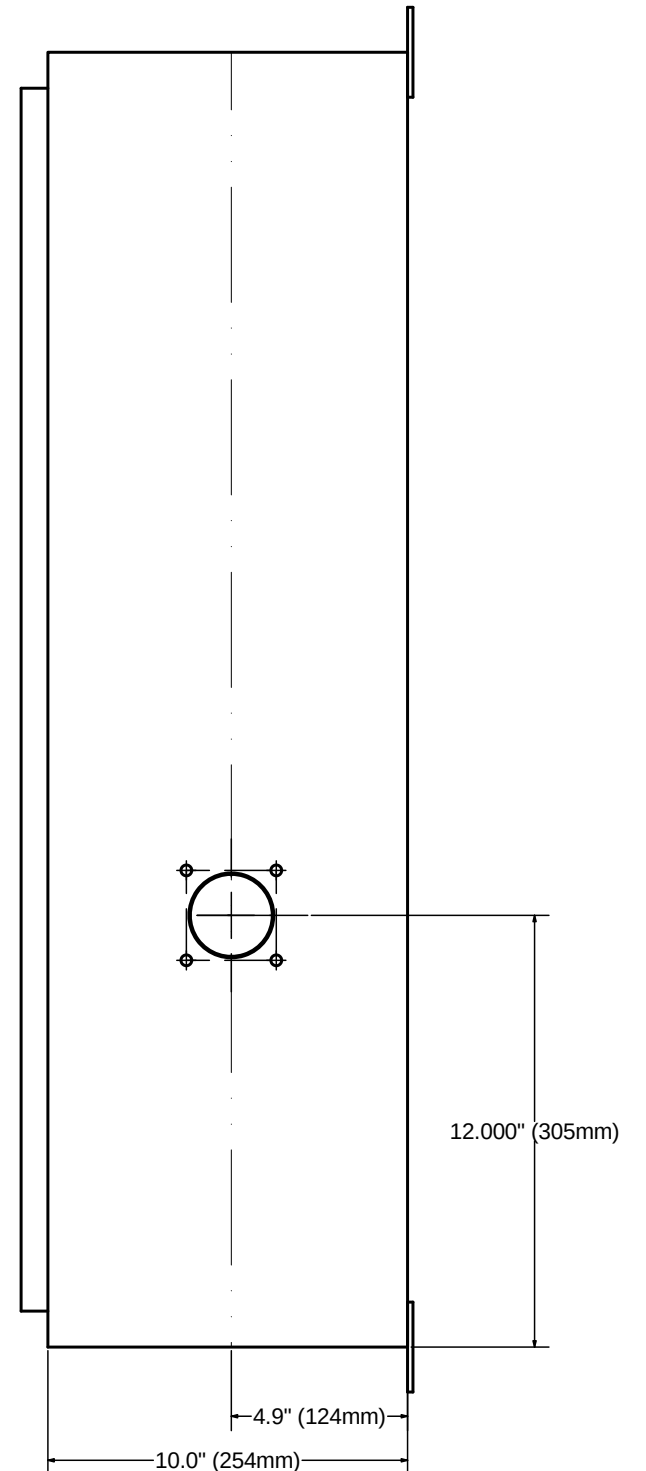
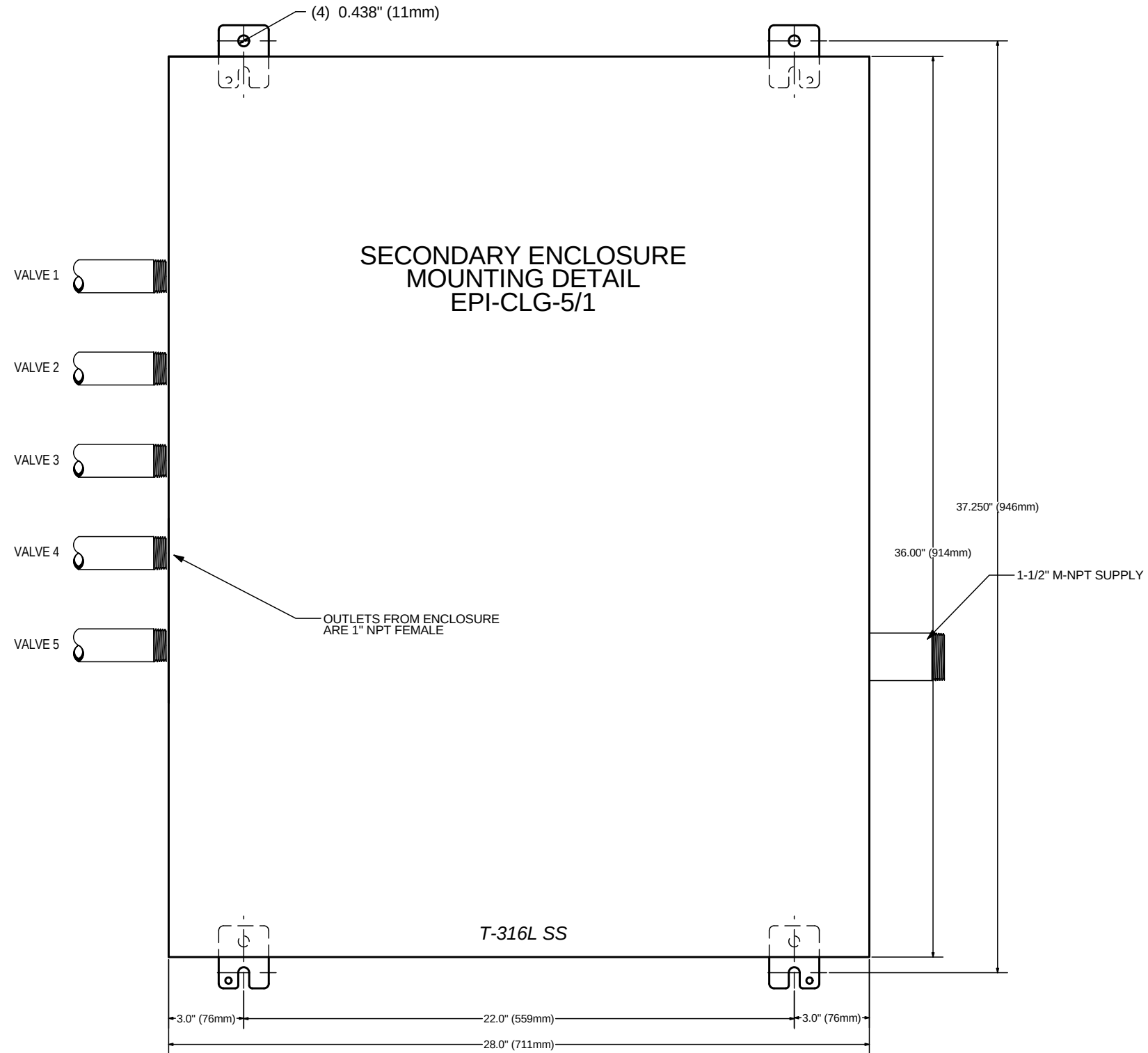
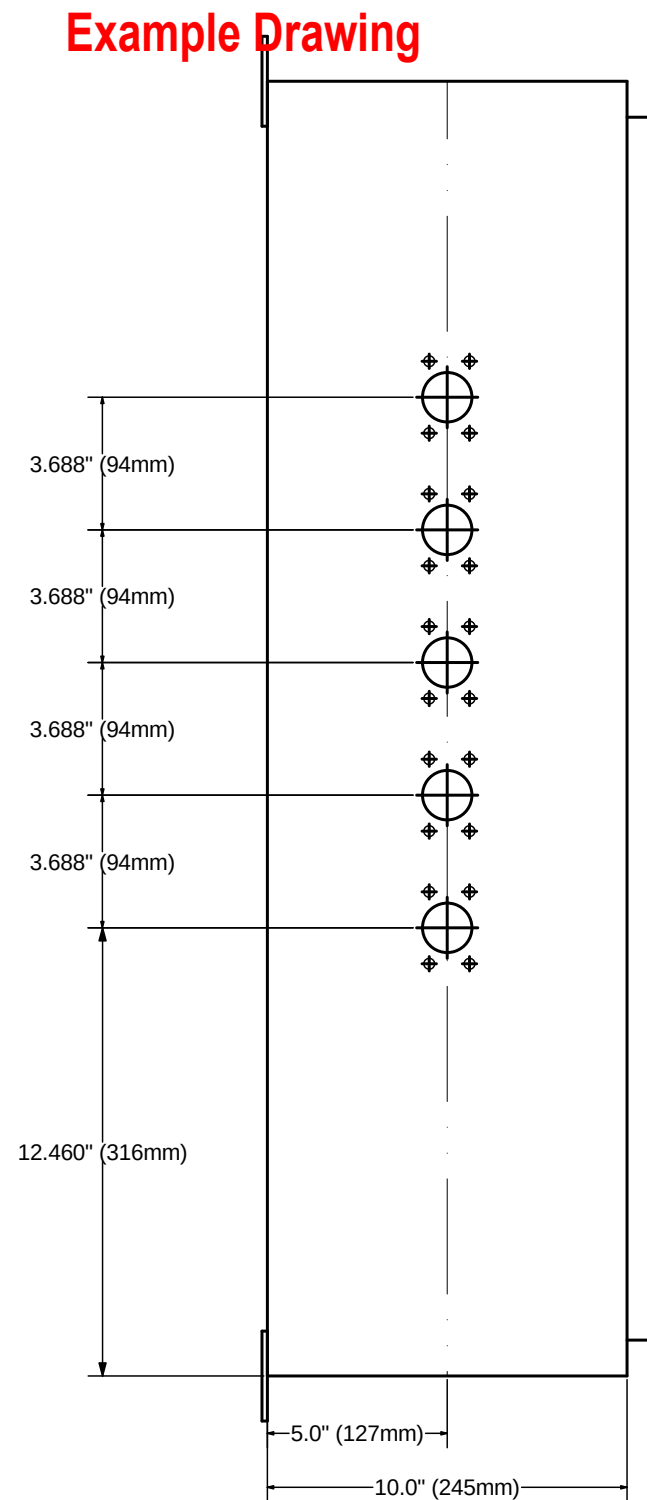
Example Drawing



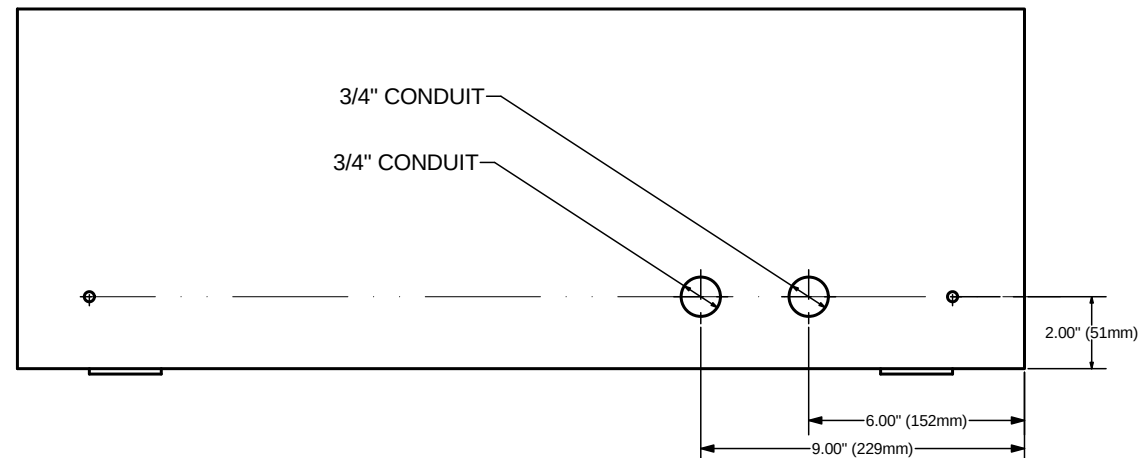
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EXTERNAL COMPONENT SCHEMATIC			
GRANTS CREEK WWTP, SALISBURY, NC			
	SCALE: NONE		DRAWN BY: J.R. PARKS
	DATE: 12-09-2020		JOB NUMBER: S201387
	PULSAIR SYSTEMS INC., P.O. BOX 562		
	BELLEVUE, WA 98009-0562		DRAWING NUMBER 20625

Example Drawing

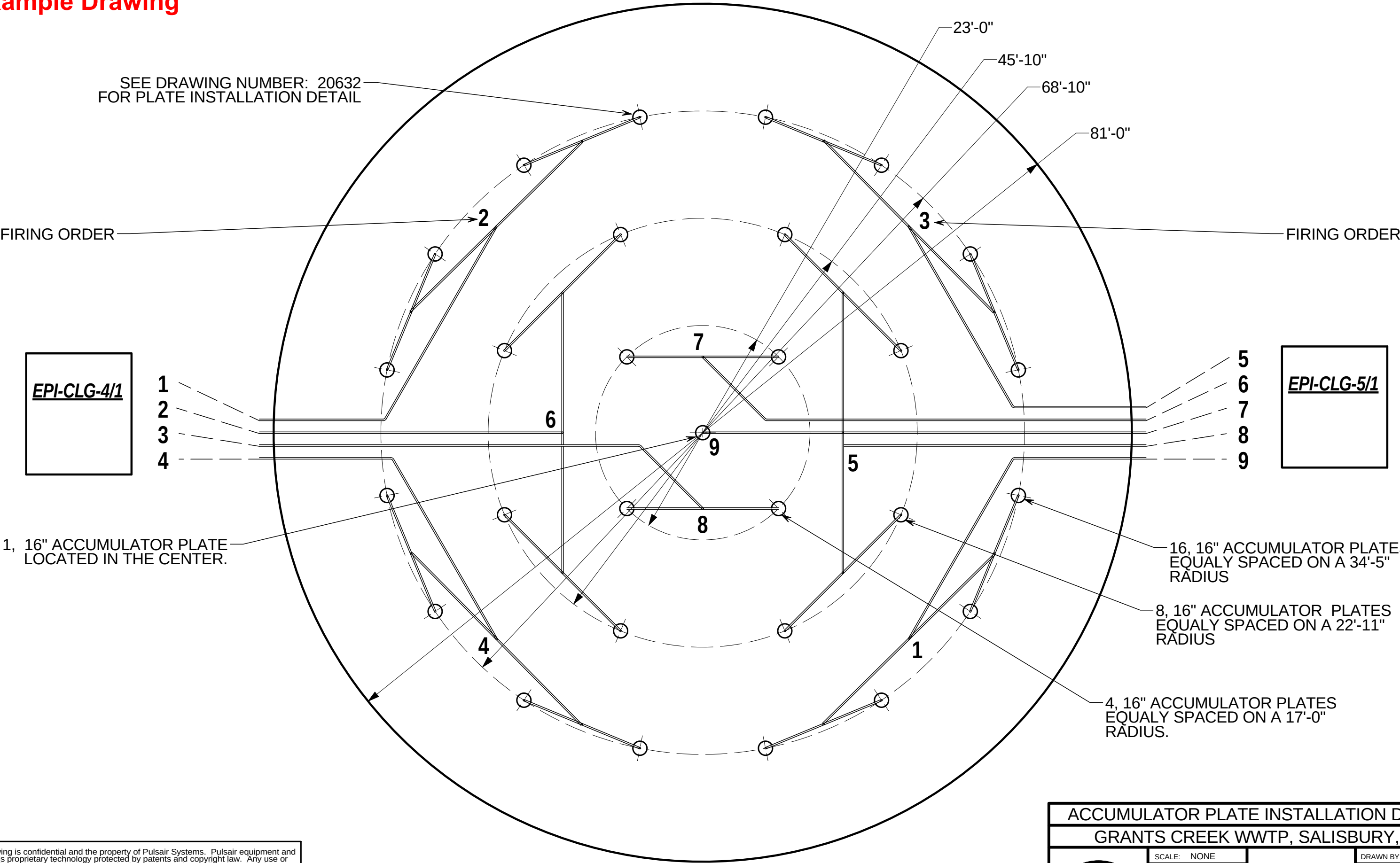


CAUTION When connecting the air line piping from the accumulator plates to the injection valve manifolds **DO NOT OVER TIGHTEN** the piping connection. The manifolds are aluminum and excessive force can strip the threads. Teflon tape or sealant should be used to create the seal.



SECONDARY ENCLOSURE MOUNTING DETAIL			
GRANTS CREEK WWTP, SALISBURY, NC			
 Pulsair	SCALE: NONE		DRAWN BY: J.R. PARKS
	DATE: 12-09-2020		
	PULSAIR SYSTEMS INC., P.O. BOX 562		
	BELLEVUE, WA 98009-0562		

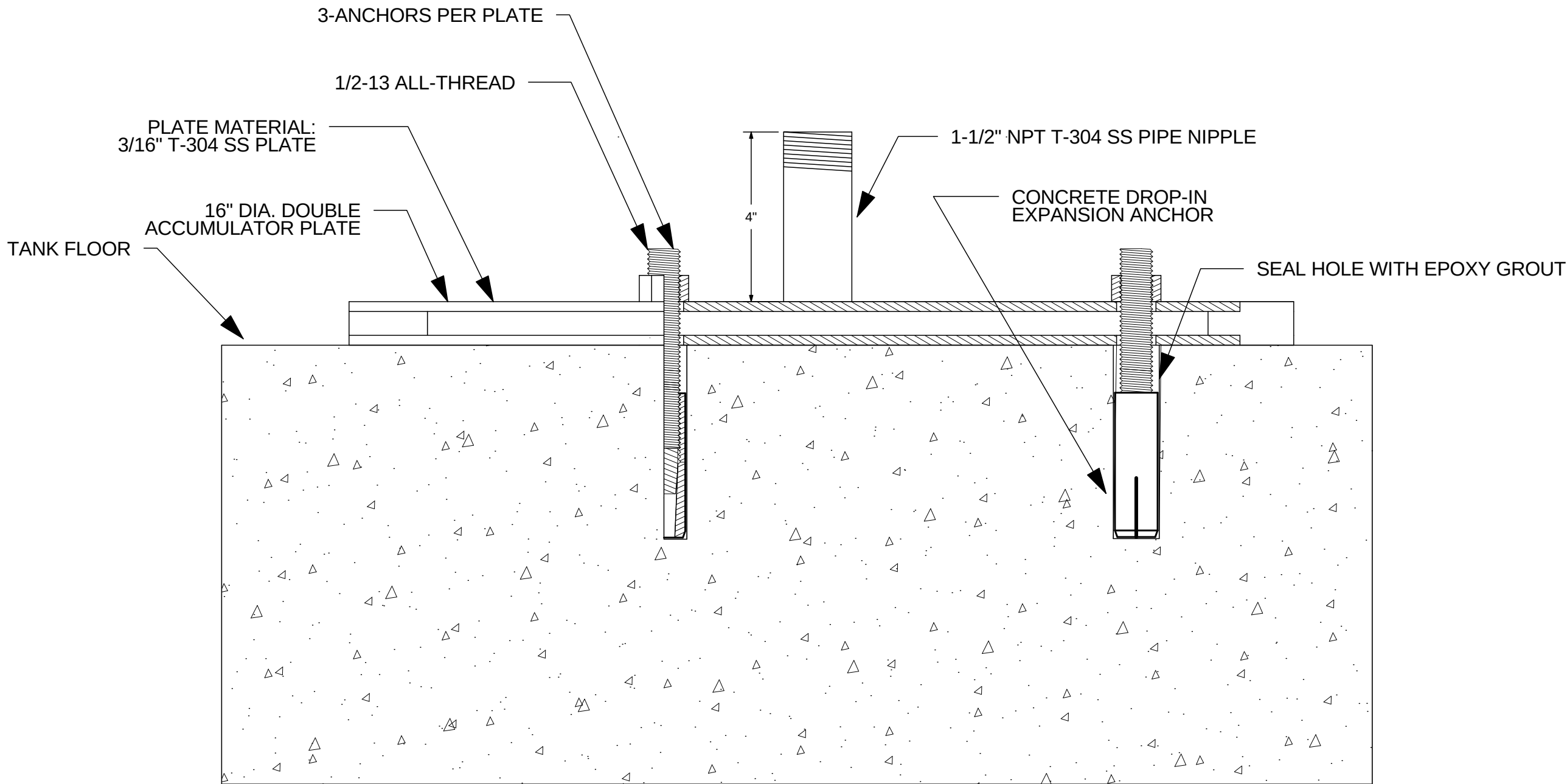
Example Drawing



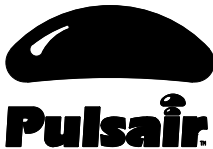
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ACCUMULATOR PLATE INSTALLATION DETAIL			
GRANTS CREEK WWTP, SALISBURY, NC			
	SCALE: NONE		DRAWN BY: J.R. PARKS
	DATE: 12-09-2020		JOB NUMBER: S201387
	PULSAIR SYSTEMS INC., P.O. BOX 562		
	BELLEVUE, WA 98009-0562		DRAWING NUMBER 20632

PLATE INSTALLATION DETAIL



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PLATE INSTALLATION DETAIL			
GRANTS CREEK WWTP, SALISBURY, NC			
	SCALE: NONE		DRAWN BY: J. R. Parks
	DATE: 12-09-2020		JOB NUMBER: S201387
	PULSAIR SYSTEMS INC., P.O. BOX 562		
	BELLEVUE, WA 98009-0562		DRAWING NUMBER 20633

Example of past EQ tank mixing project



San Francisco Airport Wastewater Treatment Plant – 60' diameter equalization tank

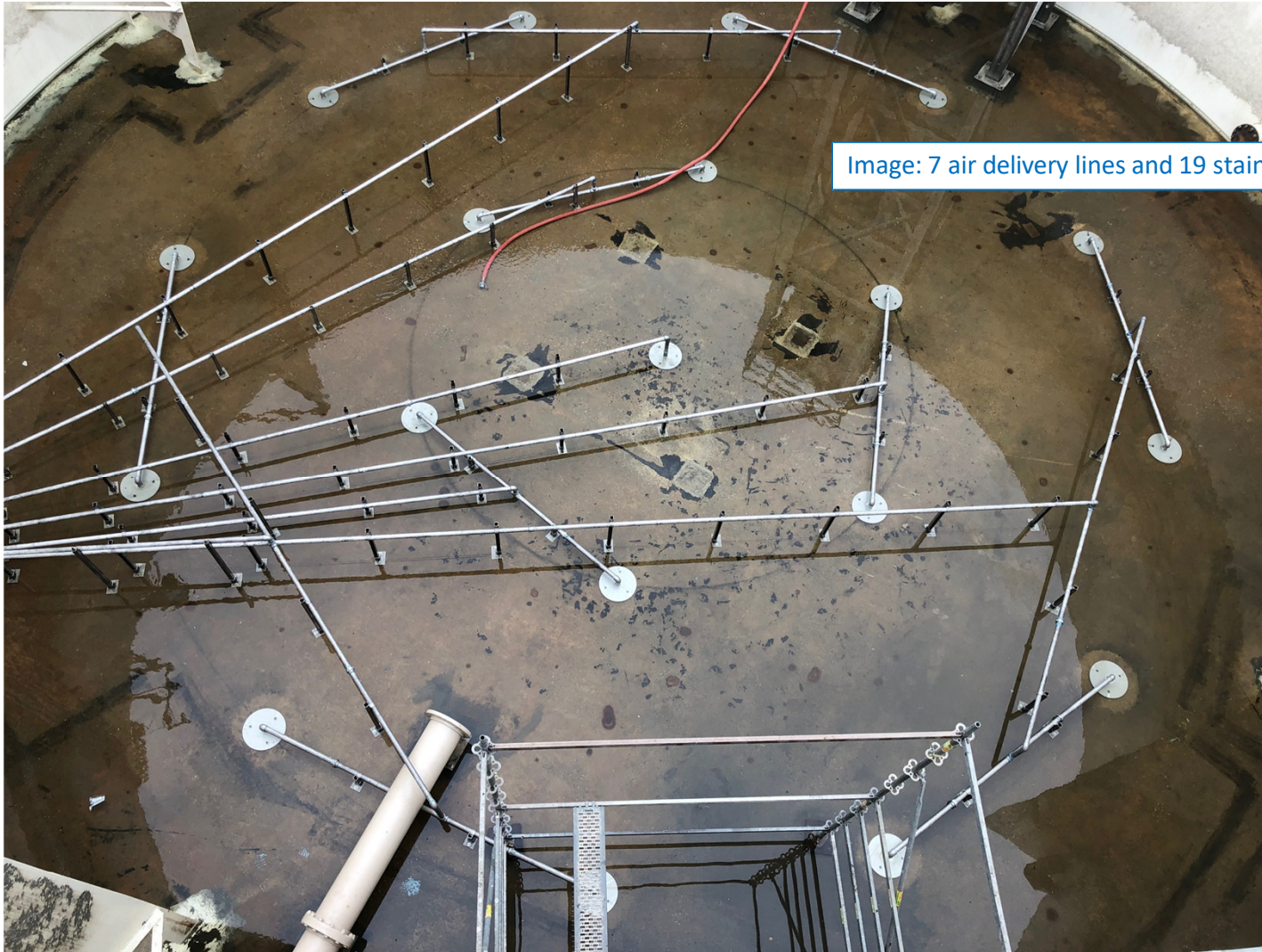


Image: 7 air delivery lines and 19 stainless steel accumulator plates

Example of past EQ tank mixing project



San Francisco Airport Wastewater Treatment Plant – 60' diameter equalization tank



Image: Stainless steel air delivery piping on pipe tray

Example of past EQ tank mixing project



San Francisco Airport Wastewater Treatment Plant – 60' diameter equalization tank



Image: PPC-1000 series mixing controller & air injection valves inside stainless steel NEMA 4 pre-plumbed valve enclosure

Example of past EQ tank mixing project



San Francisco Airport Wastewater Treatment Plant – 60' diameter equalization tank

Image: Stainless steel ball valves and 1 ½" stainless steel pipe & fittings



Example of past EQ tank mixing project



San Francisco Airport Wastewater Treatment Plant – 60' diameter equalization tank



Example of past EQ tank mixing project



San Francisco Airport Wastewater Treatment Plant – 60' diameter equalization tank



Example of past pre-dewatering sludge tank mixing project



Pulsair Systems: 30' x 30' tank with 30" high fillet corners

Location: Erie, CO

Image: Pulsair valve cabinet & air compressor



Example of past pre-dewatering sludge tank mixing project



Pulsair Systems: 30' x 30' tank with 30" high fillet corners

Location: Erie, CO

Image: Pulsair valve cabinet



Example of past pre-dewatering sludge tank mixing project



Pulsair Systems: 30' x 30' tank with 30" high fillet corners

Location: Erie, CO

Image: Pulsair PPC mixing controller with injection valves inside stainless steel enclosure



Example of past pre-dewatering sludge tank mixing project



Pulsair Systems: 30' x 30' tank with 30" high fillet corners

Location: Erie, CO

Image: Single air line plumbed to two (2) accumulator plates



Example of past pre-dewatering sludge tank mixing project



Pulsair Systems: 30' x 30' tank with 30" high fillet corners

Location: Erie, CO

Image: Compressed air delivery pipe



Example of past pre-dewatering sludge tank mixing project



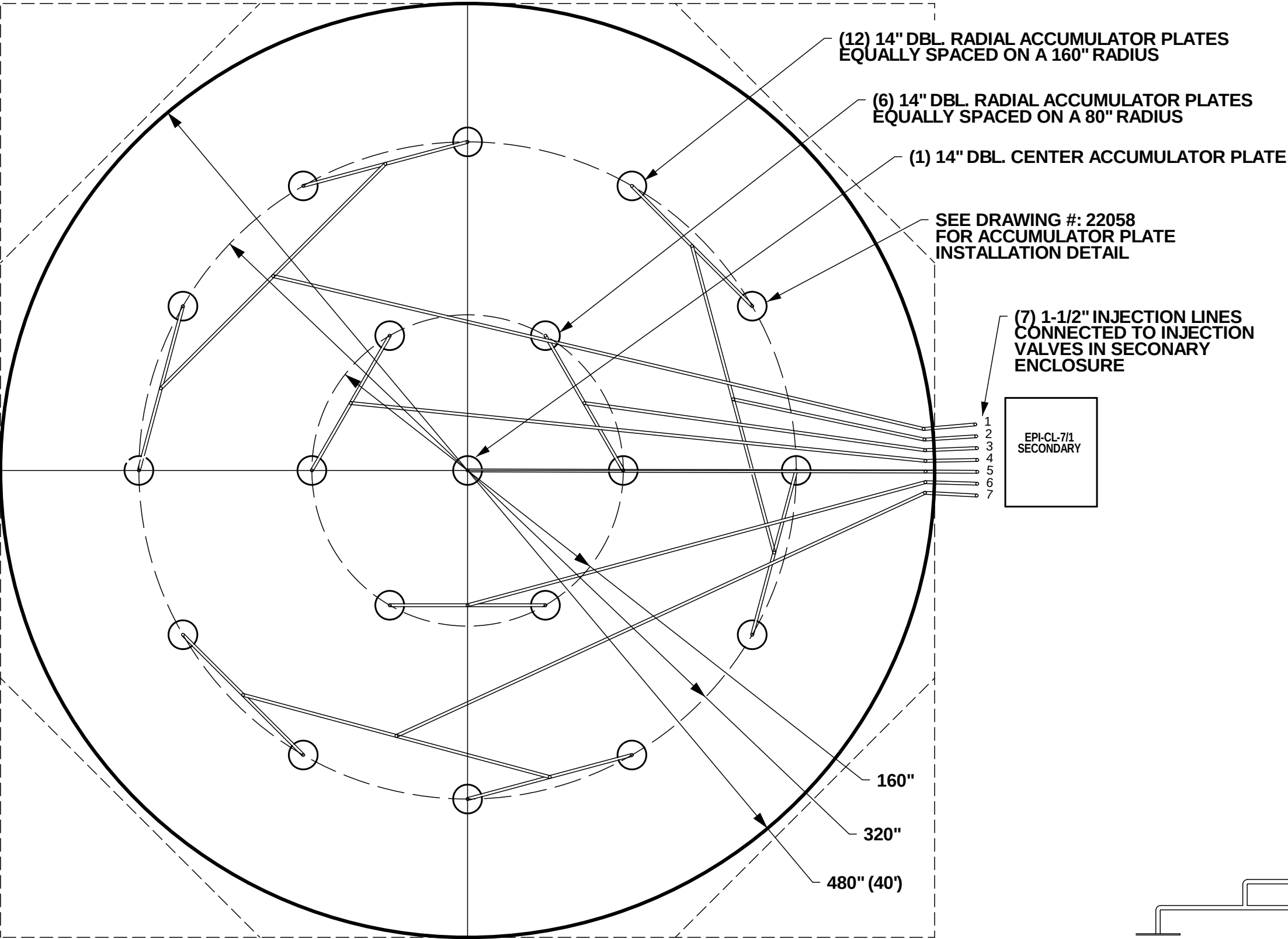
Pulsair Systems: 30' x 30' tank with 30" high fillet corners

Location: Erie, CO

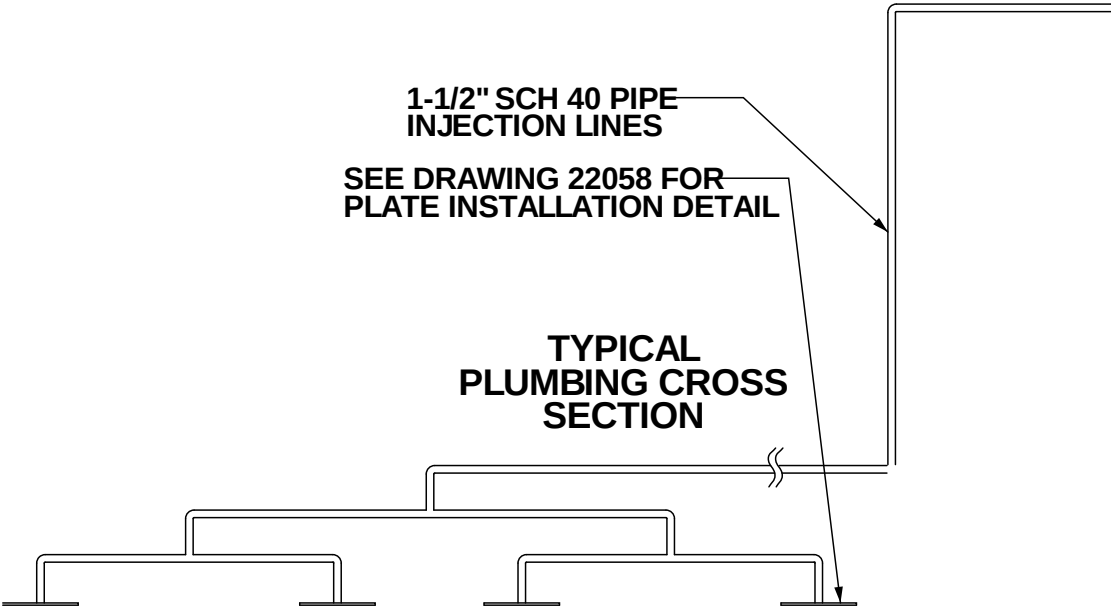
Image: Stainless steel double accumulator plate mounted on sloped floor



ACCUMULATOR PLATE INSTALLATION DETAIL

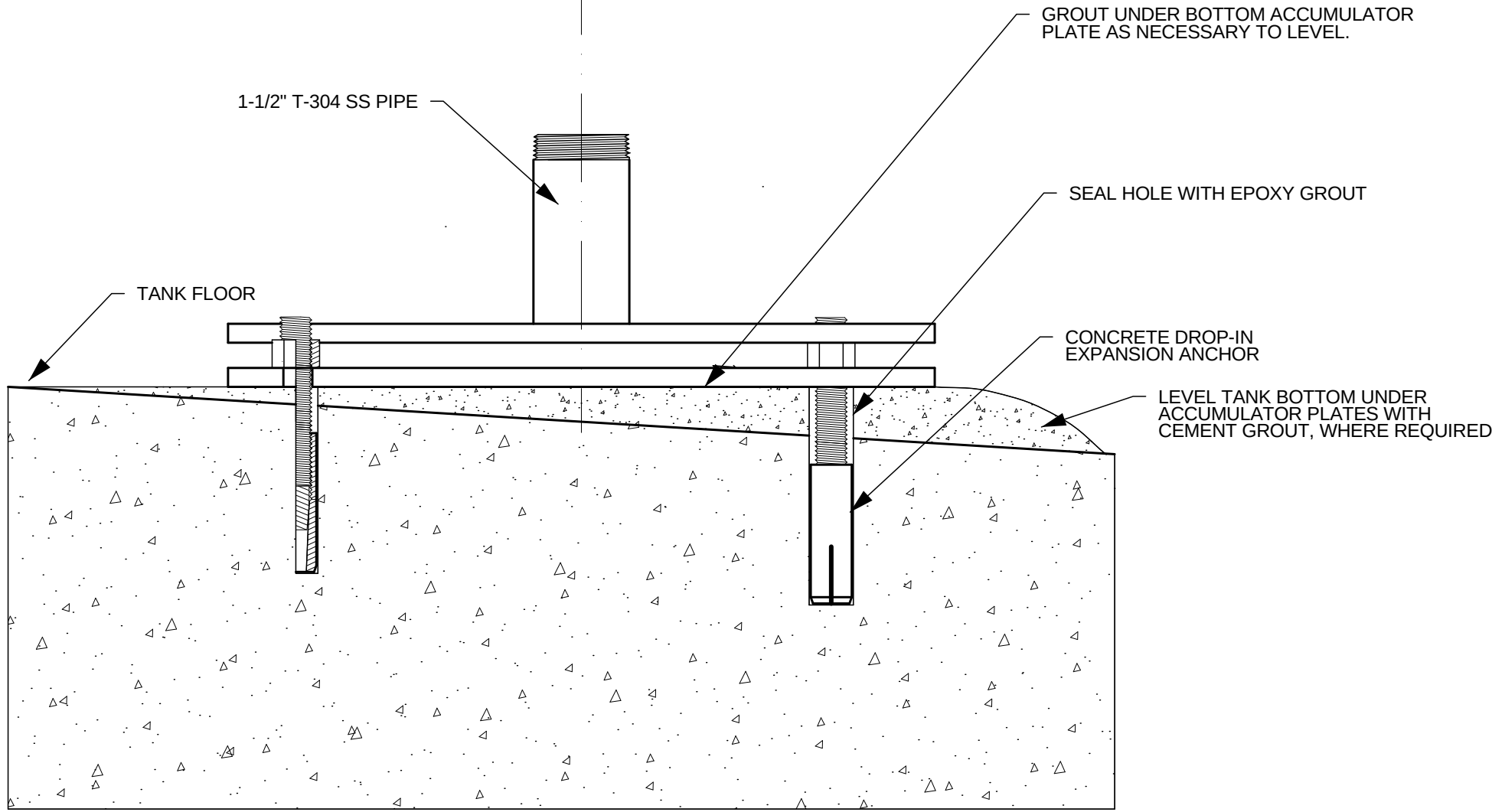
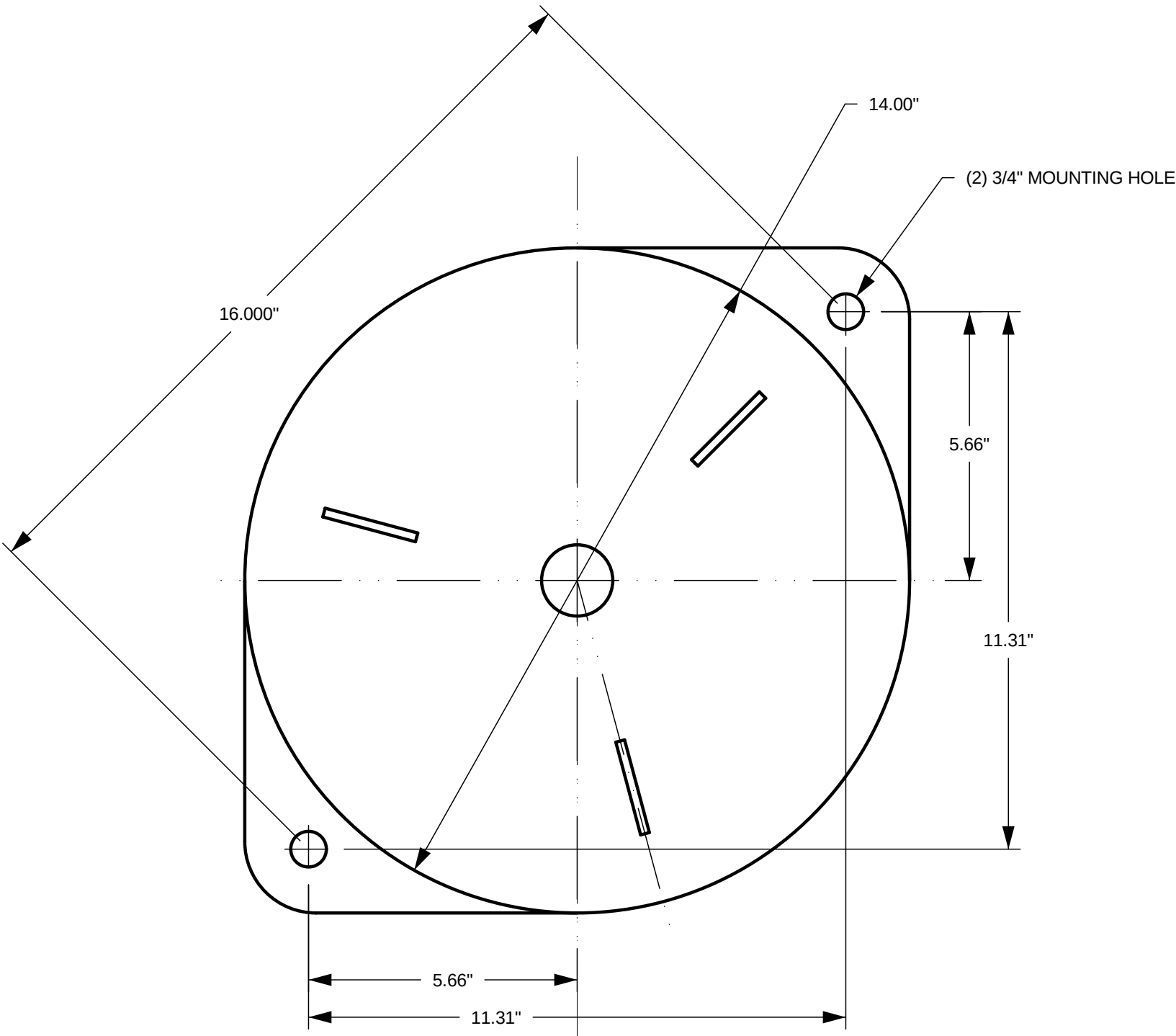


- 1. The accumulator plates are made from carbon steel. The plates are 14" in diameter, have 1-1/2" schedule 40 pipe nipples and have welding tabs which have been designed to fit the shape of the tank bottom. However, since there can often be variations or irregularities in the tank bottom it may be necessary to grind the tabs in order to level them before they are welded to the bottom of the tank.
- 2. The plates are positioned for maximum mixing efficiency. However, if necessary, their locations may be moved slightly to avoid existing in-tank components such as heating coils or other piping.
- 3. Piping is installed after the plates are level and secured in position. The air lines to the accumulator plates are all 1-1/2" and are sized to insure adequate and equal air flow to all the plates. The injection valves have flow characteristics to provide this air flow. It is important to follow the piping layout plan and pipe size to insure proper distribution of air to all of the plates.
- 4. The supply lines to the accumulator plates are to be run up inside of the tank and penetrate the tank roof. The secondary enclosures with the injection valves and other components are installed are to be installed on the tank circumference on opposite sides of the tank. It is important that no torque be applied to the piping system when making the connection to the accumulator plates.
- 5. Attach the horizontal and vertical piping to the tank bottom and wall every 6' to prevent vibration during mixing.
- 6. Install an air line drain valve below the air inlet to the secondary enclosure.



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ACCUMULATOR PLATE INSTALLATION DETAIL			
ALBANY CO. WPD - SLUDGE HOLDING TANK			
	SCALE: NONE		DRAWN BY: J.R. PARKS
	DATE: 02-08-2022		JOB NUMBER: Q22039
	PULSAIR SYSTEMS INC., P.O. BOX 562		
BELLEVUE, WA 98009-0562			DRAWING NUMBER 22057



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PLATE INSTALLATION DETAIL			
ALBANY CO. WPD - SLUDGE HOLDING TANK			
	SCALE: NONE		DRAWN BY: J.R. PARKS
	DATE: 02-09-2022		JOB NUMBER: Q22039
PULSAIR SYSTEMS INC., P.O. BOX 562			
BELLEVUE, WA 98009-0562			DRAWING NUMBER 22058

Appendix L
EPG Sludge Technical Memo



Barton & Loguidice

Memo To: Angelo Gaudio, P.E.
Executive Director, Albany County Water
Purification District

Date: 06/13/2023

From: Karen W. Clark, P.E.
Sr. Associate, Barton & Loguidice, D.P.C.

Project No.: 923.010.001
Phase No.:

Re: Sludge Processing Improvements Study
EPG – Additional Engineering Services

Barton & Loguidice, D.P.C. has been retained by ACWPD to provide additional engineering services in accordance with the County's Engineering Planning Grant (EPG) agreement with the NYSEFC. The goal of this evaluation will be to supplement additional analysis beyond the NYSERDA contract to analyze sludge management improvements at the North and South Wastewater Treatment Plants.

The additional scope of services includes:

1. Structural and Architectural Analysis of the four existing sludge mix tanks
2. Structural Assessment of the North Plant tunnels
3. Sludge Thickening Analysis to compare alternative thickening technologies for the North Plant WAS
4. Sludge Pumping Analysis to compare alternative sludge pumping technologies for the combined sludge

Structural Analysis

The structural analysis completed by Ryan Biggs Clark Davis a WBE firm in July 2022. Their report is attached to this technical memorandum and structural upgrade costs are integrated into the various sludge management alternatives contained in the comprehensive report.

A summary of the recommendation for the North Mixing Tanks includes:

1. Remove two courses of the corrugated concrete block. Replace angles at the top of the precast panels.
2. Install new support angles for precast concrete panels. After new support angles are installed, remove existing corroded angles.
3. At full-height precast panels, remove roof level panels, install new support angles, and reinstall roof level panels.
4. Install restoration anchors for masonry veneer.
5. Cut new control joints near the building corners. Install backer rod and sealant.
6. Repoint mortar.

7. Perform restoration cleaning at all exterior wall areas.
8. Remove existing coating. Prepare and coat tank interior with chemical resistant coating

The summary memo of the structural analysis is included in Attachment 1.

Architectural Analysis:

The architectural analysis was completed by B&L and while no significant defects were found with respect to the current membrane roof on the sludge mix tanks for a 30 year planning project the roof should be considered for replacement. This cost is carried in the Phase 2 Long Term upgrade costs.

In addition, four new marine type doors are proposed to replace existing doors that have been challenging to maintain. These costs are integrated into the overall cost analysis for the proposed alternatives in the Phase 1 costs under the Sludge Handling Improvements Contract.

Sludge Thickening Analysis:

Waste activated sludge (WAS) from the North Plant aeration process is currently thickened from approximately 0.5-1.0% solids content to 5.5% solids content utilizing Dissolved Air Floatation (DAF) Thickener units. There are a total of five DAF thickeners but only two are functional.

The DAF thickening process involves the injection of air to the bottom of a process tank, encouraging the formation of microbubbles which rise to the liquid surface. As these bubbles rise, they attach to solid particles, carrying them to the surface. Floating solids are then removed by chain and flight skimmer mechanisms and conveyed to the sludge mixing tanks as thickened WAS (TWAS). Liquid effluent is drawn from the bottom of the tank and returned to the liquid stream for further treatment.



Figure 1: Existing DAF Unit

The DAF units at the ACWPD North Plant have exceeded their useful design life and require frequent maintenance and repair to remain operational. WAS thickening is a critical step in the North Plant's sludge management process. The following alternatives were considered:

- Alternative 1A – Rehabilitate Existing DAF Units In-Kind
 - o Proposed Design:
 - Under this alternative, the existing DAF units would be rehabilitated by the original equipment manufacturer (OEM). Conversations with the OEM have indicated that this alternative would be difficult and costly to implement. Due to the age of the existing units, many components are no longer readily available 'off the shelf' and would need to be custom fabricated, or the existing tanks would need to be modified to accommodate installation of modern DAF replacement components.
 - o Opinion of Probable Cost:
 - The opinion of probable cost for this alternative is \$3,600,000.
- Alternative 1B – Replacement DAFT Units
 - o Proposed Design:
 - Under this alternative, the existing DAF units would be replaced in kind with two (2) new DAF units. Each unit would be sized for a hydraulic capacity of 300 gpm and would operate in parallel. Benefits of this alternative include operator familiarity with the DAF process and the limited need for upstream/downstream piping modifications to accommodate installation of the new units. Disadvantages include relatively high energy requirements and odor issues and significant structural modifications needed to create access for installation.
 - o Opinion of Probable Cost:
 - The opinion of probable cost for this alternative is \$1,900,000.
- Alternative 2 – Replace DAFT Units with two (2) new Gravity Belt Thickeners
 - o Proposed Design:
 - Under this alternative, the existing DAFT units would be replaced with two (2) new Gravity Belt Thickeners (GBTs). In the GBT process, unthickened sludge is pumped onto a porous, horizontal, filter belt. As the belt travels, liquid drains through the belt and is collected and recycled for further treatment; solids are retained on top of the belt. At the end of the belt, the solids dump into a feed hopper, where they can be pumped to subsequent solids handling processes.



Figure 3: Gravity Belt Thickener

At the ACWPD North Plant, the two (2) proposed GBTs would be installed within the footprint of the existing DAF units. Minor feed and discharge piping modifications would be necessary to accommodate the new equipment. Benefits of the GBT process include its relative simplicity, low energy requirements, and ability to operate continuously. Drawbacks include odor issues, cleanliness of the process area, and high wash-water requirements.

- o Opinion of Probable Cost:
 - The opinion of probable cost for this alternative is \$2,300,000. This cost does not include any odor control shrouds or dedicated air handling units.
- Alternative 3 – Replace DAFT Units with two (2) new Rotary Drum Thickeners
 - o Proposed Design:
 - Under this alternative, the existing DAFT units would be replaced with two (2) new Rotary Drum Thickeners (RDTs). The RDT process involves the addition of unthickened sludge and polymer to a rotating mesh drum. As the drum rotates, water drains through the mesh and is collected and recycled for further treatment; solids are retained inside the drum and move towards the discharge end, where they drop into a hopper and can be pumped to subsequent solids handling processes.



Figure 3: Rotary Thickener

At the ACWPD North Plant, the two (2) proposed RDTs would be installed within the footprint of the existing DAF units. Minor feed and discharge piping modifications would be necessary to accommodate the new equipment. Benefits of the RDT process include a smaller footprint than GBTs or DAFs, minimal odor/cleanliness issues, and ability to achieve higher solids concentrations.

- o Opinion of Probable Cost:
 - The opinion of probable cost for this alternative is \$3,100,000.
- Alternative 4 – Replace DAFT Units with two (2) new Screw Presses
 - o Proposed Design:
 - Under this alternative, the existing DAFT units would be replaced with two (2) new screw presses. The screw press process involves the addition of unthickened sludge to a flocculation chamber, where it is mixed with polymer to form larger particles. From this chamber, the flocculated sludge is fed into a fixed drum with a rotating screw inside. As the screw rotates, water drains through the mesh and is collected and recycled for further treatment; solids are moved towards the discharge end, where they drop into a hopper and can be pumped to subsequent solids handling processes.



Figure 4 – Screw Press

At the ACWPD North Plant, the two (2) proposed screw presses would be installed within the footprint of the existing DAF units. Minor feed and discharge piping modifications would be necessary to accommodate the new equipment. Benefits of the screw press process include minimal odor/cleanliness issues, and ability to achieve higher solids concentrations.

In May 2023, ACWPD, Shrier-Martin Process Equipment, and Esmil USA Corp. coordinated to pilot test a new screw press system at the ACWPD North Plant. The pilot test demonstrated the ability of the unit to achieve superior solids concentrations when thickening WAS than the existing DAF process.

Results of the screw press pilot testing is included in Attachment B. Six trails were run at varying influent feed rates, varying speed of the screw and varying polymer doses. The WAS was thickened to 5.8% to 8.23%, with an average percent solids of 6.58%. A few general conclusions of the pilot testing:

- The higher the flowrate through the unit the lower the final percent solids.
- The higher the polymer dosage the higher the final percent solids.
- Operating the unit at an average throughput of 100 gallons per minute per screw, at an average screw speed of 4.75 rpm and a polymer dosage of 24.62 lb/ton of dry solids should yield on average a thickened sludge concentration of 6.58%

These test results were used in the final selection of the screw press equipment to meet the design requirements.

- o Opinion of Probable Cost:
 - The opinion of probable cost for this alternative is \$2,200,000.

Cost estimates and equipment proposals for the alternatives evaluated are included in Attachment B.

For the purposes of the overall capital budget \$2,300,000 was carried in the Sludge Handling Improvements Contract under Phase 1. This could accommodate the Screw Press installation or the Gravity Belt Thickeners (without odor control shroud) for WAS thickening at the North Plant. Final selection will be made during final design.

Sludge Pumping Analysis:

Combined thickened WAS (TWAS) and primary sludge (PS) is currently pumped from the North Plant sludge mixing tanks to the belt filter press dewatering system by four (4) rotary lobe pumps.



Figure 5 – Existing Combined Sludge Pump Gallery

These pumps are undersized for existing and projected future flows. To overcome the pumps' limited capacity, ACWPD is forced to operate the rotary lobe pumps beyond their best operating point, leading to excessive wear on pump components. Additionally, ACWPD has installed two (2) progressive cavity style booster pumps in the rotary lobe discharge piping to get the necessary pressure at the Belt Filter Presses. The operation of two sets of positive-displacement style pumps in series has led to additional operation issues. ACWPD wishes to replace the existing combined sludge pumps with appropriately sized units that will allow for the elimination of the booster pumps and improved performance and efficiency and eliminate double pumping of the sludge. The following alternatives were considered:

- Alternative 1: Install New Rotary Lobe Style Pumps
 - o Proposed Design:

- Under this alternative, the existing rotary lobe pumps would be replaced with two (2) new rotary lobe pumps. Each pump would be sized for a design point of 300 gallons per minute (gpm) at 136' total dynamic head (TDH) and would operate in a duty/standby configuration. Each pump would have a 25HP motor.

Benefits of this alternative include operator familiarity with rotary lobe pumps, and a relatively smaller pump footprint. Drawbacks include the possibility of continued wear-and-tear.

- o Opinion of Probable Cost:
 - The opinion of probable cost for this alternative is \$700,000.
- Alternative 2: Install New Progressive Cavity Style Pumps
 - o Proposed Design:
 - Under this alternative, the existing rotary lobe pumps would be replaced with two (2) new progressive cavity pumps (Seepex). Each pump would be sized for a design point of 300 gallons per minute (gpm) at 136' total dynamic head (TDH) and would operate in a duty/standby configuration. Each pump would have a 40 HP motor.

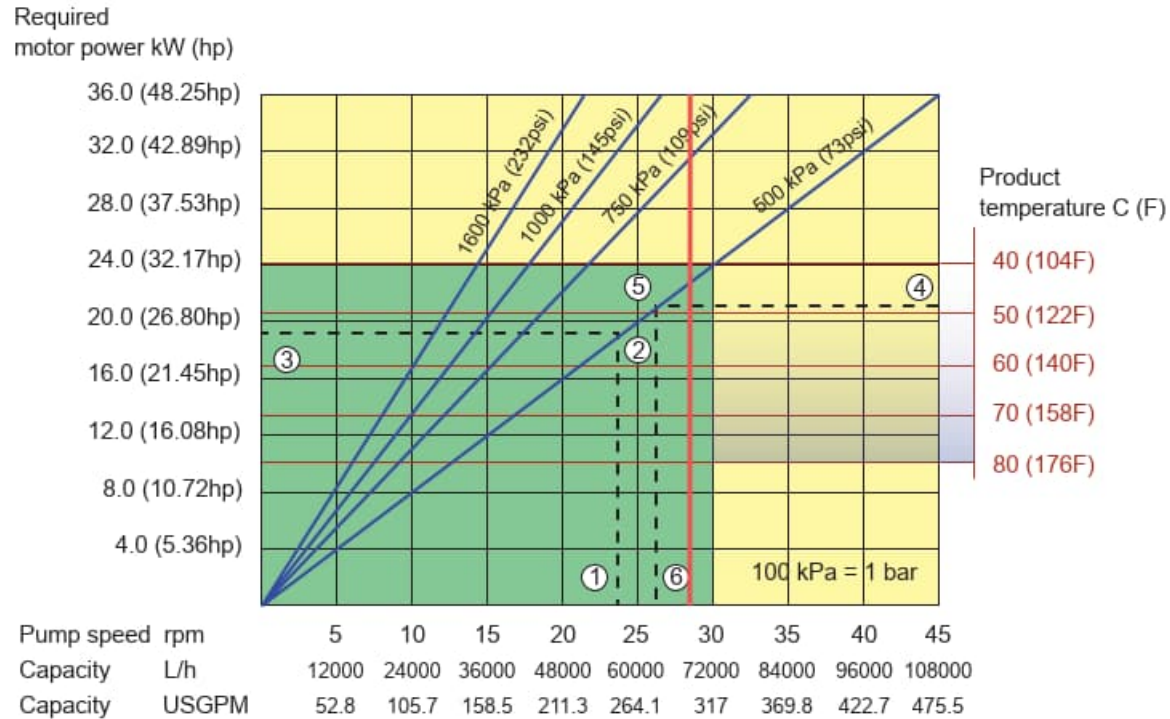
Benefits of this alternative include increased reliability. Drawbacks include a relatively larger pump footprint and difficulty associated with maintenance of progressive cavity pumps. Modern progressive cavity pump designs do include provision for in-place pump maintenance without the need for removal of suction and/or discharge piping; however, these designs are typically associated with lower maximum discharge pressures.
 - o Opinion of Probable Cost:
 - The opinion of probable cost for this alternative is \$1,110,000.
- Alternative 3: Install New Double Disc Style Pumps
 - o Proposed Design:
 - Under this alternative, the existing rotary lobe pumps would be replaced with two (2) new double disc pumps (Penn Valley). Each pump would be sized for a design point of 300 gallons per minute (gpm) at 136' total dynamic head (TDH) and would operate in a duty/standby configuration. Based on conversations with a manufacturer's representative, this design point would exceed the maximum capacity of the double disc style pump and should not be pursued. For this reason, this alternative was not evaluated in further detail.
 - The total dynamic head outlined in this evaluation includes a 25 psi minimum requirement for the Venturi mixer for the belt filter press system. Should

alternative dewatering systems that do not require a Venturi mixer be considered in the future and this additional 25 psi (58 ft of TDH) be eliminated from the system the double disc style pumps could be a viable sludge pumping alternative.

- o Opinion of Probable Cost:
 - Not applicable.

- Alternative 4: Install New Hose Style Pumps
 - o Proposed Design:
 - Under this alternative, the existing rotary lobe pumps would be replaced with two (2) new hose pumps (Bredel). Each pump would be sized for a design point of 300 gallons per minute (gpm) at 136' total dynamic head (TDH) and would operate in a duty/standby configuration.
The Bredel 2100 pump has an upper limit capacity of approximately 317 gpm as shown below. To facilitate the 300 gpm design flow the pumps would need to operate at the upper limit of the pump speed (rpm). Operation of hose pumps at high rpm increase the wear on the hoses and will cause excessive maintenance and repairs costs. As the hoses wear the capacity of the pumps will be impacted. As such these pumps were eliminated from consideration.

Bredel 2100



- o Opinion of Probable Cost:
 - Not Applicable

Both the larger rotary lobe and the progressive cavity pumps alternatives are viable to meet the sludge pumping demands. For the purposes of the overall sludge handling evaluation the larger of the two capital cost were carried to be conservative until final design selections are made.

The information and recommendations above have been included as part of the Sludge Processing Improvements Study – Revision 2, dated June 2023.

ATTACHMENT 1

STRUCTURAL ANALYSIS OF NORTH PLANT SLUDGE MIXING TANKS



July 29, 2022

Ms. Karen Clark
Barton & Loguidice
10 Airline Drive, Suite 200
Albany, New York 12208

**Re: Albany County Sewer District Sludge Holding Facility Conditions Assessment & Structural Evaluation for Improvements
Ryan Biggs | Clark Davis Project 14176**

Dear Ms. Clark:

At your request, we made a site visit on June 28, 2022, to observe the existing conditions at the sludge holding tanks at the Albany County Sewer District (ACSD) North Wastewater Treatment Plant. The purpose of the observations is to prepare a structural assessment of the building and prepare recommendations for the structural repairs and improvements. While at the site, we also observed conditions at the Grit Chambers and the UV Canopy.

The opinions and comments stated in this report are based on limited visual and sounding observations only. Mechanical, electrical, and plumbing conditions were not evaluated by Ryan Biggs | Clark Davis Engineering & Surveying, D.P.C.

Introduction

The sludge holding tank building is a rectangular, one-story structure that houses four separate sludge tanks. The building's dimensions are 87 feet by 108 feet, with each tank measuring 40 feet square. A pipe gallery runs through the middle of the structure allowing both access to the building, roof, and tanks. The building is constructed with cast-in-place concrete with the exterior walls (2 feet 6 inches thick), supporting a cast-in-place concrete roof structure. The sludge tanks are separated by 2-foot-6-inch-thick concrete walls. There are two levels, one at grade for entrance into the building and one below grade for access to the sludge tanks.

The exterior walls are clad with a non-structural veneer. The veneer is constructed with 4-inch-thick precast panels at the roof level and full height in a few locations, with 4-inch-thick fluted concrete masonry unit veneer below the roof panels. There is a 1½-inch gap between the precast panels and the structural walls of the building. The precast panels are laterally supported at the top by steel angles and vertically supported with angles at the bottom of the precast panels.

The CMU veneer is supported at the base by bearing directly on a shelf cast into the exterior cast-in-place concrete walls. The CMU flutes are constructed in stack bond and are attached to the structural walls with masonry ties.

Document Review/Comments

The following documents were made available for our review:

1. Visual Structural Assessment report prepared by DeGennaro Engineering dated September 21, 2016. As part of that investigation, exterior observations were performed in conjunction with limited removals in several locations. The following conditions were identified:
 - a. The support angles for the roof level precast panels were slightly corroded and have rotated outward, causing out-of-plane movement of the precast and fluted concrete veneer below.
 - b. The anchors for the fluted concrete veneer are corroded.
 - c. Deteriorated sealant joints.
 - d. Efflorescence staining.
2. Design Drawings prepared by Einhorn-Sanders-Architect dated May 1970.

Observations

1. Efflorescence was observed on the west side of the sludge holding tanks building (Photographs 1 and 2).



Photograph 1



Photograph 2

2. Rust staining was observed and deterioration of sealant at the bottom of the roof level precast panels (Photographs 3 and 4).



Photograph 3



Photograph 4

3. In several locations, the mortar joints are missing or eroded (Photograph 5).



Photograph 5

4. The chemical resistant wall coating inside sludge holding tank is debonded and deteriorated (Photographs 6 and 7).



Photograph 6



Photograph 7

5. At the Grit Chambers, the concrete is spalled and the reinforcing is corroded (Photographs 8 and 9).



Photograph 8



Photograph 9

Recommendations

Sludge Holding Tanks Building

1. Remove two courses of the corrugated concrete block. Replace angles at the top of the precast panels.
2. Install new support angles for precast concrete panels. After new support angles are installed, remove existing corroded angles.
3. At full-height precast panels, remove roof level panels, install new support angles, and reinstall roof level panels.
4. Install restoration anchors for masonry veneer.
5. Cut new control joints near the building corners. Install backer rod and sealant.
6. Repoint mortar.
7. Perform restoration cleaning at all exterior wall areas.
8. Remove existing coating. Prepare and coat tank interior with chemical resistant coating

Grit Chamber

9. Prepare and perform concrete patching repairs. Saw cut repair areas in rectangular pattern, sandblast substrate, prepare and coat existing reinforcing (or replace with new), install repair material and cure.

UV Canopy

10. Perform structural analysis of existing building to determine feasibility of enclosing the structure. Reinforce existing connections if necessary.
11. Provide sub-framing/reinforcing for enclosure
12. Enclose structure with metal panels or equivalent

Opinion of Probable Construction Cost

An opinion of probable construction cost for structural work is included as part of the proposed repair/improvement plan that encompasses several disciplines for this project site. Our opinion of probable construction cost is made on the basis of Ryan Biggs | Clark Davis' experience and best judgment as a design professional. However, since Ryan Biggs | Clark Davis has no control over the cost of labor, materials, or equipment, or over competitive bidding or market conditions, Ryan Biggs | Clark Davis cannot guarantee that proposals, bids, or the construction cost will not vary from its opinion of probable cost.

The opinion of probable construction is attached.

If you have any questions with regard to this report, please call our office.

Sincerely,

RYAN BIGGS | CLARK DAVIS ENGINEERING & SURVEYING, D.P.C.



Jack Healy, P.E.
Principal



Rasul Ali, E.I.T.
Design Engineer

Attachment

ATTACHMENT 2
SLUDGE THICKENING ANALYSIS

DAFT REPLACEMENT

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives North Plant Thickener Replacement - DAFT Replacement					
Item	Unit Costs		Quantity	Class 5 Total	Notes
Thickeners - North Plant	\$219,000	/unit	2 unit	\$438,000	Vendor Quote DAFT - replaces two DAFTs increased install due to equipment size and lack of access
Installation	30%	of equipment costs	2 unit	\$131,400	
Piping and Valves	\$50,000	lump sum	1 unit	\$50,000	
Subtotal A				\$620,000	
Misc. Demolition	30%	of "A"		\$186,000	significant structural modifications to install DAFT
Civil	0%	of "A"		\$0	N/A
Yard Piping	0%	of "A"		\$0	
Electrical, Instrumentation & Controls	20%	of major equipment		\$87,600	SCADA Integration
Subtotal B				\$890,000	
Startup and Construction Sequencing	2%	of "B"		\$17,800	No Easement Necessary
Construction Easements	0%	of "B"		\$0	
General Conditions	15%	of "B"		\$133,500	
Contractor Overhead and Profit	15%	of "B"		\$133,500	Tax Exempt
Sales Tax	0%	of equipment and supplies		\$0	
Bonds and Insurance	2.5%	of "B"		\$22,250	
Subtotal C Construction Costs				\$1,200,000	
Planning and Permitting	0%	of total construction costs		\$0	
Engineering	10%	of total construction costs		\$120,000	
Construction Management	10%	of total construction costs		\$120,000	
Subtotal Project Costs				\$1,440,000	
Estimating Contingency (includes market factor contingency)	30%	of subtotal Project Costs		\$432,000	
Total Project Cost				\$1,900,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$3,800,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$950,000

Note: Refer to last sheet for additional assumptions.



10 Airline Drive - Suite 200 - Albany, New York 12205
Telephone: (518) 218-1801 - Fax: (518) 218-1805



Proposal for Supply Of:
ACTIVEFLOAT™ DAF®
Dissolved Air System



Prepared For:
ALBANY COUNTY
Cares about our community

DAF Budgetary Proposal Rev. 1

Submitted By:
Headworks BIO™ Inc.

Date: July 15, 2022

Headworks BIO Inc. is a WBE / MBE Business



Headworks Inc. is a nationally certified
WBENC Women's Business Enterprise



Mr. Angelo Gaudio, P.E.
Executive Director
Albany County Water Purification District
Albany, NY 12204

Headworks BIO Inc. appreciates the opportunity to submit this budgetary proposal for the provision of the equipment for a Dissolved Air Flotation (DAF) treatment system based on the ActiveFloat® process. Headworks BIO's 20 years of wastewater design experience coupled with a hard-working dedicated staff enable us to select and supply the best treatment option to meet your needs.

To meet your treatment requirements, the following will be supplied by Headworks BIO Inc.

1. Treatment system design
2. ActiveFloat AF-175 DAF unit with sludge pump
3. Polymer mixing system
4. Chemical dosing system
5. Air dissolving system
6. Other required components & feed pumps are to be provided by others.

Pricing

Price for the above listed equipment is **\$219,000** Ex Works (Headworks Factory), for handling **300 GPM**. For two DAFs in parallel, handling **600 GPM**, the price is **\$399,000** Ex Works (Headworks Factory).

Please find attached the design parameters and applicable Commercial Terms and Conditions for this proposal.

Thank you for considering our offer. Please contact us if you have any questions or would like any additional explanations.

Sincerely,

A handwritten signature in black ink, appearing to be "G. Seidl", written in a cursive style.

Gerald Seidl
Senior Vice President
Headworks BIO Inc.
Tel: 713-647-6667
Email: gseidl@headworksintl.com



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1. INTRODUCTION

The stainless steel constructed Dissolved Air Flotation (DAF) system uses a process which provides reliable, continuous separation of suspended solids and oil and grease with limited operator attention. The DAF white water system is a self-aspirating process, drawing ambient air into the DAF pump under vacuum by the means of a cross-flow venturi injector mounted across the pump. The ambient air is filtered and metered before being introduced into the air dissolving tank.

Based on wastewater influent parameters and the effluent requirement, the proposed treatment will include an ActiveFloat DAF (AF-175) for removal of suspended solids (TSS) and Free oil and Grease (FOG) from a thin sludge from secondary clarifier(s) at the facility.

1.1 PROCESS ADVANTAGES:

- The custom designed ActiveFloat™ DAF system for solids separation from Headworks Bio is specifically designed for use with the ActiveCell MBBR biological process.
- High-efficiency design reduces chemical consumption.



Figure 1: DAF ActiveFloat Unit (typical)

1.2 OPERATING PRINCIPLE:

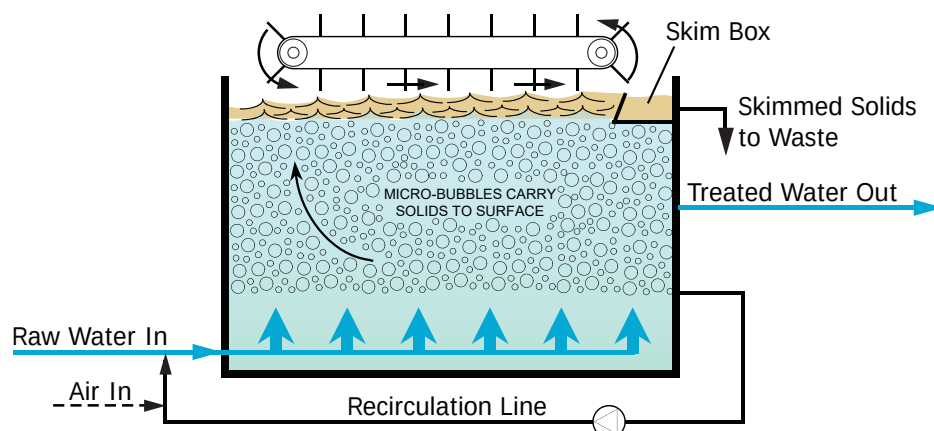


Figure 2: DAF Principal of Operation

The influent is pumped, or gravity fed into the DAF system. A coagulant/ Flocculant chemical will be added to the influent to enhance DAF performance. As shown in Figure 2 **Error! Reference source not found.**, a recirculation pump draws flow from the clear region of the DAF tank and ambient air is dissolved into the recirculated stream under high pressure. This saturated water flow is depressurized as it re-enters the DAF tank releasing the entrained gas as micro-bubbles. The micro-bubbles are thoroughly mixed with the influent flow and the solids and micro-bubbles are attracted to each other by surface tension. As the micro-bubbles rise to the surface, the solids are carried with them and form a scum layer on the water surface. A mechanical skimmer continuously skims the solids to a sump; from the sump the solids are pumped for disposal as waste sludge. Treated water from the clear zone of the DAF tank flows into the outlet weir and gravity feeds out the DAF.



2. WASTEWATER DESIGN DATA

2.1 SYSTEM DESIGN PARAMETERS

The proposed system is based on the following influent characteristics and effluent requirements:

Table 1: System Design Parameters

INFLUENT CHARACTERISTICS & DESIGN SUMMARY		
Parameter	Influent	Effluent
Hydraulic Flow (GPM)	300	
TSS (mg/l)	10,000	< 100
TSS in Sludge (mg/l)	1% dry solids	5% dry solids
FOG (mg/l)	< 10	< 10
Temperature (deg C)	10 - 25	

Notes:

1. For 600 GPM flow, two DAFs in parallel are recommended.

Table 2: System Performance Parameters

Parameter	Quantity	Comment
Solids Removal (%)	99 %	
Expected Sludge Concentration (%)	5%	

Provided all the influent characteristics are as described in Tables 1 and 2 fit within the normal operating conditions, and the system is installed and operated in accordance with Headworks BIO Inc. installation and operating instructions, the guaranteed effluent quality will meet or exceed the discharge criteria. The parameter performance is to be based on the geometric average of a minimum of five samples taken over a minimum of five days.



3. PROCESS DESCRIPTION

For this project (300 GPM), Headworks Bio is proposing an ActiveFloat AF-175 unit. For 600 GPM capacity, two AF-175 DAFs operating parallel are recommended.

The dilute sludge from the existing clarifier(s) will enter the ActiveFloat DAF from the bottom of the system. After entering the system, the wastewater will mix with whitewater and remove the suspended solids (TSS) and free oil and grease (FOG) from the wastewater.

The following flow diagram provides a simple overview of the proposed DAF treatment system.

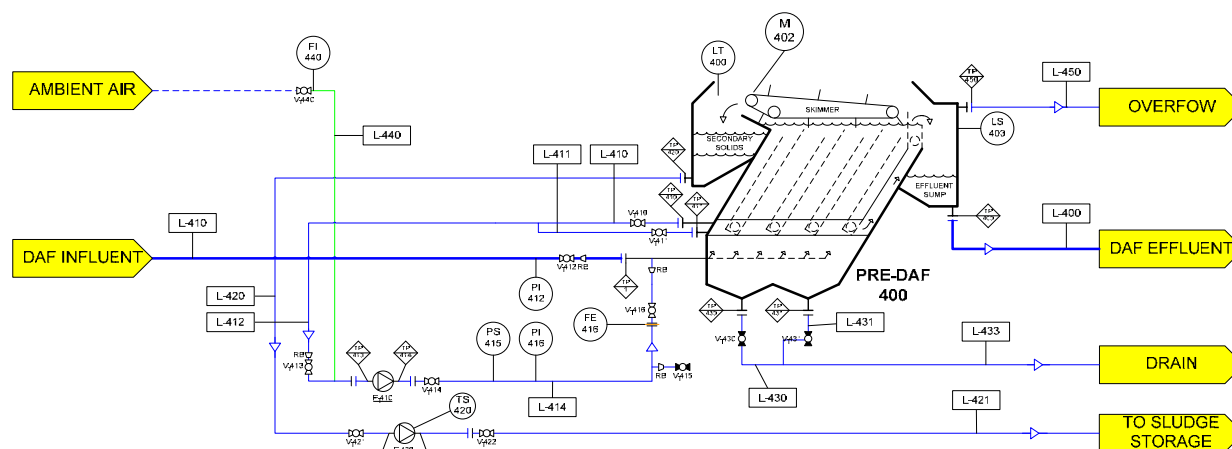


Figure 3: Typical Process Flow Diagram



4. DESIGN BASIS

The proposed treatment has been designed based on information provided by the customer and our extensive experience in designing DAF systems for various types of wastewaters. The following assumptions have been made in the treatment system design:

- HWB approved polymer must be used in accordance with the process guarantee and warranty conditions.
- Electrical specifications per supplier standard – subject to cost changes pending review of client's electrical specifications.



5. SCOPE OF SUPPLY

5.1 EQUIPMENT AND MATERIALS SUPPLIED BY HEADWORKS BIO

Headworks BIO will be supplying the following system components that will need to be off-loaded and installed into the treatment tanks:

Table 2: Scope of Supply

Description	Quantity
Main DAF tank for AF-175 - Material : SS304 - Dimensions: 9.1 L X 2.5 m W X 3.6 m H	1
Scraper Mechanism - Material : SS304 - Scraper Drive: 1.5 KW	1
Air Dissolving System - Air dissolving tube – Material – MSEP - Pressure reducer - Air compressor - Auto- Purge system	1
Coagulant dosing tank	2
Coagulant dosing pump Mechanically actuated diaphragm metering pump	1
Polyelectrolyte Preparation and dosing tank	1
Polyelectrolyte dosing pump	1
Polymer mixing tank and mixer	1
Pumps High Pressure pump – 50 m³/h @ 65 m	1 each
Piping, fittings and valves	1 lot
Valves - Purge valve with solenoid for Auto Purge System (APS) - Butterfly valve for APS - Needle valve- Air dissolving system (ADS) - Ball valve - Safety valve - Pressure reducer	1 Lot 1 Lot 1 Lot 1 Lot 1 Lot 1 Lot



Flanged Globe valve	1 Lot
Instruments: - Pressure gauges - Rotameter	1 Lot 1 Lot

5.2 DESIGN AND DELIVERY DOCUMENTATION

HWBio will provide relevant design material including project schedule, detailed process & instrumentation drawings (P&ID) for the HWBio scope of supply.

In addition, two (2) electronic copies of the DAF operating and maintenance documentation and training material will be provided in electronic format. O&M manuals for components purchased by HWBio and incorporated into the supplied system are included as appendices in the DAF O&M. The DAF O&M manual is provided with the system in preliminary form and is then updated to its final form after the startup is completed.

5.3 EQUIPMENT AND MATERIALS NOT PROVIDED BY HEADWORKS BIO

- Any modification to existing structures, disinfections, preliminary treatment, pumps, is to be supplied by others
- Treated water transfer pumps, sludge transfer pumps with piping's and fittings for reuse/disposal
- Offloading and installation of Headworks BIO supplied equipment
- Fresh water line for chemical preparation
- Electrical panel board including cable, cable tray
- All civil works; including tanks, pads, foundations, demolition and structural modification to any existing structures
- Any other items not specified in Headworks BIO's scope of supply



6. EQUIPMENT DESCRIPTION

6.1 DAF UNIT

For this project, A rectangular DAF design has been proposed. The unique design increases the effective surface area of the ActiveFloat™ dissolved air floatation process to increase the floatation and solids removal efficiency. The water rises to top as the micro-bubbles float solids to the surface. The solids are continuously skimmed to scum collection tank by a skimmer. Treated water from the clear zone of the DAF tank flows into the outlet weir and gravity feeds out the DAF.

The incoming DAF feed water is evenly distributed under the flow channels by the influent header manifold pipe.

Sludge drains at the bottom of the tank can be opened periodically to purge bottom solids to a drain. The drain valves can also be used to drain the tank for inspection or maintenance.



Figure 4: DAF (Typical)



- Fully enclosed (optional, if required)
- A 1 m maintenance space all around is preferred if possible, minimum 1 m on one side and 1m at pump end.
- Wetted parts are SS 304. Piping is PVC.
- All electrical connections to terminal boxes – subject to cost changes pending review of client's electrical specifications.
- OPTIONAL - Controls (proportional chemical dosing, DAF controls, etc.)

6.2 AIR FLOWMETER

Airflow into the DAF pumps is adjusted and monitored with a needle valve and airflow meter. The set point should only require occasional adjustment for temperature or humidity changes. Adjusting the airflow meters is best done with an inspection hatch open to allow inspection of the surface of the DAF tank. The airflow should be increased until larger bubbles begin to disturb the still water surface of the DAF tanks. Once larger bubbles are observed, reduce the airflow by 10% to ensure a smooth micro-bubble distribution without large bubbles or turbulence.

6.3 SKIMMER AND GEAR MOTORS

The Skimmer removes floated bioresidue from the wastewater surface in the DAF Tank. The Skimmer has a local on/off control and speed dial which allows skimmer speed to be set so it removes bioresidue at an effective rate. A slower speed will produce a denser sludge, a faster speed a thinner sludge. Local operating conditions and experience will determine the best sludge consistency.



7. GENERAL TERMS AND CONDITIONS

7.1 APPLICABLE TERMS

These terms govern the purchase and sale of the equipment and related services if any (collectively, "Equipment") referred to in Seller's quotation, proposal or acknowledgement, as the case may be (Seller's "Documentation"). Whether these terms are included in an offer or an acceptance by Seller, such offer or acceptance is conditioned on Buyer's assent to these terms. Seller rejects all additional or different terms in any of Buyer's forms documents.

7.2 PRICING

The price of the Equipment is based upon the following conditions:

Fifty percent (50%) paid in advance with purchase order and the remaining fifty percent (50%) due at the time of shipment. All payments shall be made through an Irrevocable Letter of Credit issued by an approved US bank, or by wire transfer subject to credit check. The details of the Letter of Credit shall be agreed upon at the time of the order.

These terms are independent of and not contingent upon the time and manner in which the purchaser receives payment from the site owner or any other person. Acceptance of order subject to credit approval. All monies not paid when due shall bear interest from the due date to the date paid either (i) at the fluctuating rate of 3% above the Prime Rate as defined below or (ii) the highest rate allowed by law, whichever is lesser. "Prime Rate" is the prime rate in effect on the first business day of the month in which a change occurs, as published in the Wall Street Journal on the next business day.

7.3 VALIDITY OF QUOTATION

60 days from date of offer.

7.4 OWNERSHIP OF MATERIAL

All devises, designs (including drawings, plans and specifications), estimates, prices, notes, electronic data and other documents or information prepared or disclosed by Seller, and all related intellectual property rights, shall remain Seller's properties. Seller grants Buyer a non-exclusive, nontransferable license to use any such material solely for Buyer's use of the equipment. Buyer shall not disclose any such material to third parties without Seller's prior written consent.

7.5 CHANGES

Seller shall not implement any changes in the scope of work described in Seller's documentation unless Buyer and Seller agree in writing to the details of the changes and any resulting price, schedule, or contractual modifications. This includes any changes necessitated by a change in applicable law occurring after the effective date of any contract including these terms.



7.6 STAINLESS STEEL, HDPE AND NATURAL GAS PRICE INCREASES

All Orders accepted, are subject to the following terms:

Headworks BIO reserves the right to adjust the price of the equipment based on increases in the price of stainless steel, HDPE or natural gas. This increase would be based on stainless steel and/or HDPE and/or natural gas price increases (including surcharges) as published monthly in the U.S. with the base price being that price (including surcharges, if any) published on the date of this offer. Such price increase only affects the cost of the stainless steel material and/or HDPE portion of the affected equipment.

7.7 FORCE MAJEURE

"Force Majeure" shall mean any act or event which is outside the reasonable control of a party including, without prejudice to the foregoing generality, Acts of God, epidemics, tidal waves, explosions, lightning, earthquakes, hurricanes, wars (whether declared or not), riots, strikes and industrial actions (other than among the employees of party seeking to rely on such event, or its subcontractor), civil and military disturbances and unrest, acts of the public enemy, action or inaction of the government or governmental authorities or of representatives thereof. If Headworks BIO is prevented from or delayed in performing its obligations as a result of Force Majeure, such prevention or delay shall not be considered a breach of the Agreement, but shall for the duration of such event relieve Headworks BIO of its respective obligations thereunder. Should the Force Majeure suspension period last for more than one (1) month, Headworks BIO may terminate this quote or agreement.

7.8 FREIGHT TERMS

Equipment is sold Ex Works, Headworks Factory.

7.9 SUBMITTAL PREPARATION

Technical submittal drawings for review, authority examination and approval shall be furnished to the buyer within 6-8 weeks of order acceptance. The buyer shall approve the submittals within 4 weeks from receipt; otherwise the Stainless Steel and Natural Gas Price Increases clause described above will become applicable.

7.10 DELIVERY SCHEDULE

12-16 weeks ex works after receipt of approved submittals.

7.11 START-UP, COMMISSIONING TRIPS

There are no site visits included in this offer; however, the following services can be supplied upon request:



- An installation inspection visit to verify correct installation of Headworks Bio Supplied equipment. At this time the technician will also typically assist the local plant operators and contractors with guidelines and expectations for the startup, along with development of a site/client specific startup plan.
- A training/commissioning visit to verify correct startup and operation of the system, evaluation of the process parameters. This visit will culminate in a final O&M manual based on actual operational parameters. This includes setpoints/targets, ongoing sampling plans, any special procedures that might be required, etc. A ~4 hour training session is also included covering:
 - o Biology 101: Using PowerPoint presentation, the objective is to present why we treat wastewater, how the bioreactors work (and the biomass carriers), and what conditions are favourable for the bioreactors (pH levels, DO, soluble BOD, etc.)
 - o System overview – Health and safety: Wastewater precautions, clean-up of spilled polymer, defoamer handling, H₂S dangers and precautions.
 - o Component description and walk through system: each component supplied by HWBio is explained in detail and what happens at each stage from a process point of view.
 - o Recommended system logs, re-starting from a shutdown, daily checks, etc.
 - o Maintenance schedule – cover regular items (blower air filters, instrument cleaning, etc., as required)
 - o Review, questions, and completion certificates given out.

7.12 TAXES

Federal, state and local taxes, if any, are not included in the above prices. All applicable taxes are for the purchaser's account.

7.13 PATENT PROTECTION

Various Headworks BIO Inc. equipment contain proprietary information covered by a number of patents and patents pending in the USA and in many international countries. For a full list of the approved patents, please contact Headworks BIO legal department in Houston, Texas.

7.14 WARRANTY

The seller warrants all equipment of its own manufacture to be free of defects caused by faulty material or workmanship for a period of eighteen (18) months from date of shipment or twelve (12) months from date of start-up, whichever first occurs. In the event that defects develop during the warranty period, under normal and proper use, Headworks BIO Inc. is to be notified promptly and with their consent the products are to be returned to Headworks F.O.B. Headworks factory.

In the case of components purchased by Headworks BIO and incorporated into the equipment, such as Electrical Controls, Instrumentation, Electrical Motors, Gear Reducers and related items, Headworks BIO's warranty is limited to the individual manufacturer's warranty for that component,



usually one year. This warranty does not apply to equipment or parts thereof which have been altered or repaired other than by a representative of Headworks BIO or damaged by improper installation, application, erosion or corrosion of any sort, or subjected to misuse, abuse, neglect or accident.

THIS WARRANTY, INCLUDING THE STATED REMEDIES, IS EXPRESSLY MADE BY HEADWORKS BIOINC. AND ACCEPTED BY PURCHASER IN LIEU OF ALL OTHER WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHETHER WRITTEN, ORAL, EXPRESS, IMPLIED, OR STATUTORY. HEADWORKS BIOINC. NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITIES WITH RESPECT TO ITS EQUIPMENT. HEADWORKS BIOINC. SHALL NOT BE LIABLE FOR NORMAL WEAR AND TEAR, NOR FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE DUE TO INOPERABILITY OF ITS EQUIPMENT FOR ANY REASON NOR ANY CLAIM THAT ITS EQUIPMENT WAS NEGLIGENTLY DESIGNED OR MANUFACTURED.

7.15 TERMINATION

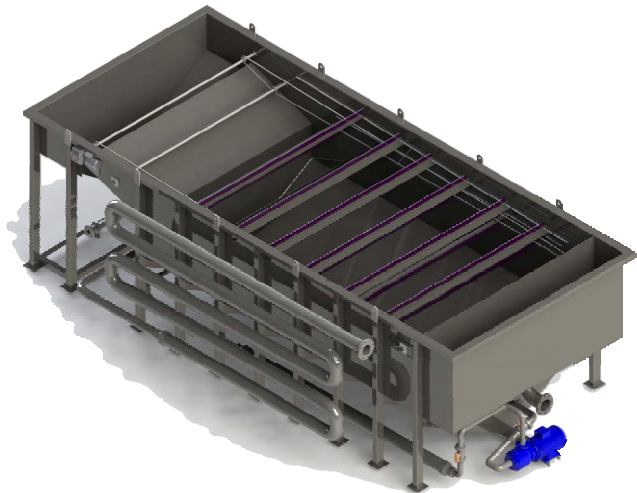
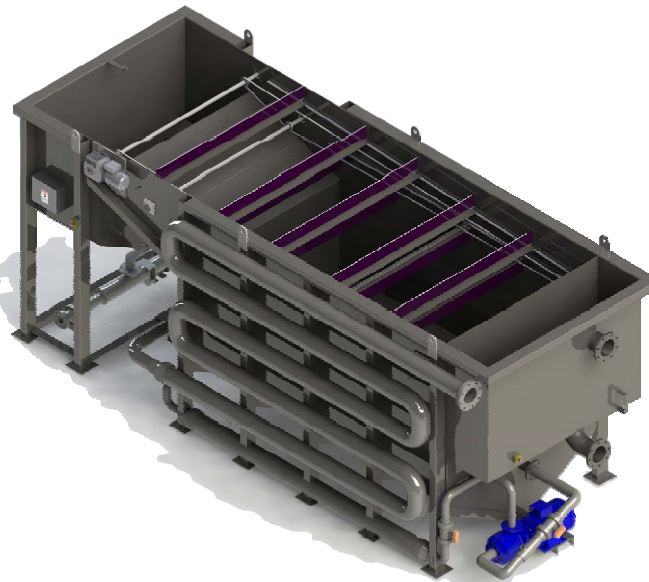
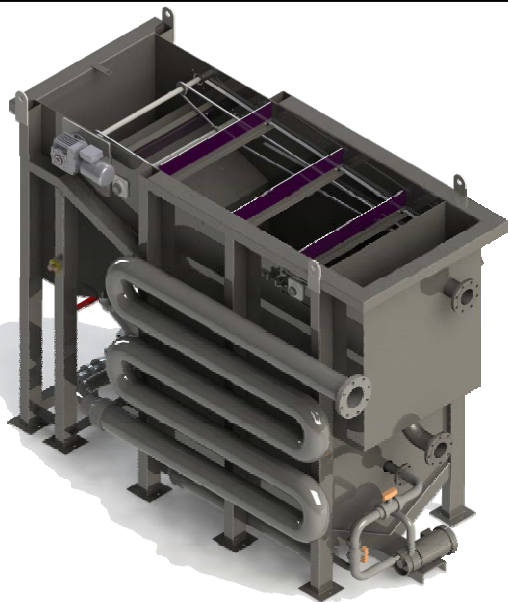
Buyer may at any time terminate this order or any part hereof for its sole convenience. In the event of such termination, Seller shall immediately stop all work hereunder, and shall immediately cause any of its suppliers or subcontractors to cease such work. Seller shall be paid a reasonable termination charge consisting of a percentage of the order price reflecting the percentage of the work performed prior to the notice of termination, including without limitations any and all engineering work completed in submittal preparation, plus actual direct costs resulting from termination. Seller shall not be paid for any work done after receipt of the notice of termination, nor for any costs incurred by the Seller's suppliers or subcontractors which Seller could reasonably have avoided. Buyer will make no payments for finished work, work in process, or raw material fabricated or procured by the Seller in excess of any order or release.

7.16 LIMITATION OF LIABILITY

In no event shall Seller be liable for anticipated profits or for incidental or consequential damages. Seller's liability on any claim of any kind for any loss or damage arising out of or in connection with or resulting from this contract or from the performance or breach thereof shall in no case exceed the price allocable to the goods or services which gives rise to the claim. Seller shall not be liable for penalties of any description. Any action resulting from any breach on the part of Seller as to the goods or services delivered hereunder must be commenced within one (1) year after the cause of action has accrued.

Specification		AF-5 DAF	AF-15 DAF	AF-25 DAF	AF-35 DAF	AF-55 DAF	AF-75 DAF	AF-105 DAF	AF-125 DAF	AF-175 DAF
Flow Range		3 ~ 11 m ³ /hr	7.5 ~ 22 m ³ /hr	11 ~ 33 m ³ /hr	28 ~ 70 m ³ /hr	35 ~ 87 m ³ /hr	40 ~ 100 m ³ /hr	55 ~ 135 m ³ /hr	75 ~ 190 m ³ /hr	95 ~ 240 m ³ /hr
Footprint		1.6m W X 2.5m H X 2.4m L	1.6m W X 2.5m H X 3.1m L	1.6m W X 2.5m H X 3.9m L	2.4m W X 2.5m H X 5.1m L	2.4m W X 2.5m H X 5.8m L	2.4m W X 2.5m H X 6.6m L	3.6m W X 2.5m H X 6.3m L	3.6m W X 2.5m H X 7.7m L	3.6m W X 2.5m H X 9.1m L
Weight	DRY	~ 1,350 kg	~ 1,800 kg	~ 2,300 kg	~ 2,900 kg	~ 3,500 kg	~ 4,100 kg	~ 4,100 kg	~ 5,500 kg	~ 6,900 kg
	WET	~ 3,100 kg*	~ 4,700 kg*	~ 6,500 kg*	~ 10,500 kg*	~ 13,100 kg*	~ 15,800 kg*	~ 17,100 kg*	~ 26,100 kg*	~ 35,100 kg*
Influent TSS Capacity		200 to 5000 mg/L			200 to 5000 mg/L			200 to 5000 mg/L		
Influent FOG Capacity		< 2000 mg/L			< 2000 mg/L			< 2000 mg/L		
TSS/FOG Reduction - Primary		> 80%			> 80%			> 80%		
TSS/FOG Reduction - Secondary		95 ~ 98%			95 ~ 98%			95 ~ 98%		
Construction Materials	Tank	SS 304			SS 304			SS 304		
	Pumps	Cast Iron, Bronze			Cast Iron, Bronze			Cast Iron, Bronze		
	Piping	PVC			PVC			PVC		
Power	Supply	3.5 kW*	5 kW*	7 kW*	10 kW*	17.5 kW*	18.5 kW*	18.5 kW*	26 kW*	51 kW*
	Requested	2.3 kW*	3.7 kW*	5.4 kW*	6.1 kW*	11.3 kW*	12 kW*	12 kW*	16.8 kW*	34 kW*

* Subject to flow rate specification



GRAVITY BELT THICKENERS

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives North Plant Thickener Replacement - Gravity Belt Thickeners Albany County, NY					
Item			Quantity	Class 5 Total	Notes
Thickeners - North Plant	\$389,000	/unit	2 unit	\$778,000	Vendor Quote GBT- replaces two DAFTS
Installation	15%	of equipment costs	2 unit	\$116,700	
Piping and Valves	\$50,000	lump sum	1 unit	\$50,000	
Subtotal A				\$940,000	
Misc. Demolition	5%	of "A"		\$47,000	N/A
Civil	0%	of "A"		\$0	
Yard Piping	0%	of "A"		\$0	
Electrical, Instrumentation & Controls	20%	of major equipment		\$155,600	SCADA Integration
Subtotal B				\$1,100,000	
Startup and Construction Sequencing	2%	of "B"		\$22,000	No Easement Necessary
Construction Easements	0%	of "B"		\$0	
General Conditions	15%	of "B"		\$165,000	
Contractor Overhead and Profit	15%	of "B"		\$165,000	Tax Exempt
Sales Tax	0%	of equipment and supplies		\$0	
Bonds and Insurance	2.5%	of "B"		\$27,500	
Subtotal C Construction Costs				\$1,500,000	
Planning and Permitting	0%	of total construction costs		\$0	
Engineering	10%	of total construction costs		\$150,000	
Construction Management	10%	of total construction costs		\$150,000	
Subtotal Project Costs				\$1,800,000	
Estimating Contingency (includes market factor contingency)	30%	of subtotal Project Costs		\$540,000	
Total Project Cost				\$2,300,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$4,600,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$1,150,000

Note: Refer to last sheet for additional assumptions.



10 Airline Drive - Suite 200 - Albany, New York 12205
Telephone: (518) 218-1801 - Fax: (518) 218-1805



354 State Route 29, Greenwich, New York 12834
Phone No 518-695-6851
E-mail: dan@bdpindustries.com

Date: Monday, May 23, 2022

To: Barton & Loguidice

Attn: Nicholas Despart
(518) 218-1801
ndespart@bartonandloguidice.com

Re: Albany County, NY – Thickening Upgrades
Two (2) 2.0m GBT Gravity Belt Thickener
BDP Quotation # 052322-1332

BDP Industries, Inc. is pleased to offer our quotation for Two (2) (one duty and one standby) GBT Gravity Belt Thickener and accessories. The GBT will be designed to thicken WAS or co-thicken a blend of primary wastewater solids and WAS. Below is a summary of our scope of work.

EQUIPMENT DESCRIPTION

The GBT equipment package includes Two (2) complete gravity belt thickener and appurtenant equipment described as follows:

1. Two (2) 2.0m GBT with the following design features:
 - a. Hot Dipped Galvanized tubular frame.
 - b. Polyurethane clear coat on the gravity zone slide decks zone.
 - c. Machined bearing pads.
 - d. Up-flow feedbox.
 - e. Sixteen foot, variable speed gravity section at operator level.
 - f. 1/4" x 3" stainless steel gravity deck support spaced every 12 inches.
 - g. Ten (10) rows of adjustable, furrowing plows with 304 stainless steel support bars.
 - h. Automatic plow lifts for unattended operation.
 - i. UHMW scraper blades.
 - j. Nylon covered rollers.
 - k. 304 stainless steel wetted parts.
 - l. 304 stainless steel hardware.
 - m. 40 PLI hydraulic tensioning and tracking.
 - n. 304 stainless steel sludge dam.
 - o. Corrosion resistant composite cylinders with 316 stainless steel rods and stainless steel hardware.
 - p. Self-cleaning, adjustable angle belt showers with Victualic connections.
 - q. Dodge, closed end, split case bearings rated for 1,000,000 hours at 40 PLI at 15 ft/min.
 - r. TEFC, IP 65 severe duty variable speed motors.
 - s. PVC conduit.
 - t. Zero speed switches for the gravity belts.
 - u. Low water pressure switch.
 - v. Electrically actuated full port valve for shower bar.
 - w. NEMA 4X low voltage junction boxes.
 - x. Main incoming power 460/3/60

2. Two (2) complete Control Panel for thickening system control function and drives.
 - a. NEMA 4X
 - b. 304 stainless steel
 - c. UL 508
 - d. PLC: Allen Bradley Compact Logix
 - e. HMI: Allen Bradley 12" Color Panelview Plus 7 OIT
 - f. Ethernet communication
 - g. 460/3/60
 - h. Contains all interlocks and controls for the GBT, booster pump, hydraulic unit and press mounted drives.
3. Two (2) 316L stainless steel polymer injection and polymer/sludge mixing system consisting of an injection ring, variable vortex mixer and reducing fittings.
4. Two (2) 2 HP hydraulic power units with a 20-gallon, 304 stainless steel reservoir.
5. Two (2) 5 HP Goulds model SSH wash water booster pumps capable of boosting from 50 to 120 PSI at a flow rate of 40 GPM. The wash water system will include a low water pressure switch and pressure gauge.
6. Two (2) 304 stainless steel discharge hopper with level control sensor.
7. One (1) lot of start-up spare parts.
8. All start-up, mechanical checkout and operator training as specified. Service to include four (4) separate trips with ten (10) days of on-site services.
9. One-year machine warranty three year warranty for the hydraulic system, bearings, frame, frame coating, rollers and roller coatings.
10. Freight to the jobsite.

Optional and Ancillary:

11. Two (2) 304 stainless steel odor control hoods with clear Lexan sliding doors and explosion proof lights.
12. Two (2) 304 stainless steel, 3/8" thick plate frame, Enclosed GBT design to contain odor and filtrate.
13. Two (2) TSS meter capable of monitoring inlet feed solids of the sludge and will be capable of auto pacing the polymer feed to each unit.
14. Two (2) Polymer System with the following components:
 - a. Two (2) BDP Mannich Polymer blending units with 50 GPH progressive cavity pump with 2400 GPH dilution water capability.
 - b. Two (2) 500-gallon 316L stainless steel polymer age tanks. Each age tank with have a pressure sensor for level control and a separate high level capacitance probe.
 - c. Three (3) 2 HP Seepex Progressive Cavity Polymer solution pumps capable of 7 GPM at 50 PSI and 300 RPM.
 - d. Two (2) complete polymer system control panel with the following features:
 - 1) 304 stainless steel, NEMA 4X.
 - 2) Allen Bradley Compact Logix PLC.



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- 3) Allen Bradley 12" color Panelview Plus OIT.
- 4) IEC motor starters.
- 5) Allen Bradley 525 Variable Frequency Drives.
- 6) 460/3/60
- 7) UL508
- 8) Ethernet communication.

The model GBT will come completely factory-assembled, tested and will be shipped in one piece. The polymer injection device, hydraulic unit, and belt media will be packed separately. This quotation is for furnishing equipment only and does not include any other installation labor or field services other than checkout, start up and testing services as listed above. All installation, on-site assembly, anchorage, pads and other work required to facilitate the setting of the equipment is to be by others. All labor and material for interconnecting between the press and the auxiliary equipment is to be completed by others.

ITEMS NOT INCLUDED IN THIS SCOPE OF SUPPLY

1. Sludge feed pumps.
2. TWAS pump.
3. Flow meter.
4. Temporary thickening.
5. Unloading at the jobsite.
6. Installation.
7. Operator platforms.
8. Sump grating.
9. Anchor bolts.
10. Applicable taxes of any kind.

SUBMITTAL DATA

Submittals will be made in the number of copies specified and will be available within 8 to 10 weeks after firm purchase order and all information is received at the factory.

SHIPMENT

Approximate shipping weight of each unit is 9,000 pounds. Estimated shipping time is 24 to 30 weeks after receipt of submittal approval.

FIELD SERVICE

Installation observation, testing and operator instruction services as listed above will be supplied. Additional service can be supplied at a service rate of \$1,200 per day plus travel expenses.

BUDGET PRICING

The total price for the above equipment is listed below (US Dollars). This price includes the shipping cost to the job site or nearest unloading point. The price does not include unloading cost and applicable taxes of any kind. This quotation will be valid for sixty (60) days from the date of this proposal.



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Qty	Description	Unit Price	Total Price
2	2.0m GBT	\$195,000	\$390,000
2	Control Panel	\$35,000	\$70,000
2	Discharge Hopper	\$7,500	\$15,000
2	Wash Water Booster Pump	\$7,500	\$15,000
1	Lot of Spare Parts	\$12,500	\$12,500
1	Start Up Service & Freight	\$15,500	\$15,500
	Total		\$518,000.00
	Optional and Ancillary		
2	304 Stainless Steel Odor Control Hoods	\$20,000	\$40,000
2	304 Stainless Steel Enclosed GBT Frame	\$40,000	\$80,000
2	Inlet Consistency Meters	\$40,000	\$80,000
2	Polymer Age System, Polymer Pumps, VFDs and Control Panels	\$130,000	\$260,000
	Total Cost		\$978,000.00

TERMS

Terms of payment are 30% with purchase order, 60% upon shipment of equipment and 10% upon start up. The attached Conditions of Sale are hereby made a part of this proposal.

We appreciate this opportunity to extend our quotation. If we can answer questions or supply additional information, please do not hesitate to contact Rich Suriano with Koester Associates at 518-888-4413.

Sincerely,

A.J. Schmidt
BDP Industries, Inc.

cc: Dan Fronhofer, P.E., BDP Industries, Inc.
Rich Suriano, Koester Associates, Inc.

CONDITIONS OF SALE - COS 5-86

1.1. General –

This contract will exist between BDP Industries, Inc. (hereafter referred to as BDP) and the buyer only when accepted in writing by an officer of BDP. The prices quoted herein are firm for a period of 60 days if a contract is entered within thirty (30) days from the date on the face of this proposal. Any amendment to this contract must be in writing and acknowledged by both parties.

1.2. Terms of Payment –

Payment is to be made on a net basis within thirty (30) days after invoice, subject to credit approval by BDP. The buyer's payment obligation is not dependent upon the buyer's receipt of payment from any other party. BDP reserves the right to invoice on partial shipments. Any balance owed by the buyer beyond thirty (30) days or more after due is subject to delinquency charges of 1.5% per month or any fraction thereof. This shall be in addition to any other amounts due and buyer shall reimburse BDP for all collection costs, including attorney's fees BDP may incur with respect to collection of past due amounts from the buyer.

1.3. Taxes –

This proposal does not include any Federal, State or Local Sales, Privilege, Use or any other taxes of any kind applicable to the sale of the equipment covered under this agreement. The buyer shall pay these taxes or the buyer shall provide BDP with a tax exemption certificate applicable to proper taxing authority.

1.4. Shipment –

All shipment will be F.O.B. factory. Shipping estimates contained herein are based on time of receipt at BDP's factory of all details pertaining to the order which are essential to contract completion.

1.5. Force Majeure –

BDP shall not be liable for any loss or damage of any nature whatsoever incurred or suffered as a result of any failures or delays in performance due to any cause or circumstances beyond its, or its subcontractors' or suppliers' control, including, but not by way of limitation, failure or delays in performance caused by strikes, lockouts or labor disputes, acts of purchaser, fires, acts of God or the public enemy, riots, incendiaries, interferences by civil or military authorities, compliance with the laws of the United States or with the orders or policies of any Governmental authority, delays in transit or delivery on the part of transportation companies or communication facilities or failure of sources of raw material. In the event of such delay, the time of delivery or completion shall be extended by a period of time equal to the period of delay plus such time as needed for start-up and/or remobilization, provided however, should the Force Majeure situation extend beyond six months the contract may be canceled by either party. Purchaser shall reimburse BDP for all costs and expenses including overhead costs which BDP may have reasonably incurred in terminating the contract, plus an amount as reasonable profits on that portions to the contract which has been completed.

1.6. Warranty –

BDP warrants the equipment manufactured by it to be free from defects in materials and workmanship for a period of 24 months from the date of shipment or 18 months from the date of start-up, whichever occurs first. BDP will repair or replace, at its option, F.O.B. its factory, any defective part or material, provided prompt notification is rendered in writing. The repair or replacement of items such as light bulbs, grease, oil, drive belts or chains, pump seals, etc. are not covered by this warranty and are considered normal consumption and routine maintenance items. In addition to the replacement of defective parts, BDP will also provide such labor as it deems necessary, to repair a defect in the main frame structure. BDP will not assume the cost of any modification or repair of its equipment unless it specifically gives authority for such action. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS. BDP MAKES NO WARRANTY AS TO FITNESS OF ITS PRODUCTS FOR PARTICULAR PURPOSE OR MERCHANTABILITY.

1.7. Limitation of Liability –

In no event, be it due to breach of any warranty hereunder or any other cause rising out of performance or non-performance of the obligations herein, whether any such breach or cause be or sound in tort, contract or otherwise, shall BDP be liable for:

- a) Indirect, special or consequential damages (such as, but not limited to, loss of profits, plant downtime, fines, penalties, or cost of replacement services) or suet by third parties against the purchaser (excluding suits regarding patents on title to the goods furnished hereunder).
- b) BDP's total cumulative liability for any and all reasons, shall not exceed an amount equal to the contract price.

1.8. Claims –

The buyer shall immediately inspect equipment within ten (10) days after receipt, BDP is not obligated to consider any claim for shortages or non-conformance unless notified by the buyer within ten (10) days after his receipt of the



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goods in question, BDP is not responsible for loss of damage in transit, however they will lend any possible assistance to the buyer in his pursuit of claim recovery.

1.9. Cancellation –

BDP will accept cancellation of this order upon receipt of payment for percentage of the contract equal to a percentage of the work completed. This shall be, at a minimum, 20% of the contract price.

1.10. Storage –

If the buyer delays shipment, then the buyer agrees to pay all invoices as they become due. The buyer further agrees to pay, in addition, storage charges computed at 1.5% per month of the invoice price of equipment stored.

1.11. Permits –

The buyer shall assume full cost and responsibility to obtain all permits or licenses with respect to the installation and operation of the equipment covered under this agreement. This shall include all requirements by Federal, State and Local governmental bodies.

This contract shall be governed in accordance with the laws of the State of New York. These conditions and terms are the only terms and conditions that will be binding upon the parties unless amended, and acknowledged, in writing by both parties. No assignment of this proposal or any purchase order resulting here from shall be binding on BDP unless accepted in writing by BDP.

ROTARY DRUM THICKENERS

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives North Plant Thickener Replacement - Rotary Drum Thickener Albany County, NY					
Item	Unit Costs		Quantity	Class 5 Total	Notes
Thickeners - North Plant	\$498,000	/unit	2 unit	\$996,000	Vendor Quote RDT- replaces two DAFTS
Installation	15%	of equipment costs	2 unit	\$149,400	
Piping and Valves	\$50,000	lump sum	1 unit	\$50,000	
Subtotal A				\$1,200,000	
Misc. Demolition	5%	of "A"		\$60,000	N/A
Civil	0%	of "A"		\$0	
Yard Piping	0%	of "A"		\$0	
Electrical, Instrumentation & Controls	20%	of major equipment		\$199,200	SCADA Integration
Subtotal B				\$1,500,000	
Startup and Construction Sequencing	2%	of "B"		\$30,000	No Easement Necessary
Construction Easements	0%	of "B"		\$0	
General Conditions	15%	of "B"		\$225,000	
Contractor Overhead and Profit	15%	of "B"		\$225,000	Tax Exempt
Sales Tax	0%	of equipment and supplies		\$0	
Bonds and Insurance	2.5%	of "B"		\$37,500	
Subtotal C Construction Costs				\$2,000,000	
Planning and Permitting	0%	of total construction costs		\$0	
Engineering	10%	of total construction costs		\$200,000	
Construction Management	10%	of total construction costs		\$200,000	
Subtotal Project Costs				\$2,400,000	
Estimating Contingency (includes market factor contingency)	30%	of subtotal Project Costs		\$720,000	
Total Project Cost				\$3,100,000	

Upper Limit of Cost Estimate Range

+100% of Total Project Costs

\$6,200,000

Lower Limit of Cost Estimate Range

-50% of Total Project Costs

\$1,550,000

Note: Refer to last sheet for additional assumptions.



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Phone No 518-695-6851
E-mail: dan@bdpindustries.com

Date: Tuesday, May 30, 2023

**To: Barton & Loguidice, PCC
10 Airline Dr #200,
Albany, NY 12205**

**Attn: Nicholas Despart
(518) 218-1801
ndespart@bartonandloguidice.com**

**Albany County Water Purification District - Albany, NY
BDP Industries Two (2) Model Dual 4x10 RDT - Rotary Drum Thickeners
BDP Quotation #: 053023 - 0856**

BDP Industries, Inc. is pleased to offer our quotation for Two (2) Dual 4x10 Rotary Drum Thickeners (RDT) and accessories. Each RDT will be designed to thicken WAS at a rate of 375 GPM with an inlet feed consistency of 0.63% and thicken to a discharge solids of 6% at a polymer dosage of 14 to 18 pounds of active polymer per dry ton. Below is a summary description of our proposed scope of supply.

EQUIPMENT DESCRIPTION

The RDT equipment package includes a complete thickener and appurtenant equipment, described as follows:

1. Two (2) Dual 4x10 Rotary Drum Thickeners with the following features:
 - a. 304 stainless steel tubular frame per ASTM A554-304 specification.
 - b. Machined bearing pads.
 - c. Dual Four-foot diameter x 10-foot-long independent, variable speed drums.
 - d. 304L stainless steel wetted parts.
 - e. 304 stainless steel hardware.
 - f. Self-cleaning adjustable angle belt showers with Victaulic connections.
 - g. Zero Speed switches for the drum.
 - h. TEFC, IP65 severe duty variable speed motor.
 - i. PVC conduit.
 - j. NEMA 4X junction boxes.
 - k. Main incoming power 460/3/60
2. Two (2) complete Control Panels for thickening system control functions and drives.
 - a. NEMA 4X
 - b. 304 stainless steel
 - c. UL 508
 - d. PLC: Allen Bradley Compact Logix
 - e. HMI: Allen Bradley 12" Color PanelView Plus 7 OIT
 - f. VFD's: Allen Bradley Powerflex 525
 - g. Ethernet communication
 - h. 460/3/60



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- i. All interlocks and controls for the RDT, booster pump and all ancillary equipment.
- j. Allen Bradley I/O
3. Two (2) 316L stainless steel polymer injection and polymer/sludge mixing systems consisting of an injection ring, variable vortex mixer, and reducing fittings.
4. Two (2) 304L stainless steel thickened sludge discharge hoppers with conductance probe for high-level alarm.
5. Two (2) 3 HP Goulds model SSH wash water booster pumps capable of boosting to 80 PSI at a flow rate of 40 GPM. The wash water system will include a low water pressure switch, electric actuating valve and pressure gauge.
6. One (1) Lot of spare parts.
7. All start-up, mechanical checkout and operator training as specified. Service to include three (3) separate trips with nine (9) days of on-site services.
8. One-year equipment warranty, Three-year warranty for the bearings, frame and frame coating.
9. Freight to the jobsite.

Optional & Ancillary

1. Two (2) Sludge flow meters, 6" Siemens magnetic with grounding rings and remote display head.
2. Two (2) TSS meter capable of monitoring inlet feed solids of the sludge and will be capable of auto pacing the polymer feed to each unit.
3. Two (2) Polymer System with the following components:
 - a. Two (2) BDP Mannich Polymer blending units with 50 GPH progressive cavity pump with 2400 GPH dilution water capability.
 - b. Two (2) 500-gallon 316L stainless steel polymer age tanks. Each age tank with have a pressure sensor for level control and a separate high level capacitance probe.
 - c. Three (3) 2 HP Seepex Progressive Cavity Polymer solution pumps capable of 7 GPM at 50 PSI and 300 RPM.
 - d. Two (2) complete polymer system control panel with the following features:
 - 1) 304 stainless steel, NEMA 4X.
 - 2) Allen Bradley Compact Logix PLC.
 - 3) Allen Bradley 12" color Panelview Plus OIT.
 - 4) IEC motor starters.
 - 5) Allen Bradley 525 Variable Frequency Drives.
 - 6) 460/3/60
 - 7) UL508
 - 8) Ethernet communication.

The model RDT will come completely factory-assembled, tested and will be shipped in one piece. The polymer injection device, booster pump, and electrical control panel will be shipped loose for installation by others. This quotation is for furnishing equipment only and does not include any other installation labor or field services other than specified checkout, start up and



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testing services. All other installation, on-site assembly, anchorage, pads and other work required to facilitate the setting of the equipment is to be by others. All material and labor for interconnections between the press and the auxiliary equipment are to be completed by others.

ITEMS NOT INCLUDED IN THIS SCOPE OF SUPPLY

1. Unloading at the jobsite.
2. Installation.
3. Temporary or mobile thickening.
4. Sludge feed pumps.
5. TWAS pumps.
6. Operator platforms.
7. Sump grating.
8. Anchor bolts.
9. Sludge feed pump.
10. Interconnecting plumbing and wiring.
11. Valves or instrumentation not listed above.
12. Applicable taxes of any kind.

SUBMITTAL DATA

Submittals will be made in the number of copies specified and will be available within 8 to 10 weeks after firm purchase order and all information is received at the factory.

SHIPMENT

Approximate shipping weight is 8,000 pounds. Estimated shipping time is 40 to 50 weeks after receipt of submittal approval.

FIELD SERVICE

Installation observation, testing and operator instruction services as specified will be supplied. Additional trips can be supplied at cost of \$1,400 per day plus travel expenses.

BUDGET PRICING

The price for the RDT and associated ancillary equipment is listed below in U.S. Dollars. This price includes the shipping cost to the job site or nearest unloading point. The price does not include unloading cost and applicable taxes of any kind. This quotation will be valid for sixty (60) days from the date of this proposal.

Qty	Description	Unit Price	Total Price
2	Dual 4X10 RDT	\$250,000	\$500,000
2	PLC/OIT Control Panel	\$50,000	\$100,000
2	Wash Water Booster Pump	\$7,500	\$15,000
2	Discharge Hopper	\$7,500	\$15,000
1	Start-up Services & Freight	\$20,500	\$20,500
	Total		\$650,500.00
	<i>Optional and Ancillary</i>		



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2	Flocculation Tanks	\$15,000	\$30,000
2	Inlet Consistency Meters	\$45,000	\$90,000
2	Flow Meter	\$7,500	\$15,000
2	Polymer Age System, Polymer Pumps, VFDs and Control Panels	\$150,000	\$300,000
	Total		\$1,085,500.00

TERMS

Terms of payment are 30% with purchase order, 60% upon shipment of equipment and 10% upon start up. The attached conditions of sale are hereby made a part of this proposal.

We appreciate this opportunity to extend our quotation and if we can answer questions or supply additional information, please do not hesitate to contact Gregg Palmer of Koester Associates at 315-897-0698.

Sincerely,

Dan Fronhofer, P.E.
BDP Industries, Inc.

cc: AJ Schmidt, BDP Industries, Inc.
&
Gregg Palmer, Koester Associates
(315) 897-0698
gpalmer@koesterassociates.com

CONDITIONS OF SALE - COS 5-86

GENERAL -- This contract will exist between BDP Industries, Inc. (hereafter referred to as BDP) and the buyer only when accepted in writing by an officer of BDP. The prices quoted herein are firm for a period of 180 days if a contract is entered within thirty (30) days from the date on the face of this proposal. Any amendment to this contract must be in writing and acknowledged by both parties.

TERMS OF PAYMENT -- Payment is to be made on a net basis within thirty (30) days after invoice, subject to credit approval by BDP. The buyer's payment obligation is not dependent upon the buyer's receipt of payment from any other party. BDP reserves the right to invoice on partial shipments. Any balance owed by the buyer beyond thirty (30) days or more after due is subject to delinquency charges of 1.5% per month or any fraction thereof. This shall be in addition to any other amounts due and buyer shall reimburse BDP for all collection costs, including attorney's fees BDP may incur with respect to collection of past due amounts from the buyer.

TAXES -- This proposal does not include any Federal, State or Local Sales, Privilege, Use or any other taxes of any kind applicable to the sale of the equipment covered under this agreement. These taxes shall be paid by the buyer or the buyer shall provide BDP with a tax exemption certificate applicable to proper taxing authority.

SHIPMENT -- All shipment will be F.O.B. factory. Shipping estimates contained herein are based on time of receipt at BDP's factory of all details pertaining to the order which are essential to contract completion.

FORCE MAJEURE -- BDP shall not be liable for any loss or damage of any nature whatsoever incurred or suffered as a result of any failures or delays in performance due to any cause or circumstances beyond its, or its subcontractors' or suppliers' control, including, but not by way of limitation, failure or delays in performance caused by strikes, lockouts or labor disputes, acts of purchaser, fires,



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acts of God or the public enemy, riots, incendiaries, interferences by civil or military authorities, compliance with the laws of the United States or with the orders or policies of any Governmental authority, delays in transit or delivery on the part of transportation companies or communication facilities or failure of sources of raw material. In the event of such delay, the time of delivery or completion shall be extended by a period of time equal to the period of delay plus such time as needed for start-up and/or remobilization, provided however, should the Force Majeure situation extend beyond six months the contract may be canceled by either party. Purchaser shall reimburse BDP for all costs and expenses including overhead costs which BDP may have reasonably incurred in terminating the contract, plus an amount as reasonable profits on that portions to the contract which has been completed.

WARRANTY -- BDP warrants the equipment manufactured by it to be free from defects in materials and workmanship for a period of 18 months from the date of shipment or 12 months from the date of start-up, whichever occurs first. BDP will repair or replace, at its option, F.O.B. its factory, any defective part or material, provided prompt notification is rendered in writing. The repair or replacement of items such as light bulbs, grease, oil, drive belts or chains, pump seals, etc. are not covered by this warranty and are considered normal consumption and routine maintenance items. In addition to the replacement of defective parts, BDP will also provide such labor as it deems necessary, to repair a defect in the main frame structure. BDP will not assume the cost of any modification or repair of its equipment unless it specifically gives authority for such action. **THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHERS. BDP MAKES NO WARRANTY AS TO FITNESS OF ITS PRODUCTS FOR PARTICULAR PURPOSE OR MERCHANTABILITY.**

LIMITATION OF LIABILITY -- A. In no event, be it due to breach of any warranty hereunder or any other cause rising out of performance or non-performance of the obligations herein, whether any such breach or cause be or sound in tort, contract or otherwise, shall BDP be liable for indirect, special or consequential damages (such as, but not limited to, loss of profits, plant downtime, fines, penalties, or cost of replacement services) or suet by third parties against the purchaser (excluding suits regarding patents on title to the goods furnished hereunder). B. BDP's total cumulative liability for any and all reasons shall not exceed an amount equal to the contract price.

CLAIMS -- The buyer shall immediately inspect equipment within ten (10) days after receipt, BDP is not obligated to consider any claim for shortages or non-conformance unless notified by the buyer within ten (10) days after his receipt of the goods in question, BDP is not responsible for loss or damage in transit, however they will lend any possible assistance to the buyer in his pursuit of claim recovery.

CANCELLATION -- BDP will accept cancellation of this order upon receipt of payment for percentage of the contract equal to a percentage of the work completed. This shall be, at a minimum, 20% of the contract price.

STORAGE -- If the buyer delays shipment, then the buyer agrees to pay all invoices as they become due. The buyer further agrees to pay, in addition, storage charges computed at 1.5% per month of the invoice price of equipment stored.

PERMITS -- The buyer shall assume full cost and responsibility to obtain all permits or licenses with respect to the installation and operation of the equipment covered under this agreement. This shall include all requirements by Federal, State and Local governmental bodies.

OTHER -- This contract shall be governed in accordance with the laws of the State of New York. These conditions and terms are the only terms and conditions that will be binding upon the parties unless amended, and acknowledged, in writing by both parties. No assignment of this proposal or any purchase order resulting here from shall be binding on BDP unless accepted in writing by BDP.

SCREW PRESS

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives North Plant Thickener Replacement - Screw Press Albany County, NY					
Item	Unit Costs		Quantity	Class 5 Total	Notes
Thickeners - North Plant	\$356,000	/unit	2 unit	\$712,000	Vendor Quote Screw Press - replaces two DAFTs
Installation	15%	of equipment costs	2 unit	\$106,800	
Piping and Valves	\$50,000	lump sum	1 unit	\$50,000	
Subtotal A				\$870,000	
Misc. Demolition	5%	of "A"		\$43,500	N/A
Civil	0%	of "A"		\$0	
Yard Piping	0%	of "A"		\$0	
Electrical, Instrumentation & Controls	20%	of major equipment		\$142,400	SCADA Integration
Subtotal B				\$1,060,000	
Startup and Construction Sequencing	2%	of "B"		\$21,200	No Easement Necessary
Construction Easements	0%	of "B"		\$0	
General Conditions	15%	of "B"		\$159,000	
Contractor Overhead and Profit	15%	of "B"		\$159,000	Tax Exempt
Sales Tax	0%	of equipment and supplies		\$0	
Bonds and Insurance	2.5%	of "B"		\$26,500	
Subtotal C Construction Costs				\$1,430,000	
Planning and Permitting	0%	of total construction costs		\$0	
Engineering	10%	of total construction costs		\$143,000	
Construction Management	10%	of total construction costs		\$143,000	
Subtotal Project Costs				\$1,720,000	
Estimating Contingency (includes market factor contingency)	30%	of subtotal Project Costs		\$516,000	
Total Project Cost				\$2,200,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$4,400,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$1,100,000

Note: Refer to last sheet for additional assumptions.



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Address:	Albany County Water Purification District							
Type of sludge:	1 Canal Road South Albany,NY 12204							
Weekly sludge amount	DAF Sludge							
Working hours per day								
Required capacity								
Machine Type	Thickener							
Parameter		4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	4-May-23	Average
Sample number		1	2	3	4	5	6	
Initial sludge DS concentration	%	0.5	0.5	0.5	0.5	0.5	0.5	0.50
Cake DS concentration	%	7.27	5.86	6.06	8.23	5.92	6.11	6.58
Decreasing of sludge volume,	times	14.5	11.7	12.1	16.5	11.8	12.2	13.15
Initial sludge flow rate	m ³ /h	18.17	19.31	20.44	26.12	27.25	24.98	22.71
	gpm	80.00	85.00	90.00	115.00	120.00	110.00	100.00
Relevant DS productivity	kgDS/h	90.8	96.5	102.2	130.6	136.3	124.9	113.56
	lbDS/h	200.3	212.8	225.4	288.0	300.5	275.4	250.40
Polymer type		AB-1090-T	AB-1090-T	AB-1090-T	AB-1090-T	AB-1090-T	AB-1090-T	
Polymer concentration (by emulsion in water)	%	0.0850	0.0726	0.0850	0.142	0.142	0.122	0.11
Polymer solution flow rate	l/h	1250.2	1250.1	1250.2	1251.0	1251.0	1250.7	1250.54
	gpm	5.50468	5.50400	5.50468	5.50786	5.50786	5.50675	5.51
Polymer emulsion (neat) productivity	l/h	1.06	0.91	1.06	1.78	1.78	1.53	1.35
	gph	0.28	0.24	0.28	0.47	0.47	0.40	0.36
Polymer emulsion (neat) dose	l/ton of DS	11.7	9.4	10.4	13.6	13.0	12.2	11.73
	g/ton of DS	2.8	2.3	2.5	3.3	3.1	2.9	2.81
	lb/ton of DS	24.6	19.7	21.8	28.6	27.4	25.7	24.62
Active matter concentration in the neat polymer	%	50.0	50.0	50.0	50.0	50.0	50.0	50.00
Active matter polymer dose	g/ton of DS	1.4	1.1	1.2	1.6	1.6	1.5	1.40
	lb/ton of DS	12.3	9.9	10.9	14.3	13.7	12.8	12.31
Screw rotation speed	rpm	3.5	4	4	5.5	6.5	5	4.75
Mixer rotation speed	rpm	25	25	25	25	25	25	25.00
Dam plate position	in	0.5	0.75	0.5	0.5	0.75	0.75	0.63

COMMERCIAL PROPOSAL

#202200623

06/05/2023

Multi-disc Screw Press Thickener System

MDQ- 354 TLD


PREPARED FOR:

Barton&Loguidice/Albany County WPD
 C/O Shrier-Martin Process Equipment
 Lima, NY 14485
 Tel.: (518) 859-7182
asiewert@smpe.com
<https://www.smpe.com>
 Adam Siewert

PREPARED BY:

EKOTON USA Corporation
 1460 Industrial Parkway
 Akron, OH 44310
 Tel.: (330) 685-0889
burns@esmil.us
<https://esmil.us>
 Randy Burns

ITEM	QTY (EACH)
Multi-disc screw press thickener system MDQ-354 TLD (two required)	1
Total	\$355,973.00

Dear Adam,

Enclosed is our proposal for Multi-disc Screw Thickener MDQ-354 TLD and an appropriately sized polymer feeder. Selection is based on the data provided. Sludge feed will be waste-activated sludge. The Thickener is capable of unattended continuous duty and is sized to meet the performance requirements. For the required processing of 540,000 gpd at an average initial infeed DS of .63% we propose two (2) of MDQ-354 TLD thickening systems. Each thickener will have dual mixing tanks, four drums and full PLC controls with HMI.

The MDQ-354 TLD has a less-than 10 Hp duty and operates at less than 20 rpm which leads to a long maintenance life for thickening drum rings and screw shaft bearings. Standard maintenance expectations could require replacement of the movable rings between 3-5 years, fixed rings and a simple screw shaft bearing replacement between 5-7 years. Our high technology thickening equipment is efficient, capable of automatic unattended continuous duty producing quality results, low odor, requires very little month to month maintenance and is highly energy efficient. The screw thickener has a programmed periodic drum washing and cleaning function to reduce attendant needs with low water requirements. Simple removal of drum solids should also be considered at end of operation if unit will not be operated for long periods.

This proposal will serve as our intention to provide equipment and start-up services. Terms and conditions will be furnished along with a contract for mutual signing or our acceptance of a project Purchase Order.

Best regards,
Randy Burns

GENERAL INFORMATION

System features

- Pre-wired system ready to use;
- Compact design;
- High packing density;
- Designed for small to medium municipal wastewater treatment plants and industrial applications;
- Minimum civil works on site;
- Easy to relocate.

Multi-disc screw thickener advantages

- Multi-disc screw thickener MDQ-354 TLD is an excellent solution for the thickening of sludge with a concentration of suspended solids of up to 50,000 mg/l.
- Thickened sludge has a solids content of 5–10%, depending on the properties and composition of the sludge.
- Screw thickener design prevents clogging of the drum, therefore there is no need for large volumes of wash water.
- It operates automatically, is simple in maintenance and does not require regular staff presence.
- It is economical, electricity, polymers and flushing water consumption during thickener operation is low.
- High wear resistance of the main thickener nodes provides reliable operation of the main thickener unit (drum) up to 30'000 hours. Also equipment demonstrates high maintainability; particularly, in equipment with two and more thickening drums when one drum can be repaired during the parallel operation of other ones.

Operation principle

Initial sludge from an external sludge storage tank is fed to the flash mixing chamber of the thickener mixing tank by an external sludge feed pump and then flows into the flocculation chamber through the overflow where the sludge is mixed with the polymer solution and the flocules are formed.

The flocculated sludge is fed into the thickening drum(-s) by gravity. As long as sludge moves through the drum, the water is removed through the gaps between the movable and fixed rings. Water is removed from sludge by gravity and pressure of the screw.

The thickened sludge is discharged into sludge transportation system and the filtrate is removed according to the existing technological scheme.

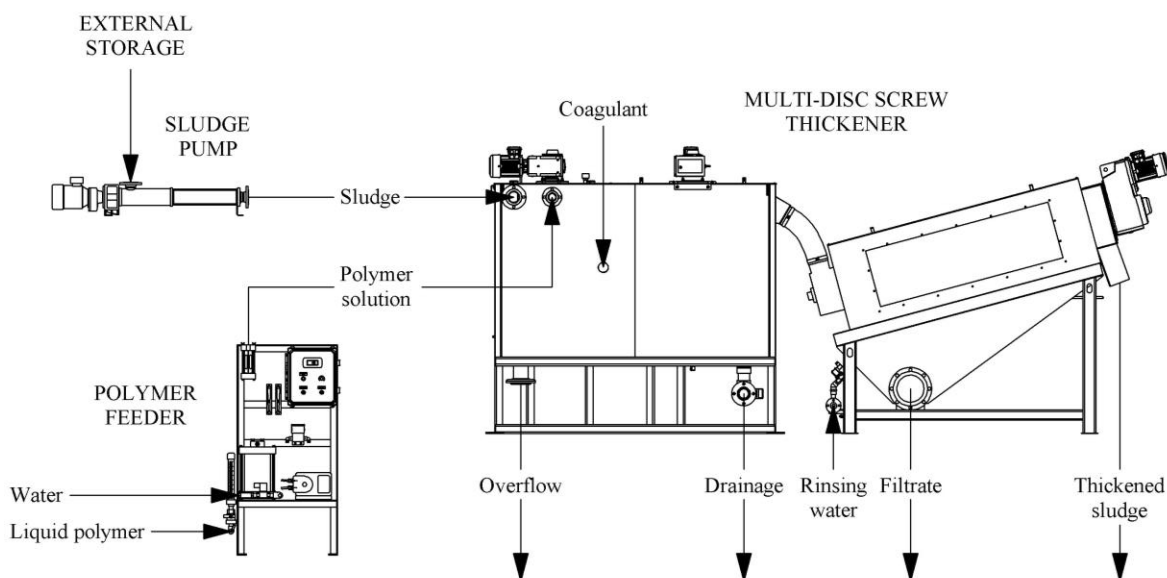


Fig. 1. Operation principle of sludge thickening system

Thickening system components description

Sludge feeding pump

The progressive cavity sludge feeding pump transfers the sludge from the external sludge storage tank to the mixing tank of the thickener.

Multi-disc screw thickener MDQ-354 TLD

The thickener consists of two main parts, located one next to each other, and connected with hoses (1- 6 pcs. depends on the model).

One part of the thickener is installed on the frame (fig. 2, pos.4), another one – on the filtrate collection tank (fig. 2, pos.11).

The reservoir installed on the frame is divided into two sections, one is called rapid mixing tank (fig. 2, pos. 1) and another one – flocculation tank (fig. 2, pos. 2). There is a partition between the sections. In both the rapid mixing tank and flocculation tank, there is mixer with a motor-drive (fig. 2, pos. 5) to mix the sludge with a reagent to form floccules (flakes), then the sludge is fed into the thickening drum(-s) (fig. 2, pos. 10), located above the filtrate collection tank.

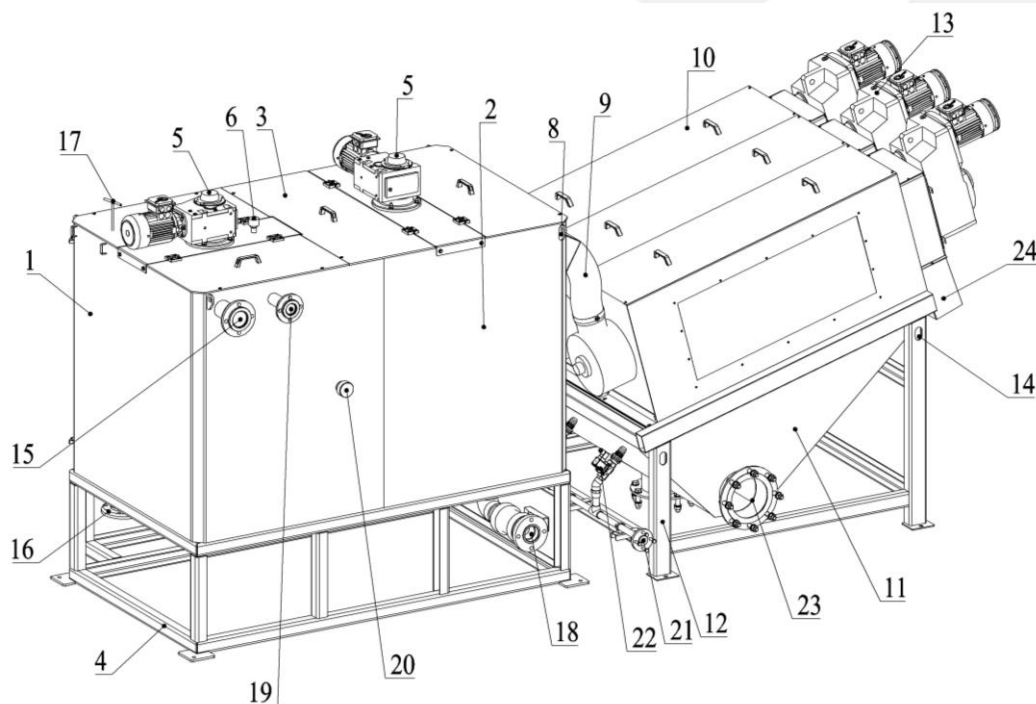


Fig. 2. Thickener main elements

- | | | | |
|----|---|----|--|
| 1 | Flash mixing chamber | 13 | Thickening drum gearmotor |
| 2 | Flocculation chamber | 14 | Lifting eye of the thickening drums |
| 3 | Outlet ports | 15 | Sludge inlet |
| 4 | Frame-base of the mixing tank | 16 | Overflow outlet |
| 5 | Agitator gearmotor | 17 | Overflow level regulation handle |
| 6 | Level sensor | 18 | Drainage outlet |
| 7 | Pressure sensor (not seen) | 19 | Flocculant inlet |
| 8 | Lifting eye of the mixing tank | 20 | Coagulant inlet |
| 9 | Thickening drum feed tube | 21 | Rinsing water inlet |
| 10 | Inspection cover of the thickening drum | 22 | Rinsing valve |
| 11 | Filtrate collection tray | 23 | Filtrate outlet |
| 12 | Frame-base of the thickening drums | 24 | Sludge discharge |
| | | 25 | Control panel (not shown on the drawing) |

Feeding system

The rapid mix and flocculation tanks (fig. 3, pos. 6) is made of stainless steel

The sludge is fed into the rapid mix tank by an external sludge feed pump. Then the sludge overflow into the flocculation tank through the space designated below the separation plate.

In the flocculation tank, polymer is fed by the polymer feeder and mixed by the agitator (fig. 3, pos. 5) with the sludge forming a floccules (flakes). Then, the sludge with reagent enters the thickening drums.

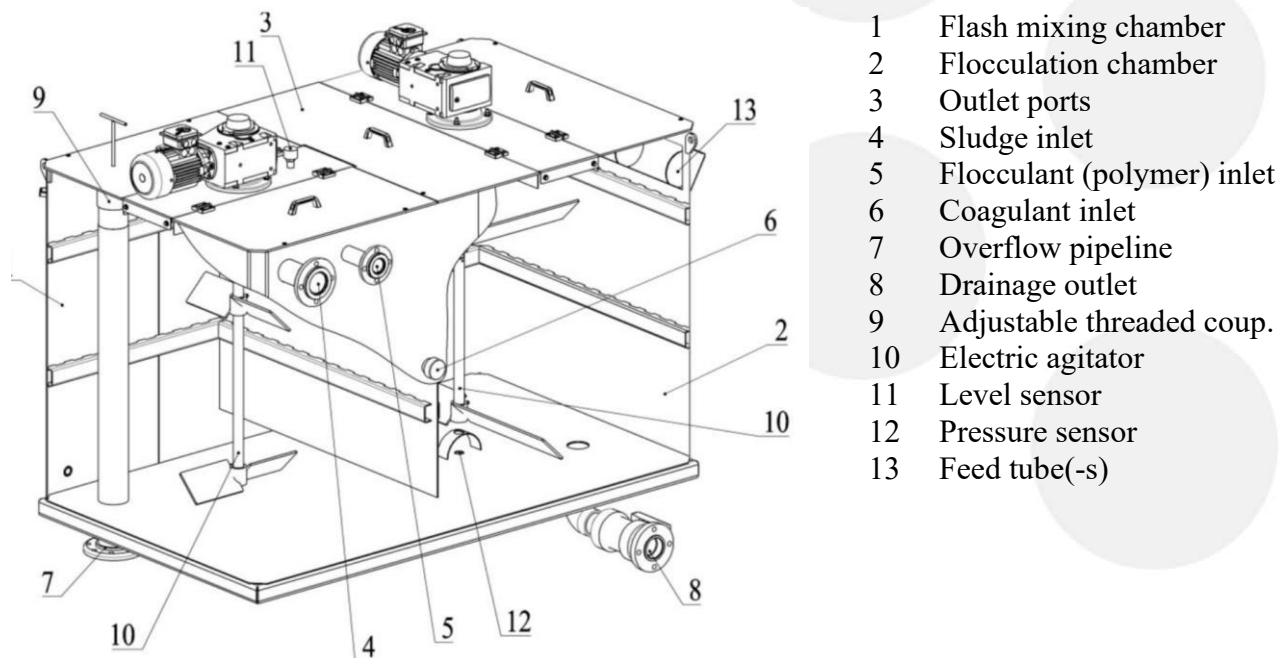


Fig. 3. Rapid mix and flocculation tank

Thickening drum

All components of the thickening drum are made of stainless steel. The thickening drum consists of a screw shaft (hereinafter screw) (fig. 4, pos. 3) rotating at an adjustable speed in the cylindrical body. Thickeners are produced with three different dimensions of thickening drum nominal diameters – 4", 8" and 14". The body consists of a series of alternating stationary rings (fig. 4, pos. 1), movable rings (fig. 4, pos. 2) and gap spacers. The width of the gap is 0.02 in.

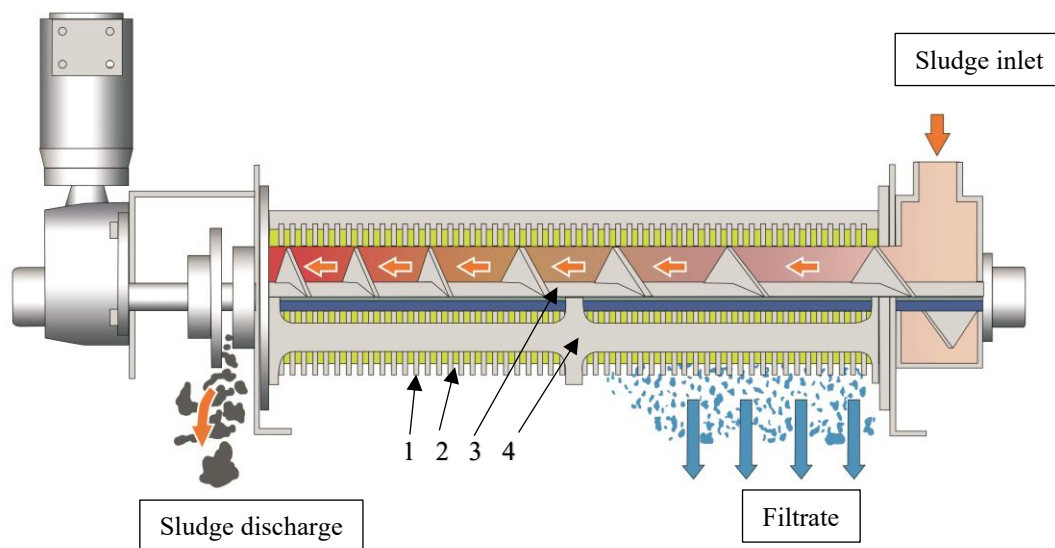


Figure 5. Thickening drum:

1 – Fixed disc; 2 – Moving disc; 3 – Screw; 4 – Support frame.

The screw of the thickening drum is driven by drive with low revolutions. The tray for filtrate receiving and draining is located under the thickening drum.

The drum is self-cleaning – the internal surface of the movable rings is in constant contact with the outer surface of the screw flights and therefore the rings move constantly (the screw touches the edge of the moving rings, resulting in a constant movement between gaps), this fact prevents thickening drum from clogging. The construction is designed that way so flushing water is only used to flush solids from the surface of the drum (fig. 6).



Automatic operation mode

The MDQ unit is equipped with a pressure sensor mounted in the base of the flocculation tank. This output signal allows the PLC to control the inlet sludge level through constant adjustment of the inlet sludge pump VFD. This adjustment of the inlet sludge is also used in controlling the polymer dosing operation.

Additional high limit sensor is mounting on the supporting structure of the flocculation tank mixer. This sensor is a safety sensor to prevent the overflow of the flocculation tank, and can be used during in constant sludge flow operation mood. This sensor is programed to pause sludge inlet flow if tripped. Allowing the unit to stay in operation until the sludge level in the tank lowers, once this level decrease the system will turn on the sludge feed pump, and resume normal operation.

Ancillary Equipment

Polymer feeder

The polymer feeder is used to activate polymer concentrate and dose the prepared polymer solution to the thickener. EKOTON will specify and purchase from a third party and be responsible for fully integrating the unit into the control system of the MDQ unit.

1. INITIAL DATA

Type of influent sludge	Waste Activated sludge
Influent sludge DS concentration (average)	0.63%
Required hydraulic productivity per day	540,000 gpd
Required hydraulic productivity <u>per unit</u>	450 gpm
Required DS productivity <u>per unit</u>	14,186 lb DS/h
Working Hours per day	10 hrs
Dry solids out	6%

2. COMMERCIAL PART

No	Description	Q-ty, pcs.	Price per unit, USD	Total price, USD
1	Multi-disc Screw Thickener MDQ-354 TLD Hydraulic capacity, per unit: up to 450 gpm DS Capacity, per unit: up to 14186 lbDS/h Number of thickening drums: 4 pc Flash mixing and flocculation chambers: included Dimensions LxWxH: – 17'- 11 7/8"x 7'- 9 1/4"x 3'- 9 1/4" Weight in dry state: 11,130 lb Weight on operation: 21,260 lb Material of the construction: AISI 304 Total installed power (without additional equipment): 10 HP - Thickening drum(s): Screw diameter: 14 in Quantity of screws: 4 pc Fixed and movable disc material: AISI 304 Screw shaft material: AISI 304 Drum support frame material: AISI 304 Drum plate material: AISI 304 Rinsing water units' material: AISI 304 Rinsing nozzles material: plastic PVC Fixed and movable discs thickness: 0.12 in Screw flights wear protection: welded FREA-METAL Inclination angle: 15° Nominal rinsing water consumption: 17.4 gpm Total water consumption: 69.6 gph Nominal pressure of flush water: 30-50 psi Number of rinsing water valves: 4 pc - Screw shaft drive: Brand: NORD Number: 4 pc Nominal power: 1.5 HP Voltage: 480 VAC / 3 phases Protection level: IP55 VFD: Allen Bradley - Flash mixing description: Material: AISI 304	1		\$355,973.00

Recycle pipe material: AISI 304
 Adjustable coupling material: Plastic PVC

- **Mixer in the flash mixing chamber:**

Mixer shaft and blades material: AISI 304
 Drive brand: NORD
 Number: 1 pc
 Nominal power: 1 HP
 Voltage: 480 VAC / 3 phases
 Drive protection level: IP55
 VFD: Allen Bradley

- **Flocculation chambers description:**

Material: AISI 304

- **Mixer in the flocculation chamber:**

Mixer shaft and blades material: AISI 304
 Drive brand: NORD
 Number: 1 pc
 Nominal power: 3 HP
 Voltage: 480 VAC / 3 phases
 Drive protection level: IP55
 VFD: Allen Bradley

- **Automation system**

Control cabinet
 Number: 1 pc.
 Voltage: 480 VAC / 3 phases
 Frequency: 60 Hz
 Ingress protection: NEMA 4X

Control system allows to operate thickener in fully automatic mode and includes:

- Allen Bradley PLC with I/O Modules
- Ethernet IP SCADA connection using second port of PLC
- 10" Weintec HMI
- Thickening drum(s) VFD
- Mixer VFD
- External sludge feed pump VFD
- Polymer unit control system
- Mixing tank automatic level control system

Shipping, FOB jobsite	included
Start-up, 1 trip up to 5 days	included
Training	included

2	Auxiliary equipment		
2.1	Inlet sludge flow meter	1	included
	Electromagnetic Flowmeter Promag W400		
	Suited for wastewater flow with IP68 protection		
	Transmitter housing of polycarbonate		

2.2 Polymer feeder**1****included****VeloBlend Model VM-10P-1200-D**

Polymer Flow Range: 0.5 to 10.0 GPH

Dilution Water Flow Range: 120 to 1200 GPM

VeloBlend unit consists of:

Polymer mixing chamber assembly
Neat polymer metering pump assembly
Dilution water inlet assembly
Solution discharge assembly
Control panel
System Skid

Not included in pricing:

- All civil engineering, erection of foundation and foundation works
- Unloading of material and device at place of erection
- Field wiring and conduits
- Piping and Ventilation
- Anchor bolts and shim packs
- Conveyance
- Macerator
- Laboratory fees
- Static and dynamical calculations of platforms and support constructions
- Material testing at site
- Provision of water and electrical power at site
- Provision of acetylene and oxygen
- Additional lifting devices
- Finishing coating at site
- Painting of stainless-steel components
- Interconnecting piping
 - Dumpster
 - Platform

1.1. Commercial conditions

1.1.1. Proposal validity

This proposal is valid for a period of 60 days.

The stated price is based on shipment no later than one year from the date of this proposal. If the Customer requests an extension of the delivery date or the warranty period beyond the terms specified in this offer, extended terms may be offered for an additional fee, which will be provided upon request.

1.1.2. Price policy

All taxes, duties, and/or other public expenses which could be levied are not included in the quoted prices and must be borne by the Customer.

1.1.3. Proposed terms of payment

Prices are based on the following payment terms:

30 % on receipt of purchase order

25 % upon submission of equipment approvals

25 % after completion of factory acceptance test (prior to shipment)

15 % upon completion of shipment

5 % upon completion of start-up not to exceed 45 days

Payment basis - net 30

1.1.4. Delivery

Shipping of the equipment is FOB Jobsite, NY. All unloading or handling will be borne by the Customer or designated Contractor. Unloading on site must be carried out in a timely manner. The customer or designated Contractor is responsible for providing necessary equipment to complete the unloading, which must be prepared prior to shipment.

Delivery time is approximately 16-20 weeks after technically and commercially clarified P.O.

The actual delivery date depends on the production workload and will be confirmed when placing the order.

1.1.5. Equipment warranty terms

Ekoton USA Corporation warrants the goods it supplied against defects in materials and workmanship for a period of twelve (12) months from the date of final acceptance of the equipment. Ekoton USA Corporation will either repair or replace, at its option, such component provided that written notice of any such defect or deficiency is given to Ekoton USA Corporation within 14 days after its initial discovery, including a description of the part, a description of the defect and date defect was discovered. Ekoton USA Corporation reserves the right to inspect said defect at the purchaser's installation site or to have said defective part or parts returned to Ekoton USA Corporation via commercial freight carrier for inspection.

Ekoton USA Corporation's warranty and obligations do not cover defects or deficiencies due to or arising out of normal wear and tear; improper or negligent handling, operation, maintenance, overloading or use; defective or improper premises or equipment installation; chemical, electro-chemical or electrical influences; weather or influences of nature; or alteration or repair performed by the Purchaser or third parties without Ekoton USA Corporation's prior written consent.

1.1.6. Documentation

The first submittal is approximately 4-6 weeks after technically and commercially clarified P.O.
Submittals: electronic copy – 1 pc.
O&M: electronic copy – 1 pc.

1.1.7. Manufacturer rights

The manufacturer reserves the right to change technical characteristics of the equipment that may not influence technological parameters. Exact technical characteristics are determined in the contract of the equipment supply.

This offer is a confidential document and cannot be passed off to a third party or representative.

EKOTON guarantees the quality of services and works at all stages of the project, for the optimum combination of technical and technological solutions. We hope that our proposal meets your interests and needs!

Terms and conditions to be mutually agreed upon at the time of order.

ATTACHMENTS

Attachment 1 – Drawings of the multi-disc screw press dehydrator MDQ-354 TLD

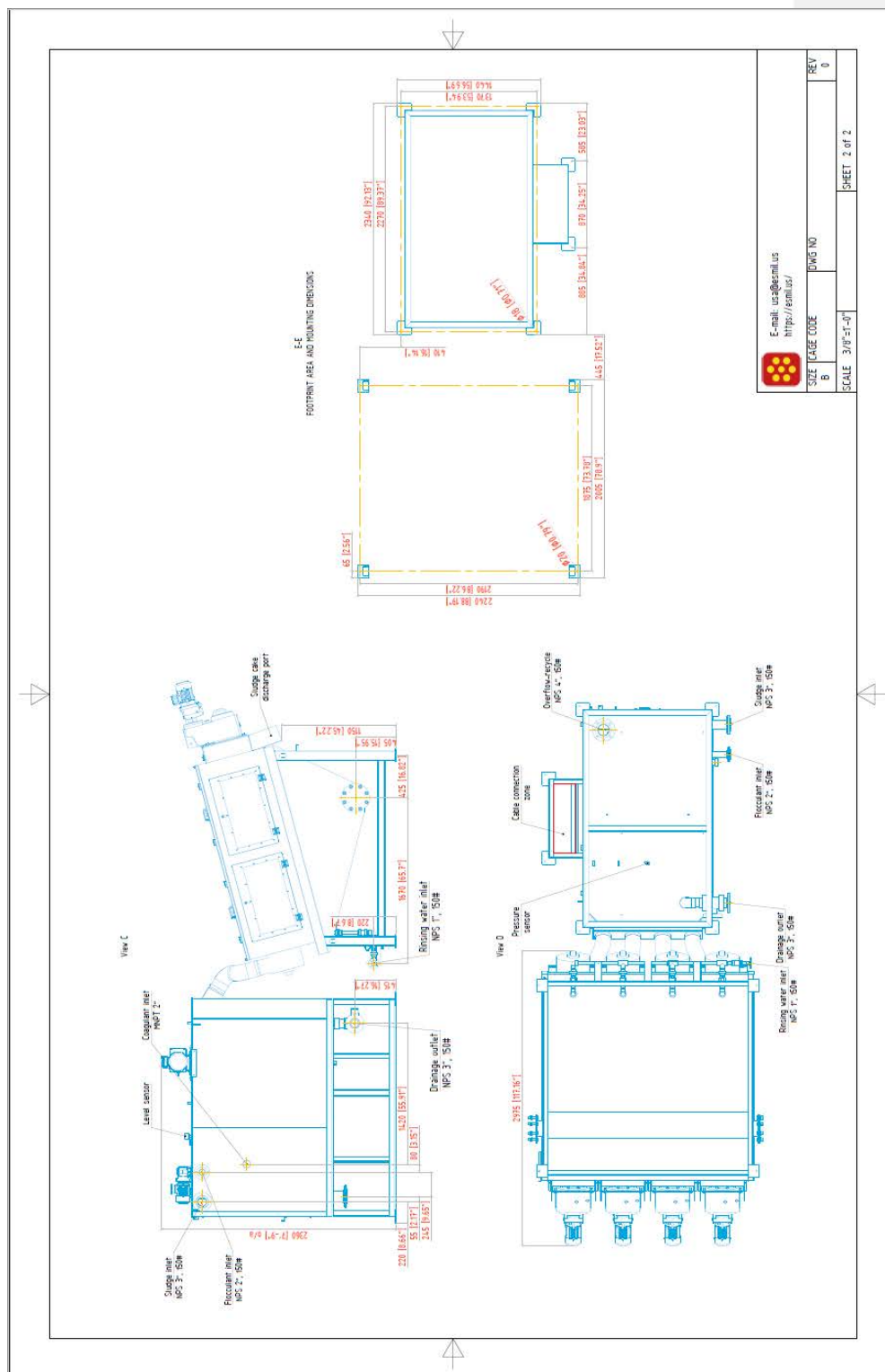
Attachment 2 – Technical description of the multi-disc screw press dehydrator MDQ-354 TLD

Best regards,
Randy Burns

June 05, 2023

www.esmil.us

Attachment 1 – Drawings of the multi-disc screw press dehydrator MDQ-354 TLD



Attachment 2 – Technical description of the multi-disc thickener MDQ-354 TLD

Model		MDQ-354 TLD
Nominal screw diameter, in (mm) x qty. of screws, pcs.		14 (350) x 4
Drum discs thickness, in		0.12
Screw rotation speed, rpm		1.7 - 11.5
Possible temperature of liquid, °F		41...95
Dimensions, ft-in	Length	17'-11 7/8"
	Width	7'-9 1/4"
	Height	7'-9"
	Cake discharge height	3'-9 1/4"
Dry weight, lb	Dewatering drums	9,660
	Mixing tank	1,470
Weight in operation, lb	Dewatering drums	13,500
	Mixing tank	7,760
Material of the main construction		AISI 304
Total installed power (without additional equipment), HP		10
Rinsing water		
Nominal consumption, gpm		17.4
Pressure, psi		30-50
Typical sum consumption, gph		69.6
Rinsing valve		
Manufacturer		GC valves
Model		S211GF16J7FG9
Quantity, pcs.		4
Screw gearmotor		
Manufacturer		NORD
Quantity, pcs.		4
Nominal power, HP		1.5
IP rating		55
Agitator in the flash mixing chamber gearmotor		
Manufacturer		NORD
Quantity, pcs.		1
Nominal power, HP		1
IP rating		55
Agitator in the flocculation chamber gearmotor		
Manufacturer		NORD
Quantity, pcs.		1
Nominal power, HP		3
IP rating		55
Pressure sensor		
Manufacturer		WIKA
Model		S-11
Quantity, pcs.		1
Conductometric level sensor		
Manufacturer		Kobold
Model		NES-REAP1
Quantity, pcs.		1
Control system		
Control cabinet		Included
Supply	Voltage, V	480
	Frequency, Hz	60
	Number of phases	3
NEMA rating		4X
Explosion protection, EX		No

ATTACHMENT 3
SLUDGE PUMPING ANALYSIS

Alternative 1.
Install New Rotary Lobe Style Pumps

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives North Plant Sludge Pump Replacement - Rotary Lobe Albany County, NY					
Item	Unit Costs		Quantity	Class 5 Total	Notes
Furnish and Install New Rotary Lobe Pumps	\$42,163	/unit	4 units	\$168,652	Vendor quote + control panel - 4 units
Installation	30%	of equipment costs	4 units	\$50,596	
Piping and Valves	\$50,000	lump sum	1 unit	\$50,000	\$15,000 per pump
Subtotal A				\$270,000	
Misc. Demolition	5%	of "A"		\$13,500	
Civil	0%	of "A"		\$0	N/A
Yard Piping	0%	of "A"		\$0	
Electrical, Instrumentation & Controls	20%	of major equipment		\$33,730.43	SCADA Integration
Subtotal B				\$320,000	
Startup and Construction Sequencing	2%	of "B"		\$6,400	
Construction Easements	0%	of "B"		\$0	No Easement Necessary
General Conditions	15%	of "B"		\$48,000	
Contractor Overhead and Profit	15%	of "B"		\$48,000	
Sales Tax	0%	of equipment and supplies		\$0	Tax Exempt
Bonds and Insurance	2.5%	of "B"		\$8,000	
Subtotal C Construction Costs				\$430,000	
Planning and Permitting	0%	of total construction costs		\$0	
Engineering	10%	of total construction costs		\$43,000	
Construction Management	10%	of total construction costs		\$43,000	
Subtotal Project Costs				\$520,000	
Estimating Contingency (includes market factor contingency)	30%	of subtotal Project Costs		\$156,000	
Total Project Cost				\$700,000	

Upper Limit of Cost Estimate Range
Lower Limit of Cost Estimate Range

+100% of Total Project Costs
-50% of Total Project Costs

\$1,400,000
\$350,000

Note: Refer to last sheet for additional assumptions.



10 Airline Drive - Suite 200 - Albany, New York 12205
Telephone: (518) 218-1801 - Fax: (518) 218-1805

Boerger LLC - 2860 Water Tower Place - Chanhassen, MN 55317 - USA

GP Jager Inc
PO Box 50
Boonton, NJ 07005-0000

Quote

No.: 31006265

Date: 06/02/2023

RFQ no.:	Albany County WPD	Inside Sales Person:	James Connell
RFQ date:	06/02/2023	E-mail:	jco@boergerllc.com
Customer No.:	100079	Phone:	612-435-7334
Contact:		Code:	JCOBJJ
Phone:	+1 (973) 750-1180		
Cell phone:			

Pos.	Description	Quantity	Unit Price:	Total Price:
100	71004566 FL518 Sludge Pumps Estimated Delivery: 12 weeks	2	\$32,163.04	\$64,326.08
<u>Value of Goods:</u>				<u>\$64,326.08</u>

Quote

No.: 31006265

Pos.	Description	Quantity	Unit price:	Total price:
------	-------------	----------	-------------	--------------

100.0 71004566

BlueLine FL Assembly
FL518 Sludge Pumps

Medium specification:

Spec. pumped medium:	Sludge .
Viscosity:	1 . cP
Solids content:	3 . %
Solids size:	- . in
Medium temp:	Ambient . °F
pH value:	Neutral .

Operational characteristics:

Location:	dry, indoor	.
Ex-Zone Inside:	Not Classified	.
Ambient temperature	Ambient	. °F
Mode of operation:	Continuous	.

Performance data:

	gpm	Psi	rpm
Nom. Delivery rate:	300	58.9	270

101.0 PF5SARCF AAAADCCC14

2 pc

Börger Rotary Lobe Pump FL518

Product series: BLUEline
Version: Classic

Casing:

One-piece Blockcasing
from Grey Cast Iron EN-GJL-250 (GG25)
with easily replaceable axial and radial casing liners
Axial casing protection liners from Hard Metal
Radial casing protection liners from Hard Metal (MIP®)

Rotor geometry:

Tri-lobe, entirely elastomer coated, screw form,
for almost pulsation-free operation
Rotor coating: NBR
Free ball entry D = 75 mm
Displacement: 5,7 l/rev

Shaft seal:

single-acting mechanical seals, type LW
Material code according EN 12756 [DIN 24960]: R1 R1 P D
Seal faces: Duronit V/Duronit V
Dynamic O-rings: NBR
Seal holding bushes: 1.0503
Stationary O-Rings: NBR

102.0 1300000048

4 pc

FL518 to 6in ANSI Flange

B1 Configuration
001-493
Galvanized CS

103.0 5301001295

2 pc

Nord SK52-280TC-5.79

Inline Reducer
1750rpm/302rpm

Quote

No.: 31006265

Pos.	Description	Quantity	Unit price:	Total price:
104.0	5120000887 WEG 02518ET3E284TC-W22 25hp,1800rpm,Prem Eff 208-230/460V 284/6TC,1.25SF	2 pc		
105.0	2510000077 FL-SK52 Inline Frame Painted Guard Rotex 55 with Purple Spider Max Torque 685 Nm	2 pc		
			\$32,163.04	\$64,326.08 USD

Value of goods:	\$	64,326.08 USD
Net value:	\$	64,326.08 USD
Tax: (0.00 %):	\$	0.00 USD
Total amount:	\$	64,326.08 USD

Quote

No.: 31006265

Invoice address:

GP Jager Inc
PO Box 50
Boonton, NJ 07005

Delivery address:

GP Jager Inc
PO Box 50
Boonton, NJ 07005

Terms Of Payment:

Net 30

Dispatch Type:

Less than Truck Load

Price Valid To:

07/02/2023

Terms of Delivery:

FOT Minneapolis

Best regards

Boerger LLC
James Connell

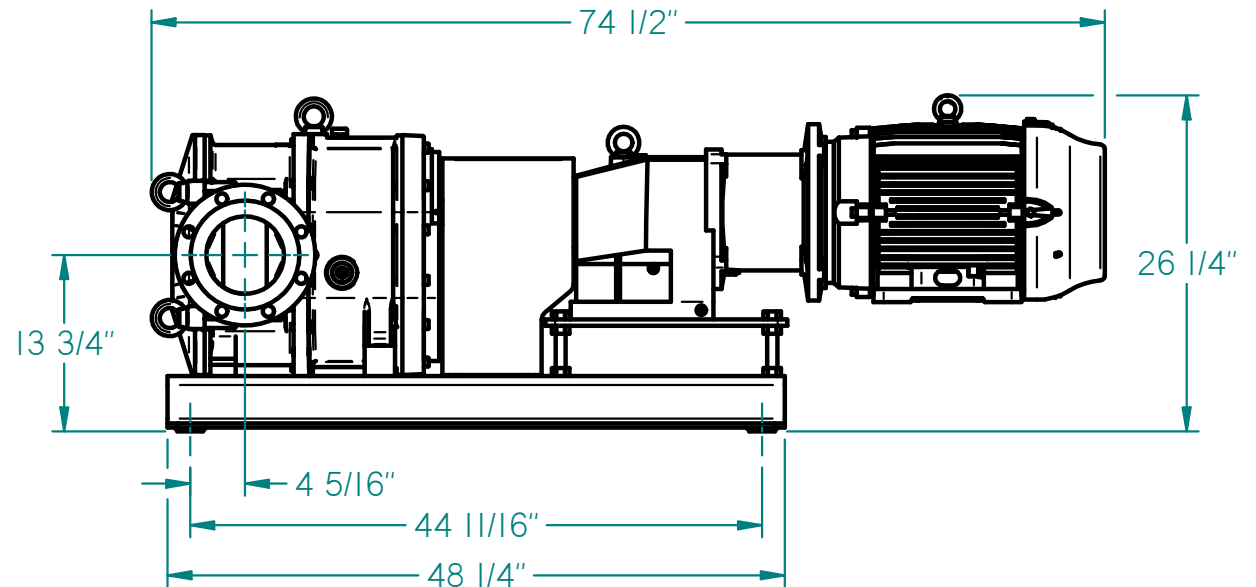
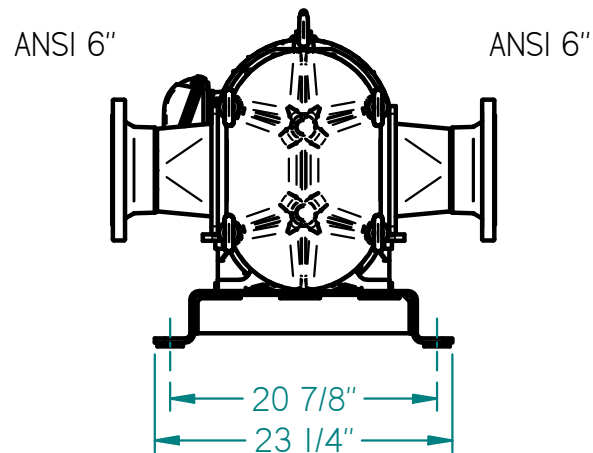
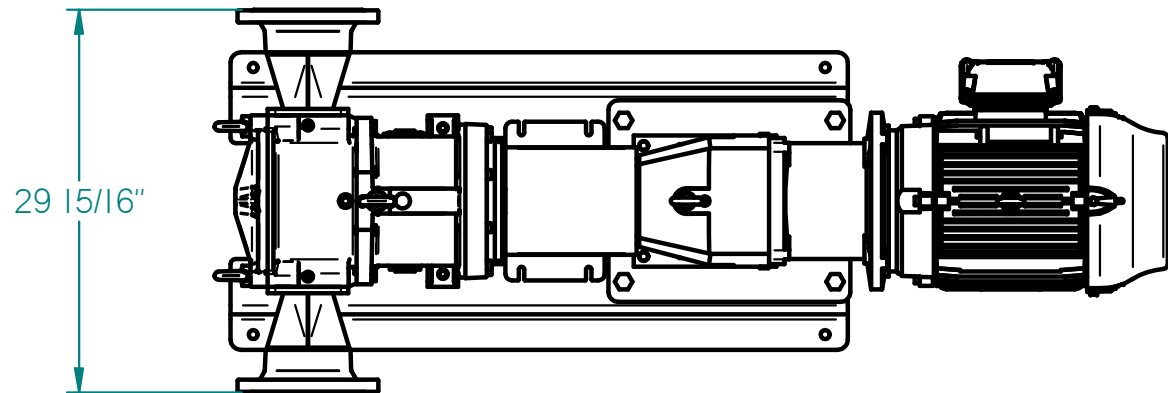
Phone: 612-435-7334
E-mail: jco@boergerllc.com
Website: www.boerger.com

Regional Manager:

Pete Masson
612-435-7324
pma@boergerllc.com

Notes:

1. BOERGER, LLC's standard Terms and Conditions apply and are an integral part of this quotation unless specifically noted otherwise in this proposal.
2. Delivery, installation, wiring, field painting, start-up and instructional services are not included unless specifically noted otherwise in this proposal.
3. Anchor bolts, pressure gauges, valves, drainage piping, starters, variable frequency drives and control equipment or any other items are not included unless specifically noted otherwise in this proposal.
4. BOERGER, LLC will review plans and specifications and will offer technical assistance and certified pump drawings for construction. The responsibility for pump station layout, access, seismic calculations including local PE stamp, etc., shall be by others.
5. This proposal is offered as an acceptable pumping system based upon descriptive items listed above. Deviations from the equipment described could result in price adjustment.
6. A BOERGER, LLC field engineer may be provided, as noted above, in a supervisory capacity only. Any and all costs associated with labor, set-up, etc., for the tests are to be by contractor.
7. Credit Card purchases will incur a 3% Processing Fee.



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BOERGER, LLC

2860 Water Tower Place
Chanhassen, MN 55317
TEL: 612-435-7300
FAX: 612-435-7301



BÖRGER®

Model: FL 518
Gear: Nord - In-Line SK52-280TC
Power: 25 HP

ALL DIMENSIONS IN INCHES
UNLESS OTHERWISE NOTED

TOLERANCES ± 1/2"

DO NOT SCALE DRAWING

DRAWN	NAME	DATE
	M. Lindquist	09/14/18

CHECKED

SHEET 1 OF 1

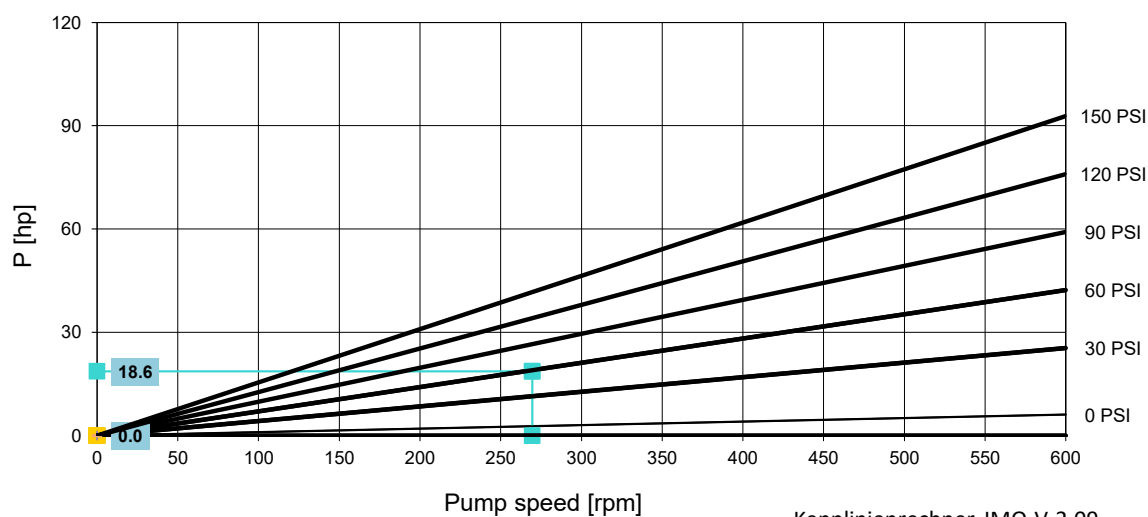
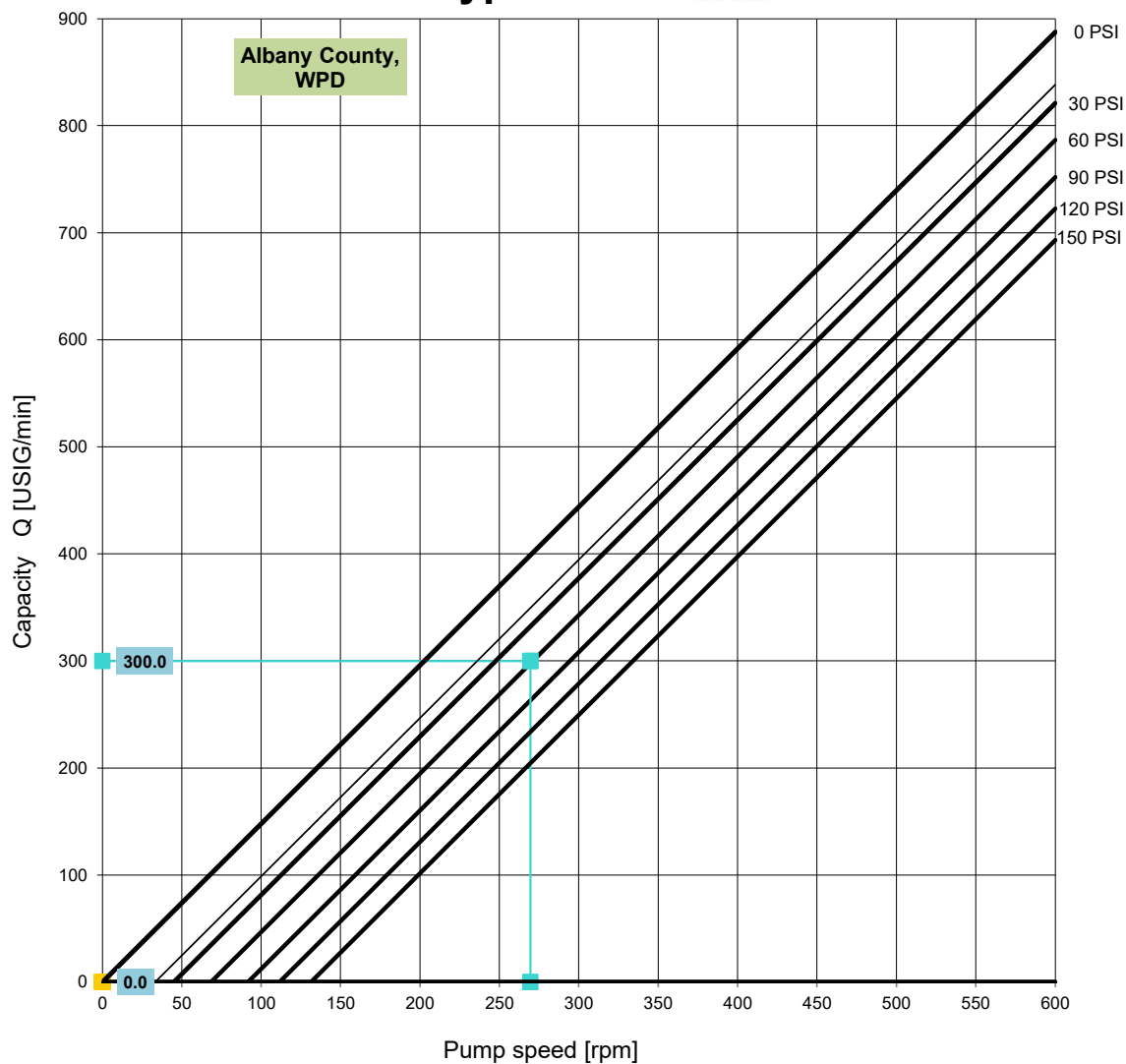
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SD-002-211

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Performance Curve FL518 Rotor Type D



Section 1 Boerger Rotary Lobe Pumps

1.01 GENERAL

- A. The equipment covered by these Specifications shall be of standard units of proven ability as manufactured by reputable concerns having long experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with the best practice and methods, and shall operate satisfactorily when installed as shown on the Drawings.
- B. All equipment shall be designed and built for 24-hour continuous service at any and all points within the specified range of operation, without overheating, without cavitation, and without excessive vibration or strain.
- C. The pumping units required under this section shall be complete. All parts shall be so designed and proportioned as to have liberal strength, stability, and stiffness and to be especially adapted for the service to be performed. Ample room for inspection, repairs and adjustment shall be provided.
- D. Stainless steel nameplates giving the name of the MANUFACTURER, the pump serial number and material code and all other pertinent data shall be attached to each pump, motor, and control panel.
- E. All working parts of the pumps and motors, such as bearings, wearing rings, shaft, sleeves, etc., shall be standard dimensions built to limit gauges or formed to templates, such that parts will be interchangeable between like units and such that the OWNER may, at any time in the future, obtain replacement and repair parts for those furnished in the original machines.
- F. The nameplate ratings of the motors shall not be exceeded, nor shall the design service factor be reduced when the pump is operating at any point on its characteristic curve at maximum speed.
- G. Mechanical equipment, including drives and electric motors shall be supplied and installed in accordance with applicable OSHA regulations. The noise level of motors, unless otherwise noted, shall not exceed 85 dBA measured 3 meters from the unit under free field conditions while operating on utility power.
- H. All lubrication fitting shall be brought to the outside of all equipment so that they are readily accessible from the outside without the necessity of removing covers, plates, housings, or guards.
- I. Warranty: Rotary Lobe Pumps supplied under this section shall be warranted to be free from defects in workmanship, design and materials for a period of two (2) years from shipment. If any part of the equipment should prove to be defective during the warranty period, the MANUFACTURER at no expense to the OWNER shall replace the part.

1.02 PUMPS

A. General

1. The Rotary Lobe Pumps shall be designed to be abrasion resistant for applications in wastewater treatment plants. The pump shall have a minimum displacement of 150.5 gal / 100 rev. (FL 518)
2. The ratio of the axial length of the lobe as compared to the lobe diameter (length/diameter) shall not exceed 1.0.
3. The pumps shall be of the positive displacement, rotary lobe type, designed to pump primary and secondary wastewater sludge as manufactured by Boerger.
4. All fluid-wetted parts including the mechanical seal shall be replaceable through the quick release front cover without disassembly of coupling, drive unit or the pipe system.
5. The pumps shall be designed to temporarily run dry and to operate in either direction. Oil-quench for protection of the mechanical seal is mandatory. Seal water flush systems are not acceptable.
6. The pumps shall be constructed with an oil-filled intermediate chamber between the pump casing and the gearbox with the following functions:
 - a. Oil-Quench (Lubrication and cooling) of the mechanical seals
 - b. Detection of seal failures
 - c. Buffer zone to the sealed timing gear
7. Oil drain of gearbox and intermediate chamber shall be easily accessible with side mounted drain screw. Oil drain under the pump is not acceptable.
8. The rotor/shaft connection shall be oil-lubricated fed by an intermediate chamber and shall not come in contact with the pumped fluid.

B. System and Fluid Conditions

Fluid Name	Sludge
Solids Content	3%
Capacity	300 gpm
Discharge Pressure	58.9 psi
Suction Condition	Flooded
Temperature	Ambient
pH Value	Neutral
Specific Gravity	1.0
Duty	Continuous

C. Pump Unit

Model	FL518
Drive Type	Geared motor with flexible coupling
Drive Configuration	Inline
Motor Power	25 hp
Pump Speed	270 rpm
Suction Flange	6" ANSI 150-lb
Discharge Flange	6" ANSI 150-lb

D. Pump Construction

1. The pump casing shall be manufactured in a single block construction (Cast iron ASTM A48 grade 40, Brinell hardness 264 Brinell). Multiple Piece Design Pump Casings held together by screw connections are not acceptable.
2. The rear of the pump casing and the front cover shall be protected with replaceable wear plates with a hardness of 550 Brinell. The front cover protection plate shall be reversible. The pump casing shall be equipped with radial pump casing protection plates, which are less expensive and will eliminate the pump casing as a spare part for reduction of the Life Cycle Costs of the pump unit. Pump casings without radial liners are not acceptable.
3. The quick release cover shall be held in place by four eye nuts. The stationary threaded studs shall keep the front cover on the same level as the pump casing in the process of opening the pump for easy handling.
4. **FL Series**
Rotors shall be tri-lobe screw rotor design with individually replaceable tips and the tips shall consist of a cast iron core coated with abrasion-resistant Buna-N. Rotors shall be dual lobe design with coated with abrasion-resistant Buna-N. Stacking of lobes is not acceptable. Rotors shall be keyed to the shaft with a cylindrical bore.
5. The shafts shall be non-sludge-wetted. The rotor/shaft connection shall be lubricated with quench fluid of the intermediate chamber. The shafts shall be timed in their rotation by straight cut timing gears running in a separate oil chamber, which also contains the ball and roller bearings for each shaft. Sludge wetted rotor/shaft connections are not acceptable. The shafts shall be constructed from AISI 4140 carbon steel.
6. The pumps shall be fitted with maintenance free, quenched mechanical seals with duronit seal faces. The seals shall be operating in a common oil-filled intermediate chamber (Quench for

lubrication and cooling). Purge systems for the seals are not acceptable. The rotating holding bush shall be locked in a fixed radial position by a keyway that also holds the rotor in place. Seal designs that open during rotor replacement are not acceptable. No sleeves shall be necessary for the mechanical seal set up. Design of the pump shall allow removal and replacement of the seal via the front cover.

7. Bearings and timing gear shall be located in a common oil-filled cast iron gearbox, fitted with a built in sight glass to monitor oil level. The timing gear shall maintain non-contact between the rotors. Bearing life to be designed for L-10 bearing life rating of 100,000 hours at design conditions.
8. Suction and discharge connections from galvanized steel shall be ANSI 150-lb flanges.
9. Pump and drive fitted on common base, made from galvanized steel.

1.03 Spare Parts

- A. One (1) set of mechanical seals and o-rings for each pump model
- B. One (1) set of lobes and o-rings for each pump model
- C. One (1) set of axial protection plates for each pump model
- D. One (1) set of radial liners (if provided) for each pump model
- E. One (1) set of special tools for each pump model

1.04 Motors

- A. Each unit shall consist of a pump with a gear reducer and 1800 rpm electric motor.
- B. The motor shall be 3-phase, 60 Hz, 460 V with 1.15 SF and Class F Insulation.
- C. All motors shall be built in accordance with latest NEMA, IEEE, ANSI and AFBMA standards where applicable.

Alternative 2.
Full New Progressive Cavity Style Pump

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives
North Plant Sludge Pump Replacement - Progressive Cavity
Albany County, NY

<u>Item</u>	<u>Unit Costs</u>	<u>Quantity</u>	<u>Class 5 Total</u>	<u>Notes</u>
Furnish and Install New Progressive Cavity Pumps	\$75,000 /unit	4 units	\$300,000	Vendor Quote - SEEPEX + control Panel
Installation	30% of equipment costs	4 units	\$90,000	
Piping and Valves	\$60,000 lump sum	1 unit	\$60,000	\$15,000 per pump
Subtotal A			\$450,000	
Misc. Demolition	5% of "A"		\$22,500	N/A
Civil	0% of "A"		\$0	
Yard Piping	0% of "A"		\$0	SCADA Integration
Electrical, Instrumentation & Controls	20% of major equipment		\$60,000	
Subtotal B			\$530,000	
Startup and Construction Sequencing	2% of "B"		\$10,600	No Easement Necessary
Construction Easements	0% of "B"		\$0	
General Conditions	15% of "B"		\$79,500	Tax Exempt
Contractor Overhead and Profit	15% of "B"		\$79,500	
Sales Tax	0% of equipment and supplies		\$0	
Bonds and Insurance	2.5% of "B"		\$13,250	
Subtotal C Construction Costs			\$710,000	
Planning and Permitting	0% of total construction costs		\$0	
Engineering	10% of total construction costs		\$71,000	
Construction Management	10% of total construction costs		\$71,000	
Subtotal Project Costs			\$850,000	
Estimating Contingency (includes market factor contingency)	30% of subtotal Project Costs		\$255,000	
Total Project Cost			\$1,110,000	

Upper Limit of Cost Estimate Range
Lower Limit of Cost Estimate Range

+100% of Total Project Costs
-50% of Total Project Costs

\$2,220,000
\$555,000

Note: Refer to last sheet for additional assumptions.



10 Airline Drive - Suite 200 - Albany, New York 12205
Telephone: (518) 218-1801 - Fax: (518) 218-1805

Item: 10
Product group N
Standard Pump

CONVEYING CAPACITY

150 - 300 USGPM

PRESSURE

70 psi

SPEED

96 - 183 rpm



* typical image, design may differ

SEEPEX pumps from the BN range are used across all industries for pumping fluids that are free flowing up to more viscous products with or without solids. It has compact design featuring many ease of maintenance features designed by SEEPEX

BN

YOUR ADVANTAGES

- Compact, space-saving design with directly flange-mounted drive (block design)
- Reduced capital cost, as it has fewer parts associated with the drive
- Easy to maintain with the use of the plug-in-shaft connection between the rotating unit and drive
- Flexibility, it can be mounted vertically or horizontally and run in either direction

Multiple flange connection positions are possible

6/5/2023

Item 10

pump to handle Sludge

qty.: 2

Progressive cavity pump

BN 130-12 / A1-C1-L8-F0-GA

Application data

Conveyed product	Sludge
Flowability	flowable
Viscosity	low viscosity (< 500 cP/mPas)
Solids content	3%
Size of solids	not specified
Density	unknown, 1 kg/dm³ assumed
Product temperature	32°F - 113°F
pH value	5-9
Kind of operation	continuous
Operating hours	8 h/day
Location	indoor, dry atmosphere
Altitude of installation	up to 1000 m assumed
Surrounding temperature	normal (32-104 °F)

Performance data

	Capacity	Pressure	Speed	
	150 USGPM	70 psi	96 rpm	min
	300 USGPM	70 psi	183 rpm	max
Starting torque	1560 lb.ft			
Inlet pressure	flooded suction (up to 0,5bar)			

Tolerances according to SEEPEX standards.

Materials and executions

Installation	horizontal
Direction of rotation	counter clockwise (left)
Lantern - Design	with cover plates
Lantern - Material	EN-JL 1040 (gci-25)
Suction casing - Design	standard
Suction casing - Material	EN-JL 1040 (gci-25)
Pressure branch - Design	standard
Pressure branch - Material	EN-JL 1040 (gci-25)
Position of branch	position 1
Suction connection	NPS 8, drilled acc. to ASME B 16.5, Class 150, RF
Pressure connection	NPS 8, drilled acc. to ASME B 16.5, Class 150, RF
Joint - Design	pin joint with joint sleeve, grease filled
Joint - Material	standard, holding bands 1.4301
Joint - Universal joint sleeve: material	NBR - Perbunan
Coupling rod - Design	standard
Coupling rod - Material	1.4021 / AISI 420
Rotor - Design	Undersize acc. to GI.ROT.02
Rotor - Material	1.0503 (C45) / AISI 1045
Rotor - Coating	ductile chromium coating
Stator - Design	standard
Stator - Material	NBR - Perbunan
Shaft sealing	mechanical seal
Code	GA - single acting mechanical seal
Shaft diameter	100 mm
Rotating/stationary seal face	SiC SiC
Elastomers	FPM
Spring	1.4571 / AISI 316Ti
Metal parts	1.4571 / AISI 316Ti
Casing - material	1.4404 / AISI 316L
Casing - connection standard	NPT

Plug-in Shaft - Design	standard
Plug-in Shaft - Material	1.4021 / AISI 420
Bolting - Design	standard
Painting - Number of colors	single-colored standard
Painting - Painted components	complete combination
Painting - Color	Standard Enamel (SEEPEx Blue)
Painting - Surface protection	std. surface protection C2 (NDFT 95 µm)

Drive

Type	Gear motor at freq. inv. (Inverter is not included)		
Mounting position	M1		
Ratio (i)	9.46		
Speed	189 rpm		
	Norm	Min	Max
Speed	189 rpm	96 rpm	183 rpm
Motor speed	1790 rpm	908 rpm	1730 rpm
Frequency	60 Hz	30 Hz	58 Hz
Rated output	40 HP		
Rated speed	1790 rpm		
Starting	direct on frequency inverter		
Efficiency class	premium efficiency		
Terminal box position acc. to supplier	1		
Cable entry position acc. to supplier	I		
Voltage	3x 230/460 V		
Frequency	60Hz		
Enclosure	IP55		
Thermal class	F		

The frequency inverter has to follow a linear U/f characteristic curve (constant torque).
It's essential to have a minimum overload capability of 150% for at least 60 seconds. (see technical data sheet)

Baseplate

Design	baseplate for block pump, design with side feet
Material	steel, painted
GPU Type Code	B-ST-LS

Packing

Type of packing	skid (US)
Type of transport	truck
Quantity of pumps per position	1 pump

Price composition

Unit price each
USD 54,875.00

Optional: Dry running protection device (TSE)

Design	standard design, complete - sensor sleeve fitted to the stator of the pump with integrated temperature sensor - connection head (IP55) - separate TSE control device suitable for mounting inside a control panel	USD 1,160.00
Voltage	110-115 V / 50-60 Hz	
Temperature coefficient	NTC	
Material sensor sleeve	1.4404 / AISI 316L	
Material connection head	aluminium	

Please send your purchase order to incomingorders@seepex.net

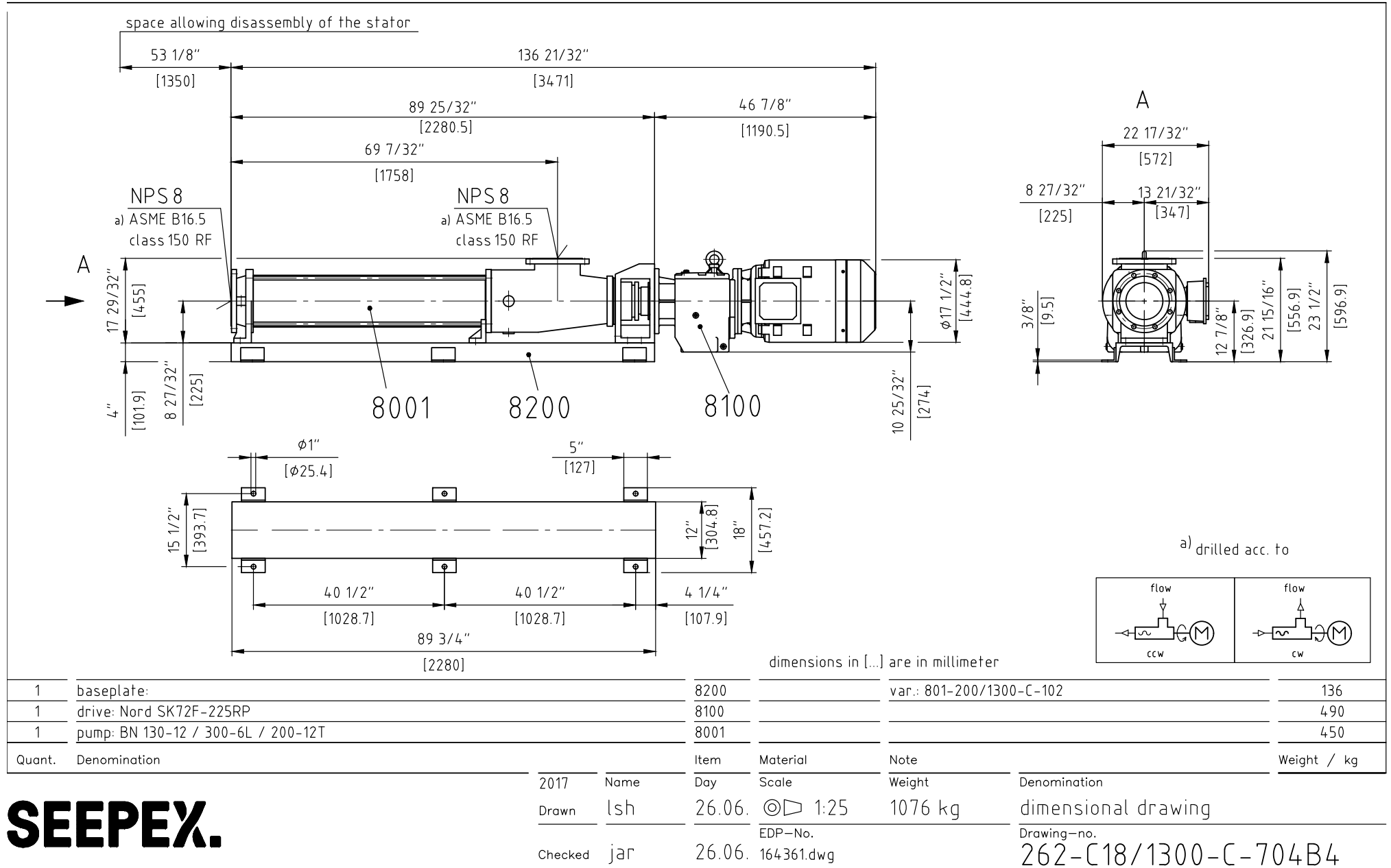
All drawings accompanying this offer is for REFERENCE ONLY, final drawings will be created upon receipt of order. If you need this drawing please request on PO.

In order to process your order, we will require either a copy of the quote this order is based on, or the quote number.

In order to process duplicate wet end orders, we will require the commission number of the pump being duplicated.

not binding drawing for offer

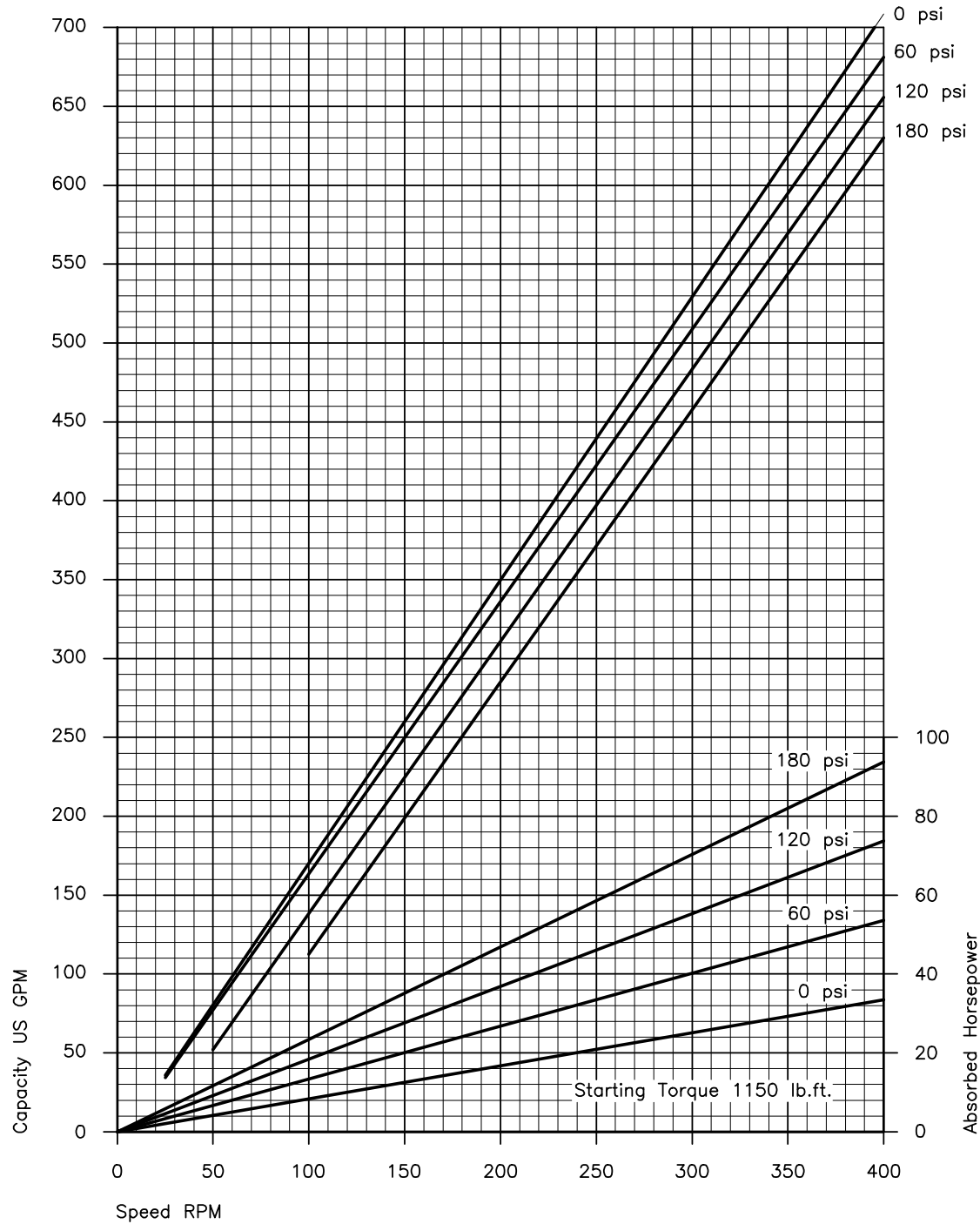
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SEEPEx.

General tolerances for dimensions without specified tolerances acc. to DIN ISO 2768-v

Characteristic Curves
Size
130-12



Values based upon water 68°F ; For notes on drive selection refer to PER

Item: 20
Product group N
Standard Pump

CONVEYING CAPACITY

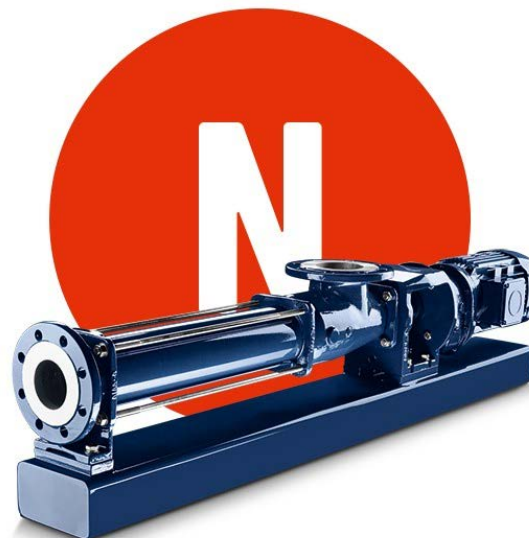
150 - 300 USGPM

PRESSURE

70 psi

SPEED

96 - 183 rpm



* typical image, design may differ

The BNM range comes with Rotor Joint Access (RJA) and Drive Joint Access (DJA) and is our Easy Maintenance solution for large standard pumps. It significantly reduces maintenance time. With RJA - a sliding housing element at the rotor connection - the stator can be removed effortlessly, giving access to the rotor-sided joint without dismantling pressure branches or piping. In addition, the complete drive and coupling rod assembly can be easily removed from the back of the suction casing to service the mechanical seal or joints (DJA). Again, it is not necessary to remove the piping or dismantle the rotor and stator. Maintenance is performed with a simple wrench, while flanges and joints remain mounted.

BNM

Your benefits at a glance:

- Maintain-In-Place
No removal of piping or the entire pump
- Significant reduction in maintenance costs
No removal of joints without complex assembly and disassembly of holding bands.
Easy loosening of ragings
- Preventive maintenance
Regular, simple and quick inspection of joints
- Increased uptime/plant availability
Fast maintenance of rotor- and drive-side components for trouble-free operation

6/5/2023

Item 20

pump to handle Sludge

qty.: 2

Progressive cavity pump

BNM 130-12 / A1-C1-L8-F0-GA

Application data

Conveyed product	Sludge
Flowability	flowable
Viscosity	low viscosity (< 500 cP/mPas)
Solids content	3%
Size of solids	not specified
Density	unknown, 1 kg/dm³ assumed
Product temperature	32°F - 113°F
pH value	5-9
Kind of operation	continuous
Operating hours	8 h/day
Location	indoor, dry atmosphere
Altitude of installation	up to 1000 m assumed
Surrounding temperature	normal (32-104 °F)

Performance data

	Capacity	Pressure	Speed	
	150 USGPM	70 psi	96 rpm	min
	300 USGPM	70 psi	183 rpm	max
Starting torque	1560 lb.ft			
Inlet pressure	flooded suction (up to 0,5bar)			

Tolerances according to SEEPEX standards.

Materials and executions

Installation	horizontal
Direction of rotation	counter clockwise (left)
Lantern - Design	with cover plates
Lantern - Material	EN-JL 1040 (gci-25)
Suction casing - Design	Easy Maintenance-design
Suction casing - Material	EN-JL 1040 (gci-25)
Pressure branch - Design	standard
Pressure branch - Material	EN-JL 1040 (gci-25)
Position of branch	position 1
Suction connection	NPS 8, drilled acc. to ASME B 16.5, Class 150, RF
Pressure connection	NPS 8, drilled acc. to ASME B 16.5, Class 150, RF
Joint - Design	pin joint with joint sleeve, grease filled
Joint - Material	standard, holding bands 1.4301
Joint - Universal joint sleeve: material	NBR - Perbunan
Coupling rod - Design	with grease filling device
Coupling rod - Material	1.4021 / AISI 420
Rotor - Design	ROK detachable & undersize
Rotor - Material	1.0503 (C45) / AISI 1045
Rotor - Coating	ductile chromium coating
Stator - Design	standard
Stator - Material	NBR - Perbunan
Shaft sealing	mechanical seal
Code	GA - single acting mechanical seal
Shaft diameter	100 mm
Rotating/stationary seal face	SiC SiC
Elastomers	FPM
Spring	1.4571 / AISI 316Ti
Metal parts	1.4571 / AISI 316Ti
Casing - material	1.4404 / AISI 316L
Casing - connection standard	NPT

Plug-in Shaft - Design	standard
Plug-in Shaft - Material	1.4021 / AISI 420
Bolting - Design	standard
Painting - Number of colors	single-colored standard
Painting - Painted components	complete combination
Painting - Color	Standard Enamel (SEEPEx Blue)
Painting - Surface protection	std. surface protection C2 (NDFT 95 µm)

Drive

Type	Gear motor at freq. inv. (Inverter is not included)		
Mounting position	M1		
Ratio (i)	9.46		
Speed	189 rpm		
	Norm	Min	Max
Speed	189 rpm	96 rpm	183 rpm
Motor speed	1790 rpm	908 rpm	1730 rpm
Frequency	60 Hz	30 Hz	58 Hz
Rated output	40 HP		
Rated speed	1790 rpm		
Starting	direct on frequency inverter		
Efficiency class	premium efficiency		
Terminal box position acc. to supplier	1		
Cable entry position acc. to supplier	I		
Voltage	3x 230/460 V		
Frequency	60Hz		
Enclosure	IP55		
Thermal class	F		

The frequency inverter has to follow a linear U/f characteristic curve (constant torque).
It's essential to have a minimum overload capability of 150% for at least 60 seconds. (see technical data sheet)

Baseplate

Design	baseplate for block pump, design with side feet
Material	steel, painted
GPU Type Code	B-ST-LS

Packing

Type of packing	skid (US)
Type of transport	truck
Quantity of pumps per position	1 pump

Price composition

Unit price each
USD 65,275.00

Optional: Dry running protection device (TSE)

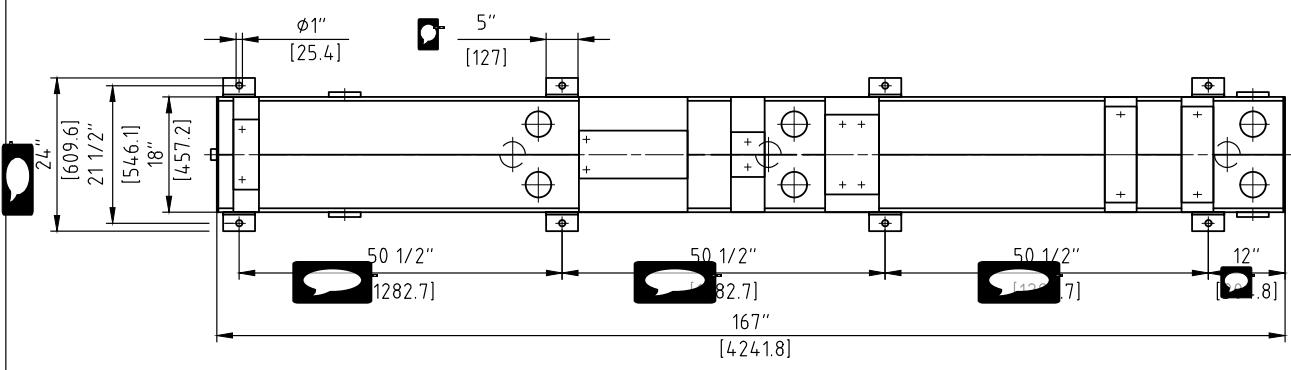
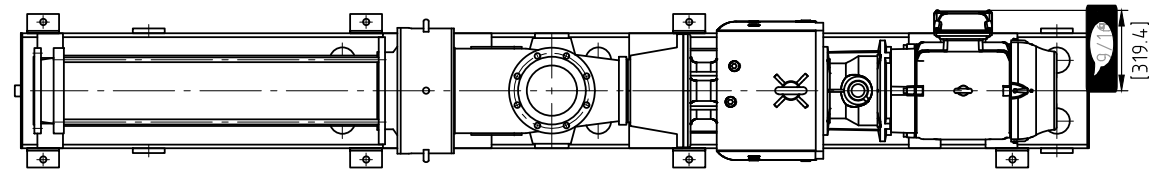
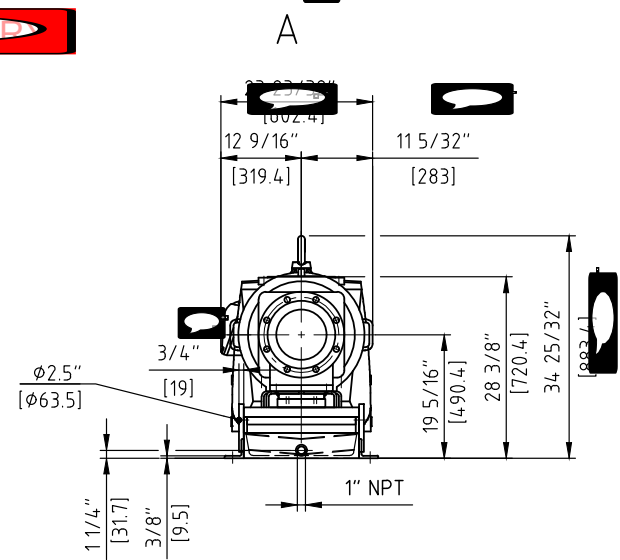
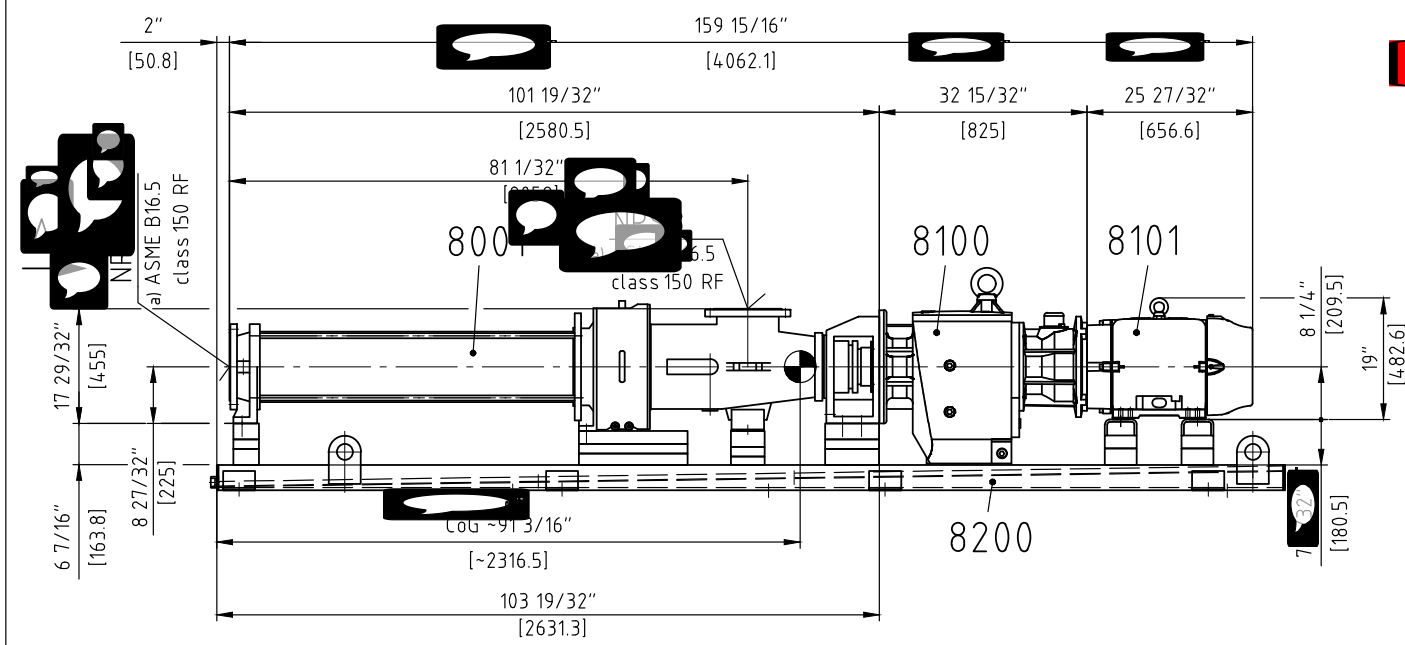
Design	standard design, complete - sensor sleeve fitted to the stator of the pump with integrated temperature sensor - connection head (IP55) - separate TSE control device suitable for mounting inside a control panel	USD 1,160.00
Voltage	110-115 V / 50-60 Hz	
Temperature coefficient	NTC	
Material sensor sleeve	1.4404 / AISI 316L	
Material connection head	aluminium	

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In order to process duplicate wet end orders, we will require the commission number of the pump being duplicated.



dimensions in [] are in millimeter

U	Standard	Item	Material	Remark	Weight kg
		105-C0571500-C			~650
		8130UE3241C-W22			224
		8130UE3241C-W22			581
		8130UE3241C-W22			648
		8130UE3241C-W22			

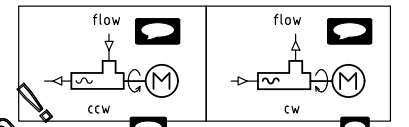
SEEPEx.

General tolerances for dimensions: 1/20

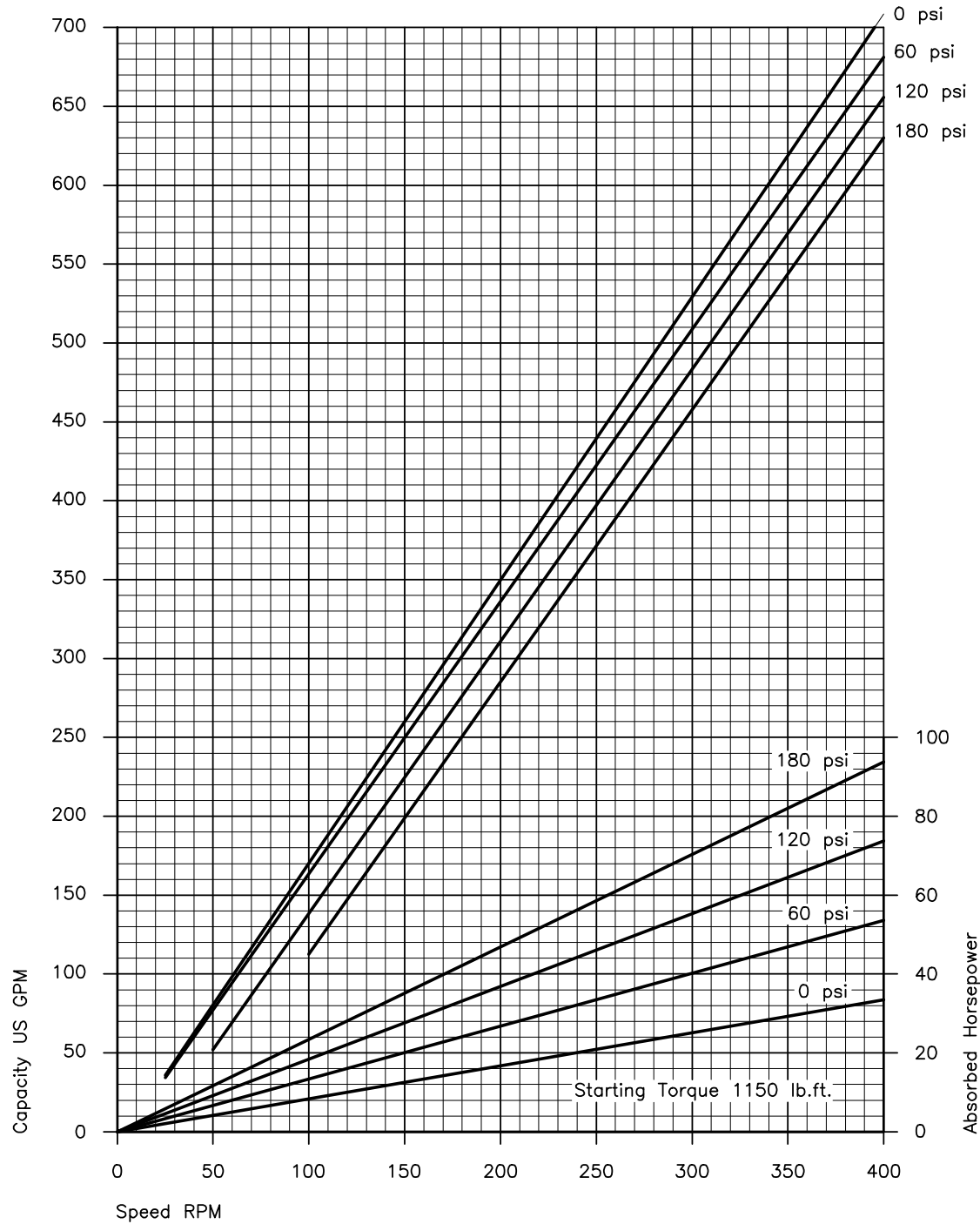
Issue	Modification	Name	Date	Scale	Material	Weight
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Drawn		eba	22.06.2022			
Checked		ls	22.06.2022			

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unverbindlich!
not binding!



Characteristic Curves
Size
130-12



Values based upon water 68°F ; For notes on drive selection refer to PER

Making life better together

We are Ingersoll Rand Businesses

Benefiting from over 160 years of experience, which comes from serving 100,000 industrial customers across 50 countries, being 'an Ingersoll Rand business' brings unparalleled value to our customers and markets.

This portfolio of industry-leading brands provide customers the most precise and innovative solutions in the market for monitoring, dosing and transfer of high-value fluids and gases. These solutions also deliver significant sustainability impact to clean energy, water, food and human health that makes life better for our society and planet.

SEEPEX is proud to be an Ingersoll Rand business.



TERMS & CONDITIONS OF SALE AND/OR REPAIR 12.22

The following terms and conditions shall apply to an order for all or any part of the articles covered by the accompanying offer unless a specific exception is included therein. Acceptance of any order by SEEPEX Inc. is expressly made conditional upon Buyer/Customer's acceptance of SEEPEX Inc. Terms and Conditions of Sale and/or Repair. All prior or future terms, conditions or negotiations (whether written or oral) by Buyer/Customer will therefore be considered void and inapplicable unless otherwise agreed in writing. SEEPEX Inc. reserves the right, in its sole discretion, to refuse any order, unconditionally, for any reason including but not limited to: expiration of the validity of the offer, errors in the offer, unacceptable payment risks, conflicts with contractual commitments made to other potential customers and the chance that a customer may try to enforce an implied warranty or merchantability of the products offered.

1.0 PRICES

1.1 Any prices quoted shall only be valid for orders placed within 30 days from the date of issue of the offer. Prices are Ex-Works SEEPEX Inc. plant (Enon, Ohio USA) in U.S. dollars, unless otherwise agreed. SEEPEX Inc. reserves the right to correct typographical or clerical errors.

2.0 TERMS

2.1 All orders are subject to approval by the SEEPEX Inc. Credit Department. Unless otherwise agreed, if payment for the invoice due is not made in full within thirty (30) days after shipment, late fees of eighteen percent (18%) per year (equivalent to a nominal monthly interest rate of 1.5%) will be applied on the unpaid balance until paid in full. The terms and conditions herein set forth are based upon tariffs, taxes, foreign exchange rates, delivery, and other conditions in effect on the date of the Buyer/Customer's order. In the event that such tariffs, taxes, foreign exchange rates, delivery, and/or other conditions should change prior to delivery of the goods, SEEPEX Inc. reserves the right to charge such increased duties, taxes, or charges to the Buyer/Customer.

2.2 Unless the order includes the appropriate exemption certificates and/or licenses, duties and taxes levied by Federal, State, or other governments are required to be charged automatically at the rate imposed at time of importation/shipment. Any change in law, regulations, or Government practice which causes a variation of any kind in the applicable charges from the amounts stated in the offer shall result in an equivalent change in the price quoted.

2.3 Until payment is made in full, SEEPEX Inc. shall retain the right, without notice, to repossess and/or retain the items, and/or dispose of them, for its benefit and hold the Buyer/Customer responsible for any loss. Buyer/Customer agrees to enter into any agreements, contracts, or notices required confirming such rights.

2.4 Except where prohibited by law, all products and services paid with a credit card will be subject to a 2.5% convenience fee added to the price of the order. This fee will not exceed our cost of acceptance and will not apply to orders placed through an online platform.

3.0 SECURITY

3.1 In order to secure any obligations due to SEEPEX Inc. from the Buyer/Customer, the Buyer/Customer grants to SEEPEX Inc. a security interest in:

- a.** The merchandise covered by the Buyer/Customer's order (s), and
- b.** All property and funds of the Buyer/Customer now or hereafter in SEEPEX Inc.'s possession, and in all additions and proceeds of such merchandise and/or property. The Buyer/Customer hereby authorizes SEEPEX Inc. to sign alone any financing statement or statements and to do all and any other things which may be necessary to perfect such security interest.

4.0 CANCELLATION

4.1 After acceptance, orders may be cancelled only with the express approval of SEEPEX Inc. In the event of an approved cancellation, the Buyer/Customer shall remain responsible for payment for all work performed and/or material expenses incurred by SEEPEX Inc. as of the time of cancellation. SEEPEX Inc. reserves the right to cancel the order if SEEPEX Inc. determines, in its sole discretion, that the Buyer/Customer's financial condition renders the Buyer/Customer unable or unlikely to pay for the order as agreed.

5.0 RETURN

5.1 No credit will be allowed for returns unless SEEPEX Inc. has authorized such returns in writing in advance. A copy of this authorization must be returned with the item as the packing slip. All returns are subject to restocking charges and to the SEEPEX Inc. Return Goods Authorization (RGA) Policy, which is available on www.seepep.com, and is incorporated herein by reference. SEEPEX Inc. will only issue credits for items that are covered under warranty or can be resold. Items that are specially produced for a specific Buyer/Customer, including but not limited to: special hoppers, baseplates, electrical panels, gear reducers and electric motors are specifically excluded from consideration for credit. Any items not received in good, clean and uncontaminated condition or items that cannot be put back into stock will not be accepted. Any elastomer material with over three (3) years of fabrication will not be accepted for return and/or credit. Buyers/Customers must pay for all freight associated with any return, including parts or equipment that may be considered to be covered by the limited warranty protection clause below. If an item is deemed to be covered under warranty, the value of the item, and freight associated with the replacement of the item, will be reimbursed by the issuance of a credit to the Buyer/Customer's account. Outstanding RGA's that have declined repair will be scrapped automatically after ninety (90) days if no other written instructions are provided.

6.0 SHIPMENT

6.1

a. Handling Charge: Buyer/Customer shall be responsible for making all arrangements for shipment of the order with a suitable carrier. In the event that Buyer/Customer requests that SEEPEX Inc. makes arrangements for shipment, then Buyer/Customer agrees to pay to SEEPEX Inc., in addition to the applicable shipping charges, a handling charge in the amount of 10% of the shipping charges with a minimum \$5.00 to a maximum charge of \$150.00, with special services requiring additional charges.

b. New Articles: Where shipping instructions dictate no specific routing, SEEPEX Inc. will utilize its best judgement in determining routing but shall not be liable for any charges once the goods have reached their agreed upon point of delivery. If changes are made at Buyer/Customer's request in a) the agreed upon point of delivery, or b) in the routing selected by SEEPEX Inc. and if such changes involve additional costs to be incurred, such costs shall be borne exclusively by the Buyer/Customer, unless otherwise agreed in writing.

c. Repair Work: All items for which the Buyer/Customer requests repair or other services by SEEPEX Inc. shall be delivered to and picked up from the SEEPEX Inc. plant (Enon, Ohio USA) unless otherwise agreed in writing. All costs of delivery shall be paid by the Buyer/Customer unless otherwise agreed to in writing prior to shipment. Items returned to SEEPEX Inc. must be returned in good, clean and uncontaminated condition. Any cost of cleaning or decontamination will be charged back to the Buyer/Customer's account at the standard service rate. SEEPEX Inc. has the right to refuse acceptance of any dirty or contaminated shipment that may be suspected of being hazardous.

d. All Orders: On collect freight shipments, cartage charges from plant to carrier are the responsibility of the Buyer/Customer. Title to articles passes to Buyer/Customer upon delivery to carrier acting as Buyer/Customer's agent subject to any right of retention by SEEPEX Inc. All claims for shortage in, and damages in, shipment or otherwise must be reported to carrier immediately upon receipt with copy or report to ourselves within five (5) business days.

7.0 WARRANTIES & LIABILITY LIMITATIONS

7.1

a. New Articles: SEEPEX Inc. warrants articles of our manufacture against defects in material and/or workmanship for a period of one (1) year from date of delivery, provided that the articles have been installed, maintained, and operated in strict accordance with SEEPEX Inc. recommendations and instructions. For any pump that Buyer/Customer registers with SEEPEX Inc., the warranty period, as expressed above, shall be extended by two (2) additional years for a total of three (3) years from date of delivery, and provided that the articles are installed, maintained and operated in strict accordance with SEEPEX Inc. recommendations and instructions for the duration of such warranty period. Registration must be confirmed and can be completed online at <http://warranty.seepep.us>.

TERMS & CONDITIONS OF SALE AND/OR REPAIR 12.22

b. Repair Work: Defined herein as work and services performed by SEEPEX Inc. SEEPEX Inc. warrants all repair work and services that it performs against defects in workmanship and/or materials for a period of one (1) year from the date of delivery of the repaired articles or for the remainder of the applicable original warranty period under Section 7.1.a., if not yet expired, whichever period is longer.

c. All Orders: All warranty claims shall be submitted promptly in writing to SEEPEX Inc. Any warranty replacement and/or repair shall be made Ex-Works SEEPEX Inc. plant (Enon, Ohio USA). SEEPEX Inc.'s warranty obligation shall be limited to the replacement and/or repair only of defective material and/or workmanship.

7.2 In no event shall SEEPEX Inc. be liable for any incidental or indirect/consequential loss or damage of whatever kind of nature including but not limited to loss of business income or profits, revenue or loss of production or damage resulting from delay in manufacture or delivery, loss of use or damage to any installation into which the article may be installed, whether arising out of contract or tort.

7.3 Force Majeure: SEEPEX Inc. shall not be liable or responsible to Buyer/Customer or any other party, or be deemed to be in default or breach of its obligations to Buyer/Customer or any other party, for any failure or delay in fulfilling or performing any of its obligations, when and to the extent such failure or delay is caused by or results from acts beyond SEEPEX Inc.'s reasonable control, including, without limitation, war, invasion, hostilities, calamity, riot, civil commotion or disorder, act of civil disobedience, threats or acts of terrorism, plague, epidemic, pandemic, outbreaks of infectious disease, including but not limited to COVID-19, or any other public health crisis, quarantine or other work-related restrictions, act of authority whether lawful or unlawful, compliance with any law or governmental order, rule, regulation or direction, embargoes or blockades, national or regional emergency, act of God or natural disaster, explosion, fire, destruction, general labor disturbance such as but not limited to boycott, strike and lockout, or shortage or inability to obtain critical labor, material or supplies, telecommunication breakdowns, power outages or shortages, lack of warehouse, dock, cargo container or storage space, inadequate shipment or transportation services, port delays or backups such as but not limited to shortage of labor, equipment, trailers, trucks, vehicles or other services to unload ships or haul cargo away, or inability or delay in obtaining supplies of adequate or suitable materials, or any other event which is beyond the reasonable control of SEEPEX Inc. that renders its performance inadvisable, commercially impracticable, illegal, or impossible ("Force Majeure Event"). Upon the occurrence of any Force Majeure Event, SEEPEX Inc., in its sole discretion and without prior notice to Buyer/Customer or any other party, shall be entitled to terminate the performance of its obligations immediately without Buyer/Customer or any other party having recourse against SEEPEX Inc., or otherwise suspend performance of its obligations to Buyer/Customer or any other party, including without limitation the payment of any funds, monies, wages, compensation or remuneration to Buyer/Customer or any other party, and such performance shall be deemed permanently excused and released hereunder or otherwise suspended until such time that SEEPEX Inc. in its sole discretion determines that it can and should resume performance of its obligations, whether in full or in part.

7.4 Notwithstanding anything herein to the contrary, SEEPEX Inc.'s liability to Buyer/Customer on any cause of action shall be limited to the amount paid by the Buyer/Customer on the subject order. SEEPEX Inc. makes no warranties, express or implied, with respect to articles or products manufactured or provided by any party other than SEEPEX Inc., except to transfer to the Buyer/Customer, where permissible, any warranty provided to SEEPEX Inc. by the original manufacturer. On any claims for repairs and/or replacement under such warranty, all costs incurred by SEEPEX Inc., which are not underwritten by the original manufacturers, shall be borne by the Buyer/Customer. Except as provided herein, SEEPEX Inc. expressly disclaims all representations, promises, or warranties, express or implied, with respect to any products, articles, work, or services, including any warranties of merchantability and of fitness for a particular purpose. All warranties made by SEEPEX Inc. shall be void where the goods have been subject to misuse, neglect, damage or alteration. SEEPEX Inc. shall be held free and harmless from any dispute or claim anywhere arising from and relating to infringement of patent, design, trademark, or copyright of items, sold or repaired under this contract.

8.0 PROPERTY RIGHTS AND RISKS

8.1 SEEPEX Inc. disclaims any liability or responsibility whatsoever with regard to loss or damages to the Buyer/Customer's property while in the possession, custody or control of SEEPEX Inc. for requested repairs or other services, and the Buyer/Customer expressly agrees to indemnify and hold SEEPEX Inc. harmless against any and all claims for such loss or damage.

9.0 HAZARDOUS MATERIALS

9.1 Any hazardous materials or the existence of any hazards relative to the condition of any product tendered to SEEPEX Inc. for service or repair work must be disclosed by Buyer/Customer in writing in the RGA Request Form, whether or not required to be disclosed per federal law on the MSDS sheet. Buyer/Customer shall defend, indemnify and hold SEEPEX Inc. harmless from and against any and all claims of injury or damage, including attorney's fees, caused by any hazardous condition or material on or about products accepted for service/ repair. This obligation includes but is not limited to claims of bodily injury or death suffered by SEEPEX Inc. employees, or by other parties.

10.0 GENERAL CONDITIONS

10.1 No modification, amendment, rescission, discharge, abandonment or waiver of these terms and conditions shall be binding upon SEEPEX Inc. unless set forth in writing and signed by a duly authorized officer or representative of SEEPEX Inc.. In any action or proceeding to enforce these terms and conditions against Buyer/Customer or any other party, SEEPEX Inc. shall be entitled to recover all of its costs and expenses, including reasonable attorney's fees and expenses incurred in connection with such action or proceeding. These terms and conditions shall be governed by and construed in accordance with the laws of the State of Ohio, and any contract resulting here from shall be deemed to be made in the State of Ohio, and SEEPEX Inc. and Buyer/Customer hereby consent to the exclusive jurisdiction of the courts of the State of Ohio located in Clark County, with respect to any controversy or claim arising out of, or relating to, any contract resulting from these terms and conditions.

SEEPEX Inc.
511 Speedway Drive
Enon, Ohio 45323
USA

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Alternative 3.
Install New Double Disc Style Pumps

The World Leader in Free-Disc™ Pumping Technology



Model: 6DDSX76

Flow Range:	0 - 425 GPM
Displacement:	0.76 gal/rev
Operating Speeds:	0 - 400 RPM
Max Discharge Pressure:	60psi operating
Max Suction Lift:	25 ft
Connection:	6" 150# Flanged

Lower Wear = Longer Life

With a non-close tolerance design and no rubbing action to generate flow the Double Disc Pump offers the lowest life cycle cost of any positive displacement pump on the market.

Features and Benefits:



"Maintain-In-Place"
Design



Self-priming



Passes up to 2" solids



Two (2) year warranty



Made in the USA



Runs dry without damage



Low friction design



No check valves



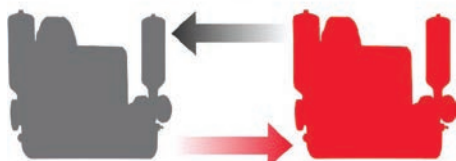
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A unique trial program that lets you try before you buy.
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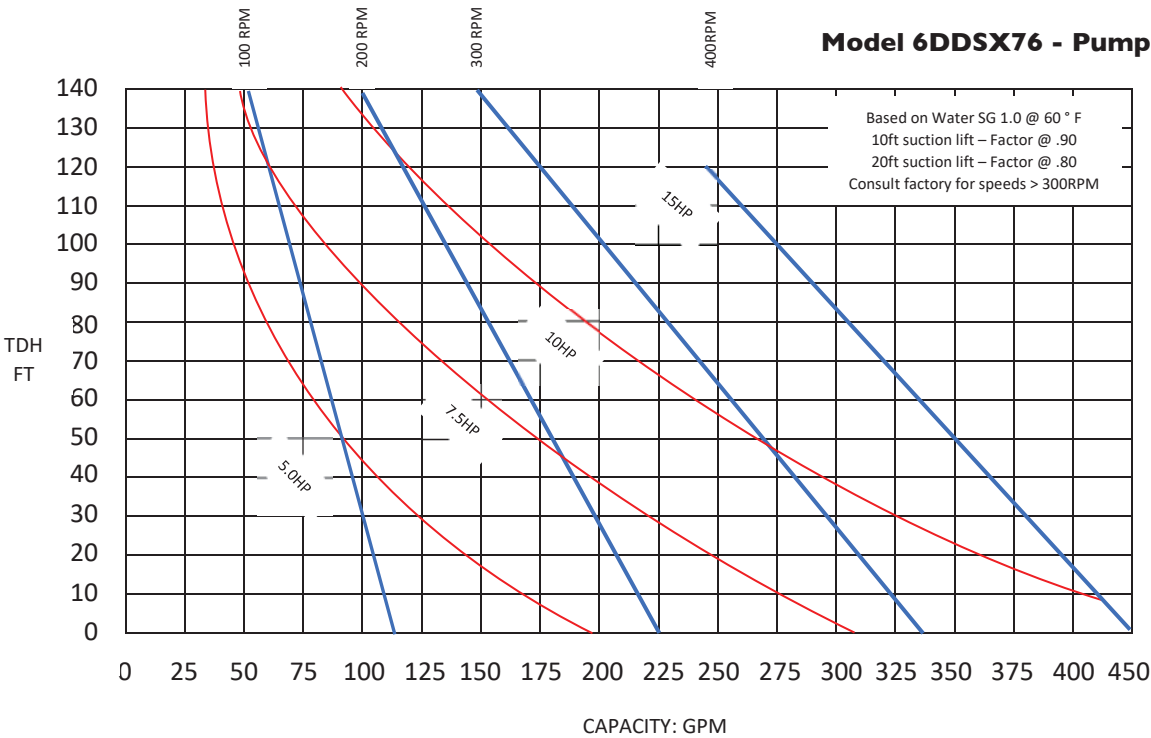
✉ info@pennvalleypump.com

☎ 215-343-8750

📍 Warrington, PA 18976

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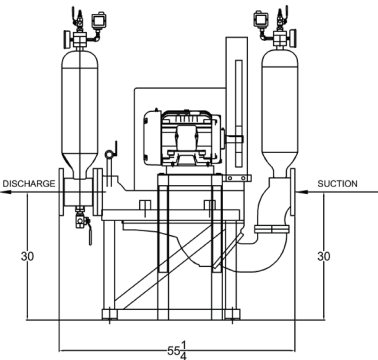


Materials of Construction:

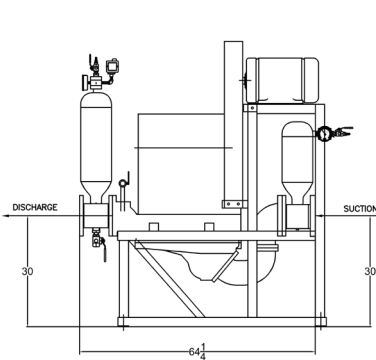
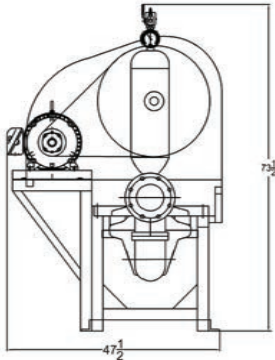
	Standard	Optional:
Housings:	Cast Iron	Linings: Porcelain Glass, Neoprene, Powder Coat, Soft PVC, Tungsten Carbide
Discs & Trunnions:	Neoprene -10° to +200°F	Buna-N +10° to +180° F, EPDM +10° to +200°F, HNBR +10° to +220° F, Viton -40° to +350° F
Connecting Rods:	Aluminum	
Drive Shaft:	High-Tensile 416 Stainless Steel	
Eccentric Cams:	High-Tensile Bronze Alloy	
Bearing Pedestals:	Aluminum	
Frame & Covers:	304 Stainless Steel	316 Stainless Steel

Drive System Options:

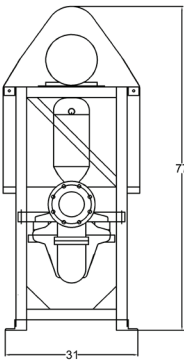
	Standard	Optional:
Static:	Electric motor, belt and pulley	Gearmotor, air or hydraulic motor
Portable:	Electric, Gas or Diesel Engine	



Side Motor Mount



Piggy-Back Motor Mount



Alternative 4.
Install New Hose Style Pumps

Bredel 265, Bredel 280 and Bredel 2100 hose pumps

Bredel^{series}

Bredel Hose Pumps

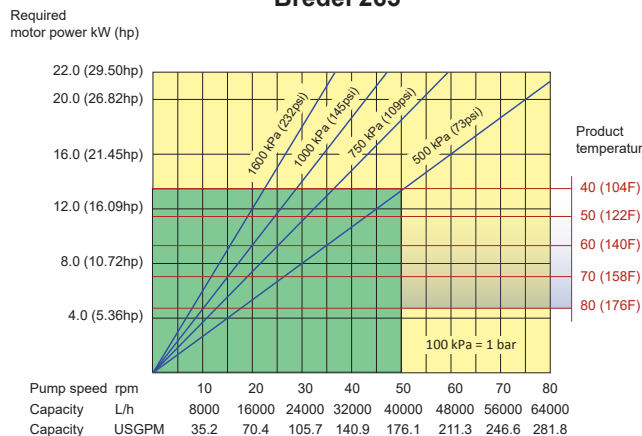
FEATURES AND BENEFITS

- Sealless, valveless pumping principle for reliable, low maintenance metering, dosing and transfer
- Flow rates up to 108,000 L/hr (475.5 USGPM) and pressures up to 16bar (232 psi)
- Dry running and self-priming, with up to 9.5 meters (30 foot) suction lift capability
- Robust design for aggressive chemicals or abrasives
- Compact direct coupled design to maximise gearbox life
- Simple hose change decreases cost of ownership, downtime and need for parts inventory

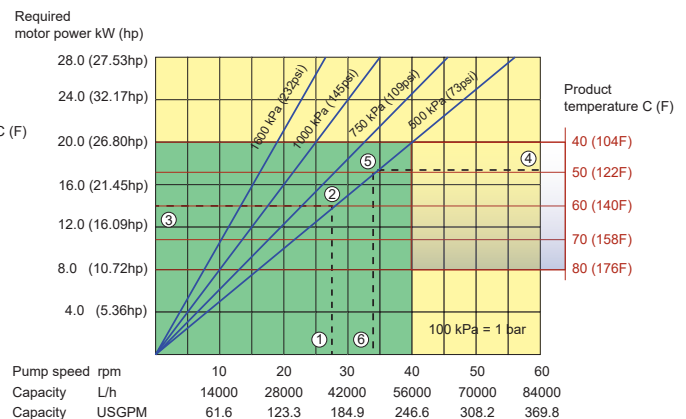


PERFORMANCE

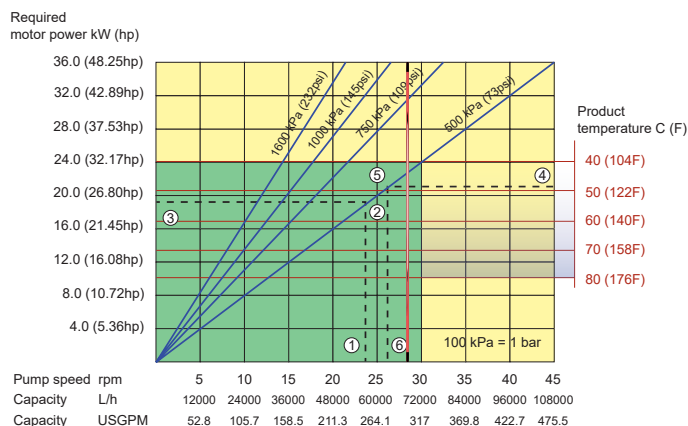
Bredel 265



Bredel 280



Bredel 2100



Continuous Duty

Intermittent Duty*

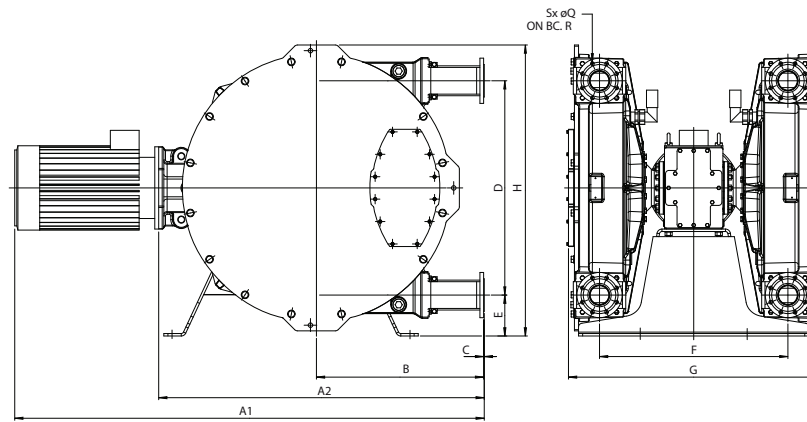
* Maximum 2 hours operation followed by minimum 1 hour stop

1. Flow required indicates pump speed
2. Calculated discharge pressure
3. Net motor power required
4. Product temperature
5. Calculated discharge pressure
6. Maximum recommended pump speed

Note: The area of continuous operation diminishes with increased product temperatures.

For product temperatures >40C (104F), the area of continuous operation is limited by the corresponding red temperature line.

DIMENSIONS



Type	A1	A2	B	C	D	E	F	G	H	ØQ	R	S
Bredel 265 (mm)	*	1115	580	3	746	152	720	943	1036	18	145	4
Bredel 265 (inches)	*	43.9	22.8	0.12	29.4	5.99	28.3	37.1	40.8	0.71	5.7	0.16
Bredel 280 (mm)	*	1404	700	4	876	182	800	1047	1218	18	160	8
Bredel 280 (inches)	*	55.3	27.6	0.16	34.5	7.2	31.5	41.2	48	0.71	6.3	0.31
Bredel 2100 (mm)	*	1516	813	3	1042	199	916	1218	1415	18	180	8
Bredel 2100 (inches)	*	59.7	32	0.12	41	7.8	36.1	48	55.7	0.71	7.1	0.31

* Depends on motor size and type

TECHNICAL SPECIFICATIONS

	Bredel 265	Bredel 280	Bredel 2100
Flow range	up to 64,000 L/hr (281.8 USGPM)	up to 78,000 L/hr (343.4 USGPM)	up to 108,000 L/hr (475.5 USGPM)
Capacity	13,4 L/rev (3.54 G/rev)	23.4 L/rev (6.18 G/rev)	40 L/rev (10.56 G/rev)
Minimum starting torque	2,000 Nm (17,701.5 Inch-lbs)	3,400Nm (30,092 inch-lbs)	5,300Nm (46,908 inch-lbs)
Hose lubricant required	40 litres (10.57 USG)	80 litres (21.13 USG)	120 litres (31.70 USG)
Pump heads weight	1116kg (2460 lbs)	1344kg (877lbs)	2064kg (1482lbs)
Common features			
Max inlet pressure	2.0bar abs (30psia)	1.5bar abs (23 psia)	
Suction pressure	0.05bar abs (0.73 psia)		
Maximum discharge pressure	1,600 kPa (16 bar) (232psi)		
Product temperature range*	-10C up to 80C (14F up to 176F)		
Ambient temperature range**	-20C up to 45C (-4F up to 113F)		

*Please consult your Bredel representative for lower or higher temperature operation.

**Allowable ambient temperature is based on pump capabilities and may be further limited by gearbox ambient capabilities

MATERIALS OF CONSTRUCTION

Components	Materials
Pump housing	Cast iron
Rotor	Cast iron
Pressing shoes	Aluminium or epoxy
Cover	Mild steel
Brackets	Galvanized steel or AISI 316
Flanges	Galvanized steel or AISI 316
Inserts	AISI 316, PVC, PP, PVDF
Support frame	Galvanized steel or AISI 316
Hose clamps	Galvanized steel or AISI 316
Shaft	Alloy steel
Seals	Neoprene or nitrile

Options	Features
Available hose materials	NR, NR Endurance, NBR, EPDM, CSM, NBR for food, F-NBR
Available flanges	ANSI, EN DIN, JIS
Available inserts	Bredel standard or with sanitary connectors
High level float switch	Max. 2A, 230 V AC/DC, max. 40VA
Low level float switch	ATEX: max. 50 mA, max. 28V AC/DC
Manifolds	Suction and discharge manifolds available in mild steel or in AISI 316
Revolution counter	For maintenance intervals and /or metering
Vacuum assist	For difficult suction conditions and high viscosity fluids
Cover lifting device	For one-man pump maintenance

The information contained in this document is believed to be correct at the time of publication, but Watson-Marlow Bredel BV accepts no liability for any error it contains, and reserves the right to alter specifications without prior notice. All mentioned values in this document are values under controlled circumstances at our test bed. Actual flow rates achieved may vary because of changes in temperature, viscosity, inlet and discharge pressures and/or system configuration. APEX, DuCoNite®, Bioprene® and Bredel are registered trademarks.

Bredel
Hose Pumps

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info@wmftg.com
+44 (0) 1326 370370

Appendix M
Incineration Technical Memo



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Saint Paul, MN 55102

T: 651.298.0710

Technical Memorandum

Prepared for: Albany County Water Purification District

Project Title: Solids Handling Evaluation

Project No.: 158349.008

Technical Memorandum

Subject: Incineration Evaluation – Update – Revision 1

Date: March 7, 2025

To: Angelo Gaudio, ACWPD Executive Director

From: Eric Muir, BC Client Services Director

Copy to: Karen Clark, B&L Senior Associate

Prepared by:

A handwritten signature in black ink, appearing to read "Lloyd Winchell".

Lloyd Winchell, Associate

Reviewed by:

A handwritten signature in blue ink, appearing to read "Tom Schwartz".

Tom Schwartz, Associate

Limitations:

This document was prepared solely for Albany County Water Purification District in accordance with professional standards at the time the services were performed and in accordance with the contract between Albany County Water Purification District and Brown and Caldwell dated. This document is governed by the specific scope of work authorized by Albany County Water Purification District; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by Albany County Water Purification District and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

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Section 1: Introduction

The Albany County Water Purification District (ACWPD) owns and operates the North Plant and South Plant facilities treating wastewater generated in the greater Albany area. Each facility includes two multiple hearth furnaces (MHF) for processing the solids generated during the treatment process. The furnace systems, or incineration process, are roughly 50 years old with several components nearing the end of the expected service life or obsolete and unsupported.

ACWPD has been evaluating the solids processing system and contracted Barton & Loguidice (B&L) and Brown and Caldwell (BC) to conduct an alternatives analysis. The analysis considered various solids processing technologies and recommended continuing with incineration.

BC provided a previous evaluation of the incineration alternative considering consolidation of solids at the North Plant and abandoning the South Plant MHFs (Attachment A). This approach has been revised to maintain incineration at the South Plant, rehabilitate one MHF there along with the North Plant MHFs, and keep the solids separate. This technical memorandum (TM) focuses on updates associated with this approach. Additional engineering effort will be required to refine the construction scope and design the improvements.

Section 2: Condition Assessment

BC conducted a site inspection at both the North Plant and South Plant on April 7, 2022. The condition of the North Plant MHFs was documented in Attachment A and summarized in Table 2-1. The South Plant MHFs are in similar condition and one furnace (MHF No. 2) was recently rehabilitated by Industrial Furnace Company (IFCO). Table 2-1 lists the South Plant MHF components requiring repair or replacement for reliable service over the next 20 years.

The site inspection was limited to visual inspection of equipment and discussions with ACWPD staff. IFCO previously conducted an inspection of the North Plant furnaces (Attachment A). Considering this information and using BC's industry experience the following repair and replacement schedules were developed.

Table 2-1. MHF System Repair and Replacement Schedule

Item	North Plant (Both MHFs)	South Plant (MHF No. 1)
Furnace shell/refractory/castings	Repair and replace per IFCO's inspection (Attachment A)	Repair and replace furnace internals as warranted by IFCO
Afterburner	Reconfigure both MHFs with afterburners	Not applicable
Burner systems	Replace equipment and controls for more reliable and efficient operation	
Combustion air fans	Replace due to age and condition	
Upper center shaft bearings/seals	Refurbish	
Lower center shaft bearings	Refurbish	
Center shaft drive motors/gearboxes	Replace for reliable operation	
Pinion/bull gears	One set per plant	
Shaft cooling air fans	Replace due to age and condition	
Clinker grinders	Replace due to age and condition	
Wet ash systems	Replace, tanks and pumps in poor condition	
ID fan	None, existing has useful life remaining	Replace due to age and condition
Refractory lined ducts	Repair as needed	
Bypass dampers	Replace due to age	
Wet scrubber	Replace for capacity	None, existing has useful life remaining
CEMs	Replace due to age	
Actuators	Replace for reliability	
Cake conveyors	Replace due to age	
Instrumentation and controls	Replace due to age and obsolescence (all four MHFs)	
Electrical	Replace due to age and obsolescence	

Several pieces of equipment still have significant useful and reliable life at the South Plant. This equipment was not listed for immediate replacement but will require rehabilitation or replacement over the 20-year service period. The major equipment falling in this category include the following:

- Furnace refractory systems – continued maintenance of the refractory systems in the furnaces is expected but wholesale replacement is not common. With continued maintenance and completion of the repairs found during routine inspections the refractory will provide reliable service. BC recommends future budgeting for replacement of two hearths in each furnace for conservatism but dependent of conditions observed in future inspections.
- Wet scrubber – the scrubbers were installed in approximately 2005. Wet scrubbers typically require low maintenance and have long service lives. The existing scrubbers are expected to serve for the next 20 years with maintenance of the supply water pumps and regular inspection of the interior components.
- Unlined ducts – the ductwork downstream of the scrubber and including the stack does not experience extreme service conditions. Duct replacement is not expected but leaking joint maintenance is likely required over the next 20 years.

- Ash ponds and yard piping – no issues related to the ash ponds and yard piping were observed or noted by ACWPD staff. Regular inspection of the pond berm and a CCTV inspection of the yard piping will minimize the risk of unexpected failures.

BC did not survey for hazardous materials during the site inspection. High-temperature processes and construction materials from the era of the furnaces often used materials now considered hazardous, like asbestos. BC recommends conducting a detailed investigation during future phases of the solids handling project.

Section 3: Capacity Analyses

BC conducted a desktop capacity evaluation of the incineration process based on common design practices for this type of incineration process, historical performance, coordination with equipment manufacturers, and experience of ACWPD staff. The following summarizes the capacity of the major components of the process based on the loading the dewatered solids, or cake, generated by the wastewater treatment process. This evaluation reflects non-consolidated solids loadings, that is each plant only processes the solids generated from within the plant.

3.1 Cake Load and Quality

B&L reviewed historical data and prepared future projections for the cake sent to the furnaces at the North and South Plants. Table 3-1 documents the loadings used for this evaluation. Included are the cake quality parameters total solids (TS) and volatile solids (VS) based on historical weekly data from 2018-2021. The higher heating value and ultimate composition values were assumed based on typical wastewater solids values in industry references^{1,2}.

Table 3-1. Cake Load and Quality Design Basis		
Item	North Plant	South Plant
Current Conditions (lb/d)		
Annual Average	43,185	21,161
Maximum Month	52,761	26,391
Peak Week	67,742	32,840
Future Conditions (lb/d)		
Annual Average	59,448	22,412
Maximum Month	69,857	27,951
Peak Week	86,140	34,781
Total Solids (percent)		
5 th Percentile	19.2	19.2
Average	24.2	23.9
95 th Percentile	29.1	28.9

¹ Niessen, W. R. (2002). Combustion and Incineration Processes (3rd ed.). New York, NY: Marcel Dekker, Inc.

² WEF. (2009). Wastewater Solids Incineration Systems, Manual of Practice No. 30 (1st ed.) McGraw-Hill Professional. <https://doi.org/10.1615/AtoZ.i.incineration>

Table 3-1. Cake Load and Quality Design Basis

Item	North Plant	South Plant
Volatile Solids (percent)		
5 th Percentile	72.8	61.7
Average	80.4	72.2
95 th Percentile	85.2	80.3
Higher Heating Value (Btu/lb of volatile)	10,500	10,500
Ultimate Composition (percent of volatile)		
Carbon	57.0	57.0
Hydrogen	7.0	7.0
Oxygen	30.0	30.0
Nitrogen	5.0	5.0
Sulfur	1.0	1.0

lb/d = pound(s) per day

Btu = British thermal unit

3.2 MHF

The MHFs were evaluated based on the design parameters, drying hearth requirements, heat release capacity, and operating schedules under various conditions.

3.2.1 Design Basis

The following parameters were taken from historical documentation provided by ACWPD for the North Plant.

- MHF diameter – 22.2 feet (ft) external and 19.9 ft internal
- Hearths – 10
- Hearth unit area – 265 square feet (ft²)
- Hearth height – 3.7 ft (Hearths 2-10)
- Outlet oxygen – 6-8 percent by volume, wet

The following parameters were used for the South Plant assessment.

- MHF diameter – 22.25 feet (ft) external and 19.9 ft internal
- Hearths – 7
- Hearth unit area – 265 square feet (ft²)
- Hearth height – 2.7 ft (Hearths 2-6)

The capacity evaluation used the following design assumptions based on industry experience.

- Drying hearth area requirement – 10 lb of water/ft²
- Combustion hearth heat release limit – 19,000 Btu/cubic foot (ft³)
- Drying hearths – as available
- Combustion hearths - 2
- Cooling hearths - 2

3.2.2 Operating Schedule

The previous evaluation (Attachment A) documented the benefits and need for operating seven days per week (d/wk) at peak conditions. This evaluation assumes that approach is acceptable for both the North and South Plant facilities.

3.2.3 Capacity Assessment

Within the furnace shell, the process will typically be capacity limited by the evaporation of water from the cake and heat release from combustion of the volatile solids and natural gas. Either of these two aspects can limit the furnace capacity depending on the quality of the cake.

3.2.3.1 North Plant

ACWPD has decided to implement afterburning at the North Plant. For this evaluation, afterburning was assumed to repurpose the top hearth (Hearth 1) as the afterburner which requires the dewatered cake to drop to Hearth 2. This afterburning approach, termed zero hearth afterburner (ZHA) has been widely applied in the industry. This reduces the hearths available for drying the solids to at most five.

Using the design assumptions stated previously, Figure 3-1 graphically presents the capacity of each furnace at the North Plant. The solid purple line representing operation with three drying hearths illustrates the importance of drying in these furnaces when compared to the five drying hearth curves (solid green, red, and blue). Five hearths are required only during less than average dewatering performance yielding less the 22 percent TS. The spread of the solid green, red, and blue curve plateaus illustrates the impacts of VS on furnace capacity. The blue curve represents the lowest VS cake and thus the highest allowable capacity from a heat release standpoint.

As noted, drying requirements exceed the five-hearth availability at less than 22 percent TS (20th percentile of historic data set) or less at peak week conditions. Under these circumstances an alternative handling method may be required.

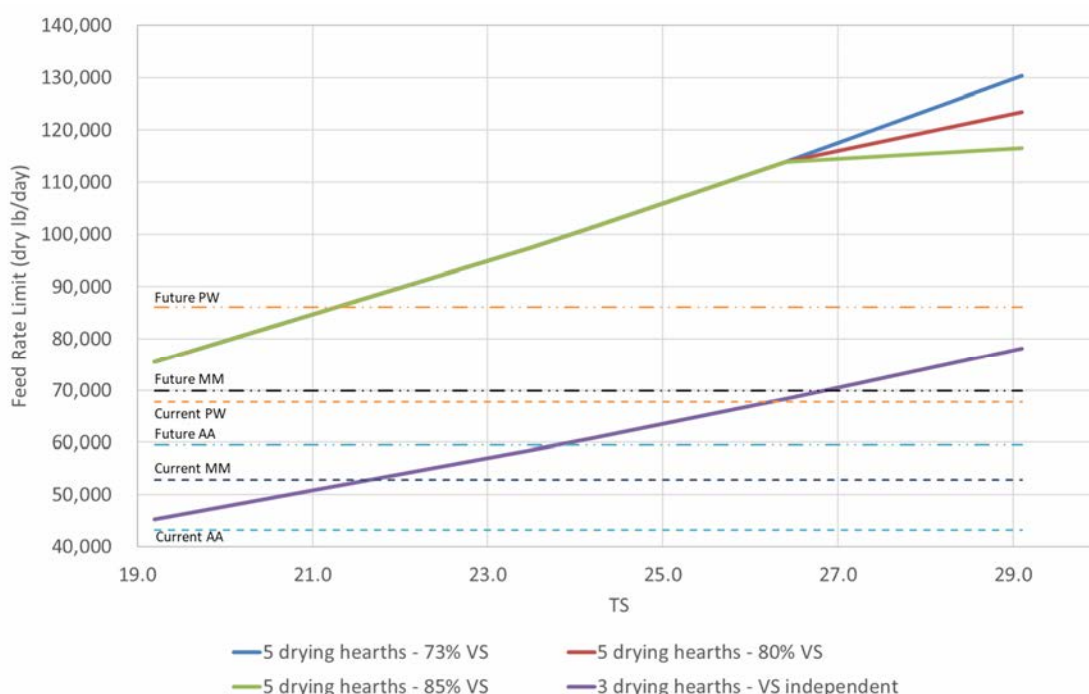


Figure 3-1. North Plant furnace capacity evaluation results – single furnace.

(dashed lines represent the various design solids loading levels as annotated)

Leading options for the peak solids production exceeding a single furnace capacity include storing solids in upstream processes or starting additional furnaces. The North Plant may be able to handle the peak conditions once all four sludge storage tanks have been made operational again. If sludge production ever approaches the system capacity a cake loadout facility can be considered shave peaks.

3.2.3.2 South Plant

ACWPD has elected to continue to operate the South Plant incinerators with the dewatered cake fed to the top hearth. This leaves three hearths available for drying after allotting the other four for combustion and cooling.

At peak week loadings and the 5th percentile dewatering quality (19.2 percent TS), the furnace will not have enough drying area over three hearths if operating on a five day per week schedule. The furnace can handle this extreme condition if operated seven days a week. The furnace also has adequate volume across two hearths to handle the heat release from the combustion process. Overall, the furnace has adequate capacity to process the projected loads.

3.3 Burners

The original burner system at the North Plant has adequate capacity if restored. Hearth 1 will serve as an afterburner and the existing burner configuration and capacity will be reviewed during detailed design.

BC assumed the South Plant existing burner configuration and capacity will be maintained. This system will be evaluated further during detailed design.

3.4 Wet Scrubber

The North Plant wet scrubbers were evaluated previously in Attachment A and found to be undersized for the projected loads. The design conditions were 48,000 actual cubic feet per minute (ACFM) at 1,250°F. The new non-consolidated loadings result in flue gas flows of 63,000 and 78,000 ACFM at maximum month and peak week assuming a 1,400°F afterburning temperature. At these flows the original equipment manufacturer indicated the existing wet scrubbers may comply with existing (MMMM) regulations but need to be modified. The modifications will increase the pressure drop across the unit and may trigger replacement of the induced draft fan. For budgeting the existing wet scrubbers will be replaced with new systems that will not change the pressure drop. During detailed design the ACWP can review the modified versus new options. Also, the water supply and drain piping need to be evaluated against the new flow rates.

The South Plant wet scrubbers are relatively modern, replaced in about 2005, and were supplied by the same manufacturer as the North Plant units. Given the South Plant meets current emissions and will not have capacity limitations, the wet scrubbers were not considered for replacement.

Section 4: Capital Costs

The opinion of probable cost prepared for this TM is a Class 5, American Association of Cost Engineering (AACE) estimate. This classification relies on stochastic estimating methods such as cost curves and scaling similar estimates. This results in an estimate that can vary from 20 to 50 percent on the low side to 30 to 100 percent on the high side.

Based on the recommendations in the previous sections, Tables 4-1 and 4-2 were prepared as an opinion of probable cost to provide reliable MHF service over the next 20 years. BC and industry experience were applied in developing the list of cost items. Some components of the system that currently have remaining service life like hearths may require refurbishment or replacement during this period but not immediately. If

ACWPD selects this alternative for solids processing BC recommends conducting a detailed evaluation to develop a construction scope for contracting purposes.

Table 4-1 provides an opinion of probable cost for the project to rehabilitate both North Plant incineration trains at \$18.8 million with a variance of \$9.42 million to \$37.7 million given the accuracy of this estimate. The above costs do not include any funds for administration, engineering services, or contingency.

Table 4-1. North Plant Incineration Process Rehabilitation Opinion of Probable Cost (Both MHFs)		
Item	Installed Cost	Notes
Furnace shell/refractory/castings	\$1,466,000	
Afterburner	\$950,000	IFCO 2025 cost proposal
Burner/combustion air fan replacement	\$4,200,000	IFCO 2025 cost proposal
Upper centershaft bearings/seals	\$26,000	
Lower centershaft bearings	\$13,000	
Centershaft drive motors/gearboxes	\$339,000	
Pinion/bull gears	\$45,000	One set
Shaft cooling air fans	\$49,000	
Clinker grinders	\$89,000	
Wet ash systems	\$1,128,000	
Refractory lined ducts	\$750,000	Repair existing
Bypass dampers	\$178,000	
Wet scrubber replacement	\$2,600,000	
Caustic systems	\$398,000	
CEMs	\$150,000	One shared system
Stack silencers	\$177,000	
Actuators	\$283,000	
Cake conveyors	\$1,227,000	
Instrumentation and controls	\$3,099,000	
Electrical	\$1,553,000	
Startup/Commissioning	\$126,000	For furnace systems only
Construction Total	\$18,846,000	Ranging from -50% to +100% for level of detail included

Table 4-2 contains the costs to rehabilitate one incineration train plus controls for both incineration trains at the South Plant estimated at \$9.98 million with a variance of \$5.0 million to \$20.0 million given the accuracy of this estimate. One of the South Plant MHFs recently had furnace refractory and castings repaired and will not be further rehabilitated except the controls.

Table 4-2. South Plant Incineration Process Rehabilitation Opinion of Probable Cost (MHF No. 1)		
Item	Installed Cost	Notes
Furnace shell/refractory/castings	\$1,100,000	One MHF, IFCO 2025 cost proposal
Burner/combustion air fan replacement	\$1,700,000	One MHF, IFCO 2025 cost proposal
Upper centershaft bearings/seals	\$13,000	One MHF
Lower centershaft bearings	\$7,000	One MHF
Centershaft drive motors/gearboxes	\$170,000	One MHF
Pinion/bull gears	\$45,000	One set
Shaft cooling air fans	\$25,000	One MHF
Clinker grinders	\$45,000	One MHF
Wet ash systems	\$564,000	One MHF
ID Fan	\$200,000	One MHF
Refractory lined ducts	\$500,000	Repair existing, one MHF
Bypass dampers	\$89,000	One MHF
CEMs	\$150,000	
Actuators	\$142,000	One MHF
Cake conveyors	\$1,227,000	
Instrumentation and controls	\$3,099,000	Both MHFs
Electrical	\$777,000	One MHF
Startup/Commissioning	\$126,000	For furnace systems only
Construction Total	\$9,979,000	Ranging from -50% to +100% for level of detail included

Section 5: Conclusions

This evaluation provides a preliminary assessment of ACWPD's incineration facilities and estimated costs for rehabilitation. An initial condition assessment established incineration components nearing the end of their useful life. If rehabilitated, the North Plant has adequate capacity at future loads assuming dewatering performance improves with the assumed upgrades and solids are stored in the expanded sludge storage tank availability. The South Plant has adequate capacity to handle anticipated loads. The proposed rehabilitation project scope will provide ACWPD with reliable incineration capacity. The estimated costs for rehabilitation can be used by ACWPD for budget expectations of the future design and construction project. Additional design efforts will be required to assess utility sizing and assess non reviewed equipment.

Attachment A: Incinerator Evaluation

June 16, 2022





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Technical Memorandum

Prepared for: Albany County Water Purification District

Project Title: Solids Handling Evaluation

Project No.: 158349.008

Technical Memorandum

Subject: Incineration Evaluation

Date: June 16, 2022

To: Angelo Gaudio, ACWPD Executive Director

From: Eric Muir, BC Client Services Director

Copy to: Karen Clark, B&L Senior Associate

Prepared by:

A handwritten signature in black ink, appearing to read 'LW' followed by a flourish.

Lloyd Winchell, Associate

Reviewed by:

A handwritten signature in blue ink, appearing to read 'Joey' followed by a flourish.

Joey Cheng, Associate

Limitations:

This document was prepared solely for Albany County Water Purification District in accordance with professional standards at the time the services were performed and in accordance with the contract between Albany County Water Purification District and Brown and Caldwell dated. This document is governed by the specific scope of work authorized by Albany County Water Purification District; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by Albany County Water Purification District and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

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Executive Summary

The Albany County Water Purification District (ACWPD) owns and operates the North Plant and South Plant facilities treating wastewater generated in the greater Albany area. Each facility includes two multiple hearth furnace (MHF) based incineration processes for handling the solids generated during treatment. The incineration systems are roughly 50 years old and ACWPD contracted Barton & Loguidice (B&L) and Brown and Caldwell (BC) to conduct a solids handling alternatives analysis. One alternative looked at consolidating the wastewater solids at the North Plant and refurbishing the MHFs. This summary focuses on the findings related to continued operation of the MHF based incineration systems with more details in the body of the technical memorandum.

Condition Assessment

BC conducted a cursory visual inspection of both North and South Plant facilities on April 7, 2022. Industrial Furnace Company (IFCO) previously conducted an inspection of the North Plant furnaces (Attachment A). Based on these inspections and discussion with ACWPD staff a repair and replacement list was developed for the North Plant with the aim of providing reliable service for the next 20 years and served as the basis for the cost estimate.

Capacity Analyses

BC evaluated the capacity of the incineration process at the North Plant based on the current and future solids loads when consolidating the two facilities.

- A 7 day per week operating schedule is recommended to fully utilize system capacity and reduce thermal cycling on equipment.
- Design system for future maximum month load (97,808 pounds per day).
- Develop peak shaving control strategy to handle solids production exceeding incineration capacity and poor quality material. A dewatered solids, or cake, loadout may be the most economical approach.
- Existing burner capacity is adequate for selected design.
- The wet scrubbers must be replaced for guaranteed emissions performance at the design load.
- The induced draft (ID) fans can handle the design flows. Turndown limitations only expected if processing North Plant solids alone as recently experienced.
- Increase velocity at the stack will increase noise levels, a silencer system can be used for mitigation.
- Ash system capacity is adequate for selected design.

The air emissions after consolidating solids at the North Plant will still meet Section 129 MMMM concentration limits and the mass load limitations for beryllium and mercury. Also, the refurbishment program proposed will not impact the Section 129 MMMM classification. Lastly, a caustic system is included in the capital cost estimate as a placeholder to address the current challenges with maintaining the wet scrubber drain pH. In lieu of that system the wet scrubber manufacturer has proposed shifting the pH measuring location to an upper region of the scrubber after most acid gases have been removed. Another option is to establish a lower pH operating limit by testing with low alkalinity effluent water, either engineered with acid dosing or naturally due to seasonal fluctuations in the liquid stream treatment process.

The South Plant incineration systems will be idled, at a minimum, after consolidation at the North Plant. This system could serve as an emergency backup or peak shaving facility requiring low capital investment. BC recommends further consideration of this concept and maintaining the current air permit.

Energy Evaluation

The energy currently required to startup and shutdown the furnaces on a weekly basis at both the North and South Plants was compared to the pumping energy required to transfer solids from the South Plant to the North Plant in the consolidation alternative. Using information provided by ACWPD on the current operations and conceptual estimates on pumping energy drove to a roughly \$75,000 per year energy savings when consolidating the solids processing at the North Plant.

BC did not evaluate the organic Rankine cycle (ORC) system. Based on information from others, replacing the heat exchangers extracting the waste heat of the MHFs with a design less susceptible to plugging is required for reliable operation. The costs for the improvement have not been estimated nor the potential impacts on the regulatory classification if the costs suffice to trigger the stricter Section 129 LLLL requirements.

Capital Costs

Based on the condition assessment and capacity analysis BC prepared a Class 5, American Association of Cost Engineering (AACE) estimate for refurbishing the North Plant incineration system. Table ES-1 provides an opinion of probable cost for the project of \$19.1 million with a variance of \$9.6 million to \$38.3 million given the accuracy of this estimate. The above costs do not include any funds for administration, engineering services, contingency, or an alternative solids handling process for peak conditions.

Table ES-1. North Plant Incineration Process Rehabilitation Opinion of Probable Cost

Item	Installed Cost	Comment
Furnace shell/refractory/castings	\$1,399,000	Covering items noted in IFCO inspection, Attachment A plus additional 30 percent for wear since
Burner replacement	\$3,363,000	
Combustion air fans	\$56,000	
Upper centershaft bearings/seals	\$24,000	
Lower centershaft bearings	\$12,000	
Centershaft drive motors/gearboxes	\$323,000	
Spare pinion/bull gears	\$43,000	One spare set
Shaft cooling air fans	\$46,000	
Clinker grinders	\$84,000	
Wet ash systems	\$1,076,000	
Refractory lined ducts	\$3,263,000	
Bypass dampers	\$170,000	
Wet scrubber replacement	\$2,600,000	
Caustic systems	\$380,000	
CEMs	\$125,000	One unit shared between furnaces
Stack silencers	\$168,000	
Actuators	\$270,000	
Cake conveyors	\$1,170,000	
Instrumentation and controls	\$2,867,000	
Electrical	\$1,481,000	
Control room	\$90,000	
Startup/Commissioning	\$120,000	For furnace systems only
Construction Total	\$19,130,000	

Section 1: Introduction

The Albany County Water Purification District (ACWPD) owns and operates the North Plant and South Plant facilities treating wastewater generated in the greater Albany area. Each facility includes two multiple hearth furnaces (MHF) for processing the solids generated during the treatment process. The furnace systems, or incineration process, are roughly 50 years old with several components nearing the end of the expected service life or obsolete and unsupported.

ACWPD has been evaluating the solids processing system and contracted Barton & Loguidice (B&L) and Brown and Caldwell (BC) to conduct an alternatives analysis. The analysis will consider various solids processing technologies.

This technical memorandum (TM) focuses on evaluating the existing incineration process for future service. The TM includes discussion on the condition of the existing equipment, capacity, energy consumption, and estimated costs to refurbish the process for reliable operation. If ACWPD selects rehabilitation of the existing incineration process additional engineering effort will be required to refine the construction scope and design the improvements.

Section 2: Condition Assessment

BC conducted a site inspection at both the North Plant and South Plant on April 7, 2022. BC noted the general condition of the incineration system components to establish a repair and replacement schedule for estimating a construction budget aimed at providing reliable service for the next 20 years. The boundaries of the inspection began at the feed conveyors and ended at the stacks and ash ponds.

The site inspection was limited to visual inspection of equipment and discussions with ACWPD staff. Industrial Furnace Company (IFCO) previously conducted an inspection of the North Plant furnaces (Attachment A). Considering this information and using BC's industry experience the following repair and replacement schedule was developed.

Table 2-1. North Plant MHF System Repair and Replacement Schedule	
Item	Comment
Furnace shell/refractory/castings	Repair and replace per IFCO's inspection (Attachment A)
Burner systems	Replace equipment and controls for more reliable and efficient operation
Combustion air fans	Replace due to age and condition
Upper center shaft bearings/seals	Refurbish
Lower center shaft bearings	Refurbish
Center shaft drive motors/gearboxes	Replace for reliable operation
Spare pinion/bull gears	On shelf spare set
Shaft cooling air fans	Replace due to age and condition
Clinker grinders	Replace due to age and condition
Wet ash systems	Replace, tanks and pumps in poor condition
Refractory lined ducts	Replace due to age and failures observed at similar facilities

Table 2-1. North Plant MHF System Repair and Replacement Schedule

Item	Comment
Bypass dampers	Replace due to age
CEMs	Replace due to age
Actuators	Replace for reliability
Cake conveyors	Replace due to age
Instrumentation and controls	Replace due to age and obsolescence
Electrical	Replace due to age and obsolescence

Several pieces of equipment still have significant useful and reliable life. This equipment was not listed for immediate replacement but will require rehabilitation or replacement over the 20-year service period. The major equipment falling in this category include the following:

- Furnace refractory systems – continued maintenance of the refractory systems in the furnaces is expected but wholesale replacement is not common. With continued maintenance and completion of the repairs noted by IFCO (Attachment A) the refractory will provide reliable service. BC recommends future budgeting for replacement of two hearths in each furnace for conservatism but dependent of conditions observed in future inspections.
- Induced draft (ID) fan – these fans were installed in approximately 2009 with the organic Rankine cycle (ORC) system. Service life for these fans can be expected to reach 20 years or more.
- Unlined ducts – the ductwork downstream of the scrubber and including the stack does not experience extreme service conditions. Duct replacement is not expected but leaking joint maintenance is likely required over the next 20 years.
- Ash ponds and yard piping – no issues related to the ash ponds and yard piping were observed or noted by ACWPD staff. Regular inspection of the pond berm and a CCTV inspection of the yard piping will minimize the risk of unexpected failures.

BC did not survey for hazardous materials during the site inspection. High-temperature processes and construction materials from the era of the furnaces often used materials now considered hazardous, like asbestos. BC recommends conducting a detailed investigation during future phases of the solids handling project.

This schedule generally applies to the South Plant as well. IFCO has not provided a similar detailed inspection for the South Plant furnaces. ACWPD staff noted the condition of the furnaces refractory roofs and BC observed several cracks. The roofs would require replacement for reliable long-term service. The repair and replacement schedules may differ from other aspects as well but for the purposes of this evaluation were considered equivalent.

Section 3: Capacity Analyses

BC conducted a desktop capacity evaluation of the incineration process based on common design practices for this type of incineration process, historical performance, coordination with equipment manufacturers, and experience of ACWPD staff. The following summarizes the capacity of the major components of the process based on the loading the dewatered solids, or cake, generated by the wastewater treatment process.

3.1 Cake Load and Quality

B&L reviewed historical data and prepared future projections for the cake sent to the furnaces at the North Plant after consolidation. Table 3-1 documents the loadings used for this evaluation. Included are the cake quality parameters total solids (TS) and volatile solids (VS) based on historical weekly data from 2018-2021 for the North Plant. When combining solids from the two plants no adjustments were made to the North Plant TS and VS values. The higher heating value and ultimate composition values were assumed based on typical wastewater solids values in industry references.

Table 3-1. Cake Load and Quality Design Basis	
Item	Value
Current Annual Average – North Plant (lb/d)	43,185
Current Conditions – Combined Plants (lb/d)	
Annual Average	64,346
Maximum Month	79,152
Peak Week	100,582
Future Conditions – Combined Plants (lb/d)	
Annual Average	81,860
Maximum Month	97,808
Peak Week	120,921
Total Solids (percent)	
5 th Percentile	19.2
Average	24.2
95 th Percentile	29.1
Volatile Solids (percent)	
5 th Percentile	72.8
Average	80.4
95 th Percentile	85.2
Higher Heating Value (Btu/lb of volatile)	10,500
Ultimate Composition (percent of volatile)	
Carbon	57.0
Hydrogen	7.0
Oxygen	30.0
Nitrogen	5.0
Sulfur	1.0

lb/d = pound(s) per day

Btu = British thermal unit

The North Plant does not currently process skimmings or scum separately for incineration. This evaluation kept that strategy in place.

3.2 MHF

The North Plant MHFs were evaluated based on drying and heat release capacity.

3.2.1 Design Basis

The following parameters were taken from historical documentation provided by ACWPD.

- MHF diameter – 22.2 feet (ft) external and 19.9 ft internal
- Hearths – 10
- Hearth unit area – 265 square feet (ft²)
- Hearth height – 3.7 ft (Hearths 2-10)
- Outlet oxygen – 6-8 percent by volume, wet (Attachment C)

The capacity evaluation used the following design assumptions based on industry experience.

- Drying hearth area requirement – 10 lb of water/ft²
- Combustion hearth heat release limit – 19,000 Btu/cubic foot (ft³)
- Drying hearths – up to 6
- Combustion hearths - 2
- Cooling hearths - 2

3.2.2 Operating Schedule

Capacity was initially evaluated on a 5 days per week (d/wk) versus 7 d/wk basis. Table 3-2 summarizes the results of the evaluation with a red “X” indicating conditions that exceed the drying capacity of the furnace. Specifically, the 5 d/wk operation limits the furnace capacity over the entire TS range evaluated, including future annual average at the 19.2 percent TS level. The 7 d/wk operation provides additional capacity and can cover all conditions except the maximum month and peak week at 19.2 per TS.

Table 3-2. Drying Hearth Requirements and Operating Schedule - Combined Plants

5 days per week / 7 days per week						
TS →	19.2		24.2		29.1	
Conditions ↓/→	Current	Future	Current	Future	Current	Future
Annual Average	6 / 5	X / 6	5 / 4	6 / 5	4 / 3	5 / 4
Maximum Month	X / 6	X / X	6 / 4	X / 5	5 / 4	6 / 4
Peak Week	X / X	X / X	X / 5	X / 6	6 / 4	X / 5

X = insufficient hearth area

The heat release analysis yielded similar but not as restrictive results. In Table 3-3, a red “X” indicates the heat release exceeds the furnace capacity while a “+” identifies an acceptable operating condition. The results indicate the 7 d/wk operating approach can handle the heat load from all conditions except the future peak week.

Table 3-3. Combustion Hearth Requirements and Operating Schedule - Combined Plants

5 days per week / 7 days per week						
VS →	72.8		80.4		85.2	
Conditions ↓/→	Current	Future	Current	Future	Current	Future
Annual Average	+ / +	+ / +	+ / +	+ / +	+ / +	+ / +
Maximum Month	+ / +	X / +	+ / +	X / +	+ / +	X / +
Peak Week	X / +	X / +	X / +	X / +	X / +	X / X

+ = adequate hearth volume

X = insufficient hearth volume

The results of this analysis support operating 7 d/wk. This approach will also avoid the thermal cycling of the incineration equipment which leads to refractory and metal failures. BC recommends proceeding with a 7 d/wk operating strategy once the plants are combined.

3.2.3 Capacity Assessment

Within the furnace shell, the process will typically be capacity limited by the evaporation of water from the cake and heat release from combustion of the volatile solids. Either of these two aspects can limit the furnace capacity depending on the quality of the cake.

Using the design assumptions stated previously, Figure 3-1 graphically presents the capacity of each furnace at the North Plant. The purple line representing operation with three drying hearths illustrates the importance of drying in these furnaces when compared to the six drying hearth curves (green, red, and blue). Six hearths are required to meet the design loads over the entire range of TS. Separation of the six drying hearths curves at roughly 24 percent TS demarcates the transition from the furnace being drying limited to heat release limited. The spread of the green, red, and blue curve plateaus illustrates the impacts of VS on furnace capacity. The blue curve represents the lowest VS cake and thus the highest allowable capacity from a heat release standpoint.

Trying to design for the future peak week conditions is not practical given the minimum 24 percent TS requirement based on drying limitation. Even if this could be overcome, the maximum VS would essentially be the historical average 80 percent. Either of these variables are to some degree out of the control of ACWPD staff so conservatism in design is warranted.

The furnaces are better suited for reliable design around the future maximum month load. Heat release will not be a problem based on the historical data set considered. Drying requirements exceed the six hearth availability at roughly 20.5 percent TS (10th percentile of historic data set) or less. Under these circumstances an alternative handling method must be available.

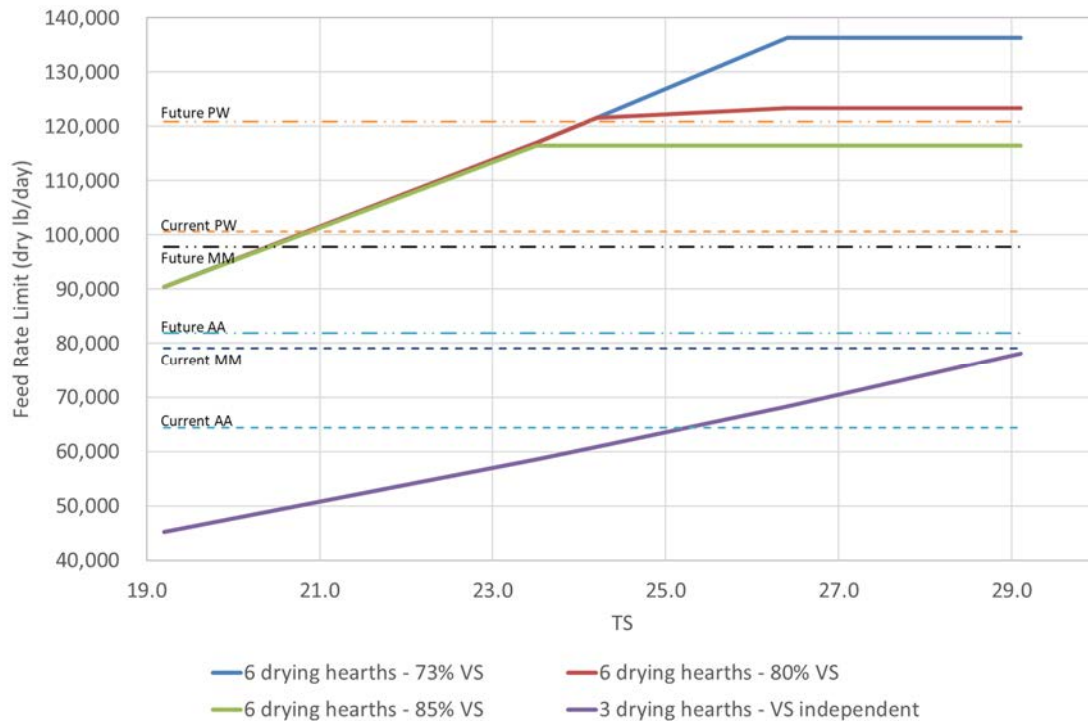


Figure 3-1. North Plant furnace capacity evaluation results – single furnace.

Leading options for the peak solids production exceeding a single furnace capacity include storing solids in upstream processes, starting additional furnaces, or providing cake loadout facilities.

- Storing solids in upstream processes like clarifiers is not recommended due to upset risks and potential exceedance of the effluent permit limits. Solids storage in dedicated tanks can be accomplished but must consider storage time and volume limitations.
- The current air permit (Attachment B) does not allow ACWPD to concurrently operate two furnaces at the North Plant. Revising the air permit may be a complex process but the state regulator can be approached. Keeping the South Plant incineration process available to handle future peaks can also be considered. This would require maintenance of the equipment and air permit at the South Plant but is a viable option.
- The original North Plant system included a cake loadout facility that has not been used recently. Rehabilitating the loadout would provide ACWPD with a low capital cost solids outlet option. Identifying cake quality requirements of the end user and retaining a hauling company will be required.

BC recommends designing the furnace processes around the future maximum month load and developing an alternative solids handling approach for peak conditions or poor quality cake.

3.3 Burners

The burners installed on the MHF provide supplemental heat and help control the operation of the furnace. Three burners exist on each of Hearths 1, 3, 4, 7, and 9. Each burner has a nominal capacity of 1.48 million Btus per hour (MMBtuh) for a total capacity of 22.2 MMBtuh.

BC used a universal heat and materials balance to evaluate the capacity of the burners. The balance considered the inputs and outputs of the MHF. Table 3-4 summarizes the results of the burner evaluation. The evaluation results focus on the heat demand to achieve a MHF exhaust temperature (1,000 – 1,300°F) within the guidelines (Attachment C) that ACWPD staff follow.

- Minimum – represents processing current average solids load at the North Plant only at low water and high volatile content. Under these conditions the furnace will not require natural gas assuming the process operates stable and the ID fan can operate this low, see subsequent section.
- Average – combined North and South Plants solids at historical average TS and VS. Burners achieve higher end of exhaust temperature range with capacity of burner system.
- Maximum Month - combined North and South Plants solids at high water and low volatile content. Burners cannot achieve high end but still within exhaust temperature range guidelines.
- Peak Week – increased solids load but same quality as Maximum Month condition with similar results though the exhaust temperature is about 80°F lower but still within guidelines.

Table 3-4. Burner Capacity Evaluation Results

Conditions	Furnace Solids Load (lb/d)	TS (percent)	VS (percent)	Heat Demand (MMBtuh)	Exhaust Temperature (°F)
Minimum	43,185	29.1	85.2	0	1,358
Average	81,860	24.2	80.4	8.1	1,326
Maximum Month	97,808	19.2	72.8	22.2	1,220
Peak Week	120,921	19.2	72.8	22.2	1,143

The existing burner system can supply adequate heat for all conditions considered, including the recommended maximum month design.

If ACWPD selects a solids handling alternative using the MHFs a detailed hearth by hearth balance is recommended. This level of detail can confirm the burner layout requirements, that is how many burners and on which hearths. Likewise, the location of ambient and return air introduction can also be evaluated.

3.4 Wet Scrubber

The existing wet scrubbers at the North Plant remove particulate and neutralize acid gases from the flue gas. The original design conditions at the scrubber inlet were 48,000 actual cubic feet per minute (ACFM) at 1,250°F.

BC evaluated the wet scrubbers under the same conditions as those presented for the burners but capping the exhaust temperature at 1,300°F. Table 3-5 summarizes the results of the evaluation. All conditions exceed the original wet scrubber design except for the minimum condition.

Table 3-5. Wet Scrubber Capacity Evaluation Results

Conditions	Furnace Solids Load (lb/d)	TS (percent)	VS (percent)	Exhaust Temperature (°F)	Scrubber Inlet Flow (ACFM)
Minimum	43,185	29.1	85.2	1,358	19,036
Average	81,860	24.2	80.4	1,326	51,446
Maximum Month	97,808	19.2	72.8	1,220	80,098
Peak Week	120,921	19.2	72.8	1,143	99,217

The original equipment manufacturer, EnviroCare International (ECI), evaluated these conditions. At the maximum month load and above ECI will not guarantee emissions performance. To maximize capacity of the existing units ECI noted flow to the subcooling trays would need to double. The added water will increase the

pressure drop created by wet scrubber to roughly 42 inches of water column (in wc) which exceeds the ID fan capacity at the maximum load, described in the following section.

For this evaluation BC recommends budgeting for new replacement wet scrubbers. Preliminary sizing by ECI suggests the wet scrubber diameter will increase from 7.5-ft to 10-ft. The new wet scrubber design will target the existing 23 in wc pressure drop.

3.5 ID Fan

The ID fans pull the flue gas through the incineration process and keep the furnaces under draft conditions. The original fans were replaced in roughly 2009 to accommodate the higher pressure drop anticipated with the ORC system heat exchanger installation. The design point was 15,000 ACFM at 45 in wc with a density of 0.0487 lb/ft³.

BC evaluated the ID fans under the same conditions as the burners and wet scrubbers. The evaluation assumed the overall scrubber differential pressure would continue at 23 in wc. Table 3-6 summarizes the results. The Peak Week horsepower (HP) requirement exceeds the current 200 HP motor. The minimum condition lies relatively close to the peak of the fan curve and operation here may be complicated. ACWPD reported current stable operation of the ID fan on North Plant solids requires additional return air to increase the flow through the system.

Table 3-6. ID Fan Capacity Evaluation Results

Conditions	Furnace Solids Load (lb/d)	TS (percent)	VS (percent)	Inlet Flow (ACFM)	Inlet Density (lb/ft ³)	Static Pressure (in wc)	Fan Speed (percent of full)	Power (HP)
Minimum	43,185	29.1	85.2	4,725	0.0704	23.8	60	30
Average	81,860	24.2	80.4	11,305	0.0703	27.4	67	75
Maximum Month	97,808	19.2	72.8	17,617	0.0701	33.6	84	170
Peak Week	120,921	19.2	72.8	21,788	0.0701	39.3	90	240

The original equipment manufacturer, Robinson Fans, evaluated the design conditions. They found no issues with operation except the motor rating exceedance at the Peak Week condition. Their calculations indicated the ID fans can operate at the minimum condition due to a “surgeless” design. Regardless, based on ACWPD’s experience the MHF operation may require additional flow introduction at low processing rates to maintain stable ID fan operation.

Overall, the ID fan design will meet the conditions when combining the North and South Plants solids loads. The limitation on the motor requirements at Peak Week further support designing for Maximum Month conditions.

3.6 Stack

The existing 36-inch diameter stacks release cleaned flue gas to the atmosphere. Existing stacks generally do not require system or permit modifications unless the height is changed or the velocity reduced. Because the flow rate through the stack increases from the conditions evaluated when combining the North and South Plants solids, these potential modifications will not apply.

The increased velocity may subsequently increase the noise level emanating from the stack. The current average velocity of approximately 900 feet per minute will increase to almost 3,700 feet per minute at the future maximum month design. BC recommends further investigation into potential stack noise suppression technologies.

3.7 Ash System

The existing wet, or hydraulic, ash handling systems collect the bottom ash from the furnaces, slurry it, and then pump to the ash lagoons. The existing system utilized pumps designed for 850 gallons per minute. The existing system basis of design (Attachment D) resulted in an ash load of 93,643 lb/d.

For the future maximum month design condition, approximately 27,000 lb/d of ash will be produced. This level of production falls well under the original design, whether the 93,643 lb/d load was expected to be split between two furnaces or handled through one.

No modifications to the ash system design are required.

3.8 Source Classification

The present Title V air permit has the MHF system permitted as an “existing” installation needing to meet the Section 129 emissions as described under Subpart MMMM—Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units (Attachment B). However, the regulations state that if the incinerators are significantly modified they will need to meet the emission limits for a “new” installation. Several pertinent definitions relating to this determination are provided below.

Modification means a change to an existing incinerator system unit later than September 21, 2011, and that meets one of the following two criteria:

1. The cumulative cost of the changes over the life of the unit exceeds 50 percent of the original cost of building and installing the incinerator system (not including the cost of land) updated to current costs (current dollars). To determine what systems are within the boundary of the incinerator system used to calculate these costs, see the definition of incinerator system.
2. Any physical change in the incinerator system or change in the method of operation that increases the amount of any air pollutant emitted for which Section 129 or Section 111 of the Clean Air Act has established standards.

In first addressing criterion 2, the intended incinerator repair is to provide an operable incinerator system without increasing the processing capacity or increasing the amount of air pollutants associated with the operation of the MHF. With this consideration criterion 2 would not cause the intended repair work to change the existing permit status.

Addressing criterion 1 requires the comparison of the total cost of the modifications to date, as a percentage of the original cost of the incinerators (in current day dollars), for determining the status of the MHF. If the historical modifications add up to more than 50 percent of the original cost, the MHF will be considered a “new” unit and will be subject to changes in the permit including regulating the MHF emission limits under Subpart LLLL of Section 129.

The portion of the MHF processes included in the determination of existing unit status are provided in the following definition of what is to be considered:

Sewage sludge incineration (SSI) unit... designs include fluidized bed and multiple hearth. An SSI unit also includes, but is not limited to, the sewage sludge feed system, auxiliary fuel feed system, grate system, flue gas system, waste heat recovery equipment, if any, and bottom ash system. The SSI unit includes all ash handling systems connected to the bottom ash

handling system. The combustion unit bottom ash system ends at the truck loading station or similar equipment that transfers the ash to final disposal. The SSI unit does not include air pollution control equipment or the stack. (Federal Register, Volume 76, Number 54, March 21,2011)

Because none of the repairs constitute a “change” in the system and the current “existing” status of the furnaces, the classification will not change.

3.9 Air Emissions

Incineration systems must meet local, state, and federal air emission requirements. ACWPD currently operates under a Title V air permit administered by the New York Department of Environmental Conservation. The following discussion summarizes the impacts and potential improvements related to air emissions after combining the North and South Plants solids.

3.9.1 Current Permit Assessment

The North Plant MHFs have successfully met the Section 129 MMMM concentration-based limits since their inception (Attachment E). Furthermore, the stack test in 2015 of MHF 1 processed roughly the same amount of solids (94,560 lb/d) as the future maximum month design (97,808 lb/d). With a properly sized wet scrubber, main air pollution control device in ACWPD’s incineration train, BC expects passing performance after the North and South Plant solids loads combine.

ACWPD’s air permit (Attachment B) also contains mass load limits for beryllium (Be) and mercury (Hg). Without historical data on the metal content of the solids, BC used the and concentrations from ACWPD’s annual emission summary and Section 129 MMMM limits for Be and Hg, respectively. Table 3-7 shows the estimated values do not approach the current air permit thresholds at the future maximum month design.

Table 3-7. Estimate Be and Hg Emission Loads at Maximum Month Design		
Metal	Current Permit Limit (kg/d)	Emission Rate (kg/d) ^a
Be	0.010	0.0002 ^b
Hg	3.20	0.174 ^c

kg/d = kilograms per day

- Calculated with stack flow of 431 dry standard cubic meters per minute under maximum month solids loading conditions.
- Calculated with assumed concentration of 0.00034 milligrams per dry standard cubic meter used in ACWPD annual emissions reports.
- Calculated with assume concentration of 0.28 milligrams per dry standard cubic meter from Section 129 MMMM limits.

3.9.2 Scrubber Drain pH

ACWPD staff report the most challenging aspect of air permit compliance is maintaining the minimum required pH in the scrubber drain. Section 129 regulations require facilities to maintain the same, or greater, pH recorded during a compliance stack test until a future stack test resets the value. See Attachment E for historical and current pH requirements. The pH serves as a surrogate measurement to indicate similar acid gas removal performance as observed during the compliance stack test. If the average pH drops below the compliance value for 3 hours ACWPD must report a deviation to the regulator.

ACWPD staff indicated the pH problems generally occur during warmer seasons. This may be the result of nitrification developing in the liquid treatment process of the North Plant. Nitrification consumes alkalinity

and increases with increasing water temperature. If the alkalinity becomes depleted in the effluent water used in the wet scrubbers, the reduced acid buffering capacity can result in pH reductions.

To combat this issue ACWPD has considered adding additional effluent flow to separator tray between the venturi nozzles and the mist eliminator. The additional water flow will increase acid gas removal. The Little Blue Valley Sewer District (LBVSD) near Kansas City, Missouri recently implemented this strategy to reduce caustic consumption. With the additional flow LBVSD was able to complete a compliance test at a lower scrubber drain pH while still meeting emissions limits. In their case, the lower pH operating requirement reduces caustic consumption during normal operations. At LBVSD the regulated pH monitoring point is separate from the new separator tray drain, allowing them to drive the regulated pH down during compliance testing while meeting emissions limits. This experience does not address the situation at the North Plant because alkalinity, for example caustic, is not being added for pH control. So, the wet scrubber drain pH is reliant on the uncontrolled alkalinity in the effluent and the acid gases generated from the incineration process. ACWPD currently has no alkalinity or pH control beyond adjusting the effluent water flow rate which staff have noted does not allow a meaningful pH reduction during compliance testing.

LBVSD has also considered switching the pH monitoring point to the new separator tray because that is the last control point in the wet scrubber and would therefore represent the emissions vented to the environment. LBVSD did not proceed as the new separator tray flow has achieved their goals of reducing caustic consumption. This approach may benefit ACWPD and ECI recently provided information on this approach. The bulk of acid gas removal, and thus pH suppression, occurs in the initial trays of the wet scrubber. Under normal operations little acid gas will proceed to the downstream separator tray and thus the pH depression is minimal at that location. The separator tray also serves as the last acid gas removal point in the entire incinerator train. Using the drain pH from this tray addresses the intent of the regulatory requirement for monitoring. That is, the pH from this location represents the quality of the flue gas being emitted from the process.

ACWPD is also considering reducing the alkalinity to the scrubber by dosing the effluent with acid. An engineering trial can indicate whether this approach can minimize the scrubber drain pH while still passing the emissions limits. BC is not aware of another facility doing this exactly, but acid addition is not uncommon in scrubbing situations where ammonia slip occurs when used for nitrogen oxide (NO_x) control. ECI has familiarity with this approach and can be consulted to develop a temporary system for trial purposes.

Alternatively, instead of adding acid ACWPD can monitor the effluent and conduct an engineering test at minimum alkalinity conditions. BC expects minimum alkalinity conditions to occur during peak wastewater temperatures, likely in August.

To overcome the wet scrubber drain pH issues BC recommends the following program.

1. Continue to sample and analyze effluent alkalinity to develop a seasonal data set. This will take time to capture measurements during the critical warm periods for the wet scrubber impacts. The data can also be used to understand the biological treatment process in the liquid stream.
2. Consult with regulatory authority about moving the pH monitoring point to the retrofitted separator tray. If successful, install the water supply and drain with a pH probe for the tray.
3. If the regulatory authority is not receptive to the alternative pH monitoring point, evaluate conducting stack test while operating at low effluent alkalinity. Weigh the advantages and disadvantages of using acid or waiting for naturally low alkalinity. The major tradeoffs known at this time would be the handling of acid versus coinciding with naturally low alkalinity.
4. Develop a plan for an engineering test to monitor sulfur dioxide (SO₂) or hydrogen chloride (HCl) emissions on the selected approach. Either pollutant can provide valuable information and the one chosen may be driven by the availability of gas analyzers.

5. For planning purposes, this evaluation will carry a cost for a caustic addition system. The caustic would be used to maintain the scrubber drain pH. If ACWPD successfully reduces the compliance pH level this system can be eliminated from any future project. BC estimated a sodium hydroxide, or caustic, demand of 100 gallons per day (gpd) using 50 percent solution for life cycle analysis. This estimate was based on a variety of model estimates, recorded data, and design information for other peer facilities. The precise dose for ACWPD requires acid titrations of the effluent water and are recommended if a caustic system is required.

3.9.3 Afterburner

Many MHFs were retrofitted with a zero-hearth or external afterburner after implementation of the 40 Code of Federal Regulations Part 503 in the early 1990's which limited the emissions of total hydrocarbons or carbon monoxide (CO). Afterburners mineralize products of incomplete combustion from the main furnace to non-toxic carbon dioxide and water.

An afterburner was briefly considered but the current Section 129 MMMM classification and ACWPD's ability to meet CO limits in past compliance tests does not support the added capital and operational costs. The most economical afterburner would be the zero hearth approach where one or more upper hearths are dedicated for afterburning. This would require the cake to be directed to the underlying hearths. This approach will reduce furnace capacity and needs to be carefully considered in relation to the process handling objectives. IFCO estimate a cost of \$565,000 per furnace to construct this type a zero-hearth afterburner. The alternative is an external refractory lined chamber with burner system and volume to achieve the desired temperature and residence time. The existing ORC heat exchangers serve as a visual representation of an external afterburner and existing in the same process location of the incineration train.

Afterburners not only reduce CO but will also reduce cyanide (CN). MHFs are known to emit CN in sufficient amounts to depress nitrification in the biological liquid process. The wet scrubbers capture the CN from the flue gas and the drain recycles back to the liquid treatment system. When MHFs operate continuously the biology becomes acclimated to the CN but progresses at a reduced nitrification rate. If the MHF operated intermittently the biology can experience toxic shock and completely lose nitrification. If ACWPD nitrifies to meet effluent ammonia limits, reducing the CN recycle will increase nitrifications rates assuming no other limitations are present.

3.10 Emerging Contaminants of Concern

Per- and polyfluoroalkyl substances (PFAS) are a contaminant of emerging concern in the wastewater solids industry. Several states are taking actions to assess the risk of land applying PFAS compounds and the state of Maine has gone so far as to place a moratorium on solids, or biosolids if meeting certain quality requirements, land application due to PFAS concerns. Technologies typically used to process solids in the wastewater industry today provide little to no PFAS destruction except for incineration. While PFAS compounds are recalcitrant the conditions of an MHF will likely promote significant destruction. The fate of PFAS compounds through sewage sludge incinerators (SSIs) is currently being studied by the Water Research Foundation Project 5111 led by BC. At this time no PFAS emissions regulations exist for SSIs.

Given PFAS compounds exhibit high thermal stability, their fate can serve as analogues for other organic contaminants. Contaminants like microplastics and pharmaceuticals will likely be destroyed or removed during incineration if future research shows PFAS compounds have such a fate. The complex flue gas chemistry resulting from incineration of these halogenated compounds could possibly lead to formation of undesired products but the available body of research has not covered this topic and would need to be studied.

Section 4: Energy Evaluation

Part of the evaluation included an assessment of the energy consumption differences if consolidating solids incineration at the North Plant. This section documents the approach taken to address this requirement.

4.1 Energy Basis

The primary difference between current operations and the consolidated alternative will be the number of startup and shutdowns the furnaces go through on an annual basis. Currently, the furnaces at both the North and South Plants cycle weekly. In the proposed operating scenario, the solids load consolidated at the North Plant will support continuous operation.

ACWPD staff provided information to develop the basis for the evaluation. Both the North and South Plants require the same duration, 10 hours (hr), for startup and shutdown for a 20 hour complete cycle. During this time the ID fans, scrubber booster pumps, ash pumps, and blowers operate. Table 4-1 summarizes the electrical loads for each plant.

Table 4-1. Electrical Loads During Furnace Startup and Shutdown		
Equipment	North Plant	South Plant
ID Fan	200	150
Venturi Inlet Booster Pump	10	15
Venturi Throat Booster Pump	7.5	10
Effluent Water Pumps ^a	50	55
Ash Pump	15	30
Center Shaft Drive	15	10
Shaft Cooling Air Blower	15	15
Combustion Air Blower	40	40
Total	352	275

a. Estimated using 85 pounds per square inch (psig) typical pressure and the permitted wet scrubber flow of 835.75 and 753.50 gallons per minute (gpm) for the North and South Plants, respectively. Assumed pump efficiency of 75 percent.

Natural gas is the other major form of energy consumption at both plants. The amount used during the weekly startup and shutdown cycles historically averages 98 and 141 thousand cubic feet (MCF) from the beginning of 2020 through April of 2022, for the North and South Plants respectively.

Alternatively, after consolidation solids generated at the South Plant will be pumped to the North Plant. The pumping energy has been estimated by others at roughly 75 HP for 5.5 hours per day (Regional Biosolids Facility South Plant Sludge Conveyance Alternatives – Technical Memorandum, ARCADIS, November 12, 2019 Draft).

Unit costs for electricity and natural gas approximated the latest month, February 2022, of pricing provided by APCWD. Electricity cost \$0.16 per kilowatt hour (kWh) and natural gas cost \$8.00 per MCF.

4.2 Alternative Comparison

Using the baseline information in the previous section BC prepared a cursory comparison of energy demands for current operation versus the alternative consolidation at the North Plant. Table 4-2 summarizes the energy consumption and costs.

Table 4-2. Solids Handling Alternative Annual Energy Comparison

Alternative	Electricity (kWh per year)	Natural Gas (MCF per year)	Annual Cost
Current Operations	213,273	7,326	\$92,734
Consolidated at North Plant	112,169	0	\$17,947

The pumping energy to transfer solids from the South Plant to the North plant costs about \$75,000 less than the current operation. This may be optimistic, but the difference is large enough that unaccounted for costs like sludge mixing or unplanned startup and shutdowns for the consolidated alternative will not change the overall comparison. This evaluation shows the consolidated alternative requires less energy.

4.3 ORC System

The existing ORC intended to generate power from the waste heat in the furnace flue gas. The system has been difficult to operate with run times limited to about one week before the heat exchanger becomes plugged with particulate. Reliable operation of the ORC requires the heat exchanger to be replaced.

BC did not evaluate the performance of the existing heat exchanger. Others have noted the heat exchanger utilizes a finned tube design which may have small clearances where ash particulate can collect. Or the flue gas velocity through heat exchanger is too low allowing the ash to drop out. A shell and tube design would be recommended to replace the existing unit. The current market for these types of heat exchangers is volatile, costs could range from \$1 - \$2 million for each piece of equipment alone. This improvement may count towards a modification and may drive the incineration system into the “new” classification under Section 129 LLLL which would trigger additional air pollution control equipment. BC did not perform a detailed cost determination to consider the classification implications.

Cost to improve, abandon, or demolish the ORC system have not been estimated for this evaluation.

Section 5: Capital Costs

The opinion of probable cost prepared for this TM is a Class 5, American Association of Cost Engineering (AACE) estimate. This classification relies on stochastic estimating methods such as cost curves and scaling similar estimates. This results in an estimate that can vary from 20 to 50 percent on the low side to 30 to 100 percent on the high side.

Based on the recommendations in the previous sections, Table 5-1 was prepared as an opinion of probable cost to provide reliable MHF service over the next 20 years. BC and industry experience were applied in developing the list of cost items. Some components of the system that currently have remaining service life like the ID fan and hearths may require refurbishment or replacement during this period but not immediately. If ACWPD selects this alternative for solids processing BC recommends conducting a detailed evaluation to develop a construction scope for contracting purposes.

Table 5-1 provides an opinion of probable cost for the project of \$19.1 million with a variance of \$9.6 million to \$38.3 million given the accuracy of this estimate. The above costs do not include any funds for administration, engineering services, or contingency.

Table 5-1. North Plant Incineration Process Rehabilitation Opinion of Probable Cost

Item	Installed Cost	Comment
Furnace shell/refractory/castings	\$1,399,000	Covering items noted in IFCO inspection, Attachment A plus additional 30 percent for wear since
Burner replacement	\$3,363,000	
Combustion air fans	\$56,000	
Upper centershaft bearings/seals	\$24,000	
Lower centershaft bearings	\$12,000	
Centershaft drive motors/gearboxes	\$323,000	
Spare pinion/bull gears	\$43,000	One spare set
Shaft cooling air fans	\$46,000	
Clinker grinders	\$84,000	
Wet ash systems	\$1,076,000	
Refractory lined ducts	\$3,263,000	
Bypass dampers	\$170,000	
Wet scrubber replacement	\$2,600,000	
Caustic systems	\$380,000	
CEMs	\$125,000	One unit shared between furnaces
Stack silencers	\$168,000	
Actuators	\$270,000	
Cake conveyors	\$1,170,000	
Instrumentation and controls	\$2,867,000	
Electrical	\$1,481,000	
Control room	\$90,000	
Startup/Commissioning	\$120,000	For furnace systems only
Construction Total	\$19,130,000	

Costs for handling the peak solids production have not been estimated here. As noted earlier, a solids loadout to handle the solids over the future maximum month or of poor quality represents an economical solution.

BC recommends assuming the same costs for rehabilitating the South Plant system for a similar level of service. If ACWPD desires to maintain emergency or peak shaving incineration capabilities at the South Plant the rehabilitation can be limited to critical repairs. IFCO inspected the offline furnace at the South Plant in May 2022 and suggested a repair cost of \$200,000. Additional costs may be warranted for other parts of the incineration process as well to maintain an on-demand operational status.

Section 6: Conclusions

Consolidation of the solids handling processes at the North Plant provides several advantages compared to the current operations at both facilities. The combined solids loads support continuous operation of the operating furnace at the North Plant and reduce thermal cycling. The existing North Plant furnaces individually

can handle the future maximum month load unless the cake has a high water content, less than 21 percent TS, allowing one furnace to remain offline for repairs. Energy consumption will also decline with the consolidated operation.

ACWPD, B&L, and BC will compare the cost to rehabilitate the North Plant incineration system with other solids handling alternatives. With the sunk capital of the existing incineration facilities, the capital costs are likely attractive compared to the other alternatives for the long-term solids processing for ACWPD. Additional detailed evaluations will be required to confirm and support a design reflective of scope presented.

Attachment A: IFCO Furnace Inspection Report - North Plant

January 6, 2021



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January 6, 2021

12/29/2020 ALBANY NORTH MHF #1 Incinerator Inspection Report

Below you will find a Two- section report based on our “crawl through” inspection of your 10 hearth incinerator on December 29th, 2020. Section one is general hearth by hearth notes.

Typical Conventions Used:

Good: No wear or deformation

Fair: Wear and or deformation, no repairs required

Poor: Wear and or deformation, immediate repairs required

SECTION 1: INSPECTION NOTES

➤ **IN Hearth 1**

- Rabble Arms
 - (4) Rabble Arms Fair condition HH Stainless, No refractory on arms
- Rabble Teeth
 - Fair HH Stainless
- Center Shaft Castable
 - Fair/Poor Refractory missing around Center shaft sockets
- Burner Tiles
 - (2) Burner tiles in Fair condition
- Walls
 - Fair condition.
- Doors
 - (2) Doors 16” x 24”
 - Jambs and lintels are in fair condition.
 - Doors and frames are in fair shape.
- Hearth Body
 - Fair Condition.
 - Hearth Pitch Average at 1.5” per foot
- Roof
 - Fair Condition.
 - Feed inlet Poor – replace steel and re-cast



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➤ **OUT Hearth 2**

- o Rabble Arms
 - (4) Rabble Arms Fair condition HH Stainless, No refractory
- o Rabble Teeth
 - Fair HH Stainless
- o Center Shaft Castable
 - Fair/Poor, Refractory loose & spalling, missing around arm pin sockets
- o Burner Tiles
 - (0)
- o Walls
 - Fair Condition.
- o Doors
 - (2) Doors 16" x 24".
 - Jambs, lintels and sills are in Fair condition.
 - Doors and frames are in fair shape.
 - Door Refractory (1) Fair, (1) Poor.
- o Hearth Body & Drop Holes
 - Fair Condition.
 - Hearth Pitch Average at 1.125" per foot
 - Drop Holes Fair/Poor (2) need repair
- o Lute Cape
 - Poor Condition, 2" split HH Stainless

➤ **IN Hearth 3**

- o Rabble Arms
 - (2) Rabble Arms, Fair to Poor Condition, HH Stainless, New Refractory on Arms
 - (2) Arm Plugs no refractory
- o Rabble Teeth
 - Poor HH Stainless
- o Center Shaft Castable
 - Fair/Poor, Arm Pin sockets Open
- o Burner Tiles
 - (3) Burner Tiles, Fair condition
- o Walls
 - Fair Condition
- o Doors
 - (2) Doors 16" x 24"
 - Jambs and lintels are in Fair condition.
 - Doors and frames are in fair shape.
 - Door Refractory (1) Fair, (1) Poor.
- o Hearth Body
 - Fair Condition
 - Hearth Pitch Average at 1" per foot



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➤ **OUT Hearth 4**

- Rabble Arms
 - (2) Rabble Arms, Fair Condition HH Stainless, New refractory
- Rabble Teeth
 - Poor Condition HH stainless
- Center Shaft Castable
 - Fair condition/Poor Showing signs of spalling
- Burner Tiles
 - (3) Burner tiles – Fair Condition
- Walls
 - Fair Condition
- Doors
 - (2) Doors 16” x 24”
 - Jambs and lintels are in Fair Condition
 - Doors and frames are in fair shape.
 - Door Refractory in Fair/Poor condition (1) Fair (1) Poor
- Hearth Body & Drop Holes
 - Fair condition
 - Hearth Pitch average at 1” per foot.
- Lute Cap
 - Fair Condition

➤ **IN Hearth 5**

- Rabble Arms
 - (2) Rabble Arms, Fair Condition HH Stainless, No refractory
- Rabble Teeth
 - Fair condition. HH Stainless
- Center Shaft Castable
 - Fair
- Burner Tiles
 - (0) Burner tiles
- Walls
 - Fair condition
- Doors
 - (2) Doors 16” x 24”
 - Jambs and lintels are in Poor condition. Arches falling.
 - Doors and frames are in fair shape.
 - Door Refractory in Fair condition
- Hearth Body
 - Fair/Poor Condition, Inner Ring slipping 1”
 - Hearth Pitch Average at 0.9375” per foot.



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➤ **OUT Hearth 6**

- o Rabble Arms
 - (2) Rabble Arms Fair Condition HH Stainless
- o Rabble Teeth
 - Poor condition HH Stainless
- o Center Shaft Castable
 - Poor to Fair Condition, Loose around Hearth & Arm sockets
- o Lower Lute Cap
 - Fair condition HH Stainless
- o Burner Tiles
 - (3) Burner tiles in Fair condition
- o Walls
 - Fair / Poor Condition 5' section needs repair to door Jamb
- o Doors
 - (2) Doors 16" x 24"
 - Jambs and lintels are in Fair /Poor condition. (1) need new Jamb/ arch
 - Doors and frames are in fair shape.
 - Door Refractory (1) Fair (1) Poor condition
- o Hearth Body & Drop Holes
 - Fair Condition
 - Hearth Pitch average at 1" per foot.
 - Drop Holes Fair/Poor (2) need repair
- o Lute Cap
 - Fair Condition

➤ **IN Hearth 7**

- o Rabble Arms
 - (2) Rabble Arms Fair Condition, HH Stainless
- o Rabble Teeth
 - Fair / Poor condition HH Stainless, Need new Outer and Inner Scrapper teeth
- o Center Shaft Castable
 - Fair Condition
- o Burner Tiles
 - (3) Burner tiles in Poor condition
- o Walls
 - Fair condition
- o Doors
 - (2) Doors 16" x 24"
 - All Jambs and lintels are in Poor condition.
 - Doors and frames are in fair shape.
 - Door Refractory in Fair / Poor Condition (1) Fair (1) Poor
- o Hearth Body
 - Fair Condition
 - Hearth Pitch average at .8124" per foot.



Industrial Furnace Company
40 Humboldt Street
Rochester, NY 14609
Phone: (585) 288-2070
www.Industrialfurnace.com

➤ **OUT Hearth 8**

- o Rabble Arms
 - (2) Rabble Arms Poor Condition HH Stainless
- o Rabble Teeth
 - Fair condition HH Stainless
- o Center Shaft Castable
 - Fair condition
- o Lower Lute Cap
 - Fair Condition
- o Walls
 - Fair condition
- o Doors
 - (2) Doors 16" x 24"
 - Jambs and lintels are in Fair condition.
 - Doors and frames are in Fair shape.
 - Door refractory- Fair condition
- o Hearth Body & Drop Holes
 - Fair Condition
 - Hearth Pitch Fair average at 1" per foot.
 - Drop Holes Fair/Poor (1) needs repair -Slipped Special Shape

➤ **IN Hearth 9**

- o Rabble Arms
 - (2) Rabble Arms Fair Condition HH Stainless
- o Rabble Teeth
 - Poor condition
- o Center Shaft Castable
 - Fair Condition
- o Burner Tiles
 - (3) Burner tiles in Fair condition (Not Used)
- o Walls
 - Fair condition
- o Doors
 - (2) Doors 16" x 24"
 - Jambs and lintels are in Fair condition.
 - Doors and frames are in Fair condition
 - Refractory in Fair condition
- o Hearth Body
 - Fair Condition
 - Hearth Pitch Average at .875" per foot.



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➤ **OUT Hearth 10**

- Rabble Arms
 - (2) Rabble Arms Fair condition HH Stainless
- Rabble Teeth
 - Poor condition – By Lower Lute
- Center Shaft Castable
 - Fair/ Condition
- Lower Lute Cap
 - Fair condition
- Walls
 - Fair condition
- Doors
 - (2) Doors 16” x 24”
 - Jambs and lintels are in Fair condition.
 - Doors and frames are in fair shape. Refractory Fair condition
- Floor
 - Fair condition
 - Outlet Fair Condition.

➤ **Top Bearing & Shaft**

- The top bearing and shaft are covered by the warm air duct and insulation. As long as the bearing remains lubricated, there should be no problems.

➤ **Top Sand Seal**

- (Top) Unable to inspect. From inside the Alloy is deteriorating. Should be replaced

➤ **Bottom Sand Seal**

- N/A

➤ **Bottom Bearing**

- Sealed/No Visual

➤ **Master & Pinion Gears**

- Spur gears appear to be in fair condition. Limited visibility.
- Note Inspected # 2 Furnace, Pinion is showing signs of wear- recommend ordering back up

➤ **Furnace Shell**

- Overall Fair condition Fair /Poor. Reskin (2) Hearths

➤ **Ash Pump Notes-**

- MHF #1 and #2 Ash Pump Lines. Replace 150LF of 8” cast pipe.

➤ **Dampers**

- Note to Replace Both Butterfly Dampers, Supply Option for Pop Top Damper

SECTION 2: IMMEDIATE RECOMMENDED REPAIRS/MAINTENANCE

1. Replace all Poor condition Rabble Arms & Rabble teeth as noted
2. Repair Wall Sections as Noted
3. Repair Drop holes as noted
4. Replace All worn Lute Caps as noted
5. Replace all poor condition Thermal couplers
6. Repair Burners in Poor condition
7. Repair Refractory on doors as noted.



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12/28/2020 ALBANY NORTH MHF #2 Incinerator Inspection Report

Section I: Refractory Repairs.

Overall note- hearths 1-4 are in excellent condition as they were recently reinsulated a few years ago

- o Re-insulate all hearths, walls, burner areas, and back up insulation to hearths 5,6,7,8,9, and 10. Centershaft sections to be re-insulated in these areas as well.

Section II: Part and Castings:

Proposed Work Scope based on IFCO Inspection:

- Replace Hearth 3/4 Center Shaft Section
- Replace Intermediate Lute Caps on Hearths 2 & 4
- Replace all Rabble Arm Teeth on Hearth 3

➤ Remove the following parts & Set aside to be Re-Installed (Unless otherwise noted below)

- o Warm Air Duct
- o Top Bearing
- o Top Bearing Base Plate
- o 14682-OV Top Shaft Section 75" Tall
 - Leave Top Sand Seal Cap attached as needed
 - Demo & Remove Refractory as needed
- o 14682-GG Shaft Section 88" Tall (Hearths 1 & 2)
 - Remove (8) Rabble Arms
 - Demo Shaft Refractory as needed to remove shaft from Furnace
 - Remove the H2 Lute Cap (To be replaced with New)
- o 14682-NN Shaft Section (Hearths 3 & 4)
 - Center Shaft Section Shall be Discarded by Albany after IFCO removes from furnace
 - Remove (4) Rabble Arms
 - Demo Shaft Refractory as needed to remove shaft from Furnace
 - Remove the Hearth 4 Lute Cap (To be replaced with New)

➤ Install the following list of parts and materials (Hearth 4)

- Install IFCO Supplied **Used** but in **New** Condition 14682-NF Shaft Section
- Re-Install (2) Existing Rabble Arms w/ Teeth
- Install **New** Hearth 4 Intermediate Lute Cap
- Install **New** 5" Thick Extra Strength Castable Refractory Lining-Refractory and Anchoring System to be Supplied by IFCO



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➤ **Install the following list of parts and materials (Hearth 3)**

- IFCO Supplied **Used** but in **New** Condition 14682-ND Shaft Section
- Re-Install (2) Existing Rabble
- Install **New** Teeth & Spacers on the (2) existing Rabble arms
- Install **New** 5" Thick Extra Strength Castable Refractory Lining-Refractory and Anchoring System to be Supplied by IFCO

➤ **Install the following list of parts and materials (Hearths 1 & 2)**

- Re-Install 14682-GG Shaft section
- Re-Install (8) Existing Rabble Arms w/ Teeth
- Install **New** Hearth 2 Intermediate Lute Cap
- Install **New** 5" Thick Extra Strength Castable Refractory Lining-Refractory and Anchoring System to be Supplied by IFCO
- Re-install 14682-OV Top Shaft Section 75" Tall
- Install **New** 5" Thick Extra Strength Castable Refractory Lining-Refractory and Anchoring System to be Supplied by IFCO
- Re-Install Top Bearing Base Plate, Top bearing & Warm air Duct.

Section III: Other items

➤ **New "Skimmer Box" for MHF2**

- Provide box similar to current box being used at MHF#1. Box is approximately 50"x50"x70" tall

Attachment B: Air Title V Renewal – ACWPD North Plant

New York Department of Environmental Conservation

December 3, 20

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 4

1130 North Westcott Road, Schenectady, NY 12306-2014

P: (518) 357-2069 | F: (518) 357-2460

www.dec.ny.gov

December 3, 2020

Craig Hurteau, Permit Compliance Manager
Albany County Water Purification District
112 State St, Basement
Albany, NY 12207

RE: Air Title V Renewal
ACWPD North Plant
DEC #4-0126-00138/00012
1 Canal Road
Town of Colonie, Albany County

Dear Mr. Hurteau:

The permit that you applied for is enclosed. Please read it carefully and note the conditions that are included. It is valid for only those activities authorized and is **effective December 4, 2020 and will expire on December 3, 2025**. Work beyond the scope of the permit and the approved project plans may be considered a violation and subject to appropriate enforcement action.

Please be advised that the Uniform Procedures Regulations (6 NYCRR Part 621) provide that an applicant may request a public hearing if a permit is denied or contains conditions which are unacceptable to them. Any such request must be made in writing within 30 calendar days of the date of permit issuance and must be addressed to the Regional Permit Administrator at the letterhead address. A copy should also be sent to the Chief Administrative Law Judge at NYSDEC, 625 Broadway, 1st Floor, Albany, NY 12233-1550.

Also note that this permit does not eliminate the need to obtain any other federal, state or local permits or approvals that may be required for this project. If you need additional time to complete the project, you may request a permit extension. Please reference the above DEC number, include an explanation why additional time is required and the anticipated completion date.

Please feel free to contact Angelika Stewart at (518) 357-2171 or by email at angelika.stewart@dec.ny.gov should you have any questions regarding the extent of the work authorized, or your obligations under the permit.

Sincerely,



Nancy M. Baker
Regional Permit Administrator

Enclosures: Permit
cc (by email): Mark Lanzafame, DAR



Department of
Environmental
Conservation

Facility DEC ID: 4012600138

PERMIT
Under the Environmental Conservation Law (ECL)

IDENTIFICATION INFORMATION

Permit Type: Air Title V Facility
Permit ID: 4-0126-00138/00012
Effective Date: 12/04/2020 Expiration Date: 12/03/2025

Permit Issued To: Albany County Water Purification District
112 State St Basement
Albany, NY 12207-4187

Contact: ANGELO S GAUDIO
112 State St., basement
Albany, NY 12207
(518) 447-1611

Facility: Albany County Water Purification District - NORTH PLANT
1 CANAL RD S OFF JONES RD
MENANDS, NY 12204

Contact: TYLER MASICK
112 State St., basement
Albany, NY 12207-0418
(518) 447-1611

Description:

This project consists of the renewal of the facility's Title V permit. The facility is removing the emergency engines from the demand response program as part of this renewal. Accordingly, the engines are exempt from permitting and are no longer included in this permit.

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, the General Conditions specified and any Special Conditions included as part of this permit.

Permit Administrator: NANCY M. BAKER
NYSDEC - REGION 4
1130 N WESTCOTT RD
SCHENECTADY, NY 12306-2014

Authorized Signature: _____



Date: 12/3/2020

Facility DEC ID: 4012600138

Notification of Other State Permittee Obligations**Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification**

The permittee expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the compliance permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in any compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

Facility DEC ID: 4012600138

PAGE LOCATION OF CONDITIONS

PAGE

DEC GENERAL CONDITIONS

General Provisions

- 4 1 Facility Inspection by the Department
- 4 2 Relationship of this Permit to Other Department Orders and Determinations
- 4 3 Applications for permit renewals, modifications and transfers
- 5 4 Permit modifications, suspensions or revocations by the Department

Facility Level

- 5 5 Submission of application for permit modification or renewal-REGION 4 HEADQUARTERS

Facility DEC ID: 4012600138

DEC GENERAL CONDITIONS****** General Provisions ******

For the purpose of your Title V permit, the following section contains state-only enforceable terms and conditions.

GENERAL CONDITIONS - Apply to ALL Authorized Permits.

Condition 1: Facility Inspection by the Department

Applicable State Requirement: ECL 19-0305

Item 1.1:

The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3).

Item 1.2:

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

Item 1.3:

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

Condition 2: Relationship of this Permit to Other Department Orders and Determinations

Applicable State Requirement: ECL 3-0301 (2) (m)

Item 2.1:

Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

Condition 3: Applications for permit renewals, modifications and transfers

Applicable State Requirement: 6 NYCRR 621.11

Item 3.1:

The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

Item 3.2:

The permittee must submit a renewal application at least 180 days before the expiration of permits for Title V and State Facility Permits.

Item 3.3

Permits are transferrable with the approval of the department unless specifically prohibited by the statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

Facility DEC ID: 4012600138

Condition 4: Permit modifications, suspensions or revocations by the Department
Applicable State Requirement: 6 NYCRR 621.13

Item 4.1:

The Department reserves the right to exercise all available authority to modify, suspend, or revoke this permit in accordance with 6NYCRR Part 621. The grounds for modification, suspension or revocation include:

- a) materially false or inaccurate statements in the permit application or supporting papers;
- b) failure by the permittee to comply with any terms or conditions of the permit;
- c) exceeding the scope of the project as described in the permit application;
- d) newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
- e) noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

****** Facility Level ******

Condition 5: Submission of application for permit modification or renewal-REGION 4 HEADQUARTERS
Applicable State Requirement: 6 NYCRR 621.6 (a)

Item 5.1:

Submission of applications for permit modification or renewal are to be submitted to:
 NYSDEC Regional Permit Administrator
 Region 4 Headquarters
 Division of Environmental Permits
 1130 North Westcott Rd.
 Schenectady, NY 12306-2014
 (518) 357-2069

Permit ID: 4-0126-00138/00012

Facility DEC ID: 4012600138

Permit Under the Environmental Conservation Law (ECL)

ARTICLE 19: AIR POLLUTION CONTROL - TITLE V PERMIT

IDENTIFICATION INFORMATION

Permit Issued To: Albany County Water Purification District
112 State St Basement
Albany, NY 12207-4187

Facility: Albany County Water Purification District - NORTH PLANT
1 CANAL RD S OFF JONES RD
MENANDS, NY 12204

Authorized Activity By Standard Industrial Classification Code:
4952 - SEWERAGE SYSTEMS
4953 - REFUSE SYSTEMS

Permit Effective Date: 12/04/2020

Permit Expiration Date: 12/03/2025

Permit ID: 4-0126-00138/00012

Facility DEC ID: 4012600138

PAGE LOCATION OF CONDITIONS**PAGE****FEDERALLY ENFORCEABLE CONDITIONS****Facility Level**

7	2	6 NYCRR 200.6: Acceptable Ambient Air Quality
7	3	6 NYCRR 201-6.4 (a) (7): Fees
7	4	6 NYCRR 201-6.4 (c): Recordkeeping and Reporting of Compliance Monitoring
8	5	6 NYCRR 201-6.4 (c) (2): Records of Monitoring, Sampling, and Measurement
8	6	6 NYCRR 201-6.4 (c) (3) (ii): Compliance Certification
10	7	6 NYCRR 201-6.4 (e): Compliance Certification
12	8	6 NYCRR 202-2.1: Compliance Certification
12	9	6 NYCRR 202-2.5: Recordkeeping requirements
13	10	6 NYCRR 215.2: Open Fires - Prohibitions
14	1	6 NYCRR 200.7: Maintenance of Equipment
14	11	6 NYCRR 201-1.7: Recycling and Salvage
14	12	6 NYCRR 201-1.8: Prohibition of Reintroduction of Collected Contaminants to the air
14	13	6 NYCRR 201-3.2 (a): Exempt Sources - Proof of Eligibility
15	14	6 NYCRR 201-3.3 (a): Trivial Sources - Proof of Eligibility
15	15	6 NYCRR 201-6.4 (a) (4): Requirement to Provide Information
15	16	6 NYCRR 201-6.4 (a) (8): Right to Inspect
16	17	6 NYCRR 201-6.4 (f) (6): Off Permit Changes
16	18	6 NYCRR 202-1.1: Required Emissions Tests
16	19	40 CFR Part 68: Accidental release provisions.
17	20	40CFR 82, Subpart F: Recycling and Emissions Reduction
17	21	6 NYCRR Subpart 201-6: Emission Unit Definition
17	22	6 NYCRR 201-6.4 (d) (4): Progress Reports Due Semiannually
18	23	6 NYCRR 211.2: Visible Emissions Limited
18	24	6 NYCRR 212-1.6 (a): Compliance Certification
19	25	6 NYCRR 225-1.2 (h): Compliance Certification
20	26	40CFR 60, NSPS Subpart A: Applicability of Subpart A General Provisions
20	27	40CFR 60.13(i)(2), NSPS Subpart A: Compliance Certification
21	28	40CFR 60, NSPS Subpart IIII: Applicability
21	29	40CFR 60.5130, Subpart MMMM: Compliance Certification
22	30	40CFR 60.5135, Subpart MMMM: Certification Schedule - Dates
22	31	40CFR 60.5235(c), NSPS Subpart MMMM: Compliance Certification
23	32	40CFR 60.5235(d), NSPS Subpart MMMM: Compliance Certification
24	33	40CFR 63.11115, NESHAP Subpart CCCCCC: General duties to minimize emissions
24	34	40CFR 63.11116, NESHAP Subpart CCCCCC: Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline
		Emission Unit Level
25	35	6 NYCRR Subpart 201-6: Emission Point Definition By Emission Unit
25	36	6 NYCRR Subpart 201-6: Process Definition By Emission Unit

EU=1-SSINP

26	37	40CFR 60.5155, Subpart MMMM: Compliance Certification
27	38	40CFR 60.5165, Subpart MMMM: Compliance Certification
27	39	40CFR 60.5165, Subpart MMMM: Compliance Certification

Permit ID: 4-0126-00138/00012

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28 40 40CFR 60.5165, Subpart Mmmm: Compliance Certification
 29 41 40CFR 60.5165, Subpart Mmmm: Compliance Certification
 29 42 40CFR 60.5165, Subpart Mmmm: Compliance Certification
 30 43 40CFR 60.5165, Subpart Mmmm: Compliance Certification
 31 44 40CFR 60.5165, Subpart Mmmm: Compliance Certification
 31 45 40CFR 60.5165, Subpart Mmmm: Compliance Certification
 32 46 40CFR 60.5165, Subpart Mmmm: Compliance Certification
 33 47 40CFR 60.5165, Subpart Mmmm: Compliance Certification
 33 48 40CFR 60.5165, Subpart Mmmm: Compliance Certification
 34 49 40CFR 60.5170(f), NSPS Subpart Mmmm: Compliance Certification
 35 50 40CFR 60.5170(f), NSPS Subpart Mmmm: Compliance Certification
 35 51 40CFR 60.5200, Subpart Mmmm: Compliance Certification
 36 52 40CFR 60.5205, Subpart Mmmm: Performance Testing
 37 53 40CFR 60.5205(a)(3), Subpart Mmmm: Compliance Certification
 38 54 40CFR 60.5215, Subpart Mmmm: Compliance Certification
 38 55 40CFR 60.5225(a)(1), NSPS Subpart Mmmm: Compliance Certification
 40 56 40CFR 60.5230, Subpart Mmmm: Compliance Certification
 41 57 40CFR 60.5230, Subpart Mmmm: Compliance Certification
 43 58 40CFR 61.32(a), NESHAP Subpart C: Compliance Certification
 43 59 40CFR 61.52(b), NESHAP Subpart E: Compliance Certification

EU=1-SSINP,Proc=INC,ES=MHF01

44 60 40CFR 60.5210, Subpart Mmmm: Compliance Certification

EU=1-SSINP,Proc=INC,ES=MHF02

45 61 40CFR 60.5210, Subpart Mmmm: Compliance Certification

EU=1-SSINP,Proc=INC,ES=VSCR1

46 62 40CFR 60.5210, Subpart Mmmm: Compliance Certification

47 63 40CFR 60.5210, Subpart Mmmm: Compliance Certification

48 64 40CFR 60.5210, Subpart Mmmm: Compliance Certification

EU=1-SSINP,Proc=INC,ES=VSCR2

49 65 40CFR 60.5210, Subpart Mmmm: Compliance Certification

50 66 40CFR 60.5210, Subpart Mmmm: Compliance Certification

51 67 40CFR 60.5210, Subpart Mmmm: Compliance Certification

STATE ONLY ENFORCEABLE CONDITIONS**Facility Level**

54 68 ECL 19-0301: Contaminant List

55 69 6 NYCRR 201-1.4: Malfunctions and start-up/shutdown activities

Permit ID: 4-0126-00138/00012

Facility DEC ID: 4012600138

FEDERALLY ENFORCEABLE CONDITIONS****** Facility Level ********NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS**

The items listed below are not subject to the annual compliance certification requirements under Title V. Permittees may also have other obligations under regulations of general applicability.

- Item A: Public Access to Recordkeeping for Title V Facilities - 6 NYCRR 201-1.10 (b)**
The Department will make available to the public any permit application, compliance plan, permit, and monitoring and compliance certification report pursuant to Section 503(e) of the Act, except for information entitled to confidential treatment pursuant to 6 NYCRR Part 616 - Public Access to records and Section 114(c) of the Act.
- Item B: Timely Application for the Renewal of Title V Permits - 6 NYCRR 201-6.2 (a) (4)**
Owners and/or operators of facilities having an issued Title V permit shall submit a complete application at least 180 days, but not more than eighteen months, prior to the date of permit expiration for permit renewal purposes.
- Item C: Certification by a Responsible Official - 6 NYCRR 201-6.2 (d) (12)**
Any application, form, report or compliance certification required to be submitted pursuant to the federally enforceable portions of this permit shall contain a certification of truth, accuracy and completeness by a responsible official. This certification shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- Item D: Requirement to Comply With All Conditions - 6 NYCRR 201-6.4 (a) (2)**
The permittee must comply with all conditions of the Title V facility permit. Any permit non-compliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
- Item E: Permit Revocation, Modification, Reopening, Reissuance or Termination, and Associated Information Submission Requirements - 6 NYCRR 201-6.4 (a) (3)**
This permit may be modified, revoked, reopened and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.
- Item F: Cessation or Reduction of Permitted Activity Not a Defense - 6 NYCRR 201-6.4 (a) (5)**

Permit ID: 4-0126-00138/00012

Facility DEC ID: 4012600138

It shall not be a defense for a permittee in an enforcement action to claim that a cessation or reduction in the permitted activity would have been necessary in order to maintain compliance with the conditions of this permit.

Item G: Property Rights - 6 NYCRR 201-6.4 (a) (6)

This permit does not convey any property rights of any sort or any exclusive privilege.

Item H: Severability - 6 NYCRR 201-6.4 (a) (9)

If any provisions, parts or conditions of this permit are found to be invalid or are the subject of a challenge, the remainder of this permit shall continue to be valid.

Item I: Permit Shield - 6 NYCRR 201-6.4 (g)

All permittees granted a Title V facility permit shall be covered under the protection of a permit shield, except as provided under 6 NYCRR Subpart 201-6. Compliance with the conditions of the permit shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that such applicable requirements are included and are specifically identified in the permit, or the Department, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the major stationary source, and the permit includes the determination or a concise summary thereof. Nothing herein shall preclude the Department from revising or revoking the permit pursuant to 6 NYCRR Part 621 or from exercising its summary abatement authority. Nothing in this permit shall alter or affect the following:

- i. The ability of the Department to seek to bring suit on behalf of the State of New York, or the Administrator to seek to bring suit on behalf of the United States, to immediately restrain any person causing or contributing to pollution presenting an imminent and substantial endangerment to public health, welfare or the environment to stop the emission of air pollutants causing or contributing to such pollution;
- ii. The liability of a permittee of the Title V facility for any violation of applicable requirements prior to or at the time of permit issuance;
- iii. The applicable requirements of Title IV of the Act;
- iv. The ability of the Department or the Administrator to obtain information from the permittee concerning the ability to enter, inspect and monitor the facility.

Item J: Reopening for Cause - 6 NYCRR 201-6.4 (i)

Permit ID: 4-0126-00138/00012

Facility DEC ID: 4012600138

This Title V permit shall be reopened and revised under any of the following circumstances:

- i. When additional applicable requirements under the act become applicable to a title V facility with a remaining permit term of three or more years, a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended by the department pursuant to the provisions of section 201- 6.6 of this Subpart.
- ii. The Department or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
- iii. The Department or the Administrator determines that the Title V permit must be revised or reopened to assure compliance with applicable requirements.
- iv. If the permitted facility is an "affected source" subject to the requirements of Title IV of the Act, and additional requirements (including excess emissions requirements) become applicable. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit.

Proceedings to reopen and issue Title V facility permits shall follow the same procedures as apply to initial permit issuance but shall affect only those parts of the permit for which cause to reopen exists.

Reopenings shall not be initiated before a notice of such intent is provided to the facility by the Department at least thirty days in advance of the date that the permit is to be reopened, except that the Department may provide a shorter time period in the case of an emergency.

Item K: Permit Exclusion - ECL 19-0305

The issuance of this permit by the Department and the receipt thereof by the Applicant does not and shall not be construed as barring, diminishing, adjudicating or in any way affecting any legal, administrative or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the Department may have against the Applicant for violations based on facts and circumstances alleged to have occurred or existed prior to the effective date of this permit, including, but not limited to, any enforcement action authorized pursuant to the provisions of applicable federal law, the Environmental Conservation Law of the State of New York (ECL) and Chapter III of the Official Compilation of the Codes, Rules and Regulations of the State of New York (NYCRR). The issuance of this permit also shall not in any way affect pending or future enforcement

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actions under the Clean Air Act brought by the United States or any person.

Item L: Federally Enforceable Requirements - 40 CFR 70.6 (b)

All terms and conditions in this permit required by the Act or any applicable requirement, including any provisions designed to limit a facility's potential to emit, are enforceable by the Administrator and citizens under the Act. The Department has, in this permit, specifically designated any terms and conditions that are not required under the Act or under any of its applicable requirements as being enforceable under only state regulations.

**MANDATORY FEDERALLY ENFORCEABLE PERMIT CONDITIONS
SUBJECT TO ANNUAL CERTIFICATIONS AT ALL TIMES**

The following federally enforceable permit conditions are mandatory for all Title V permits and are subject to annual compliance certification requirements at all times.

**Condition 2: Acceptable Ambient Air Quality
Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 6 NYCRR 200.6****Item 2.1:**

Notwithstanding the provisions of 6 NYCRR Chapter III, Subchapter A, no person shall allow or permit any air contamination source to emit air contaminants in quantities which alone or in combination with emissions from other air contamination sources would contravene any applicable ambient air quality standard and/or cause air pollution. In such cases where contravention occurs or may occur, the Commissioner shall specify the degree and/or method of emission control required.

**Condition 3: Fees
Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 6 NYCRR 201-6.4 (a) (7)****Item 3.1:**

The owner and/or operator of a stationary source shall pay fees to the Department consistent with the fee schedule authorized by ECL 72-0303.

**Condition 4: Recordkeeping and Reporting of Compliance Monitoring
Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 6 NYCRR 201-6.4 (c)****Item 4.1:**

The following information must be included in any required compliance monitoring records and reports:

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- (i) The date, place, and time of sampling or measurements;
- (ii) The date(s) analyses were performed;
- (iii) The company or entity that performed the analyses;
- (iv) The analytical techniques or methods used including quality assurance and quality control procedures if required;
- (v) The results of such analyses including quality assurance data where required; and
- (vi) The operating conditions as existing at the time of sampling or measurement.

Any deviation from permit requirements must be clearly identified in all records and reports. Reports must be certified by a responsible official, consistent with Section 201-6.2 of Part 201.

Condition 5: Records of Monitoring, Sampling, and Measurement
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR 201-6.4 (c) (2)

Item 5.1:

Compliance monitoring and recordkeeping shall be conducted according to the terms and conditions contained in this permit and shall follow all quality assurance requirements found in applicable regulations. Records of all monitoring data and support information must be retained for a period of at least 5 years from the date of the monitoring, sampling, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

Condition 6: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR 201-6.4 (c) (3) (ii)

Item 6.1:

The Compliance Certification activity will be performed for the Facility.

Item 6.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

To meet the requirements of this facility permit with respect to reporting, the permittee must:

Submit reports of any required monitoring at a minimum frequency of every 6 months, based on a calendar year reporting schedule. These reports shall be submitted to the Department within 30 days after the end of a reporting period. All instances of deviations from permit requirements must be clearly identified in such reports. All required

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reports must be certified by the responsible official for this facility.

Notify the Department and report permit deviations and incidences of noncompliance stating the probable cause of such deviations, and any corrective actions or preventive measures taken. Where the underlying applicable requirement contains a definition of prompt or otherwise specifies a time frame for reporting deviations, that definition or time frame shall govern. Where the underlying applicable requirement fails to address the time frame for reporting deviations, reports of deviations shall be submitted to the permitting authority based on the following schedule:

- (1) For emissions of a hazardous air pollutant (as identified in an applicable regulation) that continue for more than an hour in excess of permit requirements, the report must be made within 24 hours of the occurrence.
- (2) For emissions of any regulated air pollutant, excluding those listed in paragraph (1) of this section, that continue for more than two hours in excess of permit requirements, the report must be made within 48 hours.
- (3) For all other deviations from permit requirements, the report shall be contained in the 6 month monitoring report required above.
- (4) This permit may contain a more stringent reporting requirement than required by paragraphs (1), (2) or (3) above. If more stringent reporting requirements have been placed in this permit or exist in applicable requirements that apply to this facility, the more stringent reporting requirement shall apply.

If above paragraphs (1) or (2) are met, the source must notify the permitting authority by telephone during normal business hours at the Regional Office of jurisdiction for this permit, attention Regional Air Pollution Control Engineer (RAPCE) according to the timetable listed in paragraphs (1) and (2) of this section. For deviations and incidences that must be reported outside of normal business hours, on weekends, or holidays, the DEC Spill Hotline phone number at 1-800-457-7362 shall be used. A written notice, certified by a responsible official consistent with 6 NYCRR Part 201-6.2(d)(12), must be submitted within 10 working days of an occurrence for deviations reported under (1) and (2). All deviations reported under paragraphs (1) and (2) of this section must also be identified in the 6 month monitoring report required above.

The provisions of 6 NYCRR 201-1.4 shall apply if the permittee seeks to have a violation excused unless otherwise limited by regulation. In order to have a violation of a federal regulation (such as a new source performance standard or national emissions standard for hazardous air pollutants) excused, the specific federal regulation

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must provide for an affirmative defense during start-up, shutdowns, malfunctions or upsets. Notwithstanding any recordkeeping and reporting requirements in 6 NYCRR 201-1.4, reports of any deviations shall not be on a less frequent basis than the reporting periods described in paragraphs (1) and (4) above.

In the case of any condition contained in this permit with a reporting requirement of "Upon request by regulatory agency" the permittee shall include in the semiannual report, a statement for each such condition that the monitoring or recordkeeping was performed as required or requested and a listing of all instances of deviations from these requirements.

In the case of any emission testing performed during the previous six month reporting period, either due to a request by the Department, EPA, or a regulatory requirement, the permittee shall include in the semiannual report a summary of the testing results and shall indicate whether or not the Department or EPA has approved the results.

All semiannual reports may be submitted electronically or physically. Electronic reports shall be submitted using the Department's Air Compliance and Emissions Electronic-Reporting system (ACE). If the facility owner or operator elects to send physical copies instead, two copies shall be sent to the Department (one copy to the regional air pollution control engineer (RAPCE) in the regional office and one copy to the Bureau of Quality Assurance (BQA) in the DEC central office) and one copy shall be sent to the Administrator (or his or her representative). Mailing addresses for the above referenced persons are contained in the monitoring condition for 6 NYCRR Part 201-6.4(e), contained elsewhere in this permit.

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 7: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR 201-6.4 (e)

Item 7.1:

The Compliance Certification activity will be performed for the Facility.

Item 7.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

Requirements for compliance certifications with terms and conditions contained in this facility permit include the following:

i. Compliance certifications shall contain:

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- the identification of each term or condition of the permit that is the basis of the certification;
- the compliance status;
- whether compliance was continuous or intermittent;
- the method(s) used for determining the compliance status of the facility, currently and over the reporting period consistent with the monitoring and related recordkeeping and reporting requirements of this permit;
- such other facts as the Department may require to determine the compliance status of the facility as specified in any special permit terms or conditions; and
- such additional requirements as may be specified elsewhere in this permit related to compliance certification.

ii. The responsible official must include in the annual certification report all terms and conditions contained in this permit which are identified as being subject to certification, including emission limitations, standards, or work practices. That is, the provisions labeled herein as "Compliance Certification" are not the only provisions of this permit for which an annual certification is required.

iii. Compliance certifications shall be submitted annually. Certification reports are due 30 days after the anniversary date of four consecutive calendar quarters. The first report is due 30 days after the calendar quarter that occurs just prior to the permit anniversary date, unless another quarter has been acceptable by the Department.

iv. All annual compliance certifications may be submitted electronically or physically. Electronic reports shall be submitted using the Department's Air Compliance and Emissions Electronic-Reporting system (ACE). If the facility owner or operator elects to send physical copies instead, two copies shall be sent to the Department (one copy to the regional air pollution control engineer (RAPCE) in the regional office and one copy to the Bureau of Quality Assurance (BQA) in the DEC central office) and one copy shall be sent to the Administrator (or his or her representative). The mailing addresses for the above referenced persons are:

Chief – Air Compliance Branch
USEPA Region 2 DECA/ACB
290 Broadway, 21st Floor
New York, NY 10007

The address for the RAPCE is as follows:

Regional Air Pollution Control Engineer
NYSDEC Region 4 Headquarters
1130 North Westcott Road
Schenectady, NY 12306-2014

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The address for the BQA is as follows:

NYSDEC
Bureau of Quality Assurance
625 Broadway
Albany, NY 12233-3258

Monitoring Frequency: ANNUALLY
Reporting Requirements: ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 1/30/2021.
Subsequent reports are due on the same day each year

Condition 8: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR 202-2.1

Item 8.1:

The Compliance Certification activity will be performed for the Facility.

Item 8.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

Emission statements shall be submitted on or before April 15th each year for emissions of the previous calendar year. Statements are to be mailed to: New York State Department of Environmental Conservation, Division of Air Resources, Bureau of Air Quality Planning, 625 Broadway, Albany NY 12233-3251

Monitoring Frequency: ANNUALLY
Reporting Requirements: ANNUALLY (CALENDAR)
Reports due by April 15th for previous calendar year

Condition 9: Recordkeeping requirements
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR 202-2.5

Item 9.1:

(a) The following records shall be maintained for at least five years:

(1) a copy of each emission statement submitted to the department; and

(2) records indicating how the information submitted in the emission statement was determined, including any calculations, data, measurements, and estimates used.

(b) These records shall be made available at the facility to the representatives of the department upon request during normal business hours.

Condition 10: Open Fires - Prohibitions

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Applicable Federal Requirement: 6 NYCRR 215.2**Item 10.1:**

Except as allowed by Title 6 NYCRR Section 215.3, no person shall burn, cause, suffer, allow or permit the burning of any materials in an open fire.

Item 10.2

Per Section 215.3, burning in an open fire, provided it is not contrary to other law or regulation, will be allowed as follows:

- (a) On-site burning in any town with a total population less than 20,000 of downed limbs and branches (including branches with attached leaves or needles) less than six inches in diameter and eight feet in length between May 15th and the following March 15th. For the purposes of this subdivision, the total population of a town shall include the population of any village or portion thereof located within the town. However, this subdivision shall not be construed to allow burning within any village.
- (b) Barbecue grills, maple sugar arches and similar outdoor cooking devices when actually used for cooking or processing food.
- (c) Small fires used for cooking and camp fires provided that only charcoal or untreated wood is used as fuel and the fire is not left unattended until extinguished.
- (d) On-site burning of agricultural wastes as part of a valid agricultural operation on contiguous agricultural lands larger than five acres actively devoted to agricultural or horticultural use, provided such waste is actually grown or generated on those lands and such waste is capable of being fully burned within a 24-hour period.
- (e) The use of liquid petroleum fueled smudge pots to prevent frost damage to crops.
- (f) Ceremonial or celebratory bonfires where not otherwise prohibited by law, provided that only untreated wood or other agricultural products are used as fuel and the fire is not left unattended until extinguished.
- (g) Small fires that are used to dispose of a flag or religious item, and small fires or other smoke producing process where not otherwise prohibited by law that are used in connection with a religious ceremony.
- (h) Burning on an emergency basis of explosive or other dangerous or contraband materials by police or other public safety organization.
- (i) Prescribed burns performed according to Part 194 of this Title.
- (j) Fire training, including firefighting, fire rescue, and fire/arson investigation training, performed under applicable rules and guidelines of the New York State Department of State's Office of Fire Prevention and Control. For fire training performed on acquired structures, the structures must be emptied and stripped of any material that is toxic, hazardous or likely to emit toxic smoke (such as asbestos, asphalt shingles and vinyl siding or other vinyl products) prior to burning and must be at least 300 feet from other occupied structures. No more than one structure per lot or within a 300 foot radius (whichever is bigger) may be burned in a training exercise.
- (k) Individual open fires as approved by the Director of the Division of Air Resources as may be required in response to an outbreak of a plant or animal disease upon request by the commissioner of the Department of Agriculture and Markets, or for the destruction of invasive plant and insect species.
- (l) Individual open fires that are otherwise authorized under the environmental conservation law, or by rule or regulation of the Department.

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**MANDATORY FEDERALLY ENFORCEABLE PERMIT CONDITIONS
SUBJECT TO ANNUAL CERTIFICATIONS ONLY IF APPLICABLE**

**The following federally enforceable permit conditions are mandatory for all Title V permits and are subject to annual compliance certification requirements only if effectuated during the reporting period.
[NOTE: The corresponding annual compliance certification for those conditions not effectuated during the reporting period shall be specified as "not applicable".]**

Condition 1: Maintenance of Equipment
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement:6 NYCRR 200.7

Item 1.1:

Any person who owns or operates an air contamination source which is equipped with an emission control device shall operate such device and keep it in a satisfactory state of maintenance and repair in accordance with ordinary and necessary practices, standards and procedures, inclusive of manufacturer's specifications, required to operate such device effectively.

Condition 11: Recycling and Salvage
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement:6 NYCRR 201-1.7

Item 11.1:

Where practical, the owner or operator of an air contamination source shall recycle or salvage air contaminants collected in an air cleaning device according to the requirements of the ECL.

Condition 12: Prohibition of Reintroduction of Collected Contaminants to the air
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement:6 NYCRR 201-1.8

Item 12.1:

No person shall unnecessarily remove, handle or cause to be handled, collected air contaminants from an air cleaning device for recycling, salvage or disposal in a manner that would reintroduce them to the outdoor atmosphere.

Condition 13: Exempt Sources - Proof of Eligibility
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement:6 NYCRR 201-3.2 (a)

Item 13.1:

The owner or operator of an emission source or activity that is listed as being exempt may be required to certify that it is operated within the specific criteria described in this Subpart. The owner or operator of any such emission source or activity must maintain all records necessary for demonstrating compliance with this Subpart on-site for a period of five years, and make them

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available to representatives of the department upon request.

Condition 14: Trivial Sources - Proof of Eligibility
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR 201-3.3 (a)

Item 14.1:

The owner or operator of an emission source or activity that is listed as being trivial in this Section may be required to certify that it is operated within the specific criteria described in this Subpart. The owner or operator of any such emission source or activity must maintain all required records on-site for a period of five years and make them available to representatives of the department upon request.

Condition 15: Requirement to Provide Information
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR 201-6.4 (a) (4)

Item 15.1:

The owner and/or operator shall furnish to the department, within a reasonable time, any information that the department may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the department copies of records required to be kept by the permit or, for information claimed to be confidential, the permittee may furnish such records directly to the administrator along with a claim of confidentiality, if the administrator initiated the request for information or otherwise has need of it.

Condition 16: Right to Inspect
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR 201-6.4 (a) (8)

Item 16.1:

The department or an authorized representative shall be allowed upon presentation of credentials and other documents as may be required by law to:

(i) enter upon the permittee's premises where a facility subject to the permitting requirements of this Subpart is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;

(ii) have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

(iii) inspect at reasonable times any emission sources, equipment (including monitoring and air pollution control equipment), practices, and operations regulated or required under the permit; and

(iv) sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

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Condition 17: Off Permit Changes**Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 6 NYCRR 201-6.4 (f) (6)****Item 17.1:**

No permit revision will be required for operating changes that contravene an express permit term, provided that such changes would not violate applicable requirements as defined under this Part or contravene federally enforceable monitoring (including test methods), recordkeeping, reporting, or compliance certification permit terms and conditions. Such changes may be made without requiring a permit revision, if the changes are not modifications under any provision of title I of the act and the changes do not exceed the emissions allowable under the permit (whether expressed therein as a rate of emissions or in terms of total emissions) provided that the facility provides the administrator and the department with written notification as required below in advance of the proposed changes within a minimum of seven days. The facility owner or operator, and the department shall attach each such notice to their copy of the relevant permit.

(i) For each such change, the written notification required above shall include a brief description of the change within the permitted facility, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change.

(ii) The permit shield described in section 6 NYCRR 201-6.4 shall not apply to any change made pursuant to this paragraph.

Condition 18: Required Emissions Tests**Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 6 NYCRR 202-1.1****Item 18.1:**

For the purpose of ascertaining compliance or non-compliance with any air pollution control code, rule or regulation, the commissioner may require the person who owns such air contamination source to submit an acceptable report of measured emissions within a stated time.

Condition 19: Accidental release provisions.**Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 40 CFR Part 68****Item 19.1:**

If a chemical is listed in Tables 1,2,3 or 4 of 40 CFR §68.130 is present in a process in quantities greater than the threshold quantity listed in Tables 1,2,3 or 4, the following requirements will apply:

- a) The owner or operator shall comply with the provisions of 40 CFR Part 68 and;
- b) The owner or operator shall submit at the time of permit issuance (if not previously

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submitted) one of the following, if such quantities are present:

- 1) A compliance schedule for meeting the requirements of 40 CFR Part 68 by the date provided in 40 CFR §68.10(a) or,
- 2) A certification statement that the source is in compliance with all requirements of 40 CFR Part 68, including the registration and submission of the Risk Management Plan. Information should be submitted to:

Risk Management Plan Reporting Center
C/O CSC
8400 Corporate Dr
Carrollton, Md. 20785

Condition 20: Recycling and Emissions Reduction
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40 CFR 82, Subpart F

Item 20.1:

The permittee shall comply with all applicable provisions of 40 CFR Part 82.

The following conditions are subject to annual compliance certification requirements for Title V permits only.

Condition 21: Emission Unit Definition
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR Subpart 201-6

Item 21.1:

The facility is authorized to perform regulated processes under this permit for:

Emission Unit: 1-SSINP

Emission Unit Description:

This emission unit consists of two ten-hearth furnaces (MHF01 and MHF02) that incinerate sewage sludge generated from the treatment of municipal wastewater received at the Albany County North Plant. Only one furnace (either MHF01 or MHF02) operates at any given time. Each furnace is vented to a VenturiPak scrubber system consisting of a quench stage, condenser stage, venturi, and high-efficiency mist eliminator. The multiple hearth furnaces are subject to 40 CFR Part 60, Subpart MMMM; 40 CFR Part 61, Subparts C and E; and 40 CFR Part 503, Subparts A and E.

Building(s): SOLIDS

Condition 22: Progress Reports Due Semiannually
Effective between the dates of 12/04/2020 and 12/03/2025

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Applicable Federal Requirement: 6 NYCRR 201-6.4 (d) (4)**Item 22.1:**

Progress reports consistent with an applicable schedule of compliance are to be submitted at least semiannually, or at a more frequent period if specified in the applicable requirement or by the department. Such progress reports shall contain the following:

- (i) dates for achieving the activities, milestones, or compliance required in the schedule of compliance, and dates when such activities, milestones or compliance were achieved; and
- (ii) an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

Condition 23: Visible Emissions Limited
Effective between the dates of 12/04/2020 and 12/03/2025**Applicable Federal Requirement: 6 NYCRR 211.2****Item 23.1:**

Except as permitted by a specific part of this Subchapter and for open fires for which a restricted burning permit has been issued, no person shall cause or allow any air contamination source to emit any material having an opacity equal to or greater than 20 percent (six minute average) except for one continuous six-minute period per hour of not more than 57 percent opacity.

Condition 24: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025**Applicable Federal Requirement: 6 NYCRR 212-1.6 (a)****Item 24.1:**

The Compliance Certification activity will be performed for the facility:
The Compliance Certification applies to:

Emission Unit: 1-SSINP

Process: INC

Emission Source: MHF01

Emission Unit: 1-SSINP

Process: INC

Emission Source: MHF02

Regulated Contaminant(s):

CAS No: 0NY075-00-0 PARTICULATES

Item 24.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE
PARAMETERS AS SURROGATE

Monitoring Description:

No person shall cause or allow emissions having an average opacity during any six consecutive minutes of 20 percent or greater from any process emission source, except only the emission of uncombined water. The Department reserves the right to perform or require the

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performance of a Method 9 opacity evaluation at any time during facility operation.

The permittee will conduct observations of visible emissions from the emission unit, process, etc. to which this condition applies daily while the process is in operation. The permittee will immediately investigate any instance where there is cause to believe that visible emissions above those that are normal and in compliance are occurring or have occurred from a process source.

If visible emissions above those that are normal (this may be zero percent opacity for many emission sources) and in compliance with section 212-1.6(a) are detected, the permittee shall determine the cause, make the necessary correction, and verify that the excess visible emissions problem has been corrected.

If visible emissions above those that are normal and in compliance continue to be present after corrections are made, the permittee will immediately notify the Department and conduct a Method 9 assessment within 24 hours to determine the degree of opacity.

Records of these observations, investigations and corrective actions will be kept on-site in a format acceptable to the Department and the semiannual progress report and annual compliance certifications required of all permittees subject to Title V must include a summary of these instances.

Parameter Monitored: OPACITY

Upper Permit Limit: 20 percent

Reference Test Method: EPA Reference Test Method 9

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION

Averaging Method: 6-MINUTE AVERAGE (METHOD 9)

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 25: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 6 NYCRR 225-1.2 (h)

Item 25.1:

The Compliance Certification activity will be performed for the Facility.

Item 25.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: WORK PRACTICE INVOLVING SPECIFIC OPERATIONS

Monitoring Description:

Owners and/or operators of a stationary combustion installations that fire distillate oil are limited to the firing of distillate oil with 0.0015 percent sulfur by weight or less on or after July 1, 2016.

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Compliance with this limit will be based on vendor certifications.

Data collected pursuant to this Subpart must be tabulated and summarized in a form acceptable to the Department, and must be retained for at least five years. The owner of a Title V facility must furnish to the Department such records and summaries, on a semiannual calendar basis, within 30 days after the end of the semiannual period.

All other facility owners or distributors must submit these records and summaries upon request of the Department.

Work Practice Type: PARAMETER OF PROCESS MATERIAL

Process Material: DISTILLATES - NUMBER 1 AND NUMBER 2 OIL

Parameter Monitored: SULFUR CONTENT

Upper Permit Limit: 0.0015 percent by weight

Monitoring Frequency: PER DELIVERY

Averaging Method: MAXIMUM - NOT TO BE EXCEEDED AT ANY TIME
(INSTANTANEOUS/DISCRETE OR GRAB)

Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

Condition 26: Applicability of Subpart A General Provisions
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60, NSPS Subpart A

Item 26.1:

This emission source is subject to the applicable general provisions of 40 CFR 60. The facility owner is responsible for complying with all applicable technical, administrative and reporting requirements.

Condition 27: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.13(i)(2), NSPS Subpart A

Item 27.1:

The Compliance Certification activity will be performed for the Facility.

Item 27.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The facility owner or operator may delay the performance test required by 40 CFR 60.5205(a) for an incinerator that is not anticipated to be operated for a period greater than 180 days. The facility owner or operator shall conduct a performance test within 180 days of resuming operation of the incinerator. The performance test shall be conducted in a manner that is consistent with the requirements of 40 CFR 60.5205(a).

Until such time as a performance test is completed, the facility owner or operator shall demonstrate compliance with the operating parameter

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limits for that incinerator that were established during the most recent performance test that demonstrated compliance with the emission standards contained in this permit.

The facility owner or operator shall submit written notification to the Department indicating the intent to switch incinerators at least 15 days in advance of the anticipated change over date. The notification shall include the operating limits that will be used to demonstrate compliance with the requirements of this permit and the date of the performance test required by this condition, if known.

In the event that the facility owner or operator must switch incinerators due to a malfunction or emergency situation, the facility owner or operator shall notify the Department of the switch within two working days. Such notification shall include a description of the cause of the malfunction or emergency, if known. If the cause is not known at the time of notification, the facility owner or operator shall submit an updated report to the Department once a cause has been determined. The facility owner or operator shall comply with the operating and testing provisions of this condition immediately following the switch.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 28: Applicability

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60, NSPS Subpart IIII

Item 28.1:

Facilities that have stationary compression ignition internal combustion engines must comply with applicable portions of 40 CFR 60 Subpart IIII.

Condition 29: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5130, Subpart MMMM

Item 29.1:

The Compliance Certification activity will be performed for the Facility.

Item 29.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The operator of a Sewage Sludge Incineration (SSI) unit must be fully

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trained and certified as described in 40 CFR 60.5130. A SSI unit cannot be operated unless a fully trained and qualified SSI unit operator is on-site or able to be at the facility within 1 hour. A trained and qualified SSI unit operator may operate the SSI unit directly or be the direct supervisor of one or more other plant personnel who operate the unit.

In order to be fully trained and qualified, the operator must successfully complete a Department approved training course and maintain that training through Department approved annual refresher courses.

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 30: Certification Schedule - Dates
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5135, Subpart M

Item 30.1:

The operator of a Sewage Sludge Incineration (SSI) unit must complete the operator training course by the later of the following dates:

- (a) The final compliance date; or
- (b) Six months after the date of SSI unit start-up; or
- (c) Six months after the operator assumes responsibility for operating the SSI unit or assumes responsibility for supervising the operation of the SSI unit.

Condition 31: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5235(c), NSPS Subpart M

Item 31.1:

The Compliance Certification activity will be performed for the Facility.

Item 31.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The owner or operator of a Sewage Sludge Incineration (SSI) unit must submit an annual compliance report to the Department. Each such report shall contain the information listed in 40 CFR 60.5235(c), as applicable. Annual compliance reports developed pursuant to this condition shall be submitted to the Department no later than 12 months from the date of the previous report.

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Monitoring Frequency: ANNUALLY
Reporting Requirements: ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 1/30/2021.
Subsequent reports are due every 12 calendar month(s).

Condition 32: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5235(d), NSPS Subpart M

Item 32.1:

The Compliance Certification activity will be performed for the Facility.

Item 32.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The owner or operator of a Sewage Sludge Incineration (SSI) unit must submit a deviation report to the Department if:

- (i) Any recorded operating parameter level, based on the averaging time specified in Table 4 of 40 CFR 60 Subpart M, is above the maximum operating limit or below the minimum operating limit;
- (ii) The bag leak detection system alarm sounds for more than 5 percent of the operating time for the 6-month reporting period;
- (iii) Any recorded 24-hour block average emissions level is above the emission limit, if a continuous monitoring system is used to comply with an emission limit;
- (iv) There are visible emissions of combustion ash from an ash conveying system for more than 5 percent of the hourly observation period;
- (v) A performance test was conducted that deviated from any emission limit in Table 2 or Table 3 of 40 CFR 60 Subpart M;
- (vi) A continuous monitoring system was out of control; or
- (vii) The facility had a malfunction that caused or may have caused any applicable emission limit to be exceeded.

Each deviation report prepared pursuant to this condition must contain the information specified in 40 CFR 60.5235(d), as applicable.

Deviation reports must be submitted by August 1 of that year for data collected during the first half of the calendar year (January 1 to

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June 30), and by February 1 of the following year for data collected during the second half of the calendar year (July 1 to December 31).

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 33: General duties to minimize emissions
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 63.11115, NESHAP Subpart CCCCCC

Item 33.1:

Each owner or operator of a gasoline dispensing facility that is an affected source under Subpart CCCCCC must comply with the requirements of paragraphs (a) and (b).

(a) The owner or operator must, at all times, operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

(b) The owner or operator must keep applicable records and submit reports as specified in 40 CFR 63.11125(d) and 40 CFR 63.11126(b).

Condition 34: Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 63.11116, NESHAP Subpart CCCCCC

Item 34.1:

The owner or operator must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:

- (1) Minimize gasoline spills;
- (2) Clean up spills as expeditiously as practicable;
- (3) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;
- (4) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.

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The owner or operator is not required to submit notifications or reports as specified in 40 CFR 63.11125, 40 CFR 63.11126, or Subpart A of Part 63, but he/she must have records available within 24 hours of a request by the Administrator to document the gasoline throughput.

The owner or operator must comply with the requirements of Subpart CCCCCC by the applicable dates specified in 40 CFR 63.11113.

Portable gasoline containers that meet the requirements of 40 CFR Part 59, Subpart F, are considered acceptable for compliance with paragraph (3) above.

****** Emission Unit Level ******

Condition 35: Emission Point Definition By Emission Unit
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement:6 NYCRR Subpart 201-6

Item 35.1:

The following emission points are included in this permit for the cited Emission Unit:

Emission Unit: 1-SSINP

Emission Point: 00001

Height (ft.): 66

Diameter (in.): 36

NYTMN (km.): 4725.667 NYTME (km.): 604.199 Building: SOLIDS

Condition 36: Process Definition By Emission Unit
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement:6 NYCRR Subpart 201-6

Item 36.1:

This permit authorizes the following regulated processes for the cited Emission Unit:

Emission Unit: 1-SSINP

Process: INC

Source Classification Code: 5-01-005-15

Process Description:

Incineration of sewage sludge in multiple hearth furnaces. Only one unit (either MHF01 or MHF02) is operated at any given time.

Emission Source/Control: MIST1 - Control

Control Type: MIST ELIMINATOR

Emission Source/Control: MIST2 - Control

Control Type: MIST ELIMINATOR

Emission Source/Control: VSCR1 - Control

Control Type: WET SCRUBBER

Emission Source/Control: VSCR2 - Control

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Control Type: WET SCRUBBER

Emission Source/Control: MHF01 - Incinerator
Design Capacity: 26.3 dry tons per day
Waste Feed Method: CHUTE FED
Waste Type: SEWAGE SLUDGE

Emission Source/Control: MHF02 - Incinerator
Design Capacity: 26.3 dry tons per day
Waste Feed Method: CHUTE FED
Waste Type: SEWAGE SLUDGE

Condition 37: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5155, Subpart M

Item 37.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Item 37.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The owner or operator of a Sewage Sludge Incineration (SSI) unit must meet the criteria in paragraph (a) or (b) below during periods when a qualified operator is not accessible:

(a) If a qualified operator is not accessible for more than 8 hours, the SSI unit may be operated for less than 2 weeks by other plant personnel who are familiar with the operation of the SSI unit and who have completed a review of the information specified in 40 CFR 60.5160 within the past 12 months. The facility must maintain a record of the period when a qualified operator was not accessible and include this deviation in their annual report as specified under 40 CFR 60.5235(d).

(b) If a qualified operator will not be accessible for 2 weeks or more, the facility must:

- (1) Notify the Department of this deviation in writing within 10 days. In the notice, state what caused this deviation, what the facility is doing to ensure that a qualified operator is accessible, and when they anticipate that a qualified operator will be accessible; and
- (2) Submit a status report to the Department every 4 weeks outlining what the facility is doing to ensure that a qualified operator is accessible, stating when the facility anticipates that a qualified operator will be accessible, and requesting approval from the Department to continue operation of the SSI unit. The facility must submit the first status report 4 weeks after the Department was first notified of the deviation.

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If the Department notifies the facility that their request to continue operation of the SSI unit is disapproved, the SSI unit may continue operation for 30 days, and then must cease operation.

Operation of the unit may resume if a qualified operator is accessible. The facility must notify the Department within 5 days of having resumed operations and of having a qualified operator accessible.

Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

Condition 38: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart M

Item 38.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):
CAS No: 007440-43-9 CADMIUM

Item 38.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of cadmium do not exceed 0.095 milligrams per dry standard cubic meter (corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a sample with a minimum volume of 1.0 dry standard cubic meters. In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

Upper Permit Limit: 0.095 milligrams per dry standard cubic meter
(corrected to 7% oxygen)

Reference Test Method: EPA Reference Test Method 29

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 39: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart M

Item 39.1:

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The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

CAS No: 000630-08-0 CARBON MONOXIDE

Item 39.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of carbon monoxide do not exceed 3,800 parts per million by volume (dry corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a sample for a minimum of one hour. In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

Upper Permit Limit: 3,800 parts per million by volume (dry,
corrected to 7% O₂)

Reference Test Method: EPA Reference Test Method 10, 10A or 10B

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 40: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart M

Item 40.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

CAS No: 001746-01-6 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN

Item 40.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of dioxins and furans on a toxic equivalency basis do not exceed 0.32 nanograms per dry standard cubic meter (corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a minimum sample volume of one dry standard cubic meter. In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack

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test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

Upper Permit Limit: 0.32 nanograms per dry standard cubic meter
(corrected to 7% O₂)

Reference Test Method: EPA Reference Test Method 23

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 41: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart M

Item 41.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

CAS No: 001746-01-6 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN

Item 41.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of dioxins and furans on a total mass basis do not exceed 5.0 nanograms per dry standard cubic meter (corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a minimum sample volume of one dry standard cubic meter. In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

Upper Permit Limit: 5.0 nanograms per dry standard cubic meter
(corrected to 7% O₂)

Reference Test Method: EPA Reference Test Method 23

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 42: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart M

Item 42.1:

The Compliance Certification activity will be performed for:

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Emission Unit: 1-SSINP

Item 42.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: MONITORING OF PROCESS OR CONTROL DEVICE
PARAMETERS AS SURROGATE

Monitoring Description:

The facility owner or operator shall ensure that fugitive emissions of combustion ash from an ash handling system (including conveyor transfer points) are not visible for more than five percent of each hourly observation period. Visible emissions readings must be conducted over three 1-hour observation periods in order to demonstrate compliance with this condition.

Parameter Monitored: VISIBLE EMISSIONS

Upper Permit Limit: 5 percent

Reference Test Method: EPA Reference Test Method 22

Monitoring Frequency: ANNUALLY

Averaging Method: MAXIMUM - NOT TO EXCEED STATED VALUE - SEE
MONITORING DESCRIPTION

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 43: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart MMMM**Item 43.1:**

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

CAS No: 007647-01-0 HYDROGEN CHLORIDE

Item 43.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of hydrogen chloride do not exceed 1.2 parts per million by volume (dry corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a minimum sample volume of 200 liters (if using Method 26) or one dry standard cubic meter (if using Method 26A). In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

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Upper Permit Limit: 1.2 parts per million by volume (dry, corrected to 7% O₂)

Reference Test Method: EPA Reference Test Method 26 or 26A

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 44: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart M

Item 44.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

CAS No: 007439-92-1 LEAD

Item 44.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of lead do not exceed 0.30 milligrams per dry standard cubic meter (corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a minimum sample volume of one dry standard cubic meter. In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

Upper Permit Limit: 0.30 milligrams per dry standard cubic meter (corrected to 7% oxygen)

Reference Test Method: EPA Reference Test Method 29

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 45: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart M

Item 45.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

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Facility DEC ID: 4012600138

CAS No: 007439-97-6 MERCURY

Item 45.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of mercury do not exceed 0.28 milligrams per dry standard cubic meter (corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a minimum sample volume of one dry standard cubic meter (if using Method 29) or a minimum sample as described in the test method (if using Method 30B). In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

Upper Permit Limit: 0.28 milligrams per dry standard cubic meter
(corrected to 7% oxygen)

Reference Test Method: EPA Reference Test Method 29 or 30B

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 46: Compliance Certification**Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 40CFR 60.5165, Subpart MMMM****Item 46.1:**

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

CAS No: 0NY210-00-0 OXIDES OF NITROGEN

Item 46.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of oxides of nitrogen do not exceed 220 parts per million by volume (dry corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a sample for a minimum of one hour. In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

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Upper Permit Limit: 220 parts per million by volume (dry, corrected
to 7% O₂)

Reference Test Method: EPA Reference Test Method 7 or 7E

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 47: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart M**Item 47.1:**

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

CAS No: 0NY075-00-0 PARTICULATES

Item 47.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of particulate matter do not exceed 80 milligrams per dry standard cubic meter (corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a minimum sample volume of 0.75 dry standard cubic meter. In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

Upper Permit Limit: 80 milligrams per dry standard cubic meter
(corrected to 7% oxygen)

Reference Test Method: EPA Reference Test Method 5, 26A or 29

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 48: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5165, Subpart M**Item 48.1:**

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

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CAS No: 007446-09-5 SULFUR DIOXIDE

Item 48.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator must ensure that emissions of sulfur dioxide do not exceed 26 parts per million by volume (dry corrected to 7% oxygen) as an average of 3 stack test runs. Each test run must collect a minimum sample volume of 200 liters (if using Method 6) or a minimum duration of one hour (if using Method 6C). In order to demonstrate compliance with this limit, the facility owner or operator shall conduct a stack test, as described in 40 CFR 60.5220, on an annual basis. Annual testing must be conducted at least 11 months but not more than 13 months from the previous test as described in 40 CFR 60.5205(a).

Upper Permit Limit: 26 parts per million by volume (dry, corrected to 7% O₂)

Reference Test Method: EPA Reference Test Method 6 or 6C

Monitoring Frequency: ANNUALLY

Averaging Method: ARITHMETIC MEAN

Reporting Requirements: ONCE / BATCH OR MONITORING OCCURRENCE

Condition 49: Compliance Certification**Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 40CFR 60.5170(f), NSPS Subpart M****Item 49.1:**

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Item 49.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The facility owner or operator must continuously monitor and record the feed rate of sewage sludge to the Sewage Sludge Incineration (SSI) unit and calculate a 24-hour average for all hours of operation. The facility owner or operator shall maintain a record of each daily average feed rate calculated pursuant to this condition at the facility for a period of at least five years. Such records must be made available to the Department upon request.

Monitoring Frequency: CONTINUOUS

Averaging Method: 24 HOUR DAILY AVERAGE (ARITHMETIC MEAN)

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

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Subsequent reports are due every 6 calendar month(s).

Condition 50: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5170(f), NSPS Subpart M

Item 50.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Item 50.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The facility owner or operator must maintain a record of the daily average moisture content of sewage sludge fed to the Sewage Sludge Incineration (SSI) unit. In order to demonstrate compliance with this condition, the facility owner or operator must take at least one grab sample per day of the sewage sludge fed to the SSI unit and calculate its moisture content. If more than one sample is taken, the facility owner or operator shall calculate the daily average of the samples.

The facility owner or operator shall maintain a record of each daily average moisture content calculated pursuant to this condition at the facility for a period of at least five years. Such records must be made available to the Department upon request.

Monitoring Frequency: DAILY

Averaging Method: 24 HOUR DAILY AVERAGE (ARITHMETIC MEAN)

Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

Condition 51: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5200, Subpart M

Item 51.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Item 51.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The owner or operator of a Sewage Sludge Incineration (SSI) unit must develop and implement a site-specific monitoring plan as described in 40 CFR 60.5200. Such a plan must contain the following information at

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a minimum:

(a) The elements and requirements specified in 40 CFR 60.5200(a), as applicable, for each continuous monitoring system installed at the facility.

(b) A description of the items listed in 40 CFR 60.5200(b) if a bag leak detection system is used.

(c) Provisions for conducting an initial performance evaluation of each continuous monitoring system and bag leak detection system, as applicable, in accordance with the monitoring plan and the requirements of 40 CFR 60.13(c). Each such performance evaluation shall be conducted within 60 days of the installation of the monitoring system.

(d) Specification of the operating procedures for the ash handling system that the facility owner or operator will follow to meet the fugitive emissions limitation in Subpart Mmmm.

Monitoring plans developed pursuant to this condition must be submitted to the Department at least 60 days prior to the initial performance evaluation of the continuous monitoring systems and at least 60 days in advance of the initial compliance date.

The facility owner or operator must update and resubmit the monitoring plan if there are any changes or potential changes in the monitoring procedures or processes used at the facility (as defined in 40 CFR 60.5250).

The monitoring plan developed pursuant to this condition, including any changes, must be maintained on site, and must be provided to the Department upon request.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: AS REQUIRED - SEE MONITORING DESCRIPTION

Condition 52: Performance Testing

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5205, Subpart Mmmm

Item 52.1:

This Condition applies to Emission Unit: 1-SSINP

Item 52.2:

The facility owner or operator must demonstrate initial and continuous compliance with the emission limits and standards specified in this permit. Continuous compliance is demonstrated using an initial performance test and subsequent performance tests for each pollutant on an annual basis (between 11 and 13 calendar months following the previous performance test). Each performance test must be conducted using the test methods, averaging methods, and

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minimum sampling volumes or durations as specified for each pollutant in this permit, and according to the testing, monitoring, and calibration requirements specified in 40 CFR 60.5220(a).

The facility owner or operator must repeat the performance test within 60 days of a significant permit revision involving a process change as described in 40 CFR 60.5250.

The facility owner or operator may conduct a repeat performance test at any time to establish new values for the operating limits. If successful, the new operating limits will apply from that point forward.

The Department reserves the right to request a repeat performance test at any time.

Condition 53: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5205(a)(3), Subpart M

Item 53.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Item 53.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The facility owner or operator may reduce the frequency of performance testing for a given pollutant as follows:

- (1) If the results of the performance test for at least 2 consecutive years demonstrate that emissions are at or below 75 percent of the specified emission limit, and there have been no changes in the operation of the SSI unit or air pollution control equipment that could increase emissions, the facility owner or operator does not have to conduct a performance test for that pollutant for the next 2 years. The facility owner or operator must conduct a performance test during the third year (no more than 37 months from the previous performance test).
- (2) If the SSI unit continues to meet the emission limit for the pollutant, the facility may choose to continue conducting performance tests for the pollutant every third year (no more than 37 months from the previous performance test) if emissions remain at or below 75 percent of the emission limit, and no changes are made to the operation of the affected source or air pollution control equipment

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that could increase emissions.

(3) If a performance test shows emissions exceeded 75 percent of the emission limit for a pollutant, the facility must resume conducting annual performance tests for that pollutant until all performance tests over 2 consecutive years demonstrate compliance.

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 54: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5215, Subpart M

Item 54.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Item 54.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The facility owner or operator must conduct an annual inspection of each air pollution control device used to comply with their emission limits. Each inspection must be conducted no later than 12 months following a previous annual air pollution control device inspection.

All necessary repairs must be completed within 10 operating days following an air pollution control device inspection unless the facility obtains written approval from the Department establishing an alternative date for the completion of repairs.

The facility owner or operator must maintain a record of each annual air pollution control device inspection. Each record must include a description of any repairs that were made to the air pollution control device, including the date each repair was completed, and a description of any repairs that were not completed within 10 days following the inspection. Records kept pursuant to this condition must be maintained at the facility for a period of at least five years, and must be made available to the Department upon request.

Monitoring Frequency: ANNUALLY

Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

Condition 55: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

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Applicable Federal Requirement: 40CFR 60.5225(a)(1), NSPS Subpart M**Item 55.1:**

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Item 55.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The facility owner or operator must install, operate, calibrate, and maintain the continuous parameter monitoring systems according to the following requirements for each flow, pressure, pH, and operating temperature measurement device.

(i) The facility owner or operator must collect data using the continuous monitoring system at all times the sewage sludge incinerator is operating and at the intervals specified in paragraph (ii) below, except for periods of monitoring system malfunctions that occur during periods specified in 40 CFR 60.5200(a)(7)(i), repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities (including, as applicable, calibration checks and required zero and span adjustments). Any such periods that you do not collect data using the continuous monitoring system constitute a deviation from the monitoring requirements and must be reported in the semiannual deviation report.

(ii) The facility owner or operator must collect continuous parameter monitoring system data in accordance with 40 CFR 60.13(e)(2).

(iii) Any data collected during monitoring system malfunctions, repairs associated with monitoring system malfunctions, or required monitoring system quality assurance or control activities must not be included in calculations used to report emissions or operating levels. Any such periods must be reported in your semiannual deviation report.

(iv) Any data collected during periods when the monitoring system is out of control as specified in 40 CFR 60.5200(a)(7)(i) must not be included in calculations used to report emissions or operating levels. Any such periods that do not coincide with a monitoring system malfunction, as defined in 40 CFR 60.5250, constitute a deviation from the monitoring requirements and must be reported in the semiannual deviation report.

(v) The facility owner or operator must use all the data collected during all periods except those periods specified in paragraphs (iii) and (iv) above in assessing the operation of the control device and associated control system.

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(vi) Record the results of each inspection, calibration, and validation check.

In addition, the facility owner or operator must operate and maintain the continuous monitoring system in accordance with the monitoring plan required by 40 CFR 60.4880.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 56: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5230, Subpart M

Item 56.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Item 56.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES

Monitoring Description:

The facility owner or operator must maintain the following records in an easily accessible location at the facility, as applicable:

1. Copies of the facility's final control plan and any additional notifications submitted pursuant to 40 CFR 60.5235;
2. Documentation of the operator training procedures and records as specified in 40 CFR 63.5230(c);
3. Records of the results of initial and annual air pollution control device inspections conducted as specified in 40 CFR 60.5195 and 60.5220(c), including any required maintenance and any repairs not completed within 10 days of an inspection or the time frame established by the Department;
4. A record of each performance test, as specified in 40 CFR 60.5230;
5. Records of continuous monitoring data, where applicable, as specified in 40 CFR 60.5230(f);
6. Other records for continuous monitoring systems, where applicable, as specified in 40 CFR 60.5230(g);

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7. Records of any deviation reports submitted under 40 CFR 60.5235(e) and (f);
8. Equipment specifications and related operation and maintenance requirements received from vendors for the incinerator, emission controls, and monitoring equipment;
9. Records of inspections, calibration, and validation checks of any monitoring devices as required under 40 CFR 60.5220 and 60.5225;
10. Records of the monitoring plans required under 40 CFR 60.5200, and records of performance evaluations required under 40 CFR 60.5205(b)(5);
11. If the facility owner or operator elects to conduct performance tests less frequently than annually as described in 40 CFR 60.5205(a)(3), annual records that document that the facility's emissions in the two previous consecutive years were at or below 75 percent of the applicable emission limit in Table 1 or 2 of 40 CFR 60 Subpart M, and document that there were no changes in source operations or air pollution control equipment that would cause emissions of the relevant pollutant to increase within the past 2 years;
12. Records indicating use of the bypass stack, where applicable, including dates, times, and durations as required under 40 CFR 60.5225(d); and
13. If a malfunction occurs, a record of the information submitted in the facility's annual report in 40 CFR 60.5235(c)(16).

Records kept pursuant to this condition must be maintained at the facility for a period of at least five years, and must be made available to the Department upon request.

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION
Reporting Requirements: UPON REQUEST BY REGULATORY AGENCY

Condition 57: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40 CFR 60.5230, Subpart M

Item 57.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Item 57.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: RECORD KEEPING/MAINTENANCE PROCEDURES
Monitoring Description:

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The facility owner or operator must maintain the following operator training records in an easily accessible location at the facility at all times:

(1) Documentation of the following operator training procedures and information:

- (i) A summary of the applicable standards under 40 CFR 60 Subpart Mmmm;
- (ii) Procedures for receiving, handling, and feeding sewage sludge;
- (iii) Incinerator start up, shutdown, and malfunction preventative and corrective procedures;
- (iv) Procedures for maintaining proper combustion air supply levels;
- (v) Procedures for operating the incinerator and associated air pollution control devices within the standards established under 40 CFR 60 Subpart Mmmm;
- (vi) Monitoring procedures for demonstrating compliance with the incinerator operating limits;
- (vii) Reporting and record keeping procedures;
- (viii) Procedures for handling ash;
- (ix) A list of materials burned during the performance test, if in addition to sewage sludge; and
- (x) For each qualified operator and other plant personnel who may operate the unit according to the provisions of 40 CFR 60.5155(a), the phone and/or pager number at which they can be reached during operating hours.

(2) Records showing the names of SSI unit operators and other plant personnel who may operate the SSI unit, as follows:

- (i) Records showing the names of SSI unit operators and other plant personnel who have completed review of the information described in paragraph (1) above, including the date of initial review and each subsequent review: and
- (ii) Records showing the names of SSI unit operators who have completed the training described in 40 CFR 60.5130, met the criteria for qualification under 40 CFR 60.5140, and maintained or renewed their certification under 40 CFR 60.5145 or 60.5150. Such records must include documentation of training, including the date of initial qualification and all subsequent renewals of qualification.

Records kept pursuant to this condition must be made available to the Department upon request.

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

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Condition 58: Compliance Certification**Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 40CFR 61.32(a), NESHAP Subpart C****Item 58.1:**

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

CAS No: 007440-41-7 BERYLLIUM

Item 58.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator shall not cause or allow emissions of Beryllium in excess of 10 grams (0.022 pounds) over a 24-hour period, except as provided in 40 CFR 61.32(b).

The facility owner or operator shall determine compliance with this emission limit by conducting periodic testing as described in 40 CFR 61.33.

Records of emission test results and other data needed to determine total emissions shall be retained at the facility for a period of at least two years, and must be made available to the Department upon request.

Upper Permit Limit: 10 grams per day

Reference Test Method: EPA test Method 104 or 29

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION

Averaging Method: Arithmetic average of stack test runs

Reporting Requirements: SEMI-ANNUALLY (ANNIVERSARY)

Initial Report Due: 07/03/2021 for the period 12/04/2020 through 06/03/2021

Condition 59: Compliance Certification**Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 40CFR 61.52(b), NESHAP Subpart E****Item 59.1:**

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Regulated Contaminant(s):

CAS No: 007439-97-6 MERCURY

Item 59.2:

Compliance Certification shall include the following monitoring:

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Monitoring Type: INTERMITTENT EMISSION TESTING

Monitoring Description:

The facility owner or operator shall not cause or allow emissions of mercury in excess of 3.2 kilograms (7.1 pounds) over a 24-hour period.

The facility owner or operator shall determine compliance with this emission limit by conducting periodic testing as described in 40 CFR 61.53(d).

Records of emission test results and other data needed to determine total emissions shall be retained at the facility for a period of at least two years, and must be made available to the Department upon request.

Upper Permit Limit: 3.2 kilograms per day

Reference Test Method: EPA test methods 101A or 29

Monitoring Frequency: AS REQUIRED - SEE PERMIT MONITORING DESCRIPTION

Averaging Method: Arithmetic average of stack test runs

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 60: Compliance Certification**Effective between the dates of 12/04/2020 and 12/03/2025****Applicable Federal Requirement: 40CFR 60.5210, Subpart M****Item 60.1:**

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Process: INC

Emission Source: MHF01

Item 60.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: CONTINUOUS EMISSION MONITORING (CEM)

Monitoring Description:

The facility owner or operator shall continuously monitor and record the temperature in the combustion zone (Hearths 3 and 4) and ensure that the 12-hour block average temperature is above the minimum temperature specified below at all times sewage sludge is in the combustion zone.

The continuous monitoring system shall be designed and operated in such a way as a temperature reading is recorded once every 15 minutes. Each set of four 15-minute temperature readings shall be averaged into a single 1-hour block average. Each set of 12 1-hour averages shall be averaged into a single 12-hour block average temperature and used to demonstrate compliance with this requirement.

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A 12-hour block average below the minimum combustion chamber temperature specified in this condition constitutes a deviation from this requirement. The facility owner or operator shall prepare and submit a report to the Department containing the date, time, recorded temperature, cause of the deviation, and a summary of any corrective action taken on a semiannual basis.

The facility owner or operator shall maintain a record of the data necessary to calculate each 12-hour block average. Each such record shall include the date and time the incinerator was started, the date and time the incinerator was shut down, and a description of any deviations and the corrective action taken to resolve them. The facility owner or operator shall also maintain a record of each deviation report submitted to the Department. Such records must be maintained at the facility for a period of at least five years, and must be made available to the Department upon request.

Manufacturer Name/Model Number: Type K Thermocouple
Parameter Monitored: TEMPERATURE
Lower Permit Limit: 990 degrees Fahrenheit
Reference Test Method: 40 CFR 60 Appendix F
Monitoring Frequency: CONTINUOUS
Averaging Method: AVERAGING METHOD - SEE MONITORING DESCRIPTION
Reporting Requirements: SEMI-ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 1/30/2021.
Subsequent reports are due every 6 calendar month(s).

Condition 61: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5210, Subpart M

Item 61.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Process: INC

Emission Source: MHF02

Item 61.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: CONTINUOUS EMISSION MONITORING (CEM)

Monitoring Description:

The facility owner or operator shall continuously monitor and record the temperature in the combustion zone (Hearths 3 and 4) and ensure that the 12-hour block average temperature is above the minimum temperature specified below at all times sewage sludge is in the combustion zone.

The continuous monitoring system shall be designed and operated in such a way as a temperature reading is recorded once every 15 minutes.

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Each set of four 15-minute temperature readings shall be averaged into a single 1-hour block average. Each set of 12 1-hour averages shall be averaged into a single 12-hour block average temperature and used to demonstrate compliance with this requirement.

A 12-hour block average below the minimum combustion chamber temperature specified in this condition constitutes a deviation from this requirement. The facility owner or operator shall prepare and submit a report to the Department containing the date, time, recorded temperature, cause of the deviation, and a summary of any corrective action taken on a semiannual basis.

The facility owner or operator shall maintain a record of the data necessary to calculate each 12-hour block average. Each such record shall include the date and time the incinerator was started, the date and time the incinerator was shut down, and a description of any deviations and the corrective action taken to resolve them. The facility owner or operator shall also maintain a record of each deviation report submitted to the Department. Such records must be maintained at the facility for a period of at least five years, and must be made available to the Department upon request.

Manufacturer Name/Model Number: Type K Thermocouple

Parameter Monitored: TEMPERATURE

Lower Permit Limit: 1100 degrees Fahrenheit

Reference Test Method: 40 CFR 60 Appendix F

Monitoring Frequency: CONTINUOUS

Averaging Method: AVERAGING METHOD - SEE MONITORING DESCRIPTION

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 62: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5210, Subpart M

Item 62.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Process: INC

Emission Source: VSCR1

Item 62.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: CONTINUOUS EMISSION MONITORING (CEM)

Monitoring Description:

The facility owner or operator shall continuously monitor and record the pressure drop across the wet scrubber and ensure that the 12-hour block average pressure drop is above the minimum pressure drop specified below.

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The continuous monitoring system shall be designed and operated in such a way as a pressure drop reading is recorded once every 15 minutes. Each set of four 15-minute readings shall be averaged into a single 1-hour block average. Each set of twelve 1-hour averages shall be averaged into a single 12-hour block average pressure drop and used to demonstrate compliance with this condition.

Each 12-hour average pressure drop that is below the minimum pressure drop specified in this condition constitutes a deviation from this condition. The facility owner or operator shall prepare and submit a report to the Department containing the date, time, recorded pressure drop, cause of the deviation, and a summary of any corrective action taken on a semiannual basis.

The facility owner or operator shall maintain a record of the data necessary to calculate each 12-hour block average and of each deviation report at the facility for a period of at least five years. Such records must be made available to the Department upon request.

Manufacturer Name/Model Number: Rosemount 3051

Parameter Monitored: PRESSURE DROP

Lower Permit Limit: 21.6 inches of water

Reference Test Method: 40 CFR 60 Appendix F

Monitoring Frequency: CONTINUOUS

Averaging Method: AVERAGING METHOD - SEE MONITORING DESCRIPTION

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 63: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5210, Subpart M

Item 63.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Process: INC

Emission Source: VSCR1

Item 63.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: CONTINUOUS EMISSION MONITORING (CEM)

Monitoring Description:

The facility owner or operator shall continuously monitor and record the wet scrubber liquid pH and ensure that the 3-hour block average pH is above the minimum pH specified below.

The continuous monitoring system shall be designed and operated in such a way as a pH reading is recorded once every 15 minutes. Each set

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of four 15-minute readings shall be averaged into a single 1-hour block average. Each set of three 1-hour averages shall be averaged into a single 3-hour block average pH and used to demonstrate compliance with this condition.

Each 3-hour average pH that is below the minimum pH specified in this condition constitutes a deviation from this condition. The facility owner or operator shall prepare and submit a report to the Department containing the date, time, recorded pH, cause of the deviation, and a summary of any corrective action taken on a semiannual basis.

The facility owner or operator shall maintain a record of the data necessary to calculate each 3-hour block average and of each deviation report at the facility for a period of at least five years. Such records must be made available to the Department upon request.

Manufacturer Name/Model Number: Orbipac CPF81D-7LH21 Memosens

Parameter Monitored: PH

Lower Permit Limit: 4.5 pH (STANDARD) units

Reference Test Method: 40 CFR 60 Appendix F

Monitoring Frequency: CONTINUOUS

Averaging Method: AVERAGING METHOD - SEE MONITORING DESCRIPTION

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 64: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5210, Subpart M

Item 64.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Process: INC

Emission Source: VSCR1

Item 64.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: CONTINUOUS EMISSION MONITORING (CEM)

Monitoring Description:

The facility owner or operator shall continuously monitor and record the wet scrubber liquid flow rate and ensure that the 12-hour block average flow rate is above the minimum flow rate specified below.

The continuous monitoring system shall be designed and operated in such a way as a flow rate reading is recorded once every 15 minutes. Each set of four 15-minute readings shall be averaged into a single 1-hour block average. Each set of twelve 1-hour averages shall be averaged into a single 12-hour block average flow rate and used to

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demonstrate compliance with this condition.

Each 12-hour average flow rate that is below the minimum flow rate specified in this condition constitutes a deviation from this condition. The facility owner or operator shall prepare and submit a report to the Department containing the date, time, recorded flow rate, cause of the deviation, and a summary of any corrective action taken on a semiannual basis.

The facility owner or operator shall maintain a record of the data necessary to calculate each 12-hour block average and of each deviation report at the facility for a period of at least five years. Such records must be made available to the Department upon request.

Manufacturer Name/Model Number: Rosemount 8732C

Parameter Monitored: FLOW RATE

Lower Permit Limit: 816.5 gallons per minute

Reference Test Method: 40 CFR 60 Appendix F

Monitoring Frequency: CONTINUOUS

Averaging Method: AVERAGING METHOD - SEE MONITORING DESCRIPTION

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

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Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5210, Subpart MMMM

Item 65.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Process: INC

Emission Source: VSCR2

Item 65.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: CONTINUOUS EMISSION MONITORING (CEM)

Monitoring Description:

The facility owner or operator shall continuously monitor and record the pressure drop across the wet scrubber and ensure that the 12-hour block average pressure drop is above the minimum pressure drop specified below.

The continuous monitoring system shall be designed and operated in such a way as a pressure drop reading is recorded once every 15 minutes. Each set of four 15-minute readings shall be averaged into a single 1-hour block average. Each set of twelve 1-hour averages shall be averaged into a single 12-hour block average pressure drop and used to demonstrate compliance with this condition.

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Each 12-hour average pressure drop that is below the minimum pressure drop specified in this condition constitutes a deviation from this condition. The facility owner or operator shall prepare and submit a report to the Department containing the date, time, recorded pressure drop, cause of the deviation, and a summary of any corrective action taken on a semiannual basis.

The facility owner or operator shall maintain a record of the data necessary to calculate each 12-hour block average and of each deviation report at the facility for a period of at least five years. Such records must be made available to the Department upon request.

Manufacturer Name/Model Number: Rosemount 3051
Parameter Monitored: PRESSURE DROP
Lower Permit Limit: 22.7 inches of water
Reference Test Method: 40 CFR 60 Appendix F
Monitoring Frequency: CONTINUOUS
Averaging Method: AVERAGING METHOD - SEE MONITORING DESCRIPTION
Reporting Requirements: SEMI-ANNUALLY (CALENDAR)
Reports due 30 days after the reporting period.
The initial report is due 1/30/2021.
Subsequent reports are due every 6 calendar month(s).

Condition 66: Compliance Certification
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5210, Subpart MMMM

Item 66.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP
Process: INC

Emission Source: VSCR2

Item 66.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: CONTINUOUS EMISSION MONITORING (CEM)

Monitoring Description:

The facility owner or operator shall continuously monitor and record the wet scrubber liquid pH and ensure that the 3-hour block average pH is above the minimum pH specified below.

The continuous monitoring system shall be designed and operated in such a way as a pH reading is recorded once every 15 minutes. Each set of four 15-minute readings shall be averaged into a single 1-hour block average. Each set of three 1-hour averages shall be averaged into a single 3-hour block average pH and used to demonstrate compliance with this condition.

Each 3-hour average pH that is below the minimum pH specified in this condition constitutes a deviation from this condition. The facility owner or operator shall prepare and submit a report to the Department

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containing the date, time, recorded pH, cause of the deviation, and a summary of any corrective action taken on a semiannual basis.

The facility owner or operator shall maintain a record of the data necessary to calculate each 3-hour block average and of each deviation report at the facility for a period of at least five years. Such records must be made available to the Department upon request.

Manufacturer Name/Model Number: Orbipac CPF81D-7LH21 Memosens

Parameter Monitored: PH

Lower Permit Limit: 4.5 pH (STANDARD) units

Reference Test Method: 40 CFR 60 Appendix F

Monitoring Frequency: CONTINUOUS

Averaging Method: AVERAGING METHOD - SEE MONITORING DESCRIPTION

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

Condition 67: Compliance Certification

Effective between the dates of 12/04/2020 and 12/03/2025

Applicable Federal Requirement: 40CFR 60.5210, Subpart M

Item 67.1:

The Compliance Certification activity will be performed for:

Emission Unit: 1-SSINP

Process: INC

Emission Source: VSCR2

Item 67.2:

Compliance Certification shall include the following monitoring:

Monitoring Type: CONTINUOUS EMISSION MONITORING (CEM)

Monitoring Description:

The facility owner or operator shall continuously monitor and record the wet scrubber liquid flow rate and ensure that the 12-hour block average flow rate is above the minimum flow rate specified below.

The continuous monitoring system shall be designed and operated in such a way as a flow rate reading is recorded once every 15 minutes. Each set of four 15-minute readings shall be averaged into a single 1-hour block average. Each set of twelve 1-hour averages shall be averaged into a single 12-hour block average flow rate and used to demonstrate compliance with this condition.

Each 12-hour average flow rate that is below the minimum flow rate specified in this condition constitutes a deviation from this condition. The facility owner or operator shall prepare and submit a report to the Department containing the date, time, recorded flow rate, cause of the deviation, and a summary of any corrective action taken on a semiannual basis.

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Facility DEC ID: 4012600138

The facility owner or operator shall maintain a record of the data necessary to calculate each 12-hour block average and of each deviation report at the facility for a period of at least five years. Such records must be made available to the Department upon request.

Manufacturer Name/Model Number: Rosemount 8732C

Parameter Monitored: FLOW RATE

Lower Permit Limit: 855 gallons per minute

Reference Test Method: 40 CFR 60 Appendix F

Monitoring Frequency: CONTINUOUS

Averaging Method: AVERAGING METHOD - SEE MONITORING DESCRIPTION

Reporting Requirements: SEMI-ANNUALLY (CALENDAR)

Reports due 30 days after the reporting period.

The initial report is due 1/30/2021.

Subsequent reports are due every 6 calendar month(s).

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Facility DEC ID: 4012600138

STATE ONLY ENFORCEABLE CONDITIONS****** Facility Level ********NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS**

This section contains terms and conditions which are not federally enforceable. Permittees may also have other obligations under regulations of general applicability

Item A: Emergency Defense - 6 NYCRR 201-1.5

An emergency, as defined by subpart 201-2, constitutes an affirmative defense to penalties sought in an enforcement action brought by the Department for noncompliance with emissions limitations or permit conditions for all facilities in New York State.

(a) The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An emergency occurred and that the facility owner or operator can identify the cause(s) of the emergency;

(2) The equipment at the permitted facility causing the emergency was at the time being properly operated and maintained;

(3) During the period of the emergency the facility owner or operator took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and

(4) The facility owner or operator notified the Department within two working days after the event occurred. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

(b) In any enforcement proceeding, the facility owner or operator seeking to establish the occurrence of an emergency has the burden of proof.

(c) This provision is in addition to any emergency or upset provision contained in any applicable requirement.

Item B: General Provisions for State Enforceable Permit Terms and Condition - 6 NYCRR Part 201-5

Any person who owns and/or operates stationary sources shall operate and maintain all emission units and any required emission control devices in compliance with all applicable Parts of this Chapter and existing laws, and shall operate the facility in accordance with all criteria, emission limits, terms, conditions, and standards in this permit. Failure of such person to properly operate and maintain the effectiveness of such emission units and emission control devices may be sufficient reason for the Department to revoke or deny a permit.

The owner or operator of the permitted facility must maintain all

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required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility regulated by this Subpart, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations or law.

STATE ONLY APPLICABLE REQUIREMENTS

The following conditions are state applicable requirements and are not subject to compliance certification requirements unless otherwise noted or required under 6 NYCRR Part 201.

Condition 68: Contaminant List
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable State Requirement: ECL 19-0301**Item 68.1:**

Emissions of the following contaminants are subject to contaminant specific requirements in this permit (emission limits, control requirements or compliance monitoring conditions).

CAS No: 000630-08-0
Name: CARBON MONOXIDE

CAS No: 001746-01-6
Name: 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN

CAS No: 007439-92-1
Name: LEAD

CAS No: 007439-97-6
Name: MERCURY

CAS No: 007440-41-7
Name: BERYLLIUM

CAS No: 007440-43-9
Name: CADMIUM

CAS No: 007446-09-5
Name: SULFUR DIOXIDE

CAS No: 007647-01-0
Name: HYDROGEN CHLORIDE

CAS No: 0NY075-00-0
Name: PARTICULATES

CAS No: 0NY210-00-0
Name: OXIDES OF NITROGEN

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Condition 69: Malfunctions and start-up/shutdown activities
Effective between the dates of 12/04/2020 and 12/03/2025

Applicable State Requirement: 6 NYCRR 201-1.4

Item 69.1:

(a) The facility owner or operator shall take all necessary and appropriate actions to prevent the emission of air pollutants that result in contravention of any applicable emission standard during periods of start-up, shutdown, or malfunction.

(b) The facility owner or operator shall compile and maintain records of all equipment malfunctions, maintenance, or start-up/shutdown activities when they can be expected to result in an exceedance of any applicable emission standard, and shall submit a report of such activities to the department when requested to do so, or when so required by a condition of a permit issued for the corresponding air contamination source. Such reports shall state whether any violations occurred and, if so, whether they were unavoidable, include the time, frequency and duration of the maintenance and/or start-up/shutdown activities, and an estimate of the emission rates of any air contaminants released. Such records shall be maintained for a period of at least five years and made available for review to department representatives upon request. Facility owners or operators subject to continuous stack monitoring and quarterly reporting requirements need not submit additional reports for equipment maintenance or start-up/shutdown activities for the facility to the department.

(c) In the event that emissions of air contaminants in excess of any emission standard in this Subchapter occur due to a malfunction, the facility owner or operator shall compile and maintain records of the malfunction and notify the department as soon as possible during normal working hours, but not later than two working days after becoming aware that the malfunction occurred. When requested by the department, the facility owner or operator shall submit a written report to the department describing the malfunction, the corrective action taken, identification of air contaminants, and an estimate of the emission rates.

(d) The department may also require the owner or operator to include, in reports described under Subdivisions (b) and (c) of this Section, an estimate of the maximum ground level concentration of each air contaminant emitted and the effect of such emissions.

(e) A violation of any applicable emission standard resulting from start-up, shutdown, or malfunction conditions at a permitted or registered facility may not be subject to an enforcement action by the department and/or penalty if the department determines, in its sole discretion, that such a violation was unavoidable. The actions and recordkeeping and reporting requirements listed above must be adhered to in such circumstances.

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Attachment C: MHF Operating Guidelines

APPENDIX: A

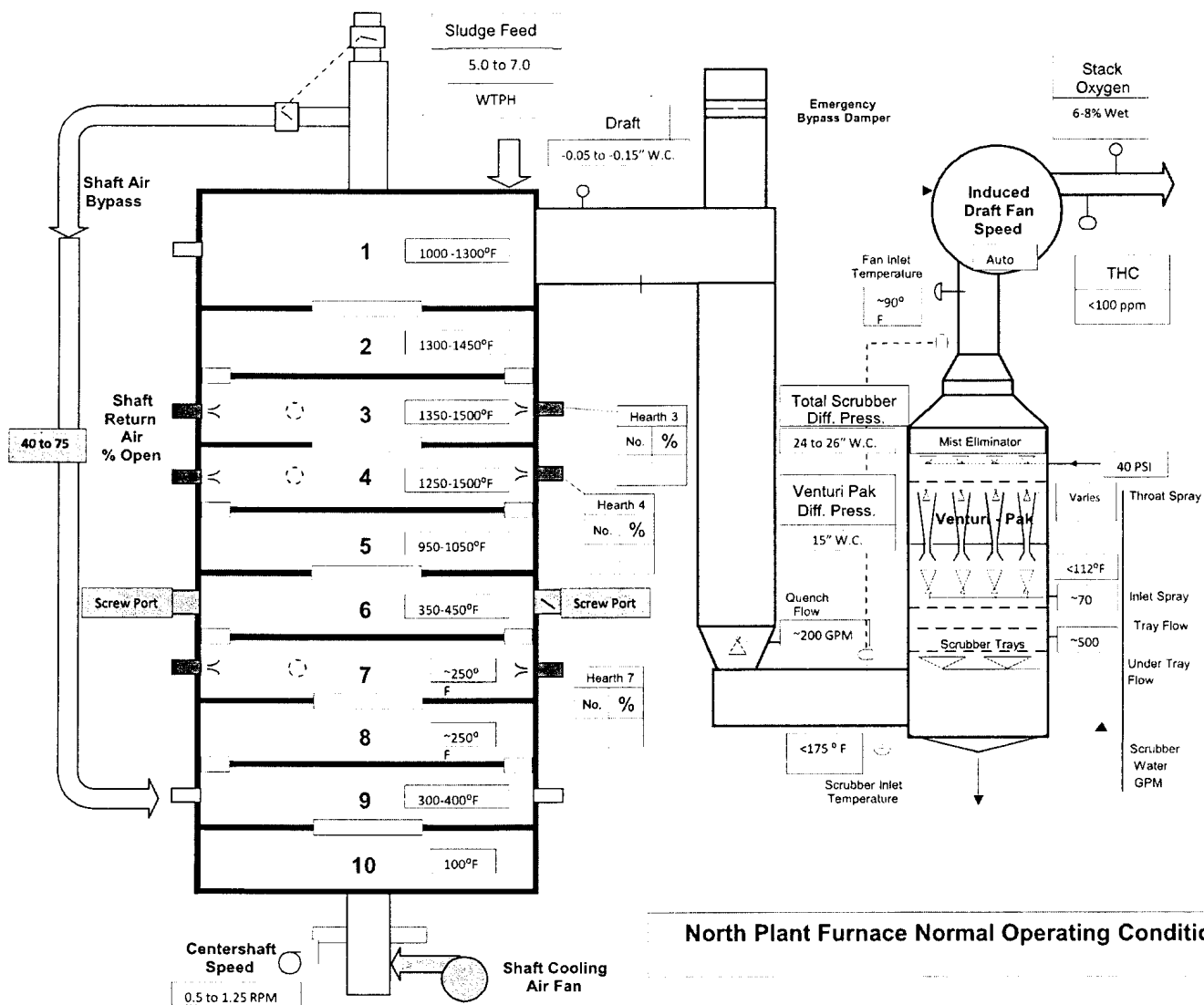
North Plant Operating Guidelines and Procedures

CONTENTS

- A. Normal Operating Mode Guidelines and Settings
 - 1. Summary Description
 - 2. Summary Schematic
 - 3. Feed Rate Guidelines by Cake Solids
- B. "Rising Fire" or High Temperature Corrective Actions
- C. "Dropping Fire" Corrective Actions
- D. "Burn Out" Control Procedures
 - 1. Loss of Feed
 - 2. Taking the Furnace Out of Service
- E. THC Control Procedures
- F. Visible Yellow Plume Corrective Actions
- G. Hot Standby and Button up Procedures

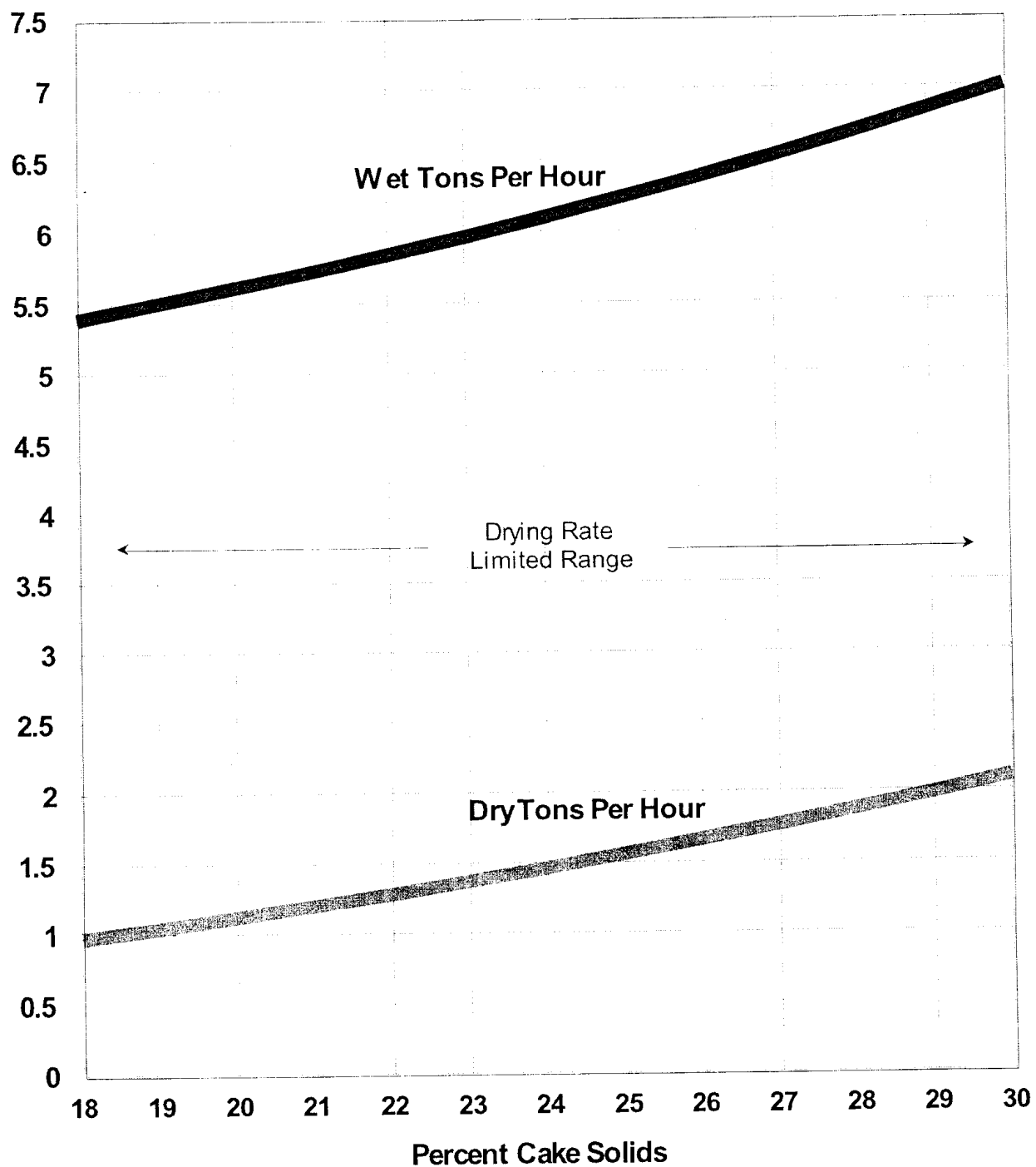
Normal Process Control Operating Mode Guidelines and Settings North Plant
(See Summary Figure 1)

Feed Rate:	Maintain Feed Rate Range of 5 to 7 (with a target of 6) Wet Tons/Hr
Furnace Draft: Fan Control	Maintain Draft Range of –0.05 to –0.15 (with a target of .10) in. w.c. Induced (ID) fan In Auto Control Mode
Furnace Oxygen:	Maintain Oxygen level in 6 to 8% wet range when possible
Oxygen Control:	Add air in the following sequence as required to maintain Oxygen: 1. Set the Return Air Damper to 40 to 75% Open. 2. If more air is needed, open the Ambient Air Ports on hearth #6 as needed. 3. If more air is still needed, then, and only then, increase the Draft level if necessary.
Hearth #1 Temperature	Maintain at 1000°F to 1300°F Range for THC and Visible Yellow Plume control. Use the burners on Hearth #3 to maintain Hearth #1 temperature if <u>needed</u>
Combustion Zone Temperature	Maintain temperatures within 1250 °F to 1500 °F on Hearth 4
Location Control:	Use Hearth 3,4, or (7 rarely) Burners as needed to stabilize the Combustion Zone Anywhere across Hearth 4. Avoid sludge burning in Hearth #3 or #5 . Operate burners in Auto Mode . Visually Inspect Hearths 3 and 4 before making any major burner use changes.
Centershaft Speed:	Set at 0.75 RPM for current cake solids and feed rate conditions. Do <u>not</u> adjust shaft speed as a routine process control measure.
THC Control:	Do <u>Not</u> make any major process control changes to “Chase” a High THC episode. Instead, slowly increase the hearth #1 Temperature and Oxygen Levels as needed to arrest or correct the THC level over a 30 minute time period if needed.
Visible Yellow:	If “high” visible yellow plume conditions occur: (1) reduce Oxygen level and (2) increase hearth #1 temperature if necessary.
Scrubber Tray Flow:	Maintain Setpoint at 500 GPM . <i>Permit Minimum TBD GPM</i>
Differential Pressure:	Total Pressure > 25” w.c. Venturi Diff. Pressure > 15” w.c. <i>Throat Spray Flow will vary automatically to Maintain Differential Pressure</i>
Scrubber Water pH:	To be determined



North Plant Furnace Normal Operating Conditions

**Figure 1. Furnace Routine Operational Feed Rate Limit
Guideline By Cake Solids***



***NOTE :** Based on Hybrid 6 Hearth Configuration With Double Size Hearth 4 and Allowing for 3 Drying Hearths. Furnace Capacity is Drying Rate Limited and Not Heat Release Rate Limited due to digested sludge volatility of about 74%.

B. Rising Fire and/or High Temperature Corrective Actions

"Rising Fire" and/or High Temperature conditions are generally caused by the burner use heat input being greater than what is needed for the given feed rate and/or cake quality conditions. These conditions typically occur with:

- (1) feed rate reductions and interruptions, or
- (2) increases in cake solids or cake volatiles

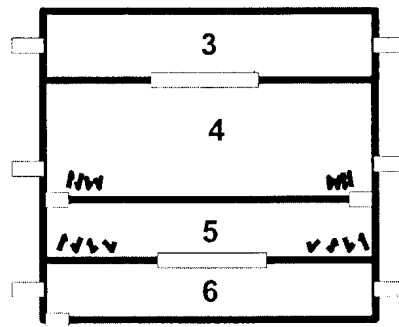
To correct these conditions, take the following actions in order as needed:

1. Inspect and verify the combustion conditions on **Hearths 3 and 4** **before** taking any corrective actions. The hearth temperatures on the computer display are most often misleading as to what is actually going on within the furnace. *Avoid making this fundamental operating mistake.*
2. Reduce the firing rate of any **Hearth 3 or 4**, burners that are ON (put on LOW FIRE).
3. If reducing the above burner firing rates is not effective, then begin shutting OFF any of the **Hearth 3 or 4** burners that are ON, one at a time, as needed to arrest the rising fire condition and stabilize the burn zone on **Hearth 4**.
4. Normally, reducing the burner firing rates or shutting off the burners will be sufficient to lower the burn zone back to **Hearth 4** and arrest the high temperature condition.
5. If, however, the above actions do not arrest the rising fire condition, then reduce the shaft speed in 0.1 RPM increments to 0.7 to 0.5 RPM as needed to help "calm" down the burning rate.
6. In the case where a feed rate reduction/interruption has occurred, take the necessary actions to restore the feed rate.
7. Return to Normal Operating Mode Settings after the combustion zone has been re-established on **Hearth 4**.

C. “Dropping Fire” or Low Combustion Zone Corrective Actions

A “Dropping Fire” condition is typically caused by an increase in the feed rate and/or lower cake solids content and the existing burner heat input rate is not high enough. Under Normal conditions, the primary combustion zone should be located somewhere across **Hearth 4**.

DROP CONDITION: The fire has moved to the Outer Edge of **Hearth 4** with some major degree of burning down on the outside of **Hearth 5** as illustrated below. Take the following actions to the extent needed depending on how far “down or out” the burn zone has moved:



1. Inspect conditions on **Hearths 4, 5** and **6** to verify how far the combustion zone has moved down. Do not rely *only* on the screen hearth temperature readings.
2. Turn **ON** all **Hearth 4** burners if it is not already ON. Set both **Hearth 4** burners to **100%** firing rate.
3. Turn ON any **Hearth 3** burners that are not ON, and set both burners to 100% firing rate.
4. **Increase the Warm Air Return** to 60 to 75%
5. **Crack the Hearth 6 Ambient Air Screw Ports** to increase air supply to aid more robust sludge burning.
6. Check to see if there has been a major **feed rate** increase. If so, call for a reduction. Do **not** shut off the feed rate completely.
7. If needed, start the **Hearth 7** burners (this would rare and a worst case scenario after the above procedures)
8. **Wait** about 10 to 15 minutes and monitor the rise of the **Hearth 5, 4, and 3** temperatures.
9. Re-inspect **Hearths 4, 5, and 6** to confirm the burn zone location and changes.
10. As the combustion zone moves back up to be completely on **Hearth 4**, reduce the **Hearth 4** and **3** burner firing rates accordingly, or as needed, and shut-off the **Hearth 3 and 4** burners first, and return back to Normal operational settings.

D. “Burn Out” Control Procedures

1. Caused By A Loss of Feed

A feed interruption or loss for an extended period of time can result in a severe “Burn Out”/Rising Fire/High temperature condition. The following actions should be taken that are similar to those for the *Rising Fire/ High Temperature* condition, but more aggressive:

1. **Shut Off All Hearth 3 or 4** burners that may be ON.
2. **Reduce the Shaft Speed** to ~ **0.6 RPM** as needed to reduce the burning rate.
3. **Increase** or Maintain the **Oxygen** level (>10%) by opening or increasing the opening of **Hearth 6 Ambient Air Screw Ports**, as needed.
4. Wait to see if the temperatures reduce, and Oxygen levels increase.
5. **If** the above steps do not arrest the Burn Out condition, then continue to **SLOW** the Shaft **Speed** down further as needed to **0.45 RPM (worst case scenario cycle the shaft speed off and on)** until the condition is corrected.
6. After the high temperature condition subsides, restore the feed rate, and return to Normal operating mode settings.

2. Caused By Taking the Furnace Out of Service (end of week shut down)

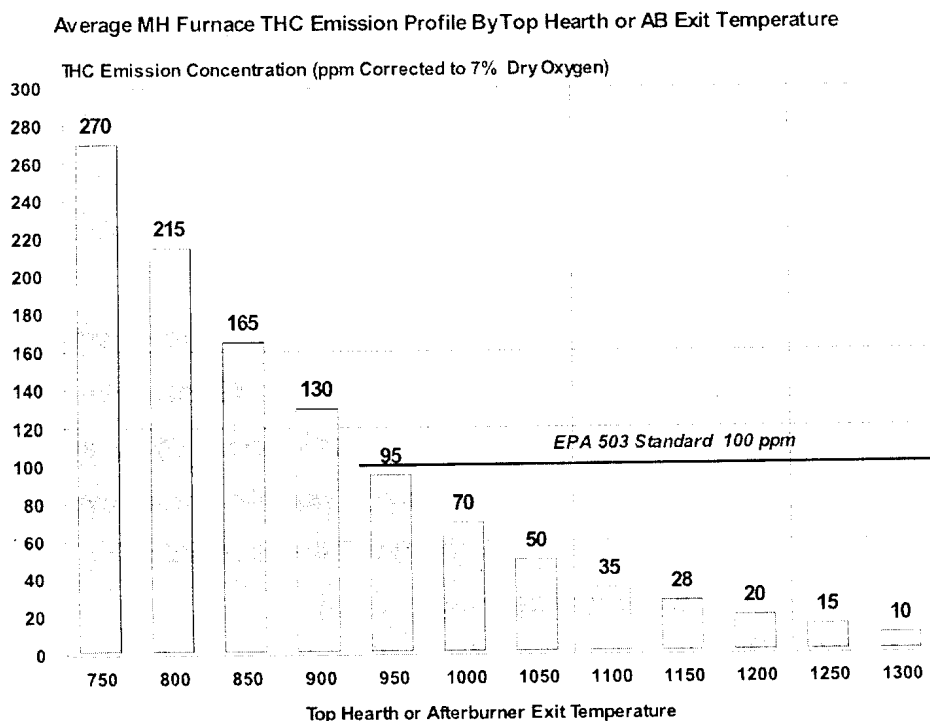
When the furnace is being taken out of service, take the following actions to minimize the high temperature Burn Out episode:

1. After the feed is stopped, **do not wait any longer**, shut **OFF All Burners** The fire will **not** go out.
2. Begin **Opening** the hearth 6 **Ambient Air Screw Ports** (up to wide open) and **Closing** the **Warm Air Return Damper** (down to 35%) in 5% increments over a 5-10 minute period.
3. **Ten (10) minutes** after the feed was stopped, **reduce shaft speed to 0.5 RPM. (worst case scenario cycle the shaft speed off and on)**
4. Expect at about 60 minutes after the feed was stopped, the **hearth 1** temperature to rise rapidly, temporarily as high as 1400-1500°F. **Wait.** No more needs to be done.
5. Monitor the **Oxygen** level during this time and keep it above **6%** to avoid stack smoking. Increase the **Draft** to **–0.20” w.c. if necessary to maintain the oxygen level.**
6. After the peak temperature episode and the “burn out” has subsided, inspect Hearths 1, 3 and 4 to confirm if all sludge has been burned out.
7. Proceed to follow the Button up or Warm Standby procedures and **close the air dampers.**

E. THC Control Procedures

Do not make any major process control changes to “chase” temporary high THC conditions. Temporary THC episodes are a common occurrence when a furnace is undergoing feed rate or cake quality changes, and burn zone movement, temperatures, and oxygen levels are affected. The THC limit is a 100 ppm Monthly Hourly average, not an instantaneous or hourly rule. As illustrated in the chart below, maintaining the minimum **Off Gas** temperature of **1000°F** most of the time on a routine daily basis will insure, by chemistry, compliance with the THC rule. For these reasons, the proper, time patient procedure to “arrest” a THC episode over a reasonable 15 to 60 minute time period is to:

1. Check if furnace is within the **hearth 1** temperature and **Oxygen** range guidelines. If either are too low, slowly make corrective actions to increase either, or both.
2. Check to see if there has been a recent increase or decrease in the feed rate, which can cause a short term THC episode which over time will subside.
3. Inspect Hearths 3 and 4 to determine if a burn zone transition is taking place from either a change in feed rate or cake solids. If so, **wait**. Allow time for : (a) the **Hearth 1 temperature** and/or **Oxygen** levels to recover, and (b) the furnace to re-stabilize until the transition is complete, and the THC episode eventually subsides..
4. Do not make any other major process changes. A time-patient correction of a THC episode may sometimes take 15 minutes to an hour to correct while still maintaining feed rate production, fuel efficiency, and not disrupting the overall furnace operation



Source: Water Environment Research Foundation & Incinerator Rx Corporation

F. Visible Yellow Plume Corrective Actions

A Low hearth 1 Gas temperature (< 1000 °F) coupled with a high Oxygen level (>9%) will, in most cases, cause some degree of a Visible Yellow Plume. When the "Yellow" is a visible "nuisance level" problem, take the following actions to reduce and minimize the Visible Yellow.

1. Start or Increase the firing of the **Hearth 3** burners to increase the hearth 1 gas temperature. If the hearth 1 gas temperature is already above 1100°F, see Step 8 below.
2. Concurrently, **reduce** the **Oxygen** to the extent possible to the lower **6 to 8%** range by reducing the amount of air going into the furnace starting with lowering the **Ambient Air** being admitted followed by the **Warm Air Return**, as on-going THC levels permit.
3. Visually inspect the Stack plume and assess for a few minutes (a) the degree of yellow, and (b) if there is a presence of fine particulate "dirty" looking type conditions.
4. Once the heart 1 Gas temperature has reached 1100°F+ or higher, and the Oxygen level is down to the 8% range +/-, re-inspect the stack visible conditions.
5. Also Check for low burn zone or overfeed conditions, both of which can cause higher visible yellow conditions.
6. Physically inspect the furnace to determine if any peep holes have been left open and Hearth doors are tight.
7. The above measures should be effective in reducing the Visible Yellow to the lowest nuisance level possible within the operating mode guidelines.
8. **If** circumstances require further reduction in the visible yellow, first obtain the Shift Supervisor's approval to either:
 - (a) increase the AB Gas temperatures further to >1200°F+ or as needed, since this will require additional burners and increase overall gas use rates, or
 - (b) reduce the feed rate by 0.5 wet tons per hour which will also help minimize the visible yellow for the given cake quality conditions.

G. Hot Standby Operating and Button Up Mode Procedures

When the furnace is taken out of service and placed on Standby for an extended period of time for any equipment or other reasons or end of week button up, the following procedures shall be used:

1. See Section D.2 for procedures for taking furnace out of service.
2. Inspect **Hearths 3, 4 and 5** and confirm sludge burn out conditions.
3. After complete burn out has been confirmed, close the **Heart 6 Ambient Air Screw Ports** and reduce the **Hot Air Return Damper to 20% open**
4. **Turn burners back on in hearth 3+4 (in auto) with set point 50° F below the peak temperature**
5. **Reduce the temperatures 100° F / hour to 1000° F in hearth 3 for hot standby and reduce draft setting to -0.05" w.c. (induced mode with I.D. fan in auto)**
6. For **button up** continue to reduce hearth 3+4 temperatures 50° F / hour until hearth 3 reaches 800° F.
7. **Clean, scrape and close flap gates on sludge hopper, also remove any loose sludge from top of incinerator. Make sure incline conveyor is running, this conveyor should always be kept ON.**
8. Close the **Hot Air Return** from the **20% open to 0% or fully closed**
9. **Shut off any remaining burners, turn off I.D. Fan, then reset the bypass damper and insure in fully closed position. Turn off combustion and cooling air fans. Turn off incinerator drive and clinker grinder.**
10. **Shut off all scrubber water (including city water for mist eliminator), then immediately shut off ash slurry pump.**
11. **Very important:** go back to top of incinerator and check sludge hopper, make sure there are no issues with burning of loose sludge or smoke conditions.

5.0 ASH HANDLING SYSTEM DESCRIPTION

The residual dry ash is removed at the bottom of the furnace by slurry with “make up” water provided by recirculated final effluent in the ash hopper. The pumped ash slurry which is also combined with the scrubber water is discharged to ash storage lagoons with the dewatered ash removed annually. The overflow from the ash lagoons is discharged to the plant sewer system and is conveyed back to the head works of the plant. The ash has a Beneficial Use Determination from NYS DEC and is utilized at local landfills as daily cover or can be blended with 50% compost to be used as final cover for seeding.

The incinerators discharge ash continuously through the ash drop chute on Hearth 10 (out hearth). The ash and any clinkers pass through a hydraulic clinker grinder into the ash slurry tank. The clinker grinder will activate an alarm if it becomes plugged or jammed (**note:** the toggle switch located at the clinker drive must be in the **on** position to activate the alarm sequence for failure). If the clinker grinder fails immediately call maintenance and initiate the following:

1. As quickly as possible shut off sludge feed and index (shut off) incinerator drive
2. When needed add additional burners to maintain furnace profile and make appropriate air adjustments
3. When grinder is repaired restart center shaft and sludge feed and return to normal burning profile

6.0 FURNACE BUILDING AND OPERATIONAL SAFETY PRACTICES

The biosolids drying and combustion process in the multiple hearth furnace operation is considered to be a Safe working environment. Safety is everyone's responsibility, and it is important that plant personnel do not become complacent and non-vigilant in regards to making sure that Safety concerns are communicated to others and remedied in a timely manner. Notify the Shift Supervisor of any unsafe condition you observe and request a work order if needed to correct the condition. Discuss any potential Safety hazards with your co-workers and the relieving Operators. The following safety actions need to be practiced while working in the furnace building and operations:

1. Know the location of every Fire Extinguisher, on each hearth floor. Don't wait until an emergency occurs. Knowing the location beforehand will save valuable time. If it is noticed that a fire extinguisher needs maintenance / recharged notify the Shift Supervisor.
2. Before going out on the hearth floors to make a visual inspection of the furnace operating conditions, notify your fellow workers that you are going to do so.
3. Wear safety glasses and hard hats as required.
4. **Even though the furnace operates in a negative draft condition, before visually inspecting inside the furnace, stand to the side when opening the "peep hole" observation door to avoid possible "blowback" of heat or fly ash that may sometimes occur when the end of a rabble arm passes by the door. Use a wooden stick to physically open the peep door and proper thermal protective gloves. Always stand to the side of the peep hole while visually inspecting the furnace conditions in the event that some other equipment or process change occurs that may cause a temporary positive draft or "puffing" condition.**
5. Know the location of every eyewash station, in the solids handling building. If an accident should occur, such as ash in the eyes, knowing the exact location of each eyewash station will enable you to be able to find the station quickly, even though your vision may be temporarily impaired.

8. Use the *proper* Safety equipment anytime tasks are being performed out on the furnace floors which include:

- Steel toe boots
- Hard hat when required
- Proper type of Safety Goggles
- Recommended *type* of gloves
- Face shield
- Ear Plugs (if required)
- Flashlight, depending on the task
- Dust mask, depending on the task
- Rubber boots, depending on the circumstance

If in doubt, contact the Chief Operator or Superintendent of Operations for recommendations as to the proper type of Safety equipment to be used for each particular task, and to ensure that these types of equipment are available for use.

1. Personal Hygiene: Any time employees are exposed to wastewater, certain precautions must be taken to prevent infections of open cuts or wounds and illnesses from water borne bacteria. Even though incineration results in inert ash material, the operational staff will still be exposed to wet sludge. After exposure to any type of wastewater, including the water supply, such as water hoses, scrubber water, ash hopper sprays, etc. always remember to *WASH YOUR HANDS* before resuming any activity where you would have your hands to come in close contact with your face.
2. Natural Gas Odor: During your inspections throughout the furnace building, if you detect even a slight odor of natural gas, notify your Shift Operator immediately. *Do not* attempt to “go find” the gas leak. Leave this task to those more equipped to handle the situation. Report your concerns to the Supervisor and allow them to consider the next course of action.

3. *Even though the need to clear “clinkers” from inside the furnace is infrequent, it is one of the more safety critical activities that may be needed to perform.*

Maintenance shall be notified and will facilitate any issues with large clinkers or plows.

- Increase the furnace Draft to -0.20 to -0.30 inches w.c. to insure a safer draft level condition for opening the hearth door.
- Wear proper safety gear including a face shield, hard hat, and thermal gloves.
- Do not remove clinkers alone. Always perform the clinker removal with an assisting staff person. **Maintenance shall always facilitate.**

4. The Emergency Bypass Damper (EBD) is the number one safety device in the furnace operation to protect both personnel and equipment. Its proper operation is essential. Any malfunction of the EBD or failure to “Open” event should be immediately reported to the Supervisor and the Safety Coordinator.

In addition to the above safety precautions, the following Health and Safety policies/procedures apply to the solids handling operations (list is not inclusive):

- General housekeeping rules - areas must be kept clean and free of excessive ash buildup. Employees should pick up tools and put them where they belong; trash should be picked up and placed in trash cans, etc. **A clean work area is a SAFER work area!**
- Means of Egress -exits must be kept clear of obstructions.
- Personal Protective Equipment, as stated above shall be used when required
- Hearing protection is available and shall be worn when needed
- **No District employee is approved to enter the incinerators**
- Lock-out/tag-out-no one is allowed to work on equipment unless lock out tag out procedures are followed.
- Guarding Floor and openings-on the belt press floor, the floor opening must be kept closed at all times unless it is being used.

- Personal hygiene: employees should practice good hygiene practices such as washing hands after coming into contact with waste water or wastewater products. Employees should not eat in process areas.

Attachment D: North Plant Incineration Basis of Design

North Plant

BASIS OF DESIGN

31.4 The incineration equipment and appurtenances shall be capable of incinerating a thickened mixture of chemically conditioned raw primary and waste activated sludge, together with grit, screenings and skimmings. The total solids for incineration and the characteristics are listed below:

<u>Item</u>	<u>Basis of Design</u>	<u>Range</u>	
			389
			391
			392
			393
			394
			395
			396
			400
1. <u>Pounds of dry solids per hour</u>			402
			403
a. Filter cake	7,010	7,010	405
b. Grit	1,500	1,000-2,000	406
c. Screenings	100	50- 150	407
d. Skimmings	180	100- 300	408
			412
2. <u>Per Cent Moisture</u>			
a. Filter cake	78	70-80	414
b. Grit	30	20-40	415
c. Screenings	50	40-60	416
d. Skimmings	50	40-60	417
			421
3. <u>Per Cent Combustible</u>			
a. Filter cake	62	60-75	423
b. Grit	20	10-30	424
c. Screenings	80	75-90	425
d. Skimmings	90	80-95	426
			430
4. <u>Heat Value BTU/Pound Combustible</u>			431
a. Filter cake	10,000	9,500-11,000	433
b. Grit	10,000	9,500-11,000	434
c. Screenings	10,000	9,500-11,000	435
d. Skimmings	15,000	12,500-17,500	436
			440
5. <u>Minimum Excess Air</u>			
a. Furnace feed	100%	-----	442
b. Auxiliary fuel	20%	-----	443

Attachment E: ACWPD Historical Stack Test Result

EPA Emission Limits and Compliance

40 CFR 60 Subpart Mmmm

			2015				2016				2017				2018			
	Goal		North		South		North		South		North		South		North		South	
Parameter	Limit	75%	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
CO	3800	2850	3586	2249	2530	2375	2057.5	2881.4	1284	1336.8	3300	-	-	(Skip 1)	-	1625.9	-	(Skip 2)
NOx	220	165	177.1	158.7	150.1	121.6	189.2	171.6	173.5	184.1	185.2	-	-	118.2	-	129.6	-	46.4
SO2	25	18.75	8.3	5.2	2.8	9.5	5.5	3.2	1.3	6.7	(Skip 1)	-	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)
FPM	80	60	22.98	21.86	17.14	22.27	31.54	29.48	15.91	36.34	(Skip 1)	-	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)
HCl	1.2	0.9	0.23	0.39	0.2	0.95	2.09	0.13	0.53	0.29	0.28	-	-	0.42	-	(Skip 1)	-	0.64
PCDD/PCDF	0.32	0.24	0.04	0.069	0.054	0.2	1.062	0.532	0.15	0.084	0.199	-	-	(Skip 1)	-	0.062	-	(Skip 2)
Cd	0.095	0.07125	0.011	0.009	0.005	0.0067	0.011	0.009	0.0017	0.0043	(Skip 1)	-	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)
Pb	0.3	0.225	0.119	0.104	0.051	0.134	0.042	0.054	0.007	0.017	(Skip 1)	-	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)
Hg	0.28	0.21	0.036	0.057	0.064	0.056	0.048	0.054	0.058	0.07	(Skip 1)	-	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)
Weight	-	Wet	7.02	5.98	5.25	5.38	4.94	5.52	3.77	3.89	5.49	-	-	3.95	-	5.57	-	4.38
	-	Dry	1.97	1.51	1.39	1.51	1.4	1.54	0.93	0.93	1.37	-	-	0.84	-	1.24	-	0.87
Temp			917	1068	970	912	990	1100	1264	1353	x	x	x	x	x	x	x	x
Scrub. Q			829	805	776	718.75	816.5	855	762	745	x	x	x	x	x	x	x	x
Delta P			25.46	25.03	22.69	22.72	21.6	20.5	19.7	21.1	x	x	x	x	x	x	x	x
pH			5.93	5.85	5.58	4.7	x	x	x	x	x	x	x	x	4.5	4.5	4.5	4.5
							5.75	5.24	5.53	4.51	5.55			5.94				5.76

Parameter	Goal		2019				2020				2021				2022			
			North		South		North		South		North		South		North		South	
	Limit	75%	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
CO	3800	2850	-	2310.5	-	2156.9	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)	-	(Skip 2)	R	R	(Skip 1 if run)	R
NOx	220	165	-	202.5	-	(Skip 1)	-	187.5	-	(Skip 2)	-	191.1	-	195.7	R	R	R	R
SO2	25	18.75	-	(Skip 2)	-	4.2	-	6	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)	(Skip 2 if run)	(Skip 2)	(Skip 1 if run)	R
FPM	80	60	-	(Skip 2)	-	18.74	-	46.17	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)	(Skip 2 if run)	(Skip 2)	(Skip 1 if run)	R
HCl	1.2	0.9	-	(Skip 2)	-	(Skip 1)	-	0.14	-	(Skip 2)	-	(Skip 1)	-	0.36	R	(Skip 2)	(Skip 1 if run)	(Skip 1)
PCDD/PCDF	0.32	0.24	-	0.072	-	0.054	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)	-	(Skip 2)	R	R	(Skip 1 if run)	R
Cd	0.095	0.07125	-	(Skip 2)	-	0.0036	-	0.01	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)	(Skip 2 if run)	(Skip 2)	(Skip 1 if run)	R
Pb	0.3	0.225	-	(Skip 2)	-	0.042	-	0.058	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)	(Skip 2 if run)	(Skip 2)	(Skip 1 if run)	R
Hg	0.28	0.21	-	(Skip 2)	-	0.052	-	0.047	-	(Skip 1)	-	(Skip 1)	-	(Skip 2)	(Skip 2 if run)	(Skip 2)	(Skip 1 if run)	R
Weight	-	Wet	-	4.95	-	3.99	-	4.34	-	-	-	5.77	-	3.66				
	-	Dry	-	1.22	-	1.05	-	1.03	-	-	-	1.50	-	1.11				
Temp			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Scrub. Q			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Delta P			x	x	x	21.6	x	22.78	x	x	x	x	x	x	x	x	x	R
pH			x	x	x	x	x	x	x	x	x	x	x	x	w	x	x	w
					5.69	5.47			5									

	EPA Emission Limits
	75% of the Emission Limit
	Emission Reported above 75%, but not an Emission Excursion
	Emissions Failure, all Determined to be Erroneous
R	Required if Run
-	Test Not Required
x	Limit Update Not Required
(Skip #)	Skipped per 40 CFR 60.5205

Appendix N
EFC Hardship Analysis and Cost Estimates



Environmental Facilities Corporation

KATHY HOCHUL
Governor

MAUREEN A. COLEMAN
President and CEO

January 8, 2024

The Honorable Daniel P. McCoy
County Executive
Albany County
Harold L. Joyce Albany County Office Building
Albany, NY 12207

Re: Clean Water State Revolving Fund (CWSRF) Project No. C4-5419-06-00
Septage and Fats Oils and Grease Receiving Station Upgrades

Dear County Executive McCoy:

I am pleased to inform you that your community may qualify to receive grant funding from the Environmental Facilities Corporation (EFC) through the federal Infrastructure Investment and Jobs Act of 2021, also known as the Bipartisan Infrastructure Law (BIL) for the project referenced above.

The project's eligibility for BIL grant is based on the project being listed above the BIL Funding Line in Subcategory D1 of the [Final 2024 Intended Use Plan \(IUP\) Annual List](#). Criteria for this determination are detailed in the CWSRF Hardship Financing and Grant Eligibility Policy ([Hardship Policy](#)) effective October 1, 2023. In addition to BIL grant, your project may be eligible for interest-free financing of up to \$25 million. Criteria for interest-free financing are also detailed in the Hardship Policy.

The amount of BIL grant available for your project is estimated as \$25,000,000 based on the information provided to EFC. As noted in the Hardship Policy, municipalities eligible for BIL funding must meet the following criteria to qualify:

- Must not have closed an EFC financing or incurred SRF-eligible debt for the project before November 15, 2021;
- Must not have issued a Notice to Proceed to construction for the project dated before November 15, 2021;
- Must not have executed a long-term project financing agreement for the project;
- Must not be substantially complete before October 1, 2023;
- Must not have been eligible for BIL funding on the Subcategory D1 list for two consecutive IUP years without closing on a project finance agreement with EFC; and
- Must comply with all applicable federal requirements.

Your project is identified as an equivalency project on the 2024 IUP and must meet certain programmatic requirements:

- Certification Forms available in the Equivalency Guidance Packet for the following:
 - o Federal Procurement for Architectural/Engineering (A/E) Services; and
 - o National Environmental Protection Act (NEPA) Environmental Review
- Inclusion of State Revolving Fund Equivalency Project Mandatory Terms and Conditions in Contract(s) for the following:
 - o Davis Bacon Federal Prevailing Wage schedules and language in construction contract bid documents;
 - o American Iron and Steel (AIS) provisions;

- o Prohibition on certain telecommunications and video surveillance services or equipment;
- o Equal Employment Opportunities (EEO) and Disadvantaged Business Enterprises (DBE) for both construction contracts and professional service agreements; and
- o Build America, Buy America (BABA) provisions.
- Single Audit reporting
- Construction Sign:
 - o All projects receiving EFC funding must post a physical sign at the project site during construction.

Information on BIL funding and requirements can be found on EFC's website at www.efc.ny.gov/BIL. This information may be updated periodically, at which time EFC will send an electronic notice to all members of our email notification listserv. To join our email notification listserv, please visit [EFC's website](http://www.efc.ny.gov).

Please confirm your acceptance of the BIL grant eligibility and intent to proceed with this project by completing and signing the enclosed form and returning it to CWSRFinfo@efc.ny.gov no later than **January 19, 2024**. Without your confirmation, we may bypass your project and award these grant funds to another community.

You must also submit an acceptable CWSRF financing application by no later than June 14, 2024. Without an acceptable application submitted by this date, this grant offer will be rescinded, and you must re compete for BIL grant in the 2025 CWSRF IUP. The CWSRF finance application forms and guidance can be found at www.efc.ny.gov/cwsrf-apply.

To help you advance this project, members of the EFC team will contact you to guide you through the program requirements and related processes.

We look forward to working with you on your water quality improvement project. Should you have any questions, please contact Máire Cunningham, Program Manager at CWSRFinfo@efc.ny.gov.

Sincerely,



Maureen A. Coleman
President & CEO

Enclosure (if required): [Equivalency Guidance Packet](#), [Equivalency Terms and Conditions Guidance](#), [Equivalency Terms and Conditions](#)

cc: Albany County Water Purification District - Angelo Gaudio, Executive Director
Barton and Loguidice - Karen W. Clark, Senior Managing Engineer
NYS EFC - Michael Budris

ACWPD - 2022 Hardship Analysis

Date: June 9, 2023

Flow Data Period = March 22 - February 23

Municipality	Flows			Annual Average Flow (mgd)	% Flow	Population Served	2021 MHI	Weighted 2021 MHI	2021 Poverty Rate %	Weighted 2021 Poverty Rate %
	22 March- August	22 Sept- Feb	23							
Albany	26.9	27.06		27.0	62.9%	99,402	\$ 52,583	\$ 33,060.58	13.2%	8.3%
Colonie, Town ³	5.38	5.54		5.5	12.7%	42,000	\$ 89,977	\$ 11,456.96	3.4%	0.4%
Colonie, Village	1.05	0.89		1.0	2.3%	7,792	\$ 96,495	\$ 2,182.84	0.9%	0.0%
Guilderland ³	0.73	0.71		0.7	1.7%	5,538	\$ 94,606	\$ 1,588.53	2.8%	0.0%
Menands	1.14	1.18		1.2	2.7%	4,490	\$ 73,281	\$ 1,982.42	8.6%	0.2%
Watervliet	2.0	2.26		2.1	4.9%	10,363	\$ 46,205	\$ 2,273.61	15.6%	0.8%
Green Island	1.5	1.35		1.4	3.3%	2,957	\$ 57,750	\$ 1,932.63	12.8%	0.4%
Cohoes	3.9	4.28		4.1	9.5%	17,931	\$ 58,669	\$ 5,561.79	12.2%	1.2%
Total	42.5	43.27		42.9	100.0%	190,473	-	\$ 60,039	-	11.4%

Summary Table		
Weighted MHI	\$	60,039
EFC 80% Upstate MHI	\$	60,126
Amount Below MHI	\$	(87)
Weighted Poverty Rate		11.4%
Statewide Poverty Rate		9.8%
Amount Above Poverty Rate		1.6%

Notes:

1. Median House Income and Poverty limits based on EFC 2021 American Community Survey Data.
2. Weighted MHI and Poverty values based on the percentage of flows that each community contributes.
3. ACWPD only serves a portion of the Town of Colonie and Guilderland. Population based on average flow divided by 130gpd per person.

Remote Flow Monitoring Station Summary - MGD						Report Printed on: 7-Mar-23		
2022	Sep	Oct	Nov	Dec	Jan	Feb	6 Month Average	Percent of 6 Month Total
Albany Monthly Percent	26.11 63.68%	24.90 62.45%	25.61 63.00%	28.59 61.96%	30.54 61.73%	26.61 62.29%	27.06	62.54%
Town Of Colonie Monthly Percent	4.49 10.95%	4.94 12.39%	4.94 12.15%	6.15 13.33%	6.85 13.85%	5.90 13.81%	5.54	12.80%
Colonie Village Monthly Percent	0.78 1.90%	0.78 1.96%	0.78 1.92%	0.92 1.99%	1.07 2.16%	1.03 2.41%	0.89	2.06%
Guilderland Monthly Percent	0.66 1.61%	0.67 1.68%	0.62 1.52%	0.76 1.65%	0.80 1.62%	0.76 1.78%	0.71	1.64%
Menands Village Monthly Percent	1.12 2.73%	1.12 2.81%	1.12 2.76%	1.36 2.95%	1.36 2.75%	1.03 2.41%	1.18	2.73%
Watervliet Monthly Percent	2.45 5.98%	2.12 5.32%	2.12 5.22%	2.39 5.18%	2.45 4.95%	2.08 4.87%	2.26	5.22%
Green Island Monthly Percent	1.41 3.44%	1.36 3.41%	1.37 3.37%	1.27 2.75%	1.47 2.97%	1.26 2.95%	1.35	3.12%
Cohoes Monthly Percent	3.98 9.71%	3.98 9.98%	4.09 10.06%	4.70 10.19%	4.93 9.97%	4.05 9.48%	4.28	9.89%
Flow Total Monthly Percent Total	41.00 100.00%	39.87 100.00%	40.65 100.00%	46.14 100.00%	49.47 100.00%	42.72 100.00%	43.27	100.00%

[illegible]

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives
FOG Receiving Alternative 1 - Hydronic Separation
Albany County, NY

<u>Item</u>	<u>Unit Costs</u>		<u>Quantity</u>	<u>Class 5 Total</u>	<u>Notes</u>
FOG Receiving Building	\$	200 /square foot	4000 SF	\$ 800,000	Butler Building
FOG/Septage Drivebay	\$	125 /square foot	1700 SF	\$ 212,500	Butler Building Shell - no Insulation
Preliminary Screening System	\$	422,400 /unit	1 unit	\$ 422,400	2024 Saveco Quote. W/ 2 Hauler Stations
Installation		30% of equipment costs		\$ 126,720	
Pumps to Decant Tanks	\$	10,000 /unit	2 unit	\$ 20,000	Redundant. Assumes 5-10 HP pump
Conical Decant Tanks (20,000 gal)	\$	100,000 /unit	3 unit	\$ 300,000	Vendor Estimate
Installation		40% of equipment costs		\$ 120,000	
Pumps to Separation System	\$	10,000 /unit	2 unit	\$ 20,000	Redundant. Assumes 5-10 HP pump
FOG Hydronic Separation System	\$	900,000 /unit	1 unit	\$ 900,000	Vendor Quote (installed)
Automation, Connectivity, Storage, and Integration	\$	350,000 /lump sum	1 LS	\$ 350,000	Vendor Quote
Additional Boiler (Auxiliary Heating)	\$	100,000 /unit	1 unit	\$ 100,000	Vendor Estimate
Odor Control	\$	250,000 /lump sum	1 LS	\$ 250,000	tentative
Existing Grease Management Modifications	\$	100,000 /lump sum	1 LS	\$ 100,000	tentative
Subtotal A				\$ 3,700,000	
Misc. Demolition		5% of "A"		\$ 185,000	
Civil		5% of "A"		\$ 185,000	
Yard Piping		5% of "A"		\$ 185,000	
Electrical, Instrumentation & Controls		30% of major mechanical equipment		\$ 438,720	
Subtotal B				\$ 4,700,000	
Startup and Construction Sequencing		2% of "B"		\$ 94,000	
Construction Easements		0% of "B"		\$ -	No Easement Necessary
General Conditions		15% of "B"		\$ 705,000	
Contractor Overhead and Profit		15% of "B"		\$ 705,000	
Sales Tax		0% of equipment and supplies		\$ -	Tax Exempt
Bonds and Insurance		2.5% of "B"		\$ 117,500	
Subtotal C Construction Costs				\$ 6,300,000	
Planning and Permitting		lump sum		\$ -	Already paid
Engineering		lump sum		\$ 250,000	Final division of engineering & construction management
Construction Management		lump sum		\$ 290,000	costs between phases may vary.
Subtotal Project Costs				\$ 6,900,000	
Estimating Contingency (includes market factor contingency)		25% of subtotal Project Costs		\$ 1,575,000	
Total Project Cost				\$ 8,500,000	

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives
FOG Receiving Alternative 2 - FOG/Septage Screening
Albany County, NY

Item	Unit Costs	Quantity	Class 5 Total	Notes
Receiving Building	\$300 /square foot	1000 sf	\$300,000	
Septage/FOG Receiving Station	\$405,300 /unit	1 unit	\$405,300	Vendor quote
Installation	30% of equipment costs		\$121,590	
Pumps to Decant Tank	\$15,000 /unit	2 unit	\$30,000	Fully redundant. Assumes 10-15 HP pump
Conical Decant Tanks	\$100,000 /unit	2 unit	\$200,000	
Hot Water/Boiler				Capacity Provided as Part of Digester
Subtotal A			\$1,100,000	
Misc. Demolition	5% of "A"		\$55,000	
Civil	5% of "A"		\$55,000	
Yard Piping	12% of "A"		\$132,000	
Electrical, Instrumentation & Controls	30% of major mechanical equipment		\$220,590	
Subtotal B			\$1,600,000	
Startup and Construction Sequencing	2% of "B"		\$32,000	
Construction Easements	0% of "B"		\$0	No Easement Necessary
General Conditions	15% of "B"		\$240,000	
Contractor Overhead and Profit	15% of "B"		\$240,000	
Sales Tax	0% of equipment and supplies		\$0	Tax Exempt
Bonds and Insurance	2.5% of "B"		\$40,000	
Subtotal C Construction Costs			\$2,200,000	
Planning and Permitting	0% of total construction costs		\$0	
Engineering	10% of total construction costs		\$220,000	
Construction Management	10% of total construction costs		\$220,000	
Subtotal Project Costs			\$2,700,000	
Estimating Contingency (includes market factor contingency)	30% of subtotal Project Costs		\$810,000	
Total Project Cost			\$3,600,000	

Upper Limit of Cost Estimate Range

+100% of Total Project Costs

\$7,200,000

Lower Limit of Cost Estimate Range

-50% of Total Project Costs

\$1,800,000

Note: Refer to last sheet for additional assumptions.



10 Airline Drive · Suite 200 · Albany, New York 12205
 Telephone: (518) 218-1801 · Fax: (518) 218-1805

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives Sludge Management Alternative 1 - Consolidation Albany County, NY					
Item	Unit Costs		Quantity	Class 5 Total	Notes
Incinerator Idling - South		lump sum		\$20,000	Furnace clean out, drain pipes, valve off utilities, etc.
8" HDPE Forcemain	\$125	/LF	22,000 LF	\$2,739,000	Directional drill
Clean-out Structures	\$15,000	/EA	22 EA	\$330,000	
Strain Press - South Plant	\$196,000	/unit	2 unit	\$392,000	Vendor Quote - 440 gpm @1% solids. Fully redundant
Installation	15%	of equipment costs	2 unit	\$59,000	
Sludge Transfer Pumps - South Plant	\$68,000	/unit	2 unit	\$136,000	Vendor quote, plus \$10k for valves
Installation	10%	of equipment costs	2 unit	\$13,600	
Gravity Belt Thickeners - North Plant	\$389,000	/unit	2 unit	\$778,000	Vendor quote. Includes polymer system.
Installation	15%	of equipment costs	2 unit	\$117,000	
Yard Piping		lump sum		\$50,000	
Belt Filter Press - North	\$486,500	/unit	1 units	\$487,000	Vendor quote
Installation	15%	of equipment costs	1 unit	\$73,000	
Dewatered Cake Loadout Conveyors	\$ 2,000	/LF	150 LF	\$300,000	To handle off-spec and solids beyond incinerator throughput. Vendor cost factor
Subtotal A				\$5,500,000	
Misc. Demolition	5%	of "A"		\$275,000	
Civil	5%	of "A"		\$275,000	
Electrical, Instrumentation & Controls	30%	of major mechanical equipment		\$630,000	
Subtotal B				\$6,700,000	
Startup and Construction Sequencing	2%	of "B"		\$134,000	
General Conditions	15%	of "B"		\$1,005,000	
Contractor Overhead and Profit	15%	of "B"		\$1,005,000	
Sales Tax	0%	of equipment and supplies		\$0	Tax exempt
Bonds and Insurance	2.5%	of "B"		\$167,500	
Subtotal C Construction Costs				\$9,100,000	
Planning and Permitting			lump sum		Included in other phases
Engineering	10%	of total construction costs		\$910,000	
Construction Management	10%	of total construction costs		\$910,000	
Estimating Contingency	30%	of total construction costs		\$2,730,000	
Total Project Cost (excluding North Incinerator Rehabilitation)				\$13,700,000	
Overall Total Project Cost				\$13,700,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$27,400,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$6,850,000

Note: Refer to cover page for additional assumptions.



Class 5 Capital Cost Estimate for Wastewater Solids Alternatives
Sludge Mixing Alternative 1 - Mixer Replacement
Albany County, NY

<u>Item</u>	<u>Unit Costs</u>		<u>Quantity</u>		<u>Class 5 Total</u>	<u>Notes</u>
Mixer Replacement	\$340,000	/unit	7	unit	\$2,380,000	
Interior Tank Wall Coatings - North	\$ 166,400	/unit	1	unit	\$ 166,400	
Roof Replacement - North	\$30	/sf	9450	sf	\$ 283,500	
Door Replacement - North	\$ 50,000	/unit	4	unit	\$ 200,000	
Façade Replacement - North	\$ 423,650	/unit	1	unit	\$ 423,650	
Interior Tank Wall Coatings - South	\$ 124,800	/unit	1	unit	\$ 124,800	
Roof Replacement - South	\$30	/sf	6000	sf	\$ 180,000	
Door Replacement - South	\$ 50,000	/unit	3	unit	\$ 150,000	Replaced in 2018. May remove from scope in final design.
Subtotal A					\$3,910,000	
Misc. Demolition	5%	of "A"			\$195,500	
Civil	0%	of "A"			\$0	N/A
Yard Piping	0%	of "A"			\$0	N/A
Electrical, Instrumentation & Controls	5%	of "A"			\$195,500	N/A
Subtotal B					\$4,300,000	
Startup and Construction Sequencing	2%	of "B"			\$86,000	
Construction Easements	0%	of "B"			\$0	No Easement Necessary
General Conditions	15%	of "B"			\$645,000	
Contractor Overhead and Profit	15%	of "B"			\$645,000	
Sales Tax	0%	of equipment and supplies			\$0	Tax Exempt
Bonds and Insurance	2.5%	of "B"			\$107,500	
Subtotal C Construction Costs					\$5,800,000	
Planning and Permitting	0%	of total construction costs			\$0	
Engineering	10%	of total construction costs			\$580,000	
Construction Management	10%	of total construction costs			\$580,000	
Subtotal Project Costs					\$7,000,000	
Estimating Contingency (includes market factor contingency)	30%	of subtotal Project Costs			\$2,100,000	
Total Project Cost					\$9,100,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$18,200,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$4,550,000

Note: Refer to last sheet for additional assumptions.



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Class 5 Capital Cost Estimate for Wastewater Solids Alternatives Sludge Mixing Alternative 2 - Large Bubble Mixing (North Plant) Albany County, NY					
Item	Unit Costs		Quantity	Class 5 Total	Notes
Large Bubble Mixing System - North	\$635,000	/unit	1 unit	\$ 635,000	2024 Enviromix Quote. Includes SHTs and Primary/Secondary Channel Mixing Vendor Quote
Installation	30%	of equipment costs		\$ 190,500	
FRP Enclosure	\$ 51,000	/unit	1 unit	\$ 51,000	
Interior Tank Wall Coatings	\$166,400	/unit	1 unit	\$ 166,400	
Roof Replacement	\$30	/sf	9450 sf	\$ 283,500	
Door Replacement	\$ 50,000	/unit	4 unit	\$ 200,000	
Façade Replacement	\$423,650	/unit	1 unit	\$ 423,650	
Subtotal A				\$ 2,000,000	
Misc. Demolition	5%	of "A"		\$ 100,000	N/A 1.5" Stainless Steel Piping SCADA Integration
Civil	0%	of "A"		\$ -	
Yard Piping	10%	of "A"		\$ 87,545	
Electrical, Instrumentation & Controls	20%	of major equipment		\$ 137,200	
Subtotal B				\$ 2,400,000	
Startup and Construction Sequencing	2%	of "B"		\$ 48,000	No Easement Necessary Tax Exempt
Construction Easements	0%	of "B"		\$ -	
General Conditions	15%	of "B"		\$ 360,000	
Contractor Overhead and Profit	15%	of "B"		\$ 360,000	
Sales Tax	0%	of equipment and supplies		\$ -	
Bonds and Insurance	2.5%	of "B"		\$ 60,000	
Subtotal C Construction Costs				\$ 3,200,000	
Planning and Permitting	0%	of total construction costs		\$ -	Already paid Final division of engineering & construction management costs between phases may vary.
Engineering	10%	of total construction costs		\$ 320,000	
Construction Management	10%	of total construction costs		\$ 320,000	
Estimating Contingency (includes market factor contingency)	25%	of subtotal Project Costs		\$ 800,000	
Total Project Cost				\$ 4,700,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$ 9,400,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$ 2,350,000

Note: Refer to last sheet for additional assumptions.



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**Class 5 Capital Cost Estimate for Wastewater Solids Alternatives
Sludge Mixing Alternative 2 - Large Bubble Mixing (South Plant)
Albany County, NY**

<u>Item</u>	<u>Unit Costs</u>	<u>Quantity</u>	<u>Class 5 Total</u>	<u>Notes</u>
Large Bubble Mixing System - South	\$431,250 /unit	1 unit	\$ 431,250	3/4 of North Plant Quote Don't need FRP enclosure - can put compressor inside existing structure Replaced in 2018. May remove from scope in final design.
Installation	30% of equipment costs		\$ 129,375	
Interior Tank Wall Coatings	\$124,800 /unit	1 unit	\$ 124,800	
Roof Replacement	\$30 /sf	6000 sf	\$ 180,000	
Door Replacement	\$ 50,000 /unit	3 unit	\$ 150,000	
Subtotal A			\$ 1,000,000	
Misc. Demolition	5% of "A"		\$ 50,000	N/A 1.5" Stainless Steel Piping SCADA Integration
Civil	0% of "A"		\$ -	
Yard Piping	5% of "A"		\$ 27,260	
Electrical, Instrumentation & Controls	20% of major equipment		\$ 86,250	
Subtotal B			\$ 1,200,000	
Startup and Construction Sequencing	2% of "B"		\$ 24,000	No Easement Necessary Tax Exempt
Construction Easements	0% of "B"		\$ -	
General Conditions	15% of "B"		\$ 180,000	
Contractor Overhead and Profit	15% of "B"		\$ 180,000	
Sales Tax	0% of equipment and supplies		\$ -	
Bonds and Insurance	2.5% of "B"		\$ 30,000	
Subtotal C Construction Costs			\$ 1,600,000	
Planning and Permitting	0% of total construction costs		\$ -	Already paid Final division of engineering & construction management costs between phases may vary.
Engineering	10% of total construction costs		\$ 160,000	
Construction Management	10% of total construction costs		\$ 160,000	
Estimating Contingency (includes market factor contingency)	25% of subtotal Project Costs		\$ 400,000	
Total Project Cost			\$ 2,400,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$ 4,800,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$ 1,200,000

Note: Refer to last sheet for additional assumptions.



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**Class 5 Capital Cost Estimate for Wastewater Solids Alternatives
North Plant Thickener Replacement and Sludge Pump Replacement
Albany County, NY**

<u>Item</u>	<u>Unit Costs</u>		<u>Quantity</u>	<u>Class 5 Total</u>	<u>Notes</u>
Sludge Thickening System	\$ 356,500	/unit	2 unit	\$ 713,000	BDP Quote 2023. 2.0m Unit w/o odor control hood, enclosed frame, or inlet consistency meter.
Installation	15%	of equipment costs	2 unit	\$ 106,950	
Piping and Valves	\$ 50,000	lump sum	1 unit	\$ 50,000	Borger Quote 2024
Combined Sludge Pump Replacement	\$ 35,000	/unit	2 units	\$ 70,000	
Installation	30%	of equipment costs	2 units	\$ 21,000	Borger Quote 2024
Grinder Replacement	\$ 40,000	/unit	2 units	\$ 80,000	
Installation	30%	of equipment costs	2 units	\$ 24,000	Assume same cost as combined pumps.
Thickened Sludge Pump Replacement	\$ 35,000	/unit	2 units	\$ 70,000	
Installation	30%	of equipment costs	2 units	\$ 21,000	\$15,000 per pump
Piping and Valves	\$ 30,000	lump sum	1 unit	\$ 30,000	
Sludge Dewatering System	\$ 359,638	/unit	1 units	\$ 359,638	ESMIL Quote 2024
Installation	15%	of equipment costs	1 units	\$ 53,946	
Piping and Valves	\$ 30,000	lump sum	1 unit	\$ 30,000	\$15,000 per pump
Subtotal A				\$ 1,630,000	
Misc. Demolition	10%	of "A"		\$ 163,000	Increased for sludge for major system removals
Civil	0%	of "A"		\$ -	N/A
Yard Piping	0%	of "A"		\$ -	
Electrical, Instrumentation & Controls	20%	of major equipment		\$ 258,528	SCADA Integration
Subtotal B				\$ 2,100,000	
Startup and Construction Sequencing	2%	of "B"		\$ 42,000	No Easement Necessary
Construction Easements	0%	of "B"		\$ -	
General Conditions	15%	of "B"		\$ 315,000	Tax Exempt
Contractor Overhead and Profit	15%	of "B"		\$ 315,000	
Sales Tax	0%	of equipment and supplies		\$ -	
Bonds and Insurance	2.5%	of "B"		\$ 52,500	
Subtotal C Construction Costs				\$ 2,800,000	
Planning and Permitting	0%	of total construction costs		\$ -	Already paid
Engineering	10%	of total construction costs		\$ 210,000	Final division of engineering & construction management costs between phases may vary.
Construction Management	10%	of total construction costs		\$ 210,000	
Estimating Contingency (includes market factor contingency)	25%	of subtotal Project Costs		\$ 700,000	
Total Project Cost				\$ 4,000,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$ 8,000,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$ 2,000,000

Note: Refer to last sheet for additional assumptions.



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**Class 5 Capital Cost Estimate for Wastewater Solids Alternatives
South Plant Thickener Replacement and Sludge Pump Replacement
Albany County, NY**

<u>Item</u>	<u>Unit Costs</u>		<u>Quantity</u>	<u>Class 5 Total</u>	<u>Notes</u>
Sludge Thickening System	\$ 356,500	/unit	2 unit	\$ 713,000	BDP Quote 2023. 2.0m Unit w/o odor control hood, enclosed frame, or inlet consistency meter.
Installation	15%	of equipment costs	2 unit	\$ 106,950	
Piping and Valves	\$ 50,000	lump sum	1 unit	\$ 50,000	Borger Quote 2024
Combined Sludge Pump Replacement	\$ 35,000	/unit	2 units	\$ 70,000	
Installation	30%	of equipment costs	2 units	\$ 21,000	Borger Quote 2024
Grinder Replacement	\$ 40,000	/unit	2 units	\$ 80,000	
Installation	30%	of equipment costs	2 units	\$ 24,000	Assume same cost as combined pumps.
Thickened Sludge Pump Replacement	\$ 35,000	/unit	2 units	\$ 70,000	
Installation	30%	of equipment costs	2 units	\$ 21,000	\$15,000 per pump
Piping and Valves	\$ 30,000	lump sum	1 unit	\$ 30,000	
Sludge Dewatering System	\$ 359,638	/unit	1 units	\$ 359,638	ESMIL Quote 2024
Installation	15%	of equipment costs	1 units	\$ 53,946	
Piping and Valves	\$ 30,000	lump sum	1 unit	\$ 30,000	\$15,000 per pump
Subtotal A				\$ 1,630,000	
Misc. Demolition	10%	of "A"		\$ 163,000	Increased for sludge for major system removals
Civil	0%	of "A"		\$ -	N/A
Yard Piping	0%	of "A"		\$ -	
Electrical, Instrumentation & Controls	20%	of major equipment		\$ 258,528	SCADA Integration
Subtotal B				\$ 2,100,000	
Startup and Construction Sequencing	2%	of "B"		\$ 42,000	No Easement Necessary
Construction Easements	0%	of "B"		\$ -	
General Conditions	15%	of "B"		\$ 315,000	Tax Exempt
Contractor Overhead and Profit	15%	of "B"		\$ 315,000	
Sales Tax	0%	of equipment and supplies		\$ -	
Bonds and Insurance	2.5%	of "B"		\$ 52,500	
Subtotal C Construction Costs				\$ 2,800,000	
Planning and Permitting	0%	of total construction costs		\$ -	Already paid
Engineering	10%	of total construction costs		\$ 210,000	Final division of engineering & construction management costs between phases may vary.
Construction Management	10%	of total construction costs		\$ 210,000	
Estimating Contingency (includes market factor contingency)	25%	of subtotal Project Costs		\$ 700,000	
Total Project Cost				\$ 4,000,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$ 8,000,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$ 2,000,000

Note: Refer to last sheet for additional assumptions.



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Class 5 Capital Cost Estimate for Wastewater Solids Alternatives Albany County, NY - Incineration Rehabilitation (North Plant)					
Item	Unit Costs		Quantity	Class 5 Total	Notes
Furnace shell/refractory/castings	\$ 733,000	/furnace	2 furnaces	\$ 1,466,000	All prices are installed cost.
Afterburner conversion	\$ 475,000	/furnace	2 furnaces	\$ 950,000	1/14/2025 IFCO Quote
Burner/Combustion Air Fan Replacement	\$ 2,100,000	/furnace	2 furnaces	\$ 4,200,000	1/14/2025 IFCO Quote
Upper centershaft bearings/seals	\$ 13,000	/furnace	2 furnaces	\$ 26,000	
Lower centershaft bearings	\$ 6,500	/furnace	2 furnaces	\$ 13,000	
Centershaft drive motors/gearboxes	\$ 169,500	/furnace	2 furnaces	\$ 339,000	
Spare pinion/bull gears	\$ 45,000	/furnace	1 furnaces	\$ 45,000	One spare set.
Shaft cooling air fans	\$ 24,500	/furnace	2 furnaces	\$ 49,000	
Clinker grinders	\$ 44,500	/furnace	2 furnaces	\$ 89,000	
Wet ash systems	\$ 564,000	/furnace	2 furnaces	\$ 1,128,000	Full system (including hopper)
Refractory lined ducts	\$ 750,000	/furnace	1 allowance	\$ 750,000	Limited scope pending additional testing.
Bypass damper	\$ 89,000	/furnace	2 furnaces	\$ 178,000	
Wet scrubber replacement	\$ 1,300,000	/furnace	2 furnaces	\$ 2,600,000	Unit cost IFCO 2024 cost proposal. Not included in current scope.
Caustic system	\$ 199,000	/furnace	2 furnaces	\$ 398,000	
CEMs	\$ 150,000	system	1 system	\$ 150,000	Inflated from 2022 Estimate. One combined system.
Stack silencers	\$ 88,500	/furnace	2 furnaces	\$ 177,000	
Actuators	\$ 141,500	/furnace	2 furnaces	\$ 283,000	
Cake conveyors	\$ 1,227,000	system	1 system	\$ 1,227,000	two long and one cross conveyor
Instrumentation and controls	\$ 3,099,000	system	1 system	\$ 3,099,000	
Electrical	\$ 1,553,000	system	1 system	\$ 1,553,000	
Subtotal A				\$ 18,800,000	
Startup/Commissioning	\$ 126,000	for incinerator system		\$ 126,000	For furnace system only.
Undefined Design Details		of "A"		\$ -	Small piping, paint, etc.
Misc. Demolition	8.0%	of "A"		\$ 1,504,000	
Total Construction Cost (direct contract with vendor)				\$ 20,400,000	
Planning and Permitting			lump sum	\$ -	Already paid
Engineering			lump sum	\$ 1,725,000	Final division of engineering & construction management
Construction Management			lump sum	\$ 1,735,000	costs between phases may vary.
Estimating Contingency	15%	of total construction costs		\$ 3,060,000	Lower for this alternative since fewer unknowns and allowance for Undefined Design Details above
Total Project Cost				\$ 27,000,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$54,000,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$13,500,000

Note: Refer to cover page for additional assumptions.

Class 5 Capital Cost Estimate for Wastewater Solids Alternatives Albany County, NY - Incineration Rehabilitation (South Plant)					
Item	Unit Costs		Quantity	Class 5 Total	Notes
Furnace shell/refractory/castings	\$ 1,100,000	/furnace	1 furnaces	\$ 1,100,000	All prices are installed cost. Only Rehab'ing One South Plant Incinerator
Burner/combustion air fan replacement	\$ 1,700,000	/furnace	1 furnaces	\$ 1,700,000	One MHF, 1/14/2025 IFCO Quote
Upper centershaft bearings/seals	\$ 13,000	/furnace	1 furnaces	\$ 13,000	One MHF
Lower centershaft bearings	\$ 7,000	/furnace	1 furnaces	\$ 7,000	One MHF
Centershaft drive motors/gearboxes	\$ 170,000	/furnace	1 furnaces	\$ 170,000	One MHF
Spare pinion/bull gears	\$ 45,000	/furnace	1 furnaces	\$ 45,000	One spare set
Shaft cooling air fans	\$ 25,000	/furnace	1 furnaces	\$ 25,000	One MHF
Clinker grinders	\$ 45,000	/furnace	1 furnaces	\$ 45,000	One MHF
Wet ash systems	\$ 564,000	/furnace	1 furnaces	\$ 564,000	One MHF
ID Fan	\$ 200,000	/furnace	1 furnaces	\$ 200,000	One MHF
Refractory lined ducts	\$ 500,000	/furnace	1 allowance	\$ 500,000	Limited scope pending additional testing.
Bypass dampers	\$ 89,000	/furnace	1 furnaces	\$ 89,000	One MHF
CEMs	\$ 150,000	system	1 system	\$ 150,000	Inflated from 2022 Estimate. One combined system.
Actuators	\$ 142,000	/furnace	1 furnaces	\$ 142,000	One MHF
Cake conveyors	\$ 1,227,000	system	1 system	\$ 1,227,000	two long and one cross conveyor
Instrumentation and controls	\$ 3,099,000	system	1 system	\$ 3,099,000	Complete system for both MHFs
Electrical	\$ 777,000	/furnace	1 furnaces	\$ 777,000	One MHF
Subtotal A				\$ 9,900,000	
Startup/Commissioning	\$ 126,000	for incinerator system		\$ 126,000	For furnace system only.
Undefined Design Details		of "A"		\$ -	Small piping, paint, etc.
Misc. Demolition	8.0%	of "A"		\$ 792,000	
Total Construction Cost (direct contract with vendor)				\$ 10,800,000	
Planning and Permitting			lump sum	\$ -	Already paid
Engineering			lump sum	\$ 1,095,000	Final division of engineering & construction
Construction Management			lump sum	\$ 1,175,000	management costs between phases may vary.
Estimating Contingency	15%	of total construction costs		\$ 1,620,000	Lower for this alternative since fewer unknowns and allowance for Undefined Design Details above
Total Project Cost				\$ 14,700,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$29,400,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$7,350,000

Note: Refer to cover page for additional assumptions.

Scenario 1 Summary Table Class 5 Capital Cost Estimate for Wastewater Solids Alternatives Albany County, NY						
Item	Unit Costs	FOG and Septage Receiving	Both Plants Incinerator Rehab	Both Plants Solids Handling Improvements	AACE Class 5 Total	Notes
Incinerator Rehabilitation - North Plant (2)	See Individual Cost Estimate Sheets		\$ 18,800,000			
Incinerator Rehabilitation - South Plant (2)			\$ 15,400,000			
Sludge Tank Mixing Upgrades - North Plant				\$ 2,000,000		
Sludge Tank Mixing Upgrades - South Plant				\$ 1,000,000		
Sludge Thickening & Pumping Upgrades - North Plant				\$ 1,630,000		
Sludge Thickening & Pumping Upgrades - South Plant				\$ 1,630,000		
FOG Receiving Upgrades - North Plant		\$ 3,700,000				
Subtotal A		\$ 3,700,000	\$ 34,200,000	\$ 6,300,000	\$ 44,200,000	
Startup/Commissioning	See Individual Cost Estimate Sheets	\$ -	\$ 252,000	\$ -		
Undefined Design Details		\$ -	\$ -	\$ -		
Misc. Demolition		\$ 185,000	\$ 2,736,000	\$ 476,000		
Civil		\$ 185,000	\$ -	\$ -		
Yard Piping		\$ 185,000	\$ -	\$ 114,805		
Electrical, Instrumentation & Controls		\$ 438,720	\$ -	\$ 740,505		
Subtotal B		\$ 4,700,000	\$ 37,200,000	\$ 7,700,000	\$ 49,600,000	
Startup and Construction Sequencing	See Individual Cost Estimate Sheets	\$ 94,000	\$ -	\$ 156,000		
General Conditions		\$ 705,000	\$ -	\$ 1,170,000		
Contractor Overhead and Profit		\$ 705,000	\$ -	\$ 1,170,000		
Sales Tax		\$ -	\$ -	\$ -		
Bonds and Insurance		\$ 117,500	\$ -	\$ 195,000		Tax exempt
Subtotal C Construction Costs		\$ 6,300,000	\$ 37,200,000	\$ 10,400,000	\$ 53,900,000	
Planning and Permitting	See Individual Cost Estimate Sheets	\$ -	\$ -	\$ -		
Engineering		\$ 250,000	\$ 2,820,000	\$ 900,000		
Construction Management		\$ 290,000	\$ 2,910,000	\$ 900,000		
Estimating Contingency		\$ 1,575,000	\$ 5,580,000	\$ 2,600,000		
Total Project Cost		\$ 8,500,000	\$ 48,600,000	\$ 14,800,000	\$ 71,900,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$143,800,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$35,950,000

Note: Refer to cover page for additional assumptions.

Scenario 2 Summary Table Class 5 Capital Cost Estimate for Wastewater Solids Alternatives Albany County, NY - Consolidated Incineration							
Item	Unit Costs	FOG and Septage Receiving	North Plant Incinerator Rehab	North Plant Solids Handling Improvements	Consolidation of South to North	AACE Class 5 Total	Notes
Incinerator Rehabilitation - North Plant	See Individual Cost Estimate Sheets		\$ 15,700,000		\$ 7,100,000		
Sludge Tank Mixing Upgrades - North Plant				\$ 1,400,000			
Sludge Tank Mixing Upgrades - South Plant					\$ 1,100,000		
Sludge Thickening & Pumping Upgrades - North Plant				\$ 1,390,000			
FOG Receiving Upgrades - North Plant		\$ 3,300,000					
Sludge Consolidation - Both Plants					\$ 5,500,000		
Subtotal A		\$ 3,300,000	\$ 15,700,000	\$ 2,800,000	\$ 13,700,000	\$ 35,500,000	
Startup/Commissioning	See Individual Cost Estimate Sheets	\$ -	\$ 120,000	\$ -	\$ 120,000		
Undefined Design Details		\$ -	\$ -	\$ -	\$ -		
Misc. Demolition		\$ 165,000	\$ 785,000	\$ 139,500	\$ 685,000		
Civil		\$ 165,000	\$ -	\$ -	\$ 275,000		
Yard Piping		\$ 165,000	\$ -	\$ 51,680	\$ -		
Electrical, Instrumentation & Controls		\$ 433,500	\$ -	\$ 333,800	\$ 721,200		
Subtotal B		\$ 4,200,000	\$ 16,600,000	\$ 3,400,000	\$ 15,600,000	\$ 39,800,000	
Startup and Construction Sequencing	See Individual Cost Estimate Sheets	\$ 84,000	\$ -	\$ 68,000	\$ 160,000		
General Conditions		\$ 630,000	\$ -	\$ 510,000	\$ 1,200,000		
Contractor Overhead and Profit		\$ 630,000	\$ -	\$ 510,000	\$ 1,200,000		
Sales Tax		\$ -	\$ -	\$ -	\$ -		
Bonds and Insurance		\$ 105,000	\$ -	\$ 85,000	\$ 200,000		Tax exempt
Subtotal C Construction Costs		\$ 5,600,000	\$ 16,600,000	\$ 4,600,000	\$ 18,400,000	\$ 45,200,000	
Planning and Permitting	See Individual Cost Estimate Sheets	\$ 20,000	\$ 200,000	\$ -	\$ -		
Engineering		\$ 560,000	\$ 1,660,000	\$ 460,000	\$ 1,840,000		
Construction Management		\$ 560,000	\$ 1,660,000	\$ 460,000	\$ 1,840,000		
Estimating Contingency		\$ 1,680,000	\$ 2,490,000	\$ 1,680,000	\$ 4,470,000		
Total Project Cost		\$ 8,500,000	\$ 22,700,000	\$ 7,200,000	\$ 26,600,000	\$ 65,000,000	
Upper Limit of Cost Estimate Range		+100% of Total Project Costs				\$130,000,000	
Lower Limit of Cost Estimate Range		-50% of Total Project Costs				\$32,500,000	

Note: Refer to cover page for additional assumptions.

**Class 5 Capital Cost Estimate for Wastewater Solids Alternatives
Scenario 3 - Consolidated Digestion & Incineration - Albany County, NY**

Item	Unit Costs		Quantity	Class 5 Total	Notes
Incinerator Idling - South			lump sum	\$20,000	Furnace clean out, drain pipes, valve off utilities, etc.
8" HDPE Forcemain	\$125	/LF	22,000 LF	\$2,739,000	Directional drill
Clean-out Structures	\$15,000	/EA	22 EA	\$330,000	
Strain Press - South Plant	\$196,000	/unit	2 unit	\$392,000	Vendor Quote - 440 gpm @1% solids. Fully redundant
Installation	15%	of equipment costs	2 unit	\$59,000	
Sludge Transfer Pumps - South Plant	\$68,000	/unit	2 unit	\$136,000	Vendor quote, plus \$10k for valves
Installation	10%	of equipment costs	2 unit	\$13,600	
Gravity Belt Thickeners - North Plant	\$389,000	/unit	2 unit	\$778,000	Vendor quote. Includes polymer system.
Installation	15%	of equipment costs	2 unit	\$117,000	
Digesters	\$2	/gal	5,670,000 gal	\$11,340,000	Steel tank digesters (3). Includes mixing, flare, pumps, head house, heat exchangers.
Digester Gas Flare	\$1,000,000	/unit	1 unit	\$1,000,000	Similar projects
Shoring and Dewatering		lump sum		\$300,000	Similar projects
Dewatered Cake Loadout Conveyors	\$ 2,000	/LF	150 LF	\$300,000	Vendor cost factor
Sludge Tank Mixing		Lump sum - See separate breakdown		\$2,200,000	At both plants
FOG Receiving Station	\$1,500,000	/unit	1 unit	\$1,500,000	Similar projects
FOG Receiving Station Odor Control	\$100,000	/unit	1 unit	\$100,000	
Subtotal A				\$21,320,000	
Misc. Demolition	5%	of "A"		\$1,066,000	Increased for digestion options. Significant site work would be needed to make lagoons suitable for digester construction.
Civil	12%	of "A"		\$2,558,000	
Yard Piping	10%	of "A"		\$2,132,000	
Electrical, Instrumentation & Controls	30%	of major mechanical equipment		\$5,290,000	
Subtotal B				\$32,400,000	
Startup and Construction Sequencing	2%	of "B"		\$648,000	Tax exempt
General Conditions	15%	of "B"		\$4,860,000	
Contractor Overhead and Profit	15%	of "B"		\$4,860,000	
Sales Tax	0%	of equipment and supplies		\$0	
Bonds and Insurance	2.5%	of "B"		\$810,000	
Subtotal C Construction Costs				\$43,600,000	
Planning and Permitting			lump sum	\$200,000	
Engineering	10%	of total construction costs		\$4,360,000	
Construction Management	10%	of total construction costs		\$4,360,000	
Estimating Contingency	30%	of total construction costs		\$13,080,000	
Total Project Cost (excluding North Incinerator Rehabilitation and Liquid Treatment)				\$65,600,000	
Additional Liquid Treatment Total Project Cost				\$11,870,000	
North Incinerator Rehabilitation Total Project Cost				\$25,400,000	
Overall Total Project Cost				\$102,900,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$205,800,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$51,450,000

Note: Refer to cover page for additional assumptions.



Class 5 Capital Cost Estimate for Wastewater Solids Alternatives Scenario 4 - Consolidated Digestion & Drying - Albany County, NY					
Item	Unit Costs		Quantity	Class 5 Total	Notes
Incinerator Idling - Both plants	\$20,000	/plant	2 plants	\$40,000	Furnace clean out, drain pipes, valve off utilities, etc.
8" HDPE Forcemain	\$125	/LF	22,000 LF	\$2,739,000	Directional drill
Clean-out Structures	\$15,000	/EA	22 EA	\$330,000	
Strain Press - South Plant	\$196,000	/unit	2 unit	\$392,000	Vendor Quote - 440 gpm @1% solids. Fully redundant
Installation	15%	of equipment costs	2 unit	\$59,000	
Sludge Transfer Pumps - South Plant	\$68,000	/unit	2 unit	\$136,000	Vendor quote, plus \$10k for valves
Installation	10%	of equipment costs	2 unit	\$13,600	
Gravity Belt Thickeners - North Plant	\$389,000	/unit	2 unit	\$778,000	Vendor quote. Includes polymer system.
Installation	15%	of equipment costs	2 unit	\$117,000	
Digesters	\$2	/gal	5,670,000 gal	\$11,340,000	Steel tank digesters (3). Includes mixing, flare, pumps, head house, heat exchangers.
Digester Gas Flare	\$1,000,000	/unit	1 unit	\$1,000,000	Similar projects
Shoring and Dewatering		lump sum		\$300,000	Similar projects
Dewatered Cake Loadout Conveyors	\$2,000	/LF	75 LF	\$150,000	Vendor cost factor
Thermal Belt Dryer	\$4,830,000	/unit	2 unit	\$9,660,000	Vendor quote. Assumes dryer could fit in an existing building.
Installation	20%	of equipment costs		\$1,932,000	
Dried Product Pneumatic Conveyance System	\$190,000	/unit	1 unit	\$190,000	Vendor quote
Dried Product Storage Building		lump sum		\$1,300,000	Two months' storage. From similar projects.
Sludge Tank Mixing		Lump sum - See separate breakdown		\$2,200,000	At both plants
FOG Receiving Station	\$1,500,000	/unit	1 unit	\$1,500,000	
FOG Receiving Station Odor Control	\$100,000	/unit	1 unit	\$100,000	
Subtotal A				\$34,280,000	
Misc. Demolition	6%	of "A"		\$2,057,000	Increased for demo for dryer install
Civil	12%	of "A"		\$4,114,000	Increased for digestion options. Significant site work would be needed to make lagoons suitable for digester construction.
Yard Piping	10%	of "A"		\$3,428,000	
Electrical, Instrumentation & Controls	30%	of major mechanical equipment		\$8,230,000	
Subtotal B				\$52,100,000	
Startup and Construction Sequencing	2%	of "B"		\$1,042,000	
General Conditions	15%	of "B"		\$7,815,000	
Contractor Overhead and Profit	15%	of "B"		\$7,815,000	
Sales Tax	0%	of equipment and supplies		\$0	Tax exempt
Bonds and Insurance	2.5%	of "B"		\$1,302,500	
Subtotal C Construction Costs				\$70,100,000	
Planning and Permitting			lump sum	\$20,000	
Engineering	10%	of total construction costs		\$7,010,000	
Construction Management	10%	of total construction costs		\$7,010,000	
Estimating Contingency	30%	of total construction costs		\$21,030,000	
Total Project Cost (excluding Liquid Treatment)				\$105,200,000	
Additional Liquid Treatment Total Project Cost				\$11,870,000	
Overall Total Project Cost				\$117,000,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$234,000,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$58,500,000

Note: Refer to cover page for additional assumptions.



Scenario 5 Summary Table Class 5 Capital Cost Estimate for Wastewater Solids Alternatives Albany County, NY						
Item	Unit Costs	FOG and Septage Receiving	Both Plants Incinerator Rehab	Both Plants Solids Handling Improvements	AACE Class 5 Total	Notes
Incinerator Rehabilitation - North Plant (2)	See Individual Cost Estimate Sheets		\$ 18,800,000			
Incinerator Rehabilitation - South Plant (1)			\$ 9,900,000			
Sludge Tank Mixing Upgrades - North Plant				\$ 2,000,000		
Sludge Tank Mixing Upgrades - South Plant				\$ 1,000,000		
Sludge Thickening & Pumping Upgrades - North Plant				\$ 1,630,000		
Sludge Thickening & Pumping Upgrades - South Plant				\$ 1,630,000		
FOG Receiving Upgrades - North Plant		\$ 3,700,000				
Subtotal A		\$ 3,700,000	\$ 28,700,000	\$ 6,300,000	\$ 38,700,000	
Startup/Commissioning	See Individual Cost Estimate Sheets	\$ -	\$ 252,000	\$ -		
Undefined Design Details		\$ -	\$ -	\$ -		
Misc. Demolition		\$ 185,000	\$ 2,296,000	\$ 476,000		
Civil		\$ 185,000	\$ -	\$ -		
Yard Piping		\$ 185,000	\$ -	\$ 114,805		
Electrical, Instrumentation & Controls		\$ 438,720	\$ -	\$ 740,505		
Subtotal B		\$ 4,700,000	\$ 31,200,000	\$ 7,700,000	\$ 43,600,000	
Startup and Construction Sequencing	See Individual Cost Estimate Sheets	\$ 94,000	\$ -	\$ 156,000		
General Conditions		\$ 705,000	\$ -	\$ 1,170,000		
Contractor Overhead and Profit		\$ 705,000	\$ -	\$ 1,170,000		
Sales Tax		\$ -	\$ -	\$ -		
Bonds and Insurance		\$ 117,500	\$ -	\$ 195,000		Tax exempt
Subtotal C Construction Costs		\$ 6,300,000	\$ 31,200,000	\$ 10,400,000	\$ 47,900,000	
Planning and Permitting	See Individual Cost Estimate Sheets	\$ -	\$ -	\$ -		
Engineering		\$ 250,000	\$ 2,820,000	\$ 900,000		
Construction Management		\$ 290,000	\$ 2,910,000	\$ 900,000		
Estimating Contingency		\$ 1,575,000	\$ 4,680,000	\$ 2,600,000		
Total Project Cost		\$ 8,500,000	\$ 41,700,000	\$ 14,800,000	\$ 65,000,000	

Upper Limit of Cost Estimate Range	+100% of Total Project Costs	\$130,000,000
Lower Limit of Cost Estimate Range	-50% of Total Project Costs	\$32,500,000

Note: Refer to cover page for additional assumptions.

Appendix O
NYSDEC Regulatory Correspondence



DANIEL P. MCCOY
COUNTY EXECUTIVE

COUNTY OF ALBANY
WATER PURIFICATION DISTRICT
1 CANAL ROAD, SOUTH
ALBANY, NEW YORK 12204
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ANGELO GAUDIO, P.E.
EXECUTIVE DIRECTOR

April 30, 2024

Carol Lamb-Lafay
Director, Division of Water
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

Tony Luisi
Regional Director, Region 4
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

**Re: Sludge Processing Improvement Project
Preliminary Engineering Report Comments**

Dear Ms. Lafay and Mr. Luisi,

The Albany County Water Purification District (District) respectfully requests comments on the above referenced Preliminary Engineering Report (PER) so that we can work towards having the project approved prior to the Environmental Facilities Corporation (EFC) funding deadline of June 14, 2024.

The District is in dire need of improvements to its sludge processing systems, including the rehabilitation of the North Plant incinerators. These improvements were initially outlined in the PER that was submitted to the DEC on July 29, 2022. A revised PER was submitted in June of 2023 that incorporated NYSDEC verbal comments obtained at a review meeting on October 7, 2022. As of the date of this letter the District has not received any written comments on the 2023 PER. Due to the delay in the issuance of the PER comments and approval of this project the District is at risk of missing the EFC funding deadline for 2024 and receiving a \$25 million dollar Bipartisan Infrastructure Law (BIL) grant.

As you are aware the District serves disadvantaged communities within the Capital District. Any delays to the approval of this project that would result in the loss of funding and grant money, would place an additional financial burden on the residents we are attempting to protect.

Again, we respectfully request that the PER comments be issued by May 10, 2024 so that the District has adequate time to address any concerns and receive project approval prior to the EFC funding application deadline on June 14, 2024.

Thank you in advance for your attention to this matter and should you have any questions you may reach me at (518) 447-1617.

Sincerely,



Angelo Gaudio, P.E.
Executive Director

Cc: Christopher LaLone, DEC
John Weidman, DEC
Bonnie Star, DEC
Ben Potter, DEC
Karen Rusin, EFC
Tracy Murphy, Albany County
Tyler Masick, Albany County
Philp Gitlen, Whiteman Osterman & Hanna
Karen Clark, Barton & Loguidice

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May 9, 2024

Mr. Angelo Gaudio / Mr. Craig Hurteau
Albany County Water Pollution District
1 Canal Road South
Albany, NY 12204

Re: Sludge Processing Improvements Study
Comments

Mr. Gaudio and Mr. Hurteau:

This letter provides preliminary technical comments related to the Albany County Water Purification District's (the District) Sludge Processing Improvements Study Revision 2 submitted in June 2023.

The District's proposed plan includes a 4-mile force main following the existing bike path along the Hudson River. This force main would pump unthickened sludge from the South Plant to the North Plant. All sludge received would be dewatered, stored, and then incinerated at the North Plant. The North Plant incinerators would be rehabilitated, and the South plant incinerators decommissioned. A fats, oil, and grease removal (FOG) process would be built at the North Plant.

The New York State Department of Environmental Conservation (DEC) Division of Air Resources is responsible for permitting and ensuring continued compliance with the Sewage Sludge Incinerator (SSI) emissions controls and other applicable emission sources at the facilities. The following comments pertain to the District's chosen scenario of consolidation of the South and North Plant sludge handling processes and the incineration of the sludge. DEC requests that the following comments and questions be addressed prior to DEC's further consideration of the proposed plan.

1. Comment – Many of the actions proposed in the document may require approval and review by other DEC divisions, such as the Division of Water and Division of Environmental Permits, and other New York State and/or local agencies.

2. DEC Director of Air Resources advised that if continued incineration is the chosen method of sewage sludge disposal, the incinerators will need to meet 40 CFR 60 LLLL. Before proceeding with any control design, LLLL applicability should be considered. The design of the controls will be different and potentially more expensive. DAR stated that under the existing order this may be the mandatory path forward for the District. Using the existing incinerator with sufficiently upgraded controls may be possible and may need to be evaluated pending the final decision of rule applicability.
3. Recent plant performance observations have demonstrated there is an opportunity to improve plantwide maintenance programs. All incinerators have had maintenance issues with operating components. Some of the issues have resulted in performance issues with the incinerators. The proposed throughput of solids through the incinerator is increasing considerably. How will the maintenance program be improved to prevent degradation issues from occurring?
4. Pg23/564 – Will South plant continue to accept truck deliveries of liquid sludge or will all truck deliveries occur at the North Plant as a result of the proposed project. What measures can be taken for odor reduction if increased deliveries are expected at North Plant?
5. Pg 31/564 Item 3.10 – Screenings and grit are collected and trucked to the incinerators. How is this material added to the incinerator? How often does this process occur?
6. Pg 33/564 Item 3.10 – Can the North Plant lagoon manage 22,000 cubic yards of ash? How will this change current ash management at the North Plant?
7. Pg 33/564 Item 3.11.2 – What is the maintenance plan moving forward to keep the plant running properly? Currently, several items are offline and should have been replaced a while ago. How will the District ensure resources are budgeted for appropriate maintenance of the incinerators and related equipment moving forward?
8. Pg 38/564 Item 4.0 (Basis of Design) – This section states the joint biosolids project needs to be sized at 77.9 dry tons per day. 77.9 dry tons per day equates to 3.246 tons per hour. The combined sludge production for years 2015-2021, in table 4-3 was 120,921 dry pounds per day. 120,921 dry pounds per day equates to 2.519 dry tons per hour. The North Plant incinerators have never been tested at even 85% of the 2.519 dry tons per hour. DEC has no assurance or evidence to suggest that either of the North Plant incinerators can operate within emission

standards at 3.246 dry tons per hour. A test has not yet been performed demonstrating compliance with 77.9 dry tons per day proposed throughput.

9. The original North Plant Basis for Design (pg 540/564) states the incinerator is designed for incinerating 7010 dry pounds per hour of filter cake, 1500 dry pounds of grit, 100 dry pounds of screenings, 180 dry pounds of skimmings. The original incinerator design did not account for the emission standards/limits of 6 NYCRR 212 or 40 CFR 60 MMMM. The incinerators at North Plant have never been tested for emission compliance within 85% of these feed rate values.
10. The latest stack test in 2024, for PCDD/PCDF, established a maximum permitted feed rate of 1.61 dry tons per hour. The third run at 1.78 dry tons per hour demonstrated a PCDD/PCDF value of .284 which is 88.75% of the .32 PCDD/PCDF standard. An increased sludge feed rate has potential for increased emissions of all contaminants. Details on individual pollutant control measures need to be established.
11. Pg 39/564 Item 4.1 – Submit a detailed explanation with associated costs and history related to 40 CFR 60.4930 including original cost of each incinerator and all changes that have taken place since installation. Modification is defined in both 40 CFR 60.4930 and 40 CFR 60.5220 as:
 - a. *Modification means a change to an existing SSI unit later than September 21, 2011 and that meets one of two criteria:*
 - 1) *The cumulative cost of the changes over the life of the unit exceeds 50 percent of the original cost of building and installing the SSI unit (not including the cost of land) updated to current costs (current dollars). To determine what systems are within the boundary of the SSI unit used to calculate these costs, see the definition of SSI unit.*
 - 2) *Any physical change in the SSI unit or change in the method of operating it that increases the amount of any air pollutant emitted for which section 129 or section 111 of the Clean Air Act has established standards.*

Sewage Sludge Incineration Unit at 60.5220 is: *Sewage sludge incineration (SSI) unit* means an incineration unit combusting sewage sludge for the purpose of reducing the volume of the sewage sludge by removing combustible matter. Sewage sludge incineration unit designs include fluidized bed and multiple hearth. A SSI unit also includes, but is not limited to, the sewage sludge feed system, auxiliary fuel feed system, grate system, flue gas system, waste heat recovery equipment, if any, and bottom ash system. The SSI unit includes all ash handling systems connected to the bottom ash handling system. The combustion unit bottom ash system ends at the truck loading station or similar equipment that

transfers the ash to final disposal. The SSI unit does not include air pollution control equipment or the stack.

12. Pg 40/564 Item 5.0 – How will the proposed FOG process impact the quality of the sludge? When removing these contents of the wastewater, the burnability of the sludge will be altered. How will the new quality of the sludge impact combustion of the sludge and overall operation of the incinerator?
13. Pg 50/564 Item 6.2.1.4 – A 4-mile force main will require venting to operate properly. Details of the venting and odor control related to these vents should be addressed. Will the vents be located every 1000 feet at the cleanout locations?
14. Pg 51/564 Item 6.2.1.5 – Please detail potential odor control measures. In addition, detail why the additional sludge throughput would not result in increased odors in the vicinity of the North Plant.
15. Pg 54/564 Sludge Mixing – DEC currently assesses a change in operation of the sludge holding tanks must occur for reliability. The District's recommended alternative is the large bubble mixing. What type of pressure relief is associated with sludge holding tanks? What will the air flow through these vents be when the bubbling is active. How will the odor potential from these vents be addressed on a continuous basis?
16. Pg 65/564 Item 9.2.13 – Is rehabilitation of the incinerators required every 10 years? What does the rehab include? How often are system components inspected for integrity?
17. Pg 432/564 Capacity Analysis – Where does the 97,808 pounds per day come from? This is not consistent with maximum values mentioned earlier in the document.
18. Pg 432/564 Capacity Analysis – State the existing burner capacities.
19. Pg 432/564 Capacity Analysis – Explain, "The air emissions after consolidatingstill meet Section 129 MMMM concentration limits and the mass load limitations for beryllium and mercury." How was this determined?
20. Pg 432/564 Capacity Analysis – "The South Plant incineration systems will be idled, at a minimum, after consolidation at the North Plant. This system could serve as an emergency backup or peak shaving facility requiring low capital investment. BC recommends further consideration of this concept and maintaining the current air permit." This appears to be inconsistent with the earlier language relative to decommissioning of the incinerators at the South Plant. To preserve the South Plant incinerators as emergency backup or peak

shaving would mean that the South Plant incinerators would also need to be completely rehabilitated and stack tested on a regular basis. Costs associated with this should be added to the proposal and this should be added into the schedule if continued operation of South Plant incinerators is part of the District's long-term plan.

21. Pg 433/564 Energy Evaluation – This will need to be included in a 7.2 analysis.
22. Pg 438/564 Item 3.2.1 – Specify which Hearth numbers are drying hearths, combustion hearths, and cooling hearths. Provide a diagram. Specify the purpose of each type of hearth.
23. Pg 438/564 Item 3.2.2 Table 3-2 – How will conditions demonstrating insufficient hearth area be avoided? It appears that moisture content relates to TS (total solids). If TS is 19.2, the peak weak always fails due to insufficient hearth area. What do the numbers represent in the table?
24. Pg 438/564 Item 3.2.2 Table 3-3 – What could cause 85.2% Volatile solids of the sludge feed? This is on the 95th percentile, how often is this condition expected to occur? Is this based on current sludge characteristics? Will the FOG process change this?
25. Pg 439/564 Item 3.2.3 – Diagram as mentioned above to detail drying/combustion/cooling hearths. What option for peak solids production exceeding a single furnace capacity is the chosen path for this project? Keeping the South plant on-line needs to be detailed as mentioned above.
26. Pg 440/564 Item 3.3 – BC is evaluating focused on the heat demand to achieve a MHF exhaust temperature, Subpart Mmmm requires combustion zone temperature. This evaluation does not take the required combustion zone temperature (Hearths 3 and 4) into consideration.
27. Pg 441/564 Item 3.3 Last Paragraph – Was this Hearth balance performed?
28. Pg 441/564 Item 3.4 – Scrubber will be changed. Please detail and submit specifications for new scrubber. DEC will require the method of control for each pollutant to be demonstrated. There is potential for the need of carbon injection or other controls, this should be evaluated before proceeding.
29. Pg 443/564 Item 3.8 – Detail original cost of each incinerator and all changes since installation using the definition of SSI. There appear to be some changes to ash/dust collection in the early years of operation. There was also a heat recovery project installed at one point, this project should be detailed as well. Will the existing sewage sludge feed system need to be changed to meet the increased capacity? Please detail. Reference item #11 for definition of SSI.

30. Pg 444/564 Item 3.9.1 – The stack test of 2015 was not performed in compliance with Subpart M MMM. All testing runs for all contaminants were not performed within the appropriate feed rate range. Temperature was also set for Hearth 1 and not Hearths 3 or 4. A test for all contaminants is scheduled for June 2024 to set OPL's in compliance with 40 CFR 60 Subpart M MMM. Currently DEC does not have a compliant stack test to evaluate against the proposed combined sewage sludge project.
31. Pg 446/564 Item 3.9.3 – An afterburner would need to be included in LLLL applicability.
32. Pg 446/564 Item 3.10 – PFAS/PFOA needs to be stack tested at the North Plant. This stack test is currently scheduled for June 2024. If there are concerns with emission results additional control may be required, The District is advised to consider this issue before proceeding.
33. Pg 448/564 Item 4.3 – The cost of the existing ORC may need to be evaluated for LLLL applicability. The U.S. EPA should verify. Please detail the original costs and details surrounding installation of this equipment.
34. Comment – Please detail the process and actions necessary for gaining approvals and implementation/installation of force main along the bike path. Please detail the method of installation of the force main (trenching or directional boring). Provide estimated timeline in regard to all force main actions.

Sincerely,



Benjamin Potter

Regional Air Pollution Control Engineer

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Office of Environmental Quality, Region 4

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May 13, 2024

VIA ELECTRONIC MAIL ONLY

angelo.gaudio@albanycountyny.gov

Angelo Gaudio, P.E.
Executive Director
Albany County Water Purification District
1 Canal Road, South
Albany, NY 12204

Re: Albany County Water Purification District
Facility: ACWPD – NORTH PLANT SPDES No: NY0026875
Project: Sludge Processing Improvements Study – EPG No. 109868
Comments - Engineering Report Submittal

Dear Mr. Gaudio:

The New York State Department of Environmental Conservation (DEC) along with the New York State Environmental Facilities Corporation (EFC), have reviewed the following submissions for the referenced project:

Engineering Planning Grant (EPG) Report entitled “Sludge Processing Improvements Study”, dated June 2023, prepared by Barton & Loguidice, D.P.C., and stamped and signed by NYS-licensed professional engineer Richard Straut (License #: 068000).

This report is considered a preliminary engineering report. Submission of a basis of design report, engineering plan set, and specifications are required prior to construction of any proposed improvements within the report. The following comments and questions are provided by the DEC Division of Water and EFC as they pertain to the requirements under the Engineering Planning Grant. Please note that other DEC Divisions may also provide separate comments that pertain to other program requirements and regulations.

1. Please include the applicable SRF number on the cover of the report.
2. As shown in Section 3.6, influent BOD and TSS loadings are significantly lower at the South Plant than the North Plant. Please provide a discussion regarding the reason behind this discrepancy.
3. Section 3.11.8 of the report states, “The existing grease receiving facility at the North Plant provides screening but does not include removal of grease, leading to operational issues later in the treatment process.” Please describe in the report any impacts of grease at the South Plant. Does the South Plant regularly accept grease from contract haulers? Are similar facilities provided at the South Plant?

4. Section 3.4 notes SPDES permit exceedances from 2018-2021. Please include permit exceedances through the present date and expand on how proposed improvements within the report will help the facility to better meet SPDES permit limits at both the North and South plants.
5. Section 3.10.5, describe where the chemical addition for odor control and coagulation are currently injected.
6. Expand upon Section 3.11.2 aging infrastructure. What is the current condition of equipment that needs to be replaced at the North and South plants for sludge processing? How were these pieces of equipment evaluated under the asset management program?
7. Please update the report to include a description of any equipment changes that have been made since the report was developed. For example, the replacement of the sludge mixing tank equipment.
8. Odor concerns should be included under Section 3.11.
9. Section 5.2 of the report discusses utilizing a portion of the brown grease biofuel produced by the FOG separation system as a fuel for to heat the processing tanks. Is additional equipment, beyond that discussed in this section, necessary to utilize this fuel?
10. In Section 5.2 of the report, discuss how the installation of the new fog equipment constitutes a water quality improvement.
11. In Section 5.2, describe what odor control solutions are proposed for the FOG receiving station.
12. In Section 6.2.1.4, discuss the hydraulic residence time in the proposed sludge force main, and what elements are proposed to prevent septic conditions within the force main.
13. Will air relief structures be installed on the proposed sludge force main? If so, what odor control measures are proposed along the force main for clean out and air relief locations?
14. In Section 6.2.1.4 and 6.2.10, explain how force main routing will consider New York State's proposed Interstate 787 improvement project and how this project may impact the construction schedule.
15. Discuss within the report, precautions that will be considered in the design should there be issues or mechanical problems with equipment for the consolidation of sludge from the South to the North plant. What redundancies will be incorporated into the design?
16. Section 7 states that there are mechanical mixers being used for the sludge mixing tank. Please update this section noting the diffuser equipment recently installed.
17. Please include all sludge mixing options in Section 7 that were considered, including the possibility of compressed air. Evaluate each alternative for likeliness to cause odors and how odors will be addressed.
18. Recommended Standards for Wastewater Facilities 2014 edition (10 State Standards) Section 86.3 states the need for odor control facilities to be provided for sludge mixing and treated storage tanks when located within ½ mile of residential or commercial areas. Please include in the report how the design will incorporate odor control measure at the North and South plants for the proposed alternative selections. Additional costs should be included in the cost estimates.
19. Section 9.2.1 states a hazardous material survey was not completed as part of the evaluation. Are there expected hazardous materials that would be encountered with the repair and replacement of the incinerators? Have these costs been considered in the cost estimates?

20. Under the Section 9 anaerobic digester options, the report discusses the need for three new blowers. Are these blower requirements different than what is already proposed under the capital improvement plan?
21. In Section 9, compare the O&M costs for each alternative to existing O&M costs.
22. The report should explain why the FOG hydronic separation system was determined to be the preferred alternative compared to the FOG and septage screen system.
23. Section 11.0 should include a summary clearly identifying what work is included in Phases 1A, 1B, and 2.
24. Are the costs presented in Section 11.2 strictly construction costs or do they include items such as contingency, engineering, administration, legal costs? If so, include a table detailing these costs.
25. Section 11.5, provide an updated project schedule.
26. Is there a potential that the ongoing Beaver Creek trunk sewer improvements may require additional treatment equipment at the North Plant as part of the proposed consolidation?
27. Do the costs associated with Phase 2 include anticipated price escalation from present to the anticipated bid date? If not, please include such costs.
28. Are improvements necessary at the North Plant associated with the increased belt press filtrate resulting from the consolidation of dewatering processes?

If you have any questions regarding this letter, please contact me at (518)357-2377 or bonnie.starr@dec.ny.gov.

Sincerely,



Bonnie Starr, P.E., ENV SP
Professional Engineer 1, Region 4

ecc: Craig Hurteau, ACWPD
Michael Budris, EFC
Karen Rusin, EFC
Donna Bullinger, EFC
John Weidman, DEC R4 Regional Engineer
Benjamin Potter, DEC R4 Regional Air Pollution Control Engineer
Ryan Waldron, DEC BWC Section Chief
Richard Straut, Barton & Loguidice



DANIEL P. MCCOY
COUNTY EXECUTIVE

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ANGELO GAUDIO, P.E.
EXECUTIVE DIRECTOR

June 13, 2024

Bonnie Starr, P.E., ENV SP
Professional Engineer 1, Region 4
Office of Environmental Quality, Region 4
1130 North Westcott Road, Schenectady, NY 12306-2014

**Re: Sludge Processing Improvements Preliminary Engineering Report
Response to Comments, Division of Water**

Dear Ms. Starr:

Albany County Water Purification District (ACWPD), in consultation with Barton & Loguidice, D.P.C. (B&L) and Brown and Caldwell (BC), offers the following responses to your letter dated May 13, 2024.

- COMMENT:** Please include the applicable SRF number on the cover of the report.
RESPONSE: The PER has been revised accordingly.
- COMMENT:** As shown in Section 3.6, influent BOD and TSS loadings are significantly lower at the South Plant than the North Plant. Please provide a discussion regarding the reason behind this discrepancy.
RESPONSE: Wastewater is conveyed to the South and North Plants through a combined sewer collection system. Generally, the South Plant takes residential strength wastewater and a large portion of the combined sewers from the City of Albany which will dilute the influent flow further during storm events.

The North Plant accepts the outside hauled waste such as septage and FOG. Although the North Plant also receives flow from combined sewers the septage, FOG and industrial users will increase loading to the plant.

3. **COMMENT:** Section 3.11.8 of the report states, “The existing grease receiving facility at the North Plant provides screening but does not include removal of grease, leading to operational issues later in the treatment process.” Please describe in the report any impacts of grease at the South Plant. Does the South Plant regularly accept grease from contract haulers? Are similar facilities provided at the South Plant?
RESPONSE: The South Plant does not accept grease from contract haulers.
4. **COMMENT:** Section 3.4 notes SPDES permit exceedances from 2018-2021. Please include permit exceedances through the present date and expand on how proposed improvements within the report will help the facility to better meet SPDES permit limits at both the North and South plants.
RESPONSE: The PER has been updated to include permit exceedances from 2022 and 2023. Information regarding how the proposed improvements will improve facility performance and ensure SPDES compliance can be found elsewhere in the report (Sections 5.2.7, 7.3.7, 8.2.7, etc.).
5. **COMMENT:** Section 3.10.5, describe where the chemical addition for odor control and coagulation are currently injected.
RESPONSE: The existing odor control oxidant (sodium peroxide) is pumped into the combined sludge forcemain at a connection point located in the basement of the Sludge Building. The dewatering coagulant is introduced into a venturi mixing ring just upstream of the belt press.
6. **COMMENT:** Expand upon Section 3.11.2 aging infrastructure. What is the current condition of equipment that needs to be replaced at the North and South plants for sludge processing? How were these pieces of equipment evaluated under the asset management program?
RESPONSE: Components identified for replacement were based on interviews with District staff and visual inspections. This was true for both the engineering evaluation completed as part of the PER and the asset management program (AMP). As the PER was initially submitted to DEC in June of 2022, prior to the inspections of the asset management programs the recommendations outlined in the PER were incorporated into the AMP. Because the existing sludge processing systems were mostly original equipment, the condition was deemed to be poor based on age and the fact that systems were not functioning or did not provide adequate redundancy, increasing the risk of catastrophic failure and negative impacts to the treatment plants.
7. **COMMENT:** Please update the report to include a description of any equipment changes that have been made since the report was developed. For example, the replacement of the sludge mixing tank equipment.
RESPONSE: The North plant sludge mechanical mixing system drives in tank #1 were replaced/rebuilt in 2022 and experienced failure within a short timeframe. As an emergency project three sludge mix tanks were retrofit to a coarse bubble diffused air system to keep the system functional until the long-term modifications can be designed and constructed. The PER has been updated accordingly.
8. **COMMENT:** Odor concerns should be included under Section 3.11.
RESPONSE: The District recently responded to an NOV dated May 20, 2024 that referenced odors and the failure to maintain the existing sludge mixing systems. Although three of the existing mechanical mixers failed while this project has been under review since July 2022, the proposed large bubble mixing system will significantly reduce the air displacement from each sludge tank as compared to the current coarse bubble mixing system that is being used as an interim solution. This reduction in air displacement will help mitigate fugitive odor concerns.

9. **COMMENT:** Section 5.2 of the report discusses utilizing a portion of the brown grease biofuel produced by the FOG separation system as a fuel for to heat the processing tanks. Is additional equipment, beyond that discussed in this section, necessary to utilize this fuel?

RESPONSE: No. The proposed FOG Hydronic Separation System includes all equipment needed to utilize the biofuel it produces.

10. **COMMENT:** In Section 5.2 of the report, discuss how the installation of the new fog equipment constitutes a water quality improvement.

RESPONSE: As described in Section 5.2, the installation of FOG receiving equipment would greatly reduce FOG loading on the primary clarifiers and downstream treatment processes. Under current operating conditions, excessive FOG loading reduces treatment efficiency by contributing to solids passthrough, and also decreases the dewatering efficiency of the belt filter presses. Removing FOG from the primary and secondary treatment processes will improve solids settleability in the secondary process resulting in better effluent quality as well as sludge dewatering, further improving the sludge incineration process.

11. **COMMENT:** In Section 5.2, describe what odor control solutions are proposed for the FOG receiving station.

RESPONSE: The process tanks associated with the proposed FOG Hydronic Separation System are enclosed which will minimize the potential for any odors. Similarly, the haulers will use hard hose or piping connection to unload FOG waste to the treatment process further minimizing odor impacts. Although no significant odors are expected, the District will evaluate odor mitigation measures associated with the proposed FOG system under the design phase.

12. **COMMENT:** In Section 6.2.1.4, discuss the hydraulic residence time in the proposed sludge force main, and what elements are proposed to prevent septic conditions within the force main.

RESPONSE: At the minimum design flow of approximately 2.5 feet per second, the hydraulic residence time within the proposed sludge force main would be approximately 2.5 hours. Potential measures to prevent septicity include chemical addition. Chemical selection and dosage will be evaluated in final project design. Provisions for flushing the force main with non-potable water (plant water) will also be provided for periods when the forcemain will be out of service for extended periods of time.

13. **COMMENT:** Will air relief structures be installed on the proposed sludge force main? If so, what odor control measures are proposed along the force main for clean out and air relief locations?

RESPONSE: Forcemain design will include air release valves at all local high points in elevation along the force main route to prevent the accumulation of air within the pipe and ensure smooth operation. The design will also include air/vacuum or combination air valves as needed to allow for the exhaust of air during forcemain start-up. Provisions for odor control at air valve locations will be considered during final design and implemented as appropriate. Final valve quantities and locations will be determined during final design. Activated carbon canisters can be utilized on the vent piping.

Cleanouts will be located to facilitate forcemain maintenance and will be sealed during normal forcemain operation. Odor control at cleanouts is not expected to be necessary.

- 14. COMMENT:** In Section 6.2.1.4 and 6.2.10, explain how force main routing will consider New York State's proposed Interstate 787 improvement project and how this project may impact the construction schedule.

RESPONSE: Close coordination with NYSDOT and all other applicable agencies will be undertaken during final design. The final force main route will be determined in consideration of all applicable constraints. At present, it is not anticipated that the project schedule will be significantly impacted by such coordination, as it was already taken into account when developing the original schedule.

- 15. COMMENT:** Discuss within the report, precautions that will be considered in the design should there be issues or mechanical problems with equipment for the consolidation of sludge from the South to the North plant. What redundancies will be incorporated into the design?

RESPONSE: Proposed redundancies in the sludge consolidation design are described in Section 6.2. Per Section 6.2.1, two (2) parallel force mains would be installed to provide redundancy. Per Sections 6.2.1.2 and 6.2.1.3, a redundant strain press and feed pump would also be provided at the South Plant. Section 6.2.1.6 describes redundant thickening equipment that would be provided at the North Plant.

- 16. COMMENT:** Section 7 states that there are mechanical mixers being used for the sludge mixing tank. Please update this section noting the diffuser equipment recently installed.

RESPONSE: The PER has been updated accordingly.

- 17. COMMENT:** Please include all sludge mixing options in Section 7 that were considered, including the possibility of compressed air. Evaluate each alternative for likeliness to cause odors and how odors will be addressed.

RESPONSE: Section 7.3 evaluates the possibility of the installation of a large bubble (compressed air) mixing system. The volume of air utilized by such a system is relatively small and is not anticipated to cause odors. During preliminary design, operators at several similar facilities which already utilize large bubble mixing systems were contacted; no concerns relating to odors were identified. References can be provided.

The existing interim coarse bubble aeration system displaces approximately 300 cfm of air for each tank, for a total of 900cfm for the three (3) tanks in service. The new large bubble mixing system will only require a total of 128 cfm of airflow for mixing all four (4) tanks, significantly reducing the volume of air displaced through the tank vents. Between the reduced air displacement and the continuous sludge turn over no increased odors are anticipated.

- 18. COMMENT:** Recommended Standards for Wastewater Facilities 2014 edition (10 State Standards) Section 86.3 states the need for odor control facilities to be provided for sludge mixing and treated storage tanks when located within ½ mile of residential or commercial areas. Please include in the report how the design will incorporate odor control measure at the North and South plants for the proposed alternative selections. Additional costs should be included in the cost estimates.

RESPONSE: Section 86.3 applies to facilities utilizing high pH stabilization and is not applicable to the North or South Plant, which do not utilize this process. Section 89.11, which applies to sludge storage facilities for all treatment plants, states that "the design shall provide for odor control in sludge storage tanks...including aeration, covering, or other appropriate means." The existing holding tanks are covered, with passive venting for pressure release. While odor control measures are not anticipated to be necessary, the overall capital budget has been increased and contingency allowances are believed to be adequate to cover the cost of potential odor control measures, if needed.

19. **COMMENT:** Section 9.2.1 states a hazardous material survey was not completed as part of the evaluation. Are there expected hazardous materials that would be encountered with the repair and replacement of the incinerators? Have these costs been considered in the cost estimates?
RESPONSE: A pre-demolition survey will be performed and is included in the engineering budget. The miscellaneous demolition budget and associated contingencies were developed to account for potential hazardous materials abatement and removal if necessary. Refer to Appendix N for a detailed breakdown.
20. **COMMENT:** Under the Section 9 anaerobic digester options, the report discusses the need for three new blowers. Are these blower requirements different than what is already proposed under the capital improvement plan?
RESPONSE: The blowers proposed under Scenarios 3 and 4 are the same as those proposed under the ongoing capital improvement plan, but would differ in size. Increased side-stream loadings caused by anaerobic digester recycle flows would necessitate larger blowers than needed under current conditions.
21. **COMMENT:** In Section 9, compare the O&M costs for each alternative to existing O&M costs.
RESPONSE: The existing O&M is Scenario 1- Incinerator Rehabilitation – Both Plants as presented Table 9-2, this is considered the baseline O&M Costs. The net present Cost Graph, Figure 10-2, shows a comparison of each alternative.
22. **COMMENT:** The report should explain why the FOG hydronic separation system was determined to be the preferred alternative compared to the FOG and septage screen system.
RESPONSE: As described in Sections 5.3.1 and 5.3.2, the dual septage/FOG receiving system (Alternative 2) was designed to utilize accepted FOG as a feedstock for anaerobic digestion. The FOG Hydronic Separation System (Alternative 1) is capable of processing FOG waste independently and therefore is preferred, as anaerobic digestion was not recommended elsewhere in the report.
23. **COMMENT:** Section 11.0 should include a summary clearly identifying what work is included in Phases 1A, 1B, and 2.
RESPONSE: The PER has been updated to reflect the following contract structure:
- | | | |
|-------------------------------|---------------|---------------|
| FOG Receiving Improvements | (Contract 1): | \$ 8,500,000 |
| Incinerator Rehabilitation | (Contract 2): | \$ 22,700,000 |
| Solids Handling Improvements | (Contract 3): | \$ 7,200,000 |
| Solids Handling Consolidation | (Contract 4): | \$ 26,600,000 |
- With the anticipated award of \$25,000,000 in BIL grant funding, the separation of these contracts into distinct phases is no longer anticipated to be necessary. Contracts 1, 2, and 3 are expected to advance concurrently following completion of project design and receipt of regulatory approval. Contract 4 will advance at a later date due to greater permitting requirements associated with forcemain construction. A revised schedule is provided in Section 11.5 of the PER.
24. **COMMENT:** Are the costs presented in Section 11.2 strictly construction costs or do they include items such as contingency, engineering, administration, legal costs? If so, include a table detailing these costs.
RESPONSE: The costs presented in Section 11.2 include all project costs, including construction, engineering, administration, etc. A detailed breakdown is included in Appendix N.

25. **COMMENT:** Section 11.5, provide an updated project schedule.

RESPONSE: The PER has been updated accordingly.

26. **COMMENT:** Is there a potential that the ongoing Beaver Creek trunk sewer improvements may require additional treatment equipment at the North Plant as part of the proposed consolidation?

RESPONSE: No. The Beaver Creek project directs sewage flow to the South Plant. As part of that project the mechanical screens at the South Plant have already been upgraded with smaller 3/8-inch screen openings, allowing the new screens to capture more floatables and inorganic material thereby reducing that material in the South Plant sludge stream. The District is proposing similar mechanical screens at the North Plant and new grit systems at both the North and South Plants; however, that work is programmed under the Capital Improvement Plan projects and not the Sludge Processing Improvement Project.

27. **COMMENT:** Do the costs associated with Phase 2 include anticipated price escalation from present to the anticipated bid date? If not, please include such costs.

RESPONSE: The Phase 2 cost estimate includes anticipated price escalation.

28. **COMMENT:** Are improvements necessary at the North Plant associated with the increased belt press filtrate resulting from the consolidation of dewatering processes?

RESPONSE: The side-stream loadings associated with increased volumes of BFP filtrate are not projected to necessitate any improvements to the existing North Plant biological treatment processes.

If you have further questions or require additional information, please contact me at (518) 447-1624.

Sincerely,



Angelo Gaudio, P.E.
Executive Director

Ecc: John Weidman, DEC
Kevin, Frazier, DEC
Carol, Lamb-Lafay, DEC
Ryan, Waldron, DEC
Christopher, Lalone, DEC
Victoria, Ruglis, DEC
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Karen Rusin, EFC
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EXECUTIVE DIRECTOR

June 13, 2024

Benjamin Potter
Regional Air Pollution Control Engineer
Office of Environmental Quality, Region 4
1130 North Westcott Road, Schenectady, NY 12306-2014

**Re: Sludge Processing Improvement Preliminary Engineering Report
Responses to DEC Comments**

Dear Mr. Potter;

Albany County Water Purification District (District), in consultation with Barton & Loguidice, D.P.C. (B&L) and Brown and Caldwell (BC), offers the following responses to your letter dated May 9, 2024.

- 1. COMMENT:** Any of the actions proposed in the document may require approval and review by other DEC divisions, such as the Division of Water and Division of Environmental Permits, and other New York State and/or local agencies.

RESPONSE: Noted. Project plans and specifications will be submitted to all applicable agencies and divisions as necessary prior to construction.
- 2. COMMENT:** DEC Director of Air Resources advised that if continued incineration is the chosen method of sewage sludge disposal, the incinerators will need to meet 40 CFR 60 LLLL. Before proceeding with any control design, LLLL applicability should be considered. The design of the controls will be different and potentially more expensive. DAR stated that under the existing order this may be the mandatory path forward for the District. Using the existing incinerator with sufficiently upgraded controls may be possible and may need to be evaluated pending the final decision of rule applicability.

RESPONSE: The District's existing North Plant sewage sludge incinerators (SSI) began operation in March 1974 and have continued the same method of operating since that time. As the SSI's were constructed prior to October 14, 2010 they are categorized as existing SSI units and are regulated under 40 CFR Part 60 Subpart MMMM (Quad M). The work outlined in the Preliminary Engineering Report (PER) is considered to be routine maintenance, repair and/or replacement and per 40 CFR Part 60.14 is not considered a "modification" as defined by that same section. The proposed work shall include the repair or replacement of critical systems including refractory, the

center shaft, rabble arms, combustion system and control system. These systems are normal wear items or systems that have been identified as being obsolete to the point where replacement components are no longer available, as is the case with the original control system. Additionally, the proposed repairs do not increase the capacity of the existing incinerators and do not alter the operating method. The District is willing to discuss the potential of additional emission controls systems but based on the definition of "modification" as provided in 40 CFR Part 60.14.e.1 it is our understanding that the proposed work is considered a routine repair that would allow for the continued operations under the Quad M standard.

3. **COMMENT:** Recent plant performance observations have demonstrated there is an opportunity to improve plant wide maintenance programs. All incinerators have had maintenance issues with operating components. Some of the issues have resulted in performance issues with the incinerators. The proposed throughput of solids through the incinerator is increasing considerably. How will the maintenance program be improved to prevent degradation issues from occurring?

RESPONSE: The County is currently working with DEC in implementing a comprehensive asset management program for the North Plant. This program will be used to develop a preventive maintenance program to service the incinerators and ancillary systems. The County also plans to enter into a service contract for annual inspection(s) and maintenance of the incinerators to ensure proactive measures are taken to keep systems operational moving forward. The completion of the repairs under the Sludge Processing Improvement Process will also ensure each system has adequate redundancy so systems can be taken offline as needed to facilitate routine inspections and repair work.

4. **COMMENT:** Pg23/564 Will South plant continue to accept truck deliveries of liquid sludge or will all truck deliveries occur at the North Plant as a result of the proposed project. What measures can be taken for odor reduction if increased deliveries are expected at North Plant?

RESPONSE: All truck deliveries would be received at the North Plant following implementation of the proposed project. Currently all scavenger waste is being received by the North Plant with the exception of sludge from the Town of Bethlehem. After completion of this project the Bethlehem sludge will be rerouted to the North Plant. This increase in truck traffic is projected to be minimal (5-10 trucks per week) compared to existing conditions and no significant odor issues related to this traffic are anticipated.

5. **COMMENT:** Pg 31/564 Screenings and grit are collected and trucked to the incinerators. How is this material added to the incinerator? How often does this process occur?

RESPONSE: Screenings and grit are currently collected and trucked to the Albany landfill for disposal. The PER has been revised accordingly.

6. **COMMENT:** Pg 33/564 Can the North Plant lagoon manage 22,000 cubic yards of ash? How will this change current ash management at the North Plant?

RESPONSE: As stated in the PER, total combined ash generation between the North and South WWTP ranges from 9,000 to 13,000 cubic yards per year, not 22,000 cubic yards. The North Plant ash lagoons are currently hauled out once every 1-2 years. The lagoons have sufficient capacity to accommodate excess ash that would be generated by the consolidation of incineration processes. The frequency with which the lagoons are cleaned out will be increased as necessary.

7. **COMMENT:** Pg 33/564 What is the maintenance plan moving forward to keep the plant running properly? Currently, several items are offline and should have been replaced a while ago. How will the District ensure resources are budgeted for appropriate maintenance of the incinerators and related equipment moving forward?

RESPONSE: The District is currently implementing an asset management program for the North Plant in order to develop a more streamlined preventive maintenance program. This program will also be used to assist in budget development and capital improvement planning. Additionally, the District has already approved a \$180M Capital Improvement Plan to address plant deficiencies over the next five years, of which \$65M is budgeted towards the Sludge Processing Improvement Project. As most of the existing unit processes are past their useful life it's critical that the District be allowed to expedite these projects to ensure future compliance.

8. **COMMENT:** Pg 38/564 Item 4.0 (Basis of Design) - This section states the joint biosolids project needs to be sized at 77.9 dry tons per day. 77.9 dry tons per day equates to 3.246 tons per hour. The combined sludge production for years 2015-2021, in table 4-3 was 120,921 dry pounds per day. 120,921 dry pounds per day equates to 2.519 dry tons per hour. The North Plant incinerators have never been tested at even 85% of the 2.519 dry tons per hour. DEC has no assurance or evidence to suggest that either of the North Plant incinerators can operate within emission standards at 3.246 dry tons per hour. A test has not yet been performed demonstrating compliance with 77.9 dry tons per day proposed throughput.

RESPONSE: The referenced value of 77.9 dry tons per day refers to the previously considered Joint Biosolids Project (with Saratoga County) and is no longer applicable for the currently proposed design. The PER has been revised to clarify this distinction.

The projected future maximum 7-day solids production is 60 dry tons per day, as shown in Table 4-3 and stated on page 21 of the PER. This value was found by evaluating historic sludge production from 2015-2021 for the North and South plants and projected growth within the District. Appendix H includes the full breakdown of these calculations. It should be noted that this value contains several layers of conservatism and will likely not be realized under normal operating conditions. The value was found by combining the historic 7-day maximum North plant and historic 7-day maximum South plant sludge production value, which do not occur at the same time, and applying various growth factors to the combined value. Applying these same growth factors to the simultaneous historic 7-day maximum combined sludge production value would have resulted in a lower future 7-day projection.

The incinerators have an original basis of design capacity of 105.5 dry tons per day. The incinerator capacity evaluation presented in the BC Incineration Technical Memo, which is a conservative value, indicates that the existing North Plant furnaces individually can adequately handle the future maximum month load of 50 dry tons per day. As discussed in Section 9.3.1 of the PER, provisions have been included in the project design for the loadout of dewatered cake during periods of time in which sludge production exceeds incinerator capacity. Existing thickened sludge storage capacity and enhanced thickening/dewatering can also be used to attenuate peak 7 day events.

After the project completion, the incinerators will be able to meet the current MMMM emissions regulations at the design throughput without increasing emission rates.

9. **COMMENT:** The original North Plant Basis for Design (pg 540/564) states the incinerator is designed for incinerating 7,010 dry pounds per hour of filter cake, 1,500 dry pounds of grit, 100 dry pounds of screenings, 180 dry pounds of skimmings. The original incinerator design did not account for the emission standards/limits of 6 NYCRR 212 or 40 CFR 60 MMMM. The incinerators at North Plant have never been tested for emission compliance within 85% of these feed rate values.
RESPONSE: Grit, screenings, and skimmings are no longer processed in the incinerator and are instead trucked to the Albany landfill for disposal. While the original incinerator design did not account for current emissions standards, it is anticipated that the incinerators are capable of meeting such standards at design feed rates after the project. Furthermore, the wet scrubber installation several years ago and the current incinerator operating temperatures has demonstrated compliance with 40 CFR 60 MMMM. The original design was provided for comparison for what the original incinerator was designed to handle and is not the proposed design capacity.
10. **COMMENT:** The latest stack test in 2024, for PCDD/PCDF, established a maximum permitted feed rate of 1 .61 dry tons per hour. The third run at 1 .78 dry tons per hour demonstrated a PCDD/PCDF value of .284 which is 88.75% of the .32 PCDD/PCDF standard. An increased sludge feed rate has potential for increased emissions of all contaminants. Details on individual pollutant control measures need to be established.
RESPONSE: The incinerators will be designed to achieve the required emissions standards. Multiple facilities comply with the 40 CFR 60 MMMM requirements at similar feed rates. Pollution control measures will be based on engineering and equipment vendor experience with similar facilities. Details on the emission system(s) will be identified during the design phase and outlined in subsequent basis of design report.
11. **COMMENT:** Pg 39/564 Item 4.1 – Submit a detailed explanation with associated costs and history related to 40 CFR 60.4930 including original cost of each incinerator and all changes that have taken place since installation. Modification is defined in both 40 CFR 60.4930 and 40 CFR 60.5220 as: 1) The cumulative cost of the changes over the life of the unit exceeds 50 percent of the original cost of building and installing the SSI unit (not including the cost of land) updated to current costs (current dollars). To determine what systems are within the boundary of the SSI unit used to calculate these costs, see the definition of SSI unit. (2) Any physical change in the SSI unit or change in the method of operating it that increases the amount of any air pollutant emitted for which section 129 or section 111 of the Clean Air Act has established standards. Sewage Sludge Incineration Unit at 60.5220 is: Sewage sludge incineration (SSI) unit means an incineration unit combusting sewage sludge for the purpose of reducing the volume of the sewage sludge by removing combustible matter. Sewage sludge incineration unit designs include fluidized bed and multiple hearth. A SSI unit also includes, but is not limited to, the sewage sludge feed system, auxiliary fuel feed system, grate system, flue gas system, waste heat recovery equipment, if any, and bottom ash system. The SSI unit includes all ash handling systems connected to the bottom ash handling system. The combustion unit bottom ash system ends at the truck loading station or similar equipment that transfers the ash to final disposal. The SSI unit does not include air pollution control equipment or the stack.
RESPONSE: Historical work to the SSI units has been limited to maintenance and repair activities, which includes refractory repairs, rabble arm and teeth replacements, ID fan replacements, and various valve, pump and pipe repairs. This work is not considered a modification under Subpart MMMM and does not qualify under the 50% cost rule. This determination was supported by EPA in 2013 as part of their review for the ORC generating system that was constructed in 2010. An

evaluation of the potential for the ORC heat recovery system to be defined as a “modification” was conducted in 2013. The findings of this evaluation were summarized in a memorandum to the District dated November 15, 2013. The memorandum found that the heat recovery system did not meet the definition of a “modification” as construction commenced in May of 2010, prior to the date stipulated in the definition. The memorandum also evaluated the cumulative cost analysis for the lifetime of the incinerators. The memo found that with the exception of the heat recovery system, no other changes were made to the North or South Plant incinerators over their lifetime that were not categorized as maintenance, repair, or replacement for compliance with current standards and therefore exempt. The District communicated these findings to the EPA Region 2 Air Compliance Chief in a letter dated December 30, 2013, and the letter was received by the EPA on January 6, 2014. Subsequent to EPA’s review the District was issued a permit in accordance with Subpart Mmmm requirements.

Unfortunately, the District was unable to ever successfully operate the heat recovery system, and the unit has not meaningfully operated since 2014. Since that time the heat recovery system has been abandoned in place, and the system cannot be operated as the ducting has been physically disconnected from the incinerator. Therefore, it is the District’s position to exclude this system from any future cumulative financial analysis as the heat recovery system is physically disconnected from the incinerator and cannot be operated. The District is currently in the process of seeking the complete physical removal of the heat recovery system, and has no intention to operate this system at any point in the future.

12. **COMMENT:** Pg 40/564 Item 5.0 - How will the proposed FOG process impact the quality of the sludge? When removing these contents of the wastewater, the burnability of the sludge will be altered. How will the new quality of the sludge impact combustion of the sludge and overall operation of the incinerator?

RESPONSE: Implementation of the proposed FOG separation system is expected to improve dewatering performance. Additionally, it is expected that the volatile solids (VS) content of the sludge would decrease, improving thermal stability and consistency of the sludge. At the South Plant, where there’s no significant FOG load and the percent VS is lower, the dewatering and incinerator performance has been more consistent. Operations of the North Plant dewatering and incineration are anticipated to improve upon completion of the project.

13. **COMMENT:** Pg 50/564 Item 6.2.1.4 - A 4-mile force main will require venting to operate properly. Details of the venting and odor control related to these vents should be addressed. Will the vents be located every 1000 feet at the cleanout locations?

RESPONSE: Forcemain design will include air release valves at all local high points along the force main route to prevent the accumulation of air within the pipe and ensure smooth operation. The design will also include air/vacuum or combination air valves as needed to allow for the exhaust of large volumes of air during forcemain start-up. Provisions for odor control at air valve locations will be considered during final design and implemented as appropriate. Final valve quantities and locations will be determined during final design; however, it is not anticipated that they will be necessary at all cleanout locations. Cleanouts will be located to facilitate forcemain maintenance and

will be sealed during normal forcemain operation. Odor control at cleanouts is not expected to be necessary.

- 14. COMMENT:** Pg 51/564 Item 6. 2. 1.5 - Please detail potential odor control measures. In addition, detail why the additional sludge throughput would not result in increased odors in the vicinity of the North Plant.

RESPONSE: Odor control measures are currently under evaluation and will be included as appropriate in the final project design. Potential measures include chemical treatment at the South Plant prior to pumping. Provisions for flushing the force main with non-potable water (plant water) will also be provided for periods when the forcemain will be out of service for extended periods of time to prevent septicity. The consolidation of sludge operations to the North Plant would also allow sludge to be processed on a 24/7 schedule allowing the sludge tank volumes to be turned over more readily and avoiding the need to store sludge during weekly shutdowns, which is the current practice.

- 15. COMMENT:** Pg 54/564 Sludge Mixing - DEC currently assesses a change in operation of the sludge holding tanks must occur for reliability. The District's recommended alternative is the large bubble mixing. What type of pressure relief is associated with sludge holding tanks? What will the air flow through these vents be when the bubbling is active. How will the odor potential from these vents be addressed on a continuous basis?

RESPONSE: At present, all four (4) of the North Plant's sludge holding tank mechanical mixing systems are out of service. As an emergency operational measure, the County installed coarse-bubble mixing systems in three (3) holding tanks to provide mixing in the interim. The sludge holding tanks have passive vents to prevent pressure accumulation. The proposed airflow that would result from the installation of a large bubble mixing system as detailed in the PER would be significantly less than the air flow needed for the current coarse bubble mixing system. The existing coarse bubble aeration system displaces approximately 300 cfm of air for each tank, for a total of 900cfm for the three (3) tanks in service. The new large bubble mixing system will only require a total of 128 cfm of airflow for mixing all four (4) tanks, significantly reducing the volume of air displaced through the tank vents. Between the reduced air displacement and the continuous sludge turnover no increased odors are anticipated.

- 16. COMMENT:** Pg 65/564 Item 9.2.13- Is rehabilitation of the incinerators required every 10 years? What does the rehab include? How often are system components inspected for integrity?

RESPONSE: The District plans to enter into a service contract for annual inspection and maintenance of the incinerators to ensure proactive measures are taken to keep systems operational moving forward. Additionally, deslagging is performed annually to ensure proper performance and having two functioning incinerators will allow the District to alternate active units annually allowing the offline unit to be adequately serviced.

- 17. COMMENT:** Pg 432/564 Capacity Analysis - Where does the 97,808 pounds per day come from? This is not consistent with maximum values mentioned earlier in the document.

RESPONSE: The 97,808 pound per day value represents the projected maximum monthly loading condition for the North and South Plant combined. This value is consistent with Table 4-3 on PER page 22 as well as the calculations presented in Appendix H – Sludge Production Basis of Design.

18. **COMMENT:** Pg 432/564 Capacity Analysis - State the existing burner capacities.
RESPONSE: Existing burner capacity is discussed in Section 3.3 of the Brown and Caldwell technical memorandum in Appendix M of the PER (page 440/564). Each burner has a nominal capacity of 1.48 million Btus per hour (MMBtuh) for a total capacity of 22.2 MMBtuh.
19. **COMMENT:** Pg 432/564 Capacity Analysis - Explain, "The air emissions after consolidating ...still meet Section 129 MMMM concentration limits and the mass load limitations for beryllium and mercury." How was this determined?
RESPONSE: This is discussed in Section 3.9.1 of the Brown and Caldwell technical memorandum in Appendix M of the PER (page 444/564). Be and Hg emissions were estimated using ACWPD's annual emissions summaries.
20. **COMMENT:** Pg 432/564 Capacity Analysis "The South Plant incineration systems will be idled, at a minimum, after consolidation at the North Plant. This system could serve as an emergency backup or peak shaving facility requiring low capital investment. BC recommends further consideration of this concept and maintaining the current air permit." This appears to be inconsistent with the earlier language relative to decommissioning of the incinerators at the South Plant. To preserve the South Plant incinerators as emergency backup or peak shaving would mean that the South Plant incinerators would also need to be completely rehabilitated and stack tested on a regular basis. Costs associated with this should be added to the proposal and this should be added into the schedule if continued operation of South Plant incinerators is part of the District's long-term plan.
RESPONSE: The South Plant incinerators will be idled as part of this project. However, the incinerators do require maintenance to provide reliable operation until the project is commissioned and consolidation at the North Plant completed. The County intends to maintain the current air permit for the South Plant incinerator following completion of the consolidation project for potential emergency use.
21. **COMMENT:** Pg 433/564 Energy Evaluation - This will need to be included in a 7.2 analysis.
RESPONSE: Energy savings associated with the optimization of incinerator run-times are included in the life-cycle cost analysis presented in Section 10.3, and in the carbon footprint analysis presented in 10.2.7.
22. **COMMENT:** Pg 438/564 Item 3.2.1 - Specify which Hearth numbers are drying hearths, combustion hearths, and cooling hearths. Provide a diagram. Specify the purpose of each type of hearth.
RESPONSE: The hearth profile will shift with sludge load and will be presented in full detail in the final project basis of design report. Under maximum month design conditions, the first six hearths will be used for drying, Hearths 7 and 8 are combustion, Hearths 9 and 10 are for cooling. The capacity evaluation discusses the hearth requirements in Sections 3.2.1 and 3.2.3 of the Brown and Caldwell technical memorandum in Appendix M of the PER (page 438 and 439/564).

23. **COMMENT:** Pg 438/564 Item 3.2.2 Table 3-2 - How will conditions demonstrating insufficient hearth area be avoided? It appears that moisture content relates to TS (total solids). If TS is 19.2, the peak week always fails due to insufficient hearth area. What do the numbers represent in the table?

RESPONSE: Table 3-2 shows that when operating 7 days/week a North Plant incinerator has adequate hearth area to process the future maximum month load except at the 5th percentile of historical dewatering TS performance. Thickened sludge storage will be used to handle peaks over the maximum month or during poor dewatering periods.

24. **COMMENT:** Pg 438/564 Item 3.2.2 Table 3-3 - What could cause 85.2% Volatile solids of the sludge feed? This is on the 95th percentile, how often is this condition expected to occur? Is this based on current sludge characteristics? Will the FOG process change this?

RESPONSE: As stated in Section 3.1 of Appendix M, volatile solids parameters presented are based on historical weekly data from 2018-2021 for North Plant sludge cake. 5% of weekly samples met or exceeded the 95th percentile value of 85.2%.

Historically, North Plant sludge cake has contained a higher volatile solids (VS) content than South Plant sludge cake. This is partially attributable to the acceptance of FOG and septage waste at the facility. A reduction of the sludge VS concentration is anticipated following the separation of FOG waste from the proposed FOG separation system; the exact degree will change as the FOG loadings and sludge characteristics are variable.

25. **COMMENT:** Pg 439/564 Item 3.2.3 - Diagram as mentioned above to detail drying/combustion/cooling hearths. What option for peak solids production exceeding a single furnace capacity is the chosen path for this project? Keeping the South plant on-line needs to be detailed as mentioned above.

RESPONSE: The hearth profile was described in response to Comment 22. A diagram can be provided if required for further clarification. Existing thickened sludge storage capacity at the North and South plants will be used to attenuate peak solids production; provision for dewatered cake loadout at the North plant will also be included in the project design as described in Section 9.3.1 of the PER. The South Plant incinerators will be idled as part of the project. The District intends to maintain the existing South Plant incinerator permit in the event of an emergency that would prevent the transfer of sludge to the North Plant or a failure of the North Plant incinerators.

26. **COMMENT:** Pg 440/564 Item 3.3 - BC is evaluating focused on the heat demand to achieve a MHF exhaust temperature, Subpart MMMM requires combustion zone temperature. This evaluation does not take the required combustion zone temperature (Hearths 3 and 4) into consideration.

RESPONSE: The combustion hearths achieve 1400-1600 F in multiple hearths, typically. The precise temperature is dictated by sludge quality, feed rate, and centershaft speed. The combustion hearth temperature can be used for regulatory compliance, and it can be controlled if needed with underlying burners.

27. **COMMENT:** Pg 441/564 Item 3.3 Last Paragraph - Was this Hearth balance performed?

RESPONSE: The detailed hearth balance will be completed as part of the design project to optimize burner and air inlet locations.

28. **COMMENT:** Pg 441/564 Item 3.4 - Scrubber will be changed. Please detail and submit specifications for new scrubber. DEC will require the method of control for each pollutant to be demonstrated. There is potential for the need of carbon injection or other controls, this should be evaluated before proceeding.

RESPONSE: The scrubber will be the same style as the existing, but larger in diameter to handle the additional flow rate when combining the two plants. Final specifications will be submitted for review following the completion of final design. Individual pollutant control measures will be discussed upon determination of incinerator classification.

29. **COMMENT:** Pg 443/564 Item 3.8 – Detail original cost of each incinerator and all changes since installation using the definition of SSI. There appear to be some changes to ash/dust collection in the early years of operation. There was also a heat recovery project installed at one point, this project should be detailed as well. Will the existing sewage sludge feed system need to be changed to meet the increased capacity? Please detail. Reference item #1 1 for definition of SSI.

RESPONSE: The SSI classification was discussed in response to question 11 and in Section 3.8 of the Brown and Caldwell technical memorandum in Appendix M of the PER (page 443/564). A more detailed presentation will be completed during the early phase of the project. The changes noted will be included in the cost evaluation as applicable. Refer to the response to comment 11 above for additional information regarding this cost evaluation.

30. **COMMENT:** Pg 444/564 Item 3.9.1 - The stack test of 2015 was not performed in compliance with Subpart Mmmm. All testing runs for all contaminants were not performed within the appropriate feed rate range. Temperature was also set for Hearth 1 and not Hearths 3 or 4. A test for all contaminants is scheduled for June 2024 to set OPL's in compliance with 40 CFR 60 Subpart Mmmm. Currently DEC does not have a compliant stack test to evaluate against the proposed combined sewage sludge project.

RESPONSE: It is the position of the District that the 2015 stack testing for the North Plant was performed in compliance with Subpart Mmmm. No prior notice of non-compliance or violation was issued by DEC following this testing. Additionally the District's current Title V permit does not include a maximum throughput capacity and DEC has only recently requested the establishment of feed rate limit during stack testing. The District will continue to work with DEC in developing a throughput capacity protocol for the North Plant stack test that is scheduled later this year. Note that the incinerator combustion system that is proposed to be replaced under this Project will provide better temperature control than the existing system, which is obsolete.

31. **COMMENT:** Pg 446/564 Item 3.9.3 - An afterburner would need to be included in LLLL applicability.
Response: Various oxidation technologies can be evaluated if 40 CFR 60 LLLL is required by EPA, an afterburner would be one option.
32. **COMMENT:** Pg 446/564 Item 3.10- PFAS/PFOA needs to be stack tested at the North Plant. This stack test is currently scheduled for June 2024. If there are concerns with emission results additional control may be required, The District is advised to consider this issue before proceeding.
Response: Comment is acknowledged but there is currently no permitted emission limit for PFAS compounds. As DEC is requesting the District perform PFAS emission testing, please provide target limits for PFAS compounds prior to the scheduled stack test on July 9, 2024.
33. **COMMENT:** Pg 448/564 Item 4.3 - The cost of the existing ORC may need to be evaluated for LLLL applicability. The U.S. EPA should verify. Please detail the original costs and details surrounding installation of this equipment.
Response: Please refer to the response to Comment #11 and the memorandum titled *SSI MACT – Applicability Determination Memo*, dated November 15, 2013, as prepared by O’Brien & Gere. As detailed in this memo, construction of the ORC commenced prior to September 21, 2011, therefore, the “cost of the cogeneration project is irrelevant to [LLLL applicability], since the project is not defined as a *modification* based on the date upon which construction commenced.” Additionally, the ORC is no longer operational or connected to an active incinerator.
34. **COMMENT:** Comment - Please detail the process and actions necessary for gaining approvals and implementation/installation of force main along the bike path. Please detail the method of installation of the force main (trenching or directional boring). Provide estimated timeline in regard to all force main actions.
Response: As stated in Section 6.2.1.4, the proposed force main would be installed via trenchless methods (i.e., horizontal directional drilling).

The Albany County Legislature has assumed lead agency status for this action. The project has been deemed a Type 1 Action under SEQRA. The County is in receipt of correspondence from NYSDEC dated April 16, 2024, detailing recommended/requested steps that will need to be performed by the County as part of the regulatory approval process, and will comply with such steps. The PER has been revised to include an updated overall project schedule, including forcemain work.

If you have further questions or require additional information, please contact me at (518) 447-1624.

Sincerely,



Angelo Gaudio, P.E.
Executive Director

Enc. Applicability Determination Memo (Nov 15, 2013)
EPA Letter (Dec 30, 2013)

Ecc: Bonnie Star, DEC
John Weidman, DEC
Kevin, Frazier, DEC
Carol, Lamb-Lafay, DEC
Ryan, Waldron, DEC
Christopher, Lalone, DEC
Victoria, Ruglis, DEC
Michael Budris, EFC
Karen Rusin, EFC
Donna Bullinger, EFC
Tyler Masick, ACWPD
Craig Hurteau, ACWPD
Karen Clark, B&L
Lyoyd, Winchell, BC
Eric Muir, BC

TO: Craig Hurteau
FROM: Matt Traister, P.E.
RE: SSI MACT - Applicability Determination Memo
FILE: 10161/51089
DATE: November 15, 2013

cc: Rich Lyons – ACSD
Tim Murphy – ACSD
Rob Ganley, P.E. – O'Brien & Gere
Cris Hine – O'Brien & Gere

O'Brien & Gere has prepared this memorandum to document our review of whether the incinerators at the North and South Plants of Albany County Sewer District (ACSD) are considered *existing* or *new* units under the sewage sludge incinerator rules promulgated under 40 CFR Part 60 Subpart LLL (*Standards of Performance for New Sewage Sludge Incineration Units*) and 40 CFR Part 60 Subpart MMM (*Emission Guidelines and Compliance Times for Existing Sewage Sludge Incinerators*). This applicability determination is critical, since the emission standards applicable to new incineration units are considerably more stringent than those applicable to existing emission units, and may have a significant effect on the manner in which the County achieves compliance.

BACKGROUND INFORMATION

Albany County Sewer District (ACSD) operates two wastewater treatment plants (WWTP), designated as the North Plant and South Plant. At the North Plant, ACSD operates two ten-hearth sewage sludge incinerators (SSI), while the South Plant uses two seven-hearth incinerators. Emissions from these incinerators are controlled using wet venturi scrubbers.

REGULATORY DEFINITIONS

Fortunately, the two rules use consistent terminology in helping to define whether a given incineration system is considered a *new sewage sludge incineration unit*, or an *existing sewage sludge incineration unit*. The following discussion illustrates the manner in which these regulatory definitions apply to the incinerators at ACSD. For clarity, applicable definitions are provided in Appendix A to this memo.

SUBPART LLLL (NEW SOURCES)

An *affected source* under this regulation is each *SSI unit* that meets all the criteria specified below (emphasis added):

- The SSI unit is one for which construction commenced after October 14, 2010 or for which modification commenced after September 21, 2011
- The SSI unit is a SSI unit as defined in §60.4930 (see Appendix A of this memorandum for that definition)
- The SSI unit is not exempt under §60.4780 (*i.e.*, combustion units that incinerate sewage sludge and are not located at a wastewater treatment facility designed to treat domestic sewage sludge).

Furthermore, pursuant to §60.4930, a *new SSI unit* is a SSI unit that meets either of the two criteria specified below:

- Commenced construction after October 14, 2010
- Commenced modification after September 21, 2011 (emphasis added).

Note that physical or operational changes made to an SSI unit to comply with the emission guidelines in subpart MMM do not qualify as a *modification*.

Analysis of Subpart LLLL Applicability

According to the air permits issued by the New York State Department of Environmental Conservation (NYSDEC), the incinerators at the North and South Plants began operation in March 1974 and, therefore, predate the October 14, 2010 construction date that otherwise defines a new source. Thus, provided that the North and South plants can prove that they have not commenced a *modification* after September 21, 2011, it is reasonable

CRAIG HURTEAU
NOVEMBER 15, 2013
PAGE 2

to assume that the incineration units at both plants will be considered *existing SSI units* and, therefore, subject to Subpart Mmmm emission guidelines.

In order to evaluate whether either the North or South Plant has undertaken a *modification*, it is helpful to review the definition of *modification* under these rules. *Modification* means a change to an existing SSI unit later than September 21, 2011 and that meets one of two criteria:

- The cumulative cost of the changes over the life of the unit exceeds 50 percent of the original cost of building and installing the SSI unit (not including the cost of land) updated to current costs (current dollars). To determine what systems are within the boundary of the SSI unit used to calculate these costs, see the definition of SSI unit (note that air pollution control equipment is not within the boundary of the SSI unit); or,
- Any physical change in the SSI unit or change in the method of operating it that increases the amount of any air pollutant emitted for which section 129 or section 111 of the Clean Air Act has established standards.

According to ACSD personnel, there have been no physical changes or changes in the method of operation of the incinerators at either plant that have resulted in the increase of a regulated air contaminant. Thus, the second criterion, listed above, has not been satisfied.

According to ACSD personnel, with the exception of the Rankine-cycle cogeneration system that was installed at the North Plant, other changes that have been made to the incineration units at the North and South Plants are categorized as “routine repair and replacement,” which are specifically excluded by USEPA in evaluating the 50% cost threshold¹. Thus, the South Plant is clearly an *existing SSI unit*, as that term is defined in §60.5250.

ACSD has provided the following information pertaining to the cogeneration project at the North Plant:

- System Design Finalized: June 2009
- Construction Commencement: May 2010 (emphasis added)
- Substantial Construction Completed: July 2013
- Initial Start Up: March 2013
- Cost of Project: \$8.59 million.

Since ACSD commenced construction of the cogeneration facility before the September 21, 2011 *modification* date specified in §60.4930, this project does not result in re-categorizing the North Plant incinerators as *new SSI units*. Moreover, the cost of the cogeneration project is irrelevant to this determination, since the project is not defined as a *modification* based on the date upon which construction commenced.

CONCLUSIONS AND RECOMMENDATIONS

Based on the preceding discussion, the incinerators at ACSD’s North and South Plants are considered *existing SSI units* and are, therefore, subject to the emission limitations, monitoring, recordkeeping and reporting provisions of 40 CFR Part 60 Subpart Mmmm. Considering the importance of this regulatory interpretation, O’Brien & Gere recommends that ACSD seek a formal regulatory determination from USEPA and/or NYSDEC on this issue.

¹ See page 3-7 of USEPA’s *Summary of Public Comments and Responses* document contained in the SSI MACT docket (EPA-HQ-OAR-2009-0559), dated February 2011.

Important Definitions from 40 CFR Part 60 Subparts LLLL and MMMM

Affected source means a sewage sludge incineration unit as defined in §60.4930.

Existing sewage sludge incineration unit means a sewage sludge incineration unit the construction of which is commenced on or before October 14, 2010.

Modification means a change to an existing SSI unit later than September 21, 2011 and that meets one of two criteria:

- (1) The cumulative cost of the changes over the life of the unit exceeds 50 percent of the original cost of building and installing the SSI unit (not including the cost of land) updated to current costs (current dollars). To determine what systems are within the boundary of the SSI unit used to calculate these costs, see the definition of SSI unit.
- (2) Any physical change in the SSI unit or change in the method of operating it that increases the amount of any air pollutant emitted for which section 129 or section 111 of the Clean Air Act has established standards.

Modified sewage sludge incineration (SSI) unit means an existing SSI unit that undergoes a modification, as defined in this section.

New sewage sludge incineration unit means a SSI unit the construction of which is commenced after October 14, 2010 which would be applicable to such unit or a modified solid waste incineration unit.

Sewage sludge incineration (SSI) unit means an incineration unit combusting sewage sludge for the purpose of reducing the volume of the sewage sludge by removing combustible matter. Sewage sludge incineration unit designs include fluidized bed and multiple hearth. A SSI unit also includes, but is not limited to, the sewage sludge feed system, auxiliary fuel feed system, grate system, flue gas system, waste heat recovery equipment, if any, and bottom ash system. The SSI unit includes all ash handling systems connected to the bottom ash handling system. The combustion unit bottom ash system ends at the truck loading station or similar equipment that transfers the ash to final disposal. The SSI unit does not include air pollution control equipment or the stack.

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
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RICHARD J. LYONS
EXECUTIVE DIRECTOR

December 30, 2013

Kenneth Eng, Chief
Air Compliance Branch
Division of Enforcement and Compliance Assistance
USEPA Region II
290 Broadway – 20th Floor
New York, NY 10007-1866

Dear Mr. Eng,

The Albany County Sewer District is seeking a formal regulatory determination as to whether the incinerators at the North and South plants are considered new or existing units under the sewage sludge incineration rules 40 CFR Part 60 Subpart LLLL and 40 CFR Part 60 Subpart MMMM, respectively.

The installation and operation of the incinerators at the North and South plants in March of 1974, predates the October 14, 2010 construction date that delineates a New Source standard.

To assess whether either the North or South plant has undergone a modification that would re-define the source as being subject to Subpart LLLL (New Sources), we considered the following:

1. At the South Plant, the only changes that have been made are categorized as “routine repair and replacement” or “air pollution control equipment” which are specifically excluded by the EPA when evaluating the 50% cost threshold. Thus, we have determined, and ask for EPA’s verification, that the South Plant is an existing SSI unit, and subject to the Subpart MMMM emission guidelines.

Kenneth Eng, Chief

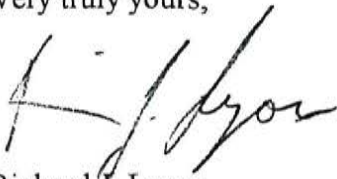
Page 2

December 30, 2013

2. At the North Plant, the only changes that are not categorized as "routine repair and replacement" or "air pollution control equipment" which are specifically excluded by the EPA when evaluating the 50% cost threshold, is the installation of the Organic Rankine-Cycle cogeneration system (ORC). However, as this modification commenced construction in May of 2010, prior to September 22, 2011, the cost of the ORC is irrelevant as this project is not defined as a modification based on the date upon which construction commenced. Thus, we have determined, and ask for EPA's verification, that the North Plant is an existing SSI unit, and subject to the Subpart M MMM emission guidelines.

If you have any questions please contact Timothy Murphy, Superintendent of Operations, or Craig Hurteau, Permit Compliance Manager, at 518-447-1611.

Very truly yours,



Richard J. Lyons
Executive Director

cc: Matthew Traister, PE, O'Brien and Gere
John Henkes, Env. Eng. II, NYSDEC

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Office of Environmental Quality, Region 4

1130 North Westcott Road, Schenectady, NY 12306-2014

P: (518) 357-2045 | F: (518) 357-2593

www.dec.ny.gov

August 19, 2024

Sent via Electronic Mail

Albany County Water Pollution District
1 Canal Road South
Albany, NY 12204

Re: Sludge Processing Improvements Study
Comments

Dear Angelo Gaudio and Craig Hurteau:

The purpose of this letter is to provide the Division of Air Resources decision related to the continued incineration plan proposed in the Albany County Water Purification District's (ACWPD or the District) Sludge Processing Improvements Study Revision 3, submitted June 2024. The Division of Air Resources is responsible for permitting and ensuring continued compliance with the Sewage Sludge Incinerator (SSI) emissions controls and other applicable emission sources at the ACWPD facilities.

On July 23, 2018, Order on Consent R4-2017-0426-210 (2018 Order) became effective, which required ACWPD to replace the sewage sludge incineration units at the North and South Plants with anaerobic digesters.

On January 10, 2022, a letter agreement modified the 2018 Order (2022 Modification) by suspending the previously approved construction milestones for the anaerobic digesters and requiring ACWPD to submit to DEC an engineering plan (Engineering Plan) for a proposed project to provide for operational improvements and increased efficiencies at the North Plant and the South Plant. The 2022 Modification provided that DEC's review of the Engineering Plan is subject to Section X of the 2018 Order, which requires DEC to notify the Respondent in writing when it disapproves a submittal and specify the reasons for its disapproval. Section X further provides that the Respondent shall be in violation of the 2018 Order if DEC disapproves a subsequently submitted revised submittal.

On July 29, 2022, ACWPD submitted to DEC the initial Engineering Plan pursuant to 2022 Modification.



Department of
Environmental
Conservation

On October 16, 2023, DEC issued ACWPD an NOV for failing to meet the required standard for polychlorinated dibenzodioxin and polychlorinated dibenzofuran (PCDD/PCDF) emissions during the 2022 and 2023 stack tests. A retest was conducted by the facility in November 2023.

On January 12, 2024, DEC issued ACWPD another NOV based on the stack retest results, which again showed PCDD/PCDF emissions in excess of applicable federal limits. A retest was conducted by the facility in February 2024.

On or about April 19, 2024, DEC issued a Notice of Inspection Results for the February 2024 retest for dioxin/furans, which was based on updated procedures recommended by IFCO. While the results complied with the PCDD/PCDF standard, the feed rates failed to comply with 40 CFR 60.5220(a)(11), which requires that each test be in the range of 85% to the maximum permitted feed rate.

On June 13, 2024, ACWPD disclosed to DEC that there was an issue with the North Plant's incinerator which caused refractory brick to collapse in Hearth #6. Per ACWPD, IFCO assessed the issue and found there was a catastrophic failure of the floor in Hearth #6. ACWPD removed the floor of Hearth #6; however, the floor of Hearth #6 has since been reinstalled and repaired.

On June 20, 2024, EPA issued to ACWPD compliance determinations and findings of violation for both Plants following a February 28, 2023 inspection.

In June 2024, following multiple comments and revisions on the Engineering Plan, ACWPD submitted Revision 3 of the Engineering Plan, which includes a 4-mile force main following the existing bike path along the Hudson River. This force main will pump unthickened sludge from the South Plant to the North Plant. All sludge received will be dewatered at the North Plant, stored at the North Plant, and then incinerated at the North Plant. The North Plant incinerators will be rehabilitated, the emissions control at the North Plant will be replaced and improved, and the South plant incinerators will be idled, to be used if and when necessary. A fats, oil, and grease removal process will be built at the North Plant.

DEC disapproves Revision 3 of the Engineering Plan for the following reasons:

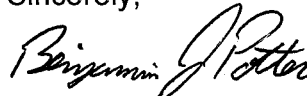
1. DEC does not approve the plan of continued and consolidated incineration at the North Plant meeting 40 CFR 60 Subpart M emission limitations. DEC has required ACWPD to perform a stack test demonstrating compliance with the 40 CFR 60 Subpart M for all contaminants while setting operational parameter limits. This test must also be performed at an appropriate sludge feed rate in compliance with Subpart M. The performance test is scheduled for September of 2024.
2. The incinerators at the North Plant were constructed in 1974 and have always been operated far below their design capacity of 105.5 dry tons per day, and even well below the projected maximum month load of 50 dry tons per day.

The effects of the proposed increase of sludge feed rate on the aging equipment remain unknown. The North Plant incinerators have not been operated or operationally tested at the proposed feed rate.

3. The maximum useful life of sewage sludge incinerators is generally 50 years on the high end. The ACWPD incinerators were designed when current emissions standards were not part of the engineering consideration and the operational parameters prioritized creating a complete burn instead of complying with emission standards. Operation of the incinerator outside of original parameters may require increased maintenance on the incinerators.
4. ACWPD cannot continue to rely on equipment that cannot and has not been maintained properly. The North and South Plants each have an incinerator that has not been operational since 2018 and 2017 and cannot be used currently due to lack of maintenance and age-related issues. The currently operating incinerators at each plant also have had major maintenance related issues. DEC acknowledges ACWPD is proposing a future maintenance plan with included budget; however ACWPD has not provided assurance that the necessary funding for future required maintenance will be allocated when needed. The maintenance history at ACWPD North and South Plants has not demonstrated appropriate or consistent action keeping the incinerators in proper working order.
5. A plan for continued incineration must demonstrate compliance with 40 CFR 60 LLLL in order to be approved under the 2022 Modification.
6. Idling of the existing incinerators and controls at the South Plant is not approved. This project must ensure operational improvements and reduced emissions at both plants. The potential continued use of the existing incinerators and controls at the South Plant do not meet this requirement. If any potential continued incineration is planned for the South Plant, operations must be in compliance with 40 CFR 60 Subpart LLLL.

Please submit a revised submittal to DEC that addresses and resolves all the above stated reasons for disapproval within 60 calendar days of the date of this letter.

Sincerely,



Benjamin Potter
Regional Air Pollution Control Engineer

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Office of Environmental Quality, Region 4
1130 North Westcott Road, Schenectady, NY 12306-2014
P: (518) 357-2045 | F: (518) 357-2593
www.dec.ny.gov

October 7, 2024

RE: Albany County Water Purification District
112 State Street, Basement
Albany, New York 12207

Angelo Gaudio

9-16-2024 Albany County and DAR/Region 4 Meeting

The purpose of the meeting was to discuss the August 19, 2024 letter from the Department of Environmental Conservation which disapproved Albany County's submitted plan for combined sewage sludge incineration at the North Plant with rebuilt incinerators, and idling of the South Plant incinerators.

Albany County is awaiting the test results for all contaminants/operational limits from the 9/11/2024 stack test of incinerator #2 at the north plant. The test was performed at approximately 6.5 wet tons per hour based on periodic visible observation of the feed rates.

Albany has stated that future operational budgets include maintenance costs.

Albany County explained in detail during the meeting that every component of the incinerators at North Plant would be replaced except for the shell. Albany has also committed to replacement of the incinerator control systems and operational monitoring systems. The Department stated that additional temperature monitoring (thermocouples) need to be installed for a better temperature profile of the Hearths, the Department is requesting 4 thermocouples at 90 degree separation. Currently each hearth has only one thermocouple. Albany is committing to retrofitting the existing incinerators by screw feeding sludge into a lower hearth and using Hearth #1 as an afterburner. The combustion Hearths may need to be lowered to meet these design requirements. The scrubbers will also be replaced with a new scrubber capable of meeting the needs of the additional sludge feed rate of the combined plants.

Albany verbally committed to retrofitting one incinerator at South Plant to the same specifications with afterburner and enclosed feed into a lower hearth. The retrofitted incinerator at South Plant will be used until the force main is constructed and the North Plant is capable of properly handling the combined sludge.

The continued odor issue was discussed during the meeting and afterwards at a plant visit. Odor control measures to be taken with this project include enclosed DAF tanks, auger feed of sludge to the incinerator, and the addition of an afterburner Hearth #1 of the incinerators, and odor control on the sludge holding tanks.

After the meeting, it is the Department's decision that prior to commencement of planning or construction of the 4 mile force main, Albany County must test the upgraded incinerators at North Plant for all contaminants and operational parameter limits, at the projected combined sludge feed rate. Once the incinerators at North Plant

have demonstrated they are capable of incinerating the combined sludge feed rate in compliance with emission limits and operational parameters, planning of the force main can proceed.

Applicability of 40 CFR 63 Subpart LLLL was discussed. Albany County submitted a request for applicability analysis to EPA and is waiting for a response. Albany is willing to commit to a phased approach of 5 years to come into compliance with Subpart LLLL.

The outstanding NOV's issued by the Department and the violations alleged by EPA were also discussed along with the impending order from determined violations. Approval of the sludge processing improvement study and compliance with Subpart LLLL can be handled as separate matters. Subpart LLLL applicability can be handled through enforcement negotiations related to the upcoming legal actions. Approval of the engineering plan can continue based on meeting the requirements below.

Please resubmit the sludge processing improvements study with the following information, and in the requested format.

- The next submitted version should detail the chosen scenario, the alternate scenarios can be omitted for clarity.
- The order of events should be identified as they will occur in the construction schedule.
- Include an interim operation plan stating how the plants will be operated during construction.
- Prior to the planning stage (seeking permits, engineering design of force main, etc.) of the force main, at least one incinerator at the North Plant must be rebuilt/modified and then tested in accordance with 40 CFR 60.5220(a)(11).
- Identify the order in which the incinerators will be rebuilt/modified and identify which incinerator at South Plant will be rebuilt.
- Explain the modifications to the incinerators including afterburner installation, enclosed auger feed to a lower hearth, upgraded scrubber system, and control systems.
- Provide a draft schematic of the incinerators and a process flow diagram of the incineration process. Detail sludge path through the incinerator and what each hearth does.
- Detail and identify the differences between the proposed control system and the existing control system.
- Clearly identify all components of the incinerators that will be replaced for both plants.
- Identify and detail additional odor controls for the sewage sludge holding tanks.
- Identify and detail odor control associated with belt filter press area and DAF tanks.
- Identify and detail potential odor control associated with force main vents, if needed after operation begins.
- Identify and detail additional odor control for truck delivery area.

Sincerely,



Benjamin J. Potter
Regional Air Pollution Control Engineer
Region 4 - Schenectady



DANIEL P. MCCOY
COUNTY EXECUTIVE

COUNTY OF ALBANY
WATER PURIFICATION DISTRICT
1 CANAL ROAD, SOUTH
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ANGELO GAUDIO, P.E.
EXECUTIVE DIRECTOR

November 7, 2024

SENT VIA ELECTRONIC MAIL ONLY

Benjamin J. Potter P.E.
Regional Air Pollution Control Engineer, Region 4
New York State Department of Environmental Conservation
1130 North Westcott Road
Schenectady, NY 12306-2014

Re: Sludge Processing Improvement Project

Dear Mr. Potter,

The Albany County Water Purification District (the "District") is issuing this letter in response to New York State Department of Environmental Conservation's ("DEC") letter dated August 19, 2024 disapproving the District's Sludge Processing Improvement Project under the 2018 Consent Order, as amended (the "Consent Order"), and DEC's October 7, 2024 letter that responded to the District's new proposal. This letter also clarifies the District's new proposal that was discussed at the joint meeting with the New York Environmental Facilities Corporation ("EFC") and DEC on September 5, 2024 and the follow up meetings between the District and DEC that were held on September 16, 2024 and September 20, 2024.

Per the DEC letter dated August 19, 2024, DEC rejected consolidating the District's South Plant sludge operations to the North Plant and processing South Plant sludge through the repaired and upgraded North Plant sewer sludge incinerators under the Consent Order. While the District believes the three Preliminary Engineering Reports ("PER") submitted under the Consent Order, demonstrated the capacity of the North Plant incinerators to accommodate the consolidated sludge volumes, in the interest of time and due to the need to expedite various sludge systems repairs, the District will be moving forward with a modified "Status Quo Alternative." This modified Status Quo Alternative will allow the District to continue incinerating sludge at both the North and South Plants in accordance with the current Title V permits.

The following outlines the items the District has committed to under the Status Quo Alternative and responds to the DEC October 7, 2024 comment letter on the Status Quo Alternative.

In general, the proposed modified Status Quo Alternative will include the following:

- North Plant:
 - Rehabilitation of both Incinerator 1 and 2 as outlined in the latest PER submission.
 - Installation of afterburners on both Incinerator 1 and 2 for increased emissions treatment.
 - Continued incinerator operation under MMMM emission standards.
 - Review by DEC, 5 years after the District closes on EFC's long term financing loan, to determine the effectiveness of the incinerator repairs and the potential future need of additional emission systems.
- South Plant:
 - Rehabilitation of one South Plant Incinerator similar to the North Plant incinerator repairs.
 - As the South Plant has no history of Dioxin/Furan exceedances no afterburners are proposed at the South Plant.
 - Continued incinerator operation under MMMM emission standards.
 - Review by DEC, 5 years after the District closes on EFC's long term financing loan, to determine the effectiveness of the incinerator repairs and the potential future need of additional emission systems.

All other components (e.g. FOG receiving, sludge mixing, and sludge thickening) will remain as outlined in the PER.

Specific to the comments provided in the DEC October 7, 2024 letter, the District's provides the following responses:

- 1. The next submitted version should detail the chosen scenario, the alternative scenarios can be omitted for clarity**

The alternatives evaluated need to stay in the PER per requirements of the funding agency (EFC).

Chapter 11 (Recommended Alternative) of the PER will be rewritten to refocus the project and outline projects components to be completed consistent with the Status Quo Alternative.

A Basis of Design will be prepared as part of the design process that will only contain the selected design options and detail out each component of the Status Quo Alternative.

- 2. The order of events should be identified as they will occur in the construction schedule**

The Construction schedule will be updated in Section 11.5 of the PER.

- 3. Include interim operations plan stating how the plants will be operated during construction.**

The interim operations will be outline in Chapter 11 in the revised PER.

- 4. Prior to the Planning Stage (seeking permits, engineering design of the force main etc.) of the force main, at least one incinerator at the North Plant must be rebuilt/modified and then tested in accordance with 40 CFR 60.5220(a)(11).**

Due to DEC's rejection of the project proposed under the Consent Order, the District is eliminating consolidation at this time. Although consolidation is the most energy efficient, had significant greenhouse gas savings and was the most cost efficient option, the District will move forward with the Status Quo Alternative to allow sludge processing to move forward.

The PER will be revised to illustrate this.

The District submits that this work constitutes maintenance repair and does not constitute a modification as defined under 40 CFR §§ 60.4930 and 60.5250. Thus, the facility is expected to remain subject to the Subpart M regulation.

- 5. Identify the order in which incinerators will be rebuilt/modified and identify which incinerator at the South Plant will be rebuilt.**

The construction contract will have Incinerator 1 at the North plant be repaired first; once operational, Incinerator 2 will be repaired. Incinerator 1 at the South Plant will be repaired.

- 6. Explain the modification to the incinerators including afterburner installation, enclosed auger feed to a lower hearth, upgraded scrubber system and controls system.**

An afterburner will be installed at Incinerator 1 and 2 at the North Plant. The South Plant has not had compliance issues that would require consideration of an afterburner.

An auger feed system is one alternative for feeding sludge into the North incinerators. The selection of the sludge feed conveyance system will be determined during the final design stage and will be outlined in the Basis of Design Report.

The scrubber does not need to be upgraded if the plants are not consolidating and therefore will not be included in the project.

- 7. Provide a draft schematic of the Incinerator and a process flow diagram of the incineration process. Detail sludge path through incinerator and what each hearth does.**

This information will be added to the revised PER.

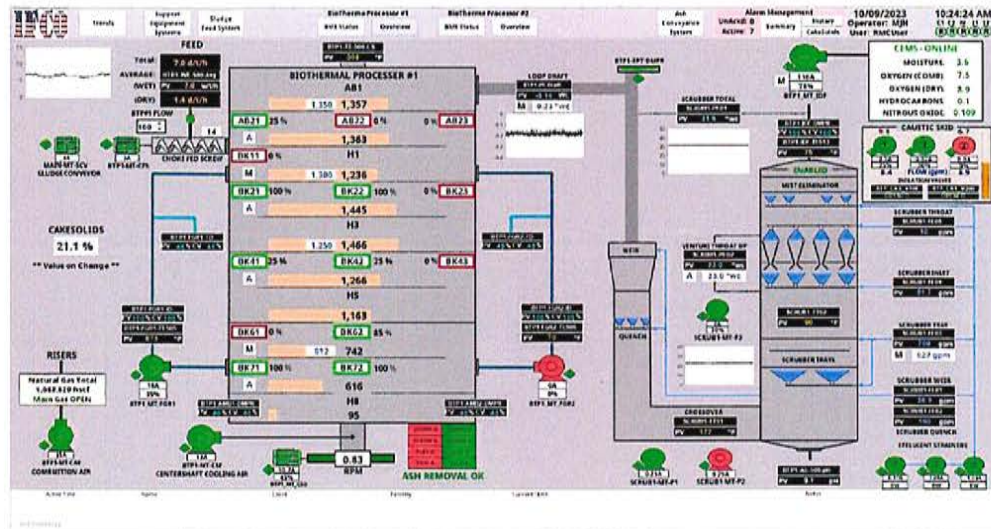
- 8. Detail and identify the differences between the proposed control system and the existing control system.**

As presented in the incinerator training on October 16, 2024, the existing control system original to the facility was installed in 1974. Most of the components are at the point of

obsolescence and rely heavily on manual adjustments vial dials to maintain temperature. The new control system will be PLC based and allow the operator to enter a specific temperature set points.
Photos from existing control system:



An example of the proposed SCADA control systems is presented below:



SCADA screen shot from Clayton Atlanta Treatment Plant

9. Identify components of incinerator to be replaced

The PER outlines the components to be replaced in Table 9-3. This will be updated to include the South Plant incinerator.
Detailed specifications of the components will be identified in the final design.

10. Identify and detail additional odor controls for the sewage sludge holding tanks

*This report/project were developed to address incineration operations. .
The sludge mixing system will be upgraded as outlined in the PER. It is anticipated that the new mixing system will help mitigate future odors by reducing the amount of air as compared to interim mixing system. The interim sludge diffused air mixing system was installed in 2023 due to the failed mechanical mixing system.*

11. Identify and detail odor control associated with the belt presses area and DAF tanks

The sludge thickening (DAF) system will be replaced with an enclosed screw press as outlined in the PER.

For odor control mitigation of the combined sludge, the District will continue to use liquid oxidant injection prior to sludge dewatering.

12. Identify and detail potential odor control associated with the force main vents, if needed after the operation begins.

In the interest of time, and based on NYSDEC's previous comments, the District is not considering consolidation at this time.

13. Identify and detail additional odor control for truck delivery area

Truck offloading details will be designed to mitigate odor from the receiving station. Offloading details will be submitted during the final design for NYSDEC approval.

Should you need additional information or have any questions on the information provided please call me at (518) 447-1617.

Sincerely,



Angelo Gaudio, P.E.
Executive Director

Cc: John Weidman, DEC
Kevin Frazier, DEC
Bonnie Starr, DEC

Victoria Ruglis, DEC
Chris LaLone, DEC
Michael Cronin, DEC
Logan Osterlitz, DEC
Karen Rusin, EFC
Michael Budris, EFC
Tracy Murphy, Albany County
Tyler Masick, Albany County
Craig Hurteau, Albany County
TJ Ruane, Whiteman Osterman & Hanna
Philp Gitlen, Whiteman Osterman & Hanna
Karen Clark, B&L

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December 11, 2024

Mr. Angelo Gaudio / Mr. Craig Hurteau
Albany County Water Pollution District
1 Canal Road South
Albany, NY 12204

Re: Sludge Processing Improvements Project

The purpose of this letter is to provide the Division of Air Resources' decision related to the new Status Quo Alternative submitted by Albany County Water Pollution Control District (ACWPD or the District) on November 7, 2024. The November 7th Status Quo Alternative proposes allowing the Albany County Water Purification District to continue incinerating sludge at both the North and South Plants in accordance with the current Title V permits. The proposed Status Quo Alternative was not one of the scenarios included in the previous Preliminary Engineering Report (PER) Revisions required under Order on Consent R4-2017-0426-210, as modified on January 10, 2022.

Scenario 1: Rehabilitation is the most similar proposed plan included in Revision 3 of the PER submitted in June 2024. This scenario included rehabilitation of all North and South Incinerators and replacement of sludge tank mixers at the North and South Plants with a large bubble mixing system and structural repairs to the mix tanks.

On August 19, 2024, the Department disapproved and provided reasons for disapproval of the previously submitted/chosen plan and requested the District submit a revised plan to the Department within 60 calendar days.

Scenario 2: Consolidation with Incineration was the District's chosen plan from the PER that was disapproved.

On September 16, 2024, the District and the Department met in person to discuss the disapproval of the previously submitted plan. The District, during that meeting, explained verbally in detail what the rehabilitation of the incinerators would include. The District also presented a plan to retrofit the existing incinerators at the North Plant with afterburners and associated alterations to the incinerators. The suggested plan discussed at that meeting also included installation of a new scrubber at the North Plant and a sludge force main from the South Plant to the North Plant. Maintaining one



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retrofitted or rebuilt incinerator at the South Plant was also proposed, in case of unforeseen issues. The District indicated a willingness to comply with 40 CFR 60 Subpart LLLL following a 5-year phased approach. Odor control measures regarding various Plant processes were also discussed during the meeting. This combination of expanded and additional measures proposed verbally by the District during the meeting would likely result in an approvable plan; however, to date these components have not been submitted to the Department via a revised engineering plan, as required under Order R4-2017-0426-210, for review and approval. Prior to concluding the meeting, the Department advised the District that it would provide a written document memorializing the components to be included in a revised engineering plan that would yield an approval by the Department.

On October 7, 2024, a meeting summary letter was sent to the District detailing specific instructions for what was necessary to approve the previously submitted plan discussed at that meeting. Applicability to 40 CFR 60 Subpart LLLL was also included in this letter, and the District's proposed 5-year approach to compliance with this regulation was agreed upon by the Department.

However, in lieu of submitting a revised plan in accordance with what was discussed during the meeting, on November 7, 2024, the District submitted a letter describing its intention to unilaterally move forward with a new proposal titled "Status Quo Alternative" which did not encompass what was discussed during the September 16th meeting. That new Status Quo Alternative is disapproved for the reasons outlined below.

The following content of this letter refers to the Status Quo Alternative Plan proposed in the November 7, 2024 letter from the District. That Plan included the following:

North Plant:

- Rehabilitation of both Incinerator 1 and 2 as outlined in the latest PER submission.
- Installation of afterburners on both Incinerator 1 and 2 for increased emission treatment.
- Continued incinerator operation under MMMM emission standards.
- Review by DEC, 5 years after the District closes on EFC's long term financing loan, to determine the effectiveness of the incinerator repairs and the potential future need of additional emission systems.

South Plant:

- Rehabilitation of one South Plant Incinerator similar to the North Plant incinerator repairs.

- As the South Plant has no history of Dioxin/Furan exceedances no afterburners are proposed at the South Plant.
- Continued incinerator operation under MMMM emission standards.
- Review by DEC, 5 years after the District closes on EFC's long term financing loan, to determine the effectiveness of the incinerator repairs and the potential future need of additional emission systems.

DEC's review of the **Status Quo Alternative** Plan is subject to Section X of Order R4-2017-0426-210 and the later Letter Agreement modification the Order dated January 10, 2022. Section X of the Order states the following:

1. All documents, which Respondent must submit pursuant to this Order, are subject to Department approval.
2. The Department shall review each of the submittals Respondent makes pursuant to this Order to determine whether it was prepared, and whether the work done to generate the data and other information in the submittal was done, in accordance with this Order and generally accepted technical and scientific principles. The Department shall notify Respondent in writing of its approval or disapproval of the submittal. All Department-approved submittals shall be incorporated into and become an enforceable part of this Order; and Respondent shall implement them in accordance with their respective schedules and terms, as approved.
3.
 - a. **If the Department disapproves a submittal, it shall so notify Respondent in writing and shall specify the reasons for its disapproval. Within the timeframe set forth in that written notification, Respondent shall make a revised submittal to the Department that addresses and resolves all the Department's stated reasons for disapproving the first submittal.**
 - b. After receipt of the revised submittal, the Department shall notify Respondent in writing of its approval or disapproval. If the revised submission is not approvable as submitted, the Department, at its option, may disapprove it or may approve it on condition that Respondent accepts such modifications as may be specified by Department to make it approvable. If Respondent does not accept such modifications, the revised submission will be disapproved. **If the Department disapproves the revised submittal, Respondent shall be in violation of this Order.** If the Department approves the revised submittal, it shall be incorporated into and become an enforceable part of this Order.
 - c. Respondent shall modify and/or amplify and expand a submittal upon the Department's direction to do so if the Department determines, because of reviewing data generated by an activity required under this Order or because of reviewing any other data or facts, that further work is necessary. The Department agrees that any modifications it specifies will be reasonable and consistent with customary engineering standards.

Item 2 of the January 10, 2022 Letter Agreement states the following:

2. Notwithstanding anything contained in Paragraph 2 to the contrary, by June 30, 2022, Respondent shall submit to DEC an engineering plan for a proposed project to provide for operational improvements and increased efficiencies at the North plant and the South plant. The engineering plan shall include intermediate construction milestones and a projected service date. DEC's review of the engineering plan shall be subject to Section X of this order.

As presented, and in accordance with subsection (3)(a) of Section X of Order R4-2017-0426-210 Order, the Department disapproves the District's Status Quo Alternative. In order for the Department to approve the proposed Status Quo Alternative the following items must be addressed in a revised plan and be submitted within 60 calendar days of this letter as Scenario 5: Enhanced Rehabilitation in a Revision 4 of the PER.

1. Paragraph 2 of the November 7 letter submitted by the District states "[t]his modified Status Quo Alternative will allow the District to continue incinerating sludge at both the North and South Plants in accordance with the current Title V permit." Addition of afterburners will require a modification to the current Title V permit and subsequent stack testing. This needs to be reflected in the proposal.
2. Rehabilitation of both plants will follow the repair and replacement schedule in Table 9-1 of the PER.
3. Installation of afterburners is approved at the North Plant.
4. An enclosed sludge feed system shall be included in the design up to the point of entry into the incinerator.
5. To be in compliance with Item 2 of the January 10, 2022 Letter Agreement, referenced above, increased efficiencies must be demonstrated at South Plant in order to be approved. If afterburners cannot be installed due to the number or hearths/incinerator design, the District must determine other means of increasing South Plant efficiencies. The District must propose and demonstrate acceptable methods of increased efficiencies of South Plant incinerators.
6. The proposed Status Quo Alternative currently states only one South Plant incinerator will be rehabilitated. Both incinerators must be rehabilitated to maintain redundancy in case of required maintenance and downtimes of the alternate operating incinerator. This should be reflected in the updated PER.
7. The District must detail the preventive maintenance schedule for the incinerators and related equipment. Associated costs of expected and required annual maintenance must be included in the updated PER.
8. The updated PER must include a cost estimate for the proposed scenario.
9. The Department cannot commit to review incinerator effectiveness related to compliance based on EFC long term financing status. The Department will continue to ensure compliance with applicable regulations during all phases of operation of the incinerators. No additional control (not specifically required

by regulation) will be required until after the District has closed on EFC's long term financing loan.

10. Compliance with 40 CFR 60 Subpart LLLL will not be required by the Department for approval of the chosen plan in the revised PER. Regulatory Compliance with 40 CFR 60 Subpart LLLL will be determined by EPA evaluation and direction.
11. The Department agrees to the updates proposed to the PER outlined in the November 7 letter from the District.
12. If the District decides to evaluate installation of a force main in the future, Paragraph 7 of the October 7 letter from the Department should be followed.

Sincerely,



Benjamin Potter
Regional Air Pollution Control Engineer

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Office of Environmental Quality, Region 4

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December 12, 2024

Mr. Angelo Gaudio / Mr. Craig Hurteau
Albany County Water Purification District
1 Canal Road South
Albany, NY 12204

Re: Sludge Processing Improvements Project

The purpose of this letter is to provide the Division of Air Resources' decision related to the new Status Quo Alternative submitted by Albany County Water Purification District (ACWPD or the District) on November 7, 2024. The November 7th Status Quo Alternative proposes allowing the Albany County Water Purification District to continue incinerating sludge at both the North and South Plants in accordance with the current Title V permits. The proposed Status Quo Alternative was not one of the scenarios included in the previous Preliminary Engineering Report (PER) Revisions required under Order on Consent R4-2017-0426-210, as modified on January 10, 2022.

Scenario 1: Rehabilitation is the most similar proposed plan included in Revision 3 of the PER submitted in June 2024. This scenario included rehabilitation of all North and South Incinerators and replacement of sludge tank mixers at the North and South Plants with a large bubble mixing system and structural repairs to the mix tanks.

On August 19, 2024, the Department provided reasons for disapproval of the previously submitted plan and requested the District submit a revised plan to the Department within 60 calendar days.

Scenario 2: Consolidation with Incineration was the District's chosen plan from the PER that was disapproved.

On September 16, 2024, the District and the Department met in person to discuss the disapproval of the previously submitted plan. The District, during that meeting, explained verbally in detail what the rehabilitation of the incinerators would include. The District also presented a plan to retrofit the existing incinerators at the North Plant with afterburners and associated alterations to the incinerators. The suggested plan discussed at that meeting also included installation of a new scrubber at the North Plant and a sludge force main from the South Plant to the North Plant. Maintaining one



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retrofitted or rebuilt incinerator at the South Plant was also proposed, in case of unforeseen issues. The District indicated a willingness to comply with 40 CFR 60 Subpart LLLL following a 5-year phased approach. Odor control measures regarding various Plant processes were also discussed during the meeting. This combination of expanded and additional measures proposed verbally by the District during the meeting would likely result in an approvable plan; however, to date these components have not been submitted to the Department via a revised engineering plan, as required under Order R4-2017-0426-210, for review and approval. Prior to concluding the meeting, the Department advised the District that it would provide a written document memorializing the components to be included in a revised engineering plan that would yield an approval by the Department.

On October 7, 2024, a meeting summary letter was sent to the District detailing specific instructions for what was necessary to approve the previously submitted plan discussed at that meeting. Applicability to 40 CFR 60 Subpart LLLL was also included in this letter, and the District's proposed 5-year approach to compliance with this regulation was agreed upon by the Department.

However, in lieu of submitting a revised plan in accordance with what was discussed during the meeting, on November 7, 2024, the District submitted a letter describing its intention to unilaterally move forward with a new proposal titled "Status Quo Alternative" which did not encompass what was discussed during the September 16th meeting. That new Status Quo Alternative is disapproved for the reasons outlined below.

The following content of this letter refers to the Status Quo Alternative Plan proposed in the November 7, 2024 letter from the District. That Plan included the following:

North Plant:

- Rehabilitation of both Incinerator 1 and 2 as outlined in the latest PER submission.
- Installation of afterburners on both Incinerator 1 and 2 for increased emission treatment.
- Continued incinerator operation under MMMM emission standards.
- Review by DEC, 5 years after the District closes on EFC's long term financing loan, to determine the effectiveness of the incinerator repairs and the potential future need of additional emission systems.

South Plant:

- Rehabilitation of one South Plant Incinerator similar to the North Plant incinerator repairs.

- As the South Plant has no history of Dioxin/Furan exceedances no afterburners are proposed at the South Plant.
- Continued incinerator operation under MMMM emission standards.
- Review by DEC, 5 years after the District closes on EFC's long term financing loan, to determine the effectiveness of the incinerator repairs and the potential future need of additional emission systems.

DEC's review of the **Status Quo Alternative** Plan is subject to Section X of Order R4-2017-0426-210 and the later Letter Agreement modification the Order dated January 10, 2022. Section X of the Order states the following:

1. All documents, which Respondent must submit pursuant to this Order, are subject to Department approval.
2. The Department shall review each of the submittals Respondent makes pursuant to this Order to determine whether it was prepared, and whether the work done to generate the data and other information in the submittal was done, in accordance with this Order and generally accepted technical and scientific principles. The Department shall notify Respondent in writing of its approval or disapproval of the submittal. All Department-approved submittals shall be incorporated into and become an enforceable part of this Order; and Respondent shall implement them in accordance with their respective schedules and terms, as approved.
3.
 - a. **If the Department disapproves a submittal, it shall so notify Respondent in writing and shall specify the reasons for its disapproval. Within the timeframe set forth in that written notification, Respondent shall make a revised submittal to the Department that addresses and resolves all the Department's stated reasons for disapproving the first submittal.**
 - b. After receipt of the revised submittal, the Department shall notify Respondent in writing of its approval or disapproval. If the revised submission is not approvable as submitted, the Department, at its option, may disapprove it or may approve it on condition that Respondent accepts such modifications as may be specified by Department to make it approvable. If Respondent does not accept such modifications, the revised submission will be disapproved. **If the Department disapproves the revised submittal, Respondent shall be in violation of this Order.** If the Department approves the revised submittal, it shall be incorporated into and become an enforceable part of this Order.
 - c. Respondent shall modify and/or amplify and expand a submittal upon the Department's direction to do so if the Department determines, because of reviewing data generated by an activity required under this Order or because of reviewing any other data or facts, that further work is necessary. The Department agrees that any modifications it specifies will be reasonable and consistent with customary engineering standards.

Item 2 of the January 10, 2022 Letter Agreement states the following:

2. Notwithstanding anything contained in Paragraph 2 to the contrary, by June 30, 2022, Respondent shall submit to DEC an engineering plan for a proposed project to provide for operational improvements and increased efficiencies at the North plant and the South plant. The engineering plan shall include intermediate construction milestones and a projected service date. DEC's review of the engineering plan shall be subject to Section X of this order.

As presented, and in accordance with subsection (3)(a) of Section X of Order R4-2017-0426-210 Order, the Department disapproves the District's Status Quo Alternative. In order for the Department to approve the proposed Status Quo Alternative the following items must be addressed in a revised plan and be submitted within 60 calendar days of this letter as Scenario 5: Enhanced Rehabilitation in a Revision 4 of the PER.

1. Paragraph 2 of the November 7 letter submitted by the District states "[t]his modified Status Quo Alternative will allow the District to continue incinerating sludge at both the North and South Plants in accordance with the current Title V permit." Addition of afterburners will require a modification to the current Title V permit and subsequent stack testing. This needs to be reflected in the proposal.
2. Rehabilitation of both plants will follow the repair and replacement schedule in Table 9-1 of the PER.
3. Installation of afterburners is approved at the North Plant.
4. An enclosed sludge feed system shall be included in the design up to the point of entry into the incinerator.
5. To be in compliance with Item 2, referenced above, increased efficiencies must be demonstrated at South Plant for approval. If afterburners cannot be installed due to the number or hearths/incinerator design, the District must determine other means of increasing South Plant efficiencies. The District must propose and demonstrate acceptable methods of increased efficiencies of South Plant incinerators.
6. The Status Quo Alternative currently states only one South Plant incinerator will be rehabilitated. Both incinerators must be rehabilitated to maintain redundancy in case of required maintenance and downtimes of the alternate operating incinerator.
7. The District must detail the preventive maintenance schedule for the incinerators and related equipment including a cost estimate for the Status Quo Alternative. Associated costs of expected and required annual maintenance must be included in the updated PER.
8. The Department cannot commit to review incinerator effectiveness related to compliance based on EFC long term financing status. The Department will continue to ensure compliance with applicable regulations during all phases of operation of the incinerators. No additional control (not specifically required

by regulation) will be required until after the District has closed on EFC's long term financing loan.

9. Compliance with 40 CFR 60 Subpart LLLL will not be required by the Department as part of the Sludge Processing Improvements Study. Regulatory Compliance with 40 CFR 60 Subpart LLLL will be determined by EPA evaluation and direction.
10. The Department agrees to the updates proposed to the PER outlined in the November 7 letter from the District.
11. If the District decides to evaluate installation of a force main in the future, Paragraph 7 of the October 7 letter from the Department should be followed.

Sincerely,



Benjamin Potter
Regional Air Pollution Control Engineer



DANIEL P. MCCOY
COUNTY EXECUTIVE

COUNTY OF ALBANY
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GARRY NATHAN

ANGELO GAUDIO, P.E.
EXECUTIVE DIRECTOR

January 24, 2025

Via Email

Benjamin Potter, P.E.
Regional Air Pollution Control Engineer
New York State Department of Environmental Conservation
Benjamin.potter@dec.ny.gov

**Re: ACWPD - Sludge Processing Improvements Study
Responses to DEC Comments & Meeting Minutes to
In-person December 13, 2024 Meeting**

Dear Mr. Potter,

On behalf of the Albany County Water Purification District (the "District" or "ACWPD"), we would like to thank the New York State Department of Environmental Conservation (the "Department" or "NYSDEC") for meeting with the District and the New York State Environmental Facilities Corporation ("NYSEFC") to discuss the Sludge Processing Improvements Project and the most recent project alternative proposed by the District. At the request of the Department, and for purposes of this letter, the most recent proposed project alternative will be referred to as "**Scenario 5**" and will be identified as such in the next revision of the Preliminary Engineering Report ("PER").

This letter outlines the District's responses to comments raised by the Department in its letters dated December 11, 2024 (the "December 11th Letter") and December 12, 2024 (the "December 12th Letter") and as presented by the District to the Department and NYSEFC at the December 13, 2024 in-person meeting at NYSEFC's offices. This letter also serves as the District's meeting minutes from the December 13, 2024 in-person meeting specific to the work proposed under Scenario 5. Additionally, the District is in receipt of the December 13, 2024 in-person meeting minutes that NYSDEC issued on January 17, 2025 and acknowledges the topics of financing, SEQR, and odor concerns that were also discussed.

The District's responses to the Department's comment letters are as follows:

1. **Paragraph 2 of the November 7 letter submitted by the District states "[t]his modified Status Quo Alternative will allow the District to continue incinerating sludge at both the North and South Plants in accordance with the current Title V permit." Addition of afterburners will require a modification of the current Title V permit and subsequent stack testing. This needs to be reflected in the proposal.**

The District acknowledges the Department's comment and has no further response.

2. **Rehabilitation of both plants will follow the repair and replacement schedule in Table 9-1 of the PER.**

The next revision of the PER will include a repair and replacement schedule for Scenario 5. The schedule will take into account work performed to the online incinerator at the South Plant over calendar year 2024, that is now not necessary as part of Scenario 5. This work will also be described in the revised PER. The South Plant work to be included in Scenario 5 will further ensure compliance with Order on Consent requirements and applicable regulations concerning pH, as well as include new controls for efficiency and providing redundancy.

3. **Installation of afterburners is approved at the North Plant.**

The District acknowledges the Department's comment and has no further response.

4. **An enclosed sludge feed system shall be included in the design up to the point of entry into the incinerator.**

As set forth in the District's November 7th letter to the Department and as explained by the District at the November 8th meeting, the sludge conveyance system will be determined during the design phase of the project. Currently, the sludge scale is designed to work with an open style (as opposed to closed) conveyor belt system. Given the equipment design and function constraints, and the lack of regulatory requirement for an enclosed conveyor system, the District requests that this issue be decoupled from work to be performed under the Sludge Processing Improvements Study.

5. **To be in compliance with Item 2, referenced above, increased efficiencies must be demonstrated at South Plant for approval. If afterburners cannot be installed due to the number of hearths/incinerator design, the District must determine other means of increasing South Plant efficiencies. The District must propose and demonstrate acceptable method of increased efficiency of South Plant incinerators.**

As part of Scenario 5, the District plans to install new controls for both incinerators at the South Plant and a pH adjustment system. Other efficiency measures include a more energy efficient sludge mixing system and sludge thickening system.

At the request of the Department at the December 13th meeting, the District will include a section in the revised PER submission describing these efficiencies.

6. **The Status Quo Alternative currently states only one South Plant incinerator will be rehabilitated. Both incinerators must be rehabilitated to maintain redundancy in case of required maintenance and downtime of the alternate operating incinerator.**

As explained by the District at the December 13th meeting, over the past year, the District performed a significant amount of work to the active incinerator at the South Plant. In addition to such work, Scenario 5 will include installation of new efficient control systems on both incinerators at the South Plant. The upgrades over the past year and the work contemplated under Scenario 5, will ensure that both incinerators will be functional and provide operational redundancy.

7. **The District must detail the preventative maintenance schedule for the incinerators and related equipment including a cost estimate of the Status Quo Alternative. Associated costs of expected and required annual maintenance must be included in the updated PER.**

The operation and maintenance ("O&M") costs associated with the proposed alternatives was included in the past versions of the PER and will be revised (to address Scenario 5) and included in the next revision of the PER. A preventative maintenance schedule is not generally a requirement for the approval of a PER submission. The O&M costs will be budgeted annually based on the anticipate maintenance needs of the equipment.

8. **The Department cannot commit to review incinerator effectiveness related to compliance based on EFC long term financing status. The Department will continue to ensure compliance with applicable regulations during all phases of operation of the incinerators. No additional control (not specifically required by regulation) will be required until after the District has closed on EFC's long term financing plan.**

The District acknowledges the Department's comment and has no further response.

At the December 13th meeting, NYSEFC acknowledged that the District could, but was not required to, seek long term financing from NYSEFC.

9. **Compliance with 40 CFR Subpart LLLL will not be required by the Department as part of the Sludge Processing Improvement Study. Regulatory Compliance with 40 CFR Subpart LLLL will be determined by EPA evaluation and direction.**

The District acknowledges the Department's comment. On this point, the Department advised that the language change between the December 11th Letter and December 12th Letter was for clarification only and was not intended to have any material substantive effect. The Department also advised that it was not aware of a process or procedure for the United States Environmental Protection Agency ("EPA") to evaluate and determine new source performance standards (i.e., 40 CFR Subpart LLLL) in connection with the work to be performed as part of the Sludge Process Improvement Study. However, the Department acknowledged that if such determination was made by EPA, the District would likely be able to address compliance through a future Order on Consent.

10. **The Department agrees to the updates as proposed to the PER outlined in the November 7 letter from the District.**

The District acknowledges the Department's comment and has no further response.

11. If the District decides to evaluate installation of a force main in the future, Paragraph 7 of the October 7 letter from the Department should be followed.

The District acknowledges the Department's comment and has no further response.

Sincerely,


Angelo Gaudio, P.E.
Executive Director

Enc. NYSDEC December 13, 2024 Meeting Minutes

cc: Michael Cronin, NYSDEC (michael.cronin@dec.ny.gov)
Kevin Fraizer, NYSDEC (Kevin.Frazier@dec.ny.gov)
Trish Gabriel, NYSDEC (trish.gabriel@dec.ny.gov)
Kyle LaFond, NYSDEC (Kyle.LaFond@dec.ny.gov)
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Jack Spath, NYSEFC (Jack.Spath@efc.ny.gov)
Karen Clark, Barton & Loguidice (kclark@bartonandloguidice.com)
Craig Hurteau, ACWPD (Craig.Hurteau@albanycountyny.gov)
Tyler Masick, ACWPD (Tyler.Masick@albanycountyny.gov)
Tracy Murphy, Albany County Law Department (Tracy.Murphy@albanycountyny.gov)
Phil Gitlen, Whiteman Osterman & Hanna LLP (pgitlen@woh.com)
T.J. Ruane, Whiteman Osterman & Hanna LLP (truane@woh.com)

NYSDEC – EFC – ACWPD Sludge Processing/Incineration Scope Meeting
December 13, 2024, 3:30 PM
EFC 7th Floor Board Room
625 Broadway, NY 12233

MEETING MINUTES

Attendees:

DEC

Michael Cronin	Edward Pellegrini
Kevin Fraizer	Benjamin Potter
Trish Gabriel	Victoria Ruglis
Kyle LaFond	Michelle Schwank
Christopher LaLone	Bonnie Starr
Samuel Maxwell	John Weidman
Logan Osterlitz	Steven Wood

EFC

Michael Budris
Rachel Kenyon Lennox
Karen Rusin
Jack Spath

County

Angelo Gaudio
Craig Hurteau
Tyler Masick
Cameron Sagan

Barton & Loquidice

Karen Clark

WOH

Phil Gitlen
T.J. Ruane

Financing and Grants

- The sludge processing improvements project was awarded in 2024 a \$25M BIL grant and \$25M interest free financing (based on hardship). The BIL grant must be obligated by Sept 30, 2025. To close financing, the County must solidify the project scope (which must resolve the DEC Division of Air's Order on Consent), amend the coordinated environmental review, and obtain engineering report approval.
- The Sludge Processing Improvements Study (EPG No. 109868) must be finalized and submitted to DEC and EFC for review by March 2025 to meet the final approval deadline of May 2025.
- Bond resolution(s) have been submitted to EFC and the County does not anticipate a need to revise the bond resolution.
- The scope of the project will no longer include the force main to convey sludge from the south to the north plant. Funds will be used to upgrade the incinerators at both north and south plant. Angelo stated the County won't have time to upgrade the north plant and then demonstrate efficiency then install the pipeline. The timing would exceed the 5-year short-term financing window. Project scope will include upgrades to sludge thickening and related systems at north and south plants.

SEQR

- DEC responded to lead agency coordination in April 2024 – County is lead.
- Determination was Type 1 Action with Negative Declaration based on original project scope.
- County to amend SEQR to assess scope changes. The County does not expect the determination to change and it won't change the bond resolution. Documentation should go to DEC – DEP and EFC.
- County to provide complete original 2024 SEQR documentation to Trish Gabriel from lead agency solicitation through ENB publication.



Department of
Environmental
Conservation

County's Proposed Work

The County and DEC discussed preliminary responses to DEC's December 11, 2024 disapproval letter of the District's Status Quo Alternative Plan, submitted under Order on Consent R4-2017-0426-210. DEC noted that a revised plan, which addresses the deficiencies outlined in the December 11, 2024 disapproval letter, is required to be submitted to DEC by February 10, 2025. Starting on Page 4 of the letter, the following items to be addressed were discussed:

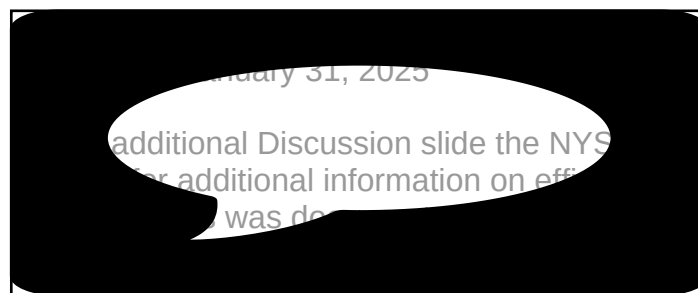
1. The County acknowledges.
2. The County will focus efforts on getting offline incinerator into operation at the south plant and having mixing and thickening systems. The goal is to have two units in operation with repaired pH control system to address the Order.
3. The County acknowledges.
4. The design will include an open conveyor system since the style is not a regulatory requirement. The County asked for this to be decoupled from the PER and to include in the design phase. The County is looking into different conveyor styles and feeding locations. A flat belt for scaling was noted.
5. The County is proposing new controls at north and south plant, pH systems, and other efficiencies for sludge processing and thickening. DEC noted that the PER needs to describe how the systems will be more efficient. It was noted that additional dewatering improvements will result in improved efficiencies. The County will add alternative scenario #5 to the PER for what is being discussed.
6. The County completed significant repairs to the incinerator this year at the south plant and improved the control systems. The intent is to provide logic controls on both incinerators. The County will provide the work order for work the contractor has completed so far.
7. The capital costs and O&M need to be included in the PER. Demonstrate mechanisms in place to secure funding to proactively complete O&M on new equipment.
8. The County acknowledges. EFC clarified County is not obligated to obtain funding from EFC, so the DEC statement should be understood as a generalized reference to obtaining long term funding for the project.
9. EPA will be requesting information from the County to base their determination if LLLL's is applicable.
10. The County acknowledges.
11. The County plans to get something sooner within 60 days and not include the force main.

Odor Concerns

- County will continue to forward odor complaints as they come in but the County is not getting many/any through their online system.
- DEC has continued to receive complaints. DEC will share tracked complaints.
- Odors are a result of mechanical mixer failures in the sludge hold tanks and pumping primary sludge into the hold tanks makes odors worse. There are four sludge hold tanks at the north plant and currently 2 tanks are in operation. The county plans to switch to an aeration system to replace the failed mechanical mixers as part of the sludge improvements project. The County will install a new system that will reduce air flow, and will also be removing the FOG to reduce putrefaction.
- DOW would like to expedite odor control improvements. VFDs were installed on the blowers to allow control of air flow (this week) and reduce off-gassing.
- County ordered and is waiting on delivery of an ozone system to trial on one tank and see if it will effectively reduce odors. Ozone system is expected to take about a week to get running. Ozone will be used as trial on 1 of 4 tanks to see if it can shave peaks. Expanded implementation is possible based on results, but the equipment currently on order is for a trial and not permanent. Dosage rates may be difficult to determine due to the H₂S fluctuation when primary sludge is pumped in.

Next Steps

- B&L working on revised PER – submit prior to 60 days is planned.
- DEC to schedule a follow up meeting prior to PER submission. Legal representation will continue to be present. (Meeting has been scheduled for January 31, 2025)
- DEC to schedule a follow up meeting to discuss specifically proposed wastewater improvements to the South Plant. (Meeting has been scheduled for January 10, 2025).



REVIEW OF REVISED PLAN

- Recap of January 10, 2025 meeting with DEC-Water and EFC
- Review of proposed rehabilitation to 2 North Incinerators and 1 South Incinerator
- Review of Comment Responses to December 12, 2024 letter as discussed at December 13, 2024 meeting

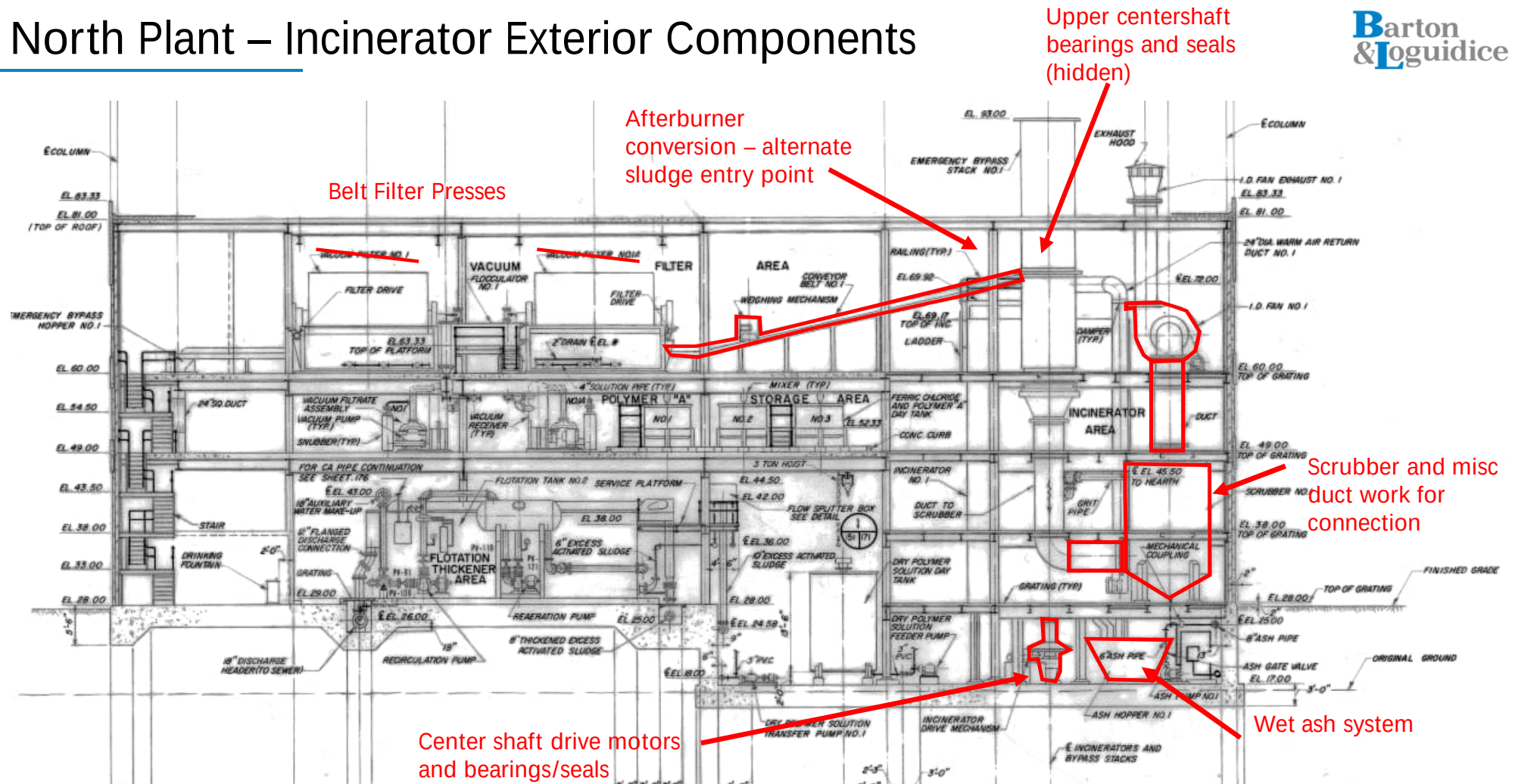
ACWPD Sludge Processing: NYSDEC–AIR Update Meeting

Comparison of Original PERs to February 2025 PER Revision (Revision 4)

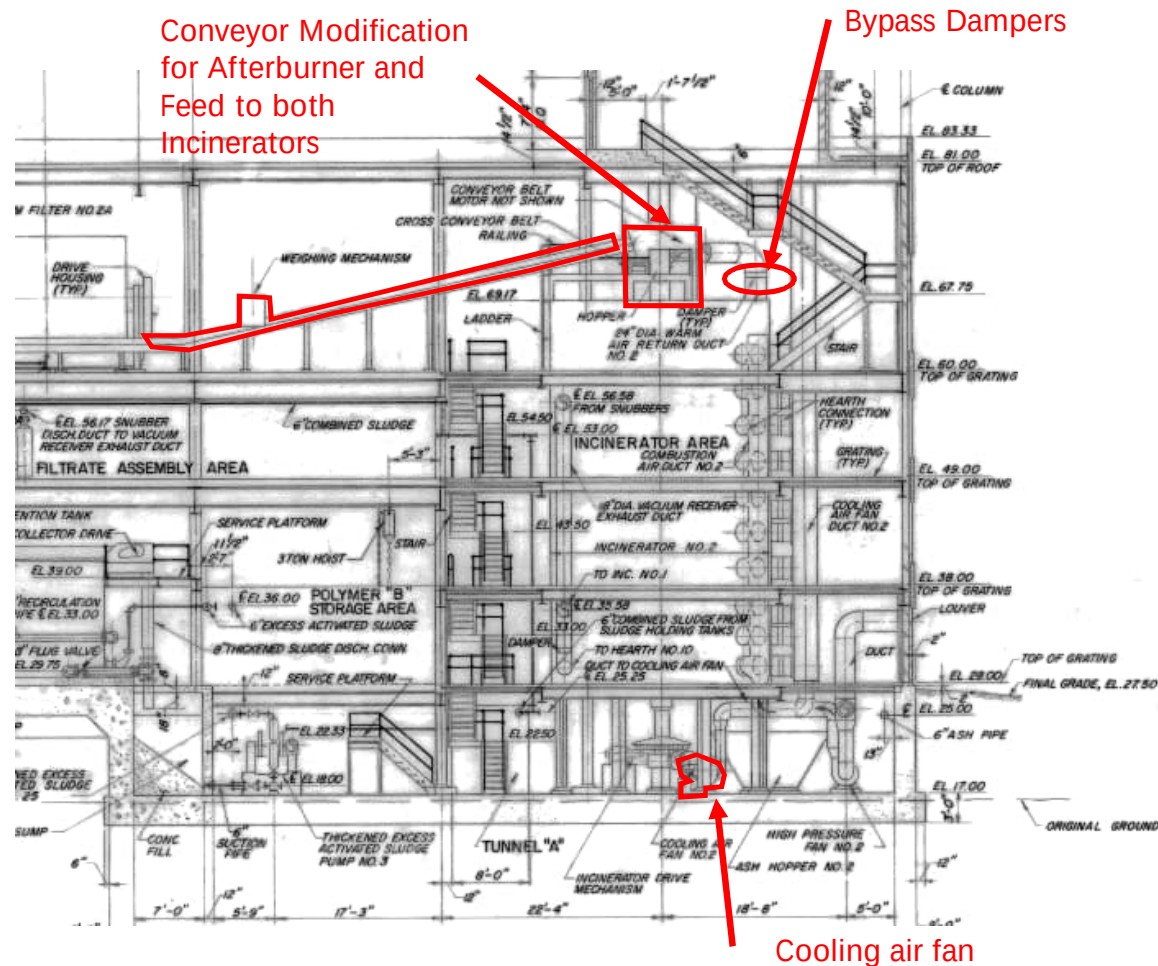
Adding Scenario 5

	Current Operations	Consolidation Option (PER rev 0, 1, 2, 3)	Rehabilitation Option (PER Rev 4)	Change
North Plant				
FOG Removal/Septage	Material released into a manhole and discharged to head of the plant at influent screening	New receiving station	New receiving station	No change
Sludge Mix Tanks (4)	Paddle mixers not operable. Temporary diffused air mixing added to 3 tanks. VFDs added to 1 blower in 2024 to reduce air volume	Replace with large bubble mixing system utilizing 128 cfm of air for all 4 North tanks	Replace with large bubble mixing system utilizing 128 cfm of air for all 4 north tanks	No change
Sludge Pumps	Existing rotary lobe pumps	New WAS thickened and combined pumps	New WAS thickened and combined pumps	No change
Sludge Thickening	Dissolved air floatation units	Install 3 sludge thickening screw presses - One for North Plant WAS - One for South Plant WAS and Primary - One redundant unit as back up	Replace with 2 sludge thickening screw presses for north plant WAS only	Only 2 screw thickening presses at North
Sludge Dewatering	Belt Filter Presses	Add an additional sludge dewatering press (belt filter press or screw press) to handle additional sludge processing of South plant WAS and Primary Sludge	Additional unit added	No change
Sludge Conveyor/Scale	Belt conveyor and scale	Replace belt conveyor and new scale	Replace belt conveyor and new scale	No change
Incinerators	One functional incinerator, marginal controls	Rehabilitate two incinerators and new control system to process North and South plant blended primary and WAS	Rehabilitate two incinerators, as needed, and new control system to process North plant blended primary and WAS Add afterburner to North Plant incinerators	Addition of afterburner to Incinerators 1 and 2
South Plant				
Sludge Mix Tanks (3)	Paddle mixers have reach end of useful life	Replace with large bubble mixing system utilizing ~100 cfm of air	Replace with large bubble mixing system utilizing ~100 cfm of air	No change
Sludge Pumps	Existing rotary lobe pumps	New WAS thickened and combined pumps	New WAS thickened and combined pumps	No change
Sludge Thickening	Dissolved air floatation units	Eliminated sludge thickening process at South. Two sludge screens and a pump station/forcemain would convey unthickened WAS and primary sludge to the North Plant	Replace DAFTs with two sludge thickening screw presses for south plant WAS	Eliminate sludge screening process and Pump Station/forcemain Add 2 sludge thickening screw presses
Sludge Dewatering	Belt Filter Presses	Eliminated	Additional unit added	New Unit added
Sludge Conveyor/Scale	Belt Conveyor and Scale	Eliminated	Modify belt conveyor and new scale	Modify belt conveyor and scale
Incinerators	One functional incinerator	Eliminated	Rehabilitate Incinerator (current offline unit) Install new controls for both incinerators	Keep Incineration operation. Rehabilitate Incinerator and New Controls

North Plant – Incinerator Exterior Components



North Plant – Incinerator Exterior Components



Other Items

CEMs Unit

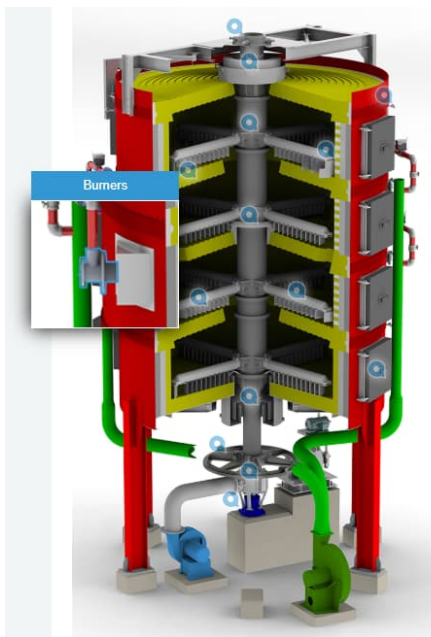
Caustic system
for pH

Actuators

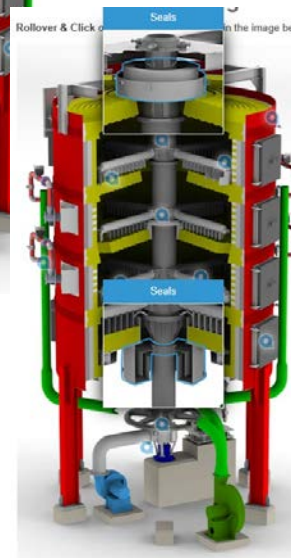
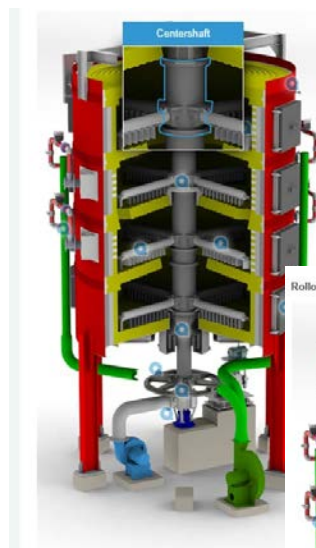
Clinker grinders

Stack Silencers

North Plant Incinerator Components - Internal



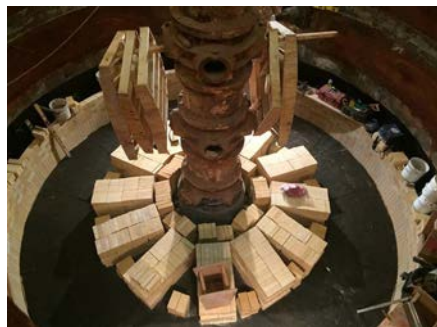
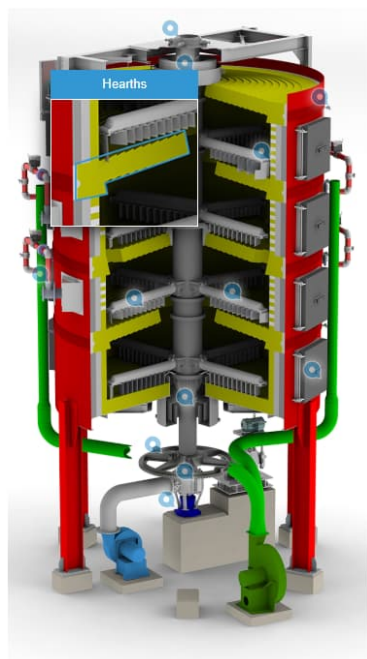
Burner Replacement



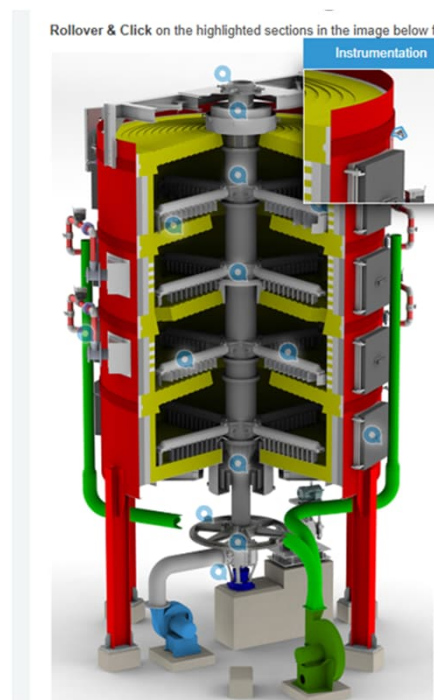
Centershaft
bearings and
seals



North Plant Incinerator Components - Internal



Refractory and Castings
(portion of North done in 2024 as emergency)



Instrumentation

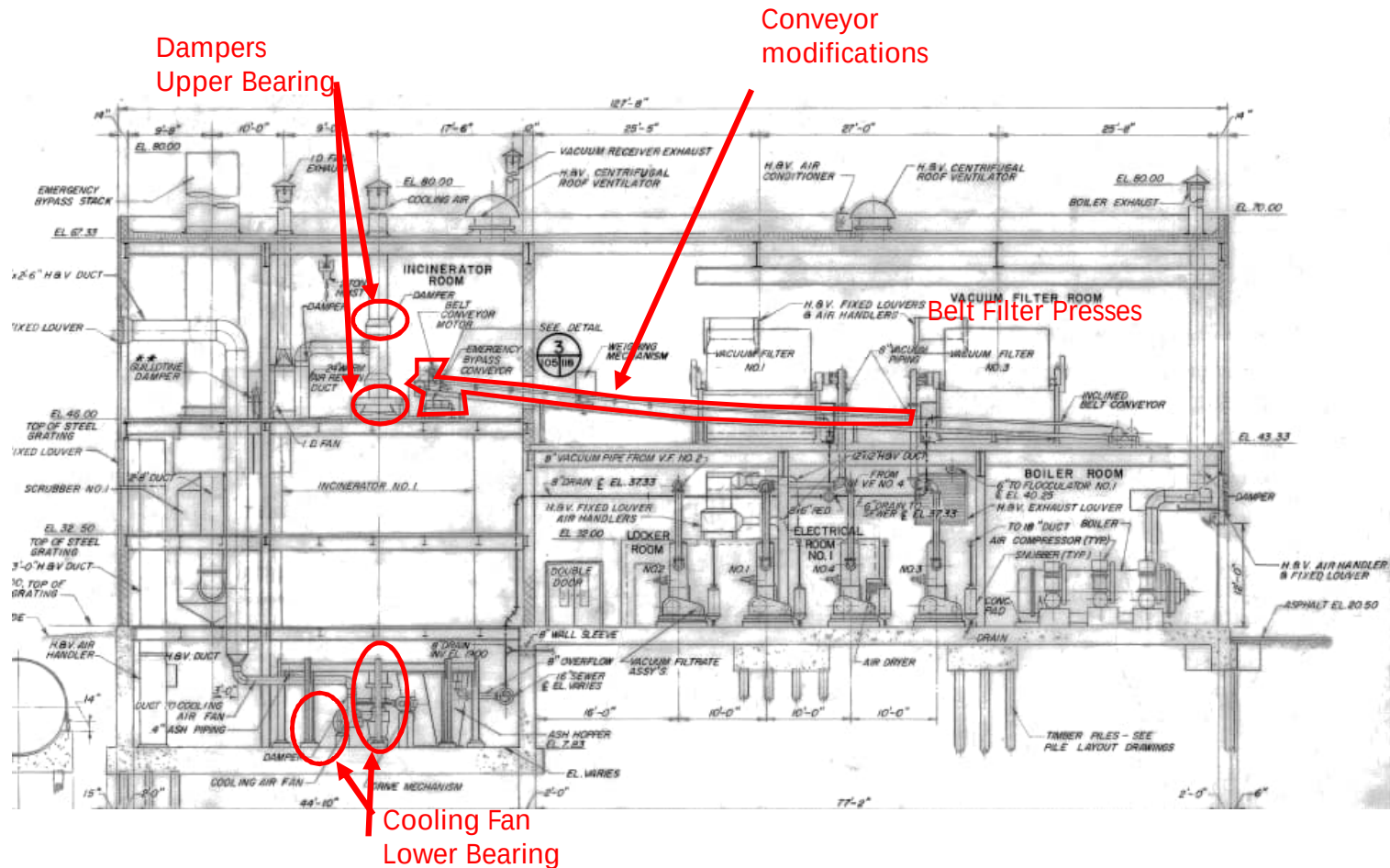


Differential Pressure Meters



Thermocouple

South Plant – Incinerator Exterior Components



Other Items

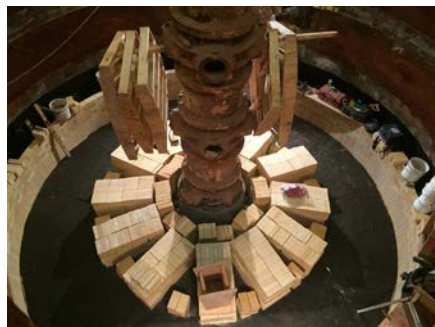
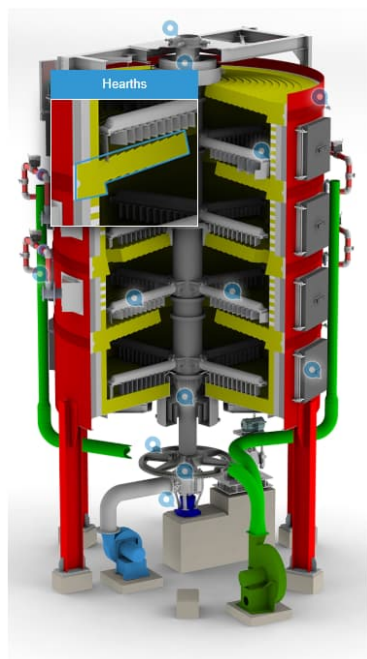
CEMs Unit

Caustic system
for pH

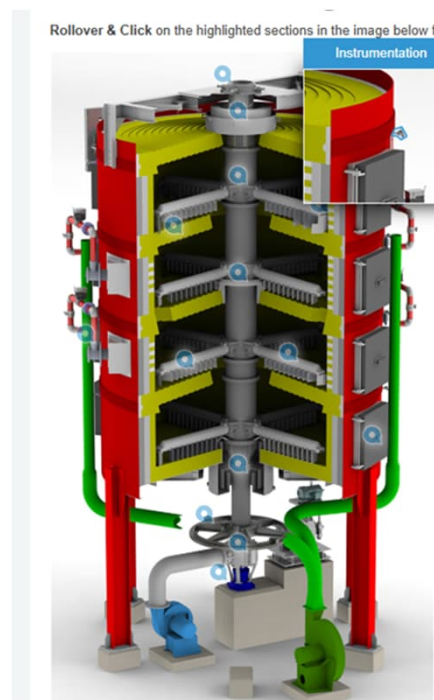
Actuators

Clinker grinders

South Plant Incinerator Components - Internal



Refractory and Castings – 1 Incinerator
(One incinerator done in 2024 as emergency)



Instrumentation



Differential Pressure Meters



Thermocouple

Review of NYSDEC 12/12/24 letter, DEC meeting minutes from 12/13/24 and ACWPD Response Letter



1. **Paragraph 2 of the November 7 letter submitted by the District states “[t]his modified Status Quo Alternative will allow the District to continue incinerating sludge at both the North and South Plans in accordance with the current Title V permit.” Addition of afterburners will require a modification of the current Title V permit and subsequent stack testing. This needs to be reflected in the proposal.**

Agreed by all parties

The District acknowledges the Department’s comment and has no further response.

2. **Rehabilitation of both plants will follow the repair and replacement schedule in Table 9-1 of the PER.**

Scenario 5 added
Tables will be 9-6 and 9-7

The next revision of the PER will include a repair and replacement schedule for Scenario 5. The schedule will take into account work performed to the online incinerator at the South Plant over calendar year 2024, that is now not necessary as part of Scenario 5. This work will also be described in the revised PER. The South Plant work to be included in Scenario 5 will further ensure compliance with Order on Consent requirements and applicable regulations concerning pH, as well as include new controls for efficiency and providing redundancy.

3. **Installation of afterburners is approved at the North Plant.**

Agreed by all parties and
included in Scenario 5

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Review of NYSDEC 12/12/24 letter, DEC meeting minutes from 12/13/24 and ACWPD Response Letter



4. **An enclosed sludge feed system shall be included in the design up to the point of entry into the incinerator.**

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At the request of the Department at the December 13th meeting, the District will include a section in the revised PER submission describing these efficiencies.

From NYSDEC minutes of 12-13-2024 meeting

4. The design will include an open conveyor system since the style is not a regulatory requirement. The County asked for this to be decoupled from the PER and to include in the design phase. The County is looking into different conveyor styles and feeding locations. A flat belt for scaling was noted.

Improved efficiencies at South will be:

- Enhanced controls will reduce natural gas use
- Caustic System will facilitate pH compliance
- Improved dewatering will reduce gas utilized by incinerator
- Sludge mixing system upgrade reduces energy by 75% +/-

Confirm response is acceptable

Review of NYSDEC 12/12/24 letter, DEC meeting minutes from 12/13/24 and ACWPD Response Letter

6. **The Status Quo Alternative currently states only one South Plant incinerator will be rehabilitated. Both incinerators must be rehabilitated to maintain redundancy in case of required maintenance and downtime of the alternate operating incinerator.**

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Confirm agreement

7. **The District must detail the preventative maintenance schedule for the incinerators and related equipment including a cost estimate of the Status Quo Alternative. Associated costs of expected and required annual maintenance must be included in the updated PER.**

The operation and maintenance (“O&M”) costs associated with the proposed alternatives was included in the past versions of the PER and will be revised (to address Scenario 5) and included in the next revision of the PER. A preventative maintenance schedule is not generally a requirement for the approval of a PER submission. The O&M costs will be budgeted annually based on the anticipate maintenance needs of the equipment.

NYSDEC meeting Minutes:

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Agreed by all parties

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Review of NYSDEC 12/12/24 letter, DEC meeting minutes from 12/13/24 and ACWPD Response Letter

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Agreed by all parties

- 11. If the District decides to evaluate installation of a force main in the future, Paragraph 7 of the October 7 letter from the Department should be followed.**

The District acknowledges the Department's comment and has no further response.

Agreed by all parties

Additional Discussion

At meeting:

All parties concurred with the proposed upgrades

NYSDEC Legal/Air indicated that the efficiency improvements need to be more than just energy efficiency

ACWPD/B&L indicated additional language would be added to the report



DANIEL P. MCCOY
COUNTY EXECUTIVE

COUNTY OF ALBANY
WATER PURIFICATION DISTRICT
1 CANAL ROAD, SOUTH
ALBANY, NEW YORK 12204

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ANGELO GAUDIO, P.E.
EXECUTIVE DIRECTOR

February 10, 2025

Via Email

Benjamin Potter, P.E.
Regional Air Pollution Control Engineer
New York State Department of Environmental Conservation
Benjamin.potter@dec.ny.gov

**Re: Sludge Processing Improvements Study
Financial Commitment Letter**

Dear Mr. Potter,

The purpose of this letter is to reconfirm the Albany County Water Purification District's (District) financial commitment to maintaining its infrastructure at the both the District's North and South treatment plants. In addition to the \$65,000,000 in improvements proposed under the Sludge Processing Improvement Project the District secured County approval of an additional \$110,600,000 for various improvements under the District's Capital Improvement Plan which was approved by the Albany County Legislature in 2024. This Capital Improvement Plan will focus on the replacement of critical treatment processes that are past their useful life. A breakdown of the projects proposed under District's approved 2025-2029 Capital Plan are listed in the table below:

Project Title	Cost
Sludge Process Improvements	\$ 65.0 M
North Plant Capital Improvement Plan	
Screen Replacement	\$ 7.2 M
Grit System Replacement	\$ 11.5 M
Primary Clarifier Upgrades	\$ 9.5 M
Secondary Clarifier Upgrades	\$ 22.3 M
Plant Water Pumps Upgrades	\$ 1.7 M
High Voltage System Upgrades	\$ 18.1 M
Total =	\$ 70.3 M

South Plant Capital Improvement Plan	
Grit System Replacement	\$ 9.0 M
Primary Clarifier Upgrades	\$ 8.2 M
Secondary Clarifier Upgrades	\$ 12.9 M
Plant Water Pumps Upgrades	\$ 1.7 M
High Voltage System Upgrades	\$ 8.5 M
Total =	\$ 40.3 M

The projects above were selected in part based on the risk assessment completed for the Asset Management Plan which the District recently adopted and developed under the NYSDEC Asset Management Pilot Program. As the identified treatment processes are past their useful life and in many case do not have adequate redundancy the District has been challenged in maintaining equipment and systems that are obsolete. This has resulted in the District continuing to increase its annual maintenance budget to address equipment deficiencies and emergency repair work. The District's 2025 budget included a 10% rate increase to our member communities including a 31% year over year increase to the District's equipment repair budget line.

Until the projects list above can be completed the District will continue to increase the equipment repair budget line as necessary to maintain these legacy systems. However, the District also recognizes that expending increased maintenance costs on obsolete equipment has diminishing returns and ultimately these systems need to be upgrade to ensure continued permit compliance. To address this issue the District respectfully requests NYSDEC and NYSEFC approach the review of these capital projects with the understanding that the unit processes listed above are at a higher risk of failure and expediting these projects would help ensure continued compliance.

The recent rate increases required to mitigate ongoing maintenance needs and the proposed Capital Plan reconfirms the District's continued financial commitment to maintaining its facilities for the benefit of the customers it serves.

Should you have any questions please feel free to contact me.

Sincerely,



Angelo Gaudio, P.E.
Executive Director

Enc. ACWPD 2025-2029 Capital Plan

cc: Michael Cronin, NYSDEC (michael.cronin@dec.ny.gov)
Kevin Fraizer, NYSDEC (Kevin.Frazier@dec.ny.gov)
Trish Gabriel, NYSDEC (trish.gabriel@dec.ny.gov)
Kyle LaFond, NYSDEC (Kyle.LaFond@dec.ny.gov)
Christopher LaLone, NYSDEC (christopher.lalone@dec.ny.gov)
Logan Osterlitz, NYSDEC (logan.osterlitz@dec.ny.gov)
Edward Pellegrini, NYSDEC (edward.pellegrini@dec.ny.gov)
Victoria Ruglis, NYSDEC (Victoria.Ruglis@dec.ny.gov)
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Steven Wood, NYSDEC (Steven.Wood@dec.ny.gov)
William Brizzell, NYSEFC (William.Brizzell@efc.ny.gov)
Michael Budris, NYSEFC (Michael.Budris@efc.ny.gov)
Rachel Kenyon Lennox, NYSEFC (Rachel.KenyonLennox@efc.ny.gov)
Karen Rusin, NYSEFC (Karen.Rusin@efc.ny.gov)
Jack Spath, NYSEFC (Jack.Spath@efc.ny.gov)
Karen Clark, Barton & Loguidice (kclark@bartonandloguidice.com)
Craig Hurteau, ACWPD (Craig.Hurteau@albanycountyny.gov)
Tyler Masick, ACWPD (Tyler.Masick@albanycountyny.gov)
Tracy Murphy, Albany County Law Department (Tracy.Murphy@albanycountyny.gov)
Phil Gitlen, Whiteman Osterman & Hanna LLP (pgitlen@woh.com)
T.J. Ruane, Whiteman Osterman & Hanna LLP (truane@woh.com)

G Fund Water Purification Capital Projects

North and South Plant HVAC Upgrades

Project Number: **G2301**

Debt Account:

Project Description: Project to include the study, design, and construction of improvement to existing HVAC systems at both the North and South treatment plants. Existing HVAC systems at both facilities are at the end of their useful life.

Amendment(s): 2024-2028 - Increase Costs.

Project Status:	<u> </u> New	<u> </u> 1	Existing	<u> </u> Amended	<u> </u> Continual	<u> </u> Completed			
Authorized Funding		Pre-2024	2024	2025	2026	2027	2028	2029	Total
County			0.150	1.350					1.500
State									-
Federal									-
Other									-
Total Project Cost		-	0.150	1.350	-	-	-	-	1.500

North Plant Treatment Process Improvements

Project Number: **G2401**

Debt Account:

Project Description: Project will include improvements to unit treatment process associated with the North Plant. Phase 1 of the project will include replacement of the mechanical screens, grit system, primary and secondary clarifiers, plant water pumps and upgrades to the high voltage electrical system. Upgrades have been identified in a 2023 Capital Study that is currently being finalized. Grouping projects together will allow the District to maximize the potential for grant opportunities in the coming years.

Amendment(s): 2025-2029 - cost of project amended to account for EFC fees.

Project Status:	New	Existing	1	Amended	Continual	Completed		
Authorized Funding	Pre-2024	2024	2025	2026	2027	2028	2029	Total
County		0.100	5.000	45.000	19.900	2.294		72.294
State								-
Federal								-
Other Approp	0.150	0.150						0.300
Total Project Cost	0.150	0.250	5.000	45.000	19.900	2.294	-	72.594

South Plant Treatment Process Improvements

Project Number: **G2402**

Debt Account:

Project Description: Project will include improvements to unit treatment process associated with the North Plant. Phase 1 of the project will include replacement of the mechanical screens, grit system, primary and secondary clarifiers, plant water pumps and upgrades to the high voltage electrical system. Upgrades have been identified in a 2023 Capital Study that is currently being finalize. Grouping projects together will allow the District to maximize the potential for grant opportunities in the coming years.

Amendment(s): 2025-2029 - cost of project amended to account for administration fees from EFC.

Project Status:	<u> </u> New	<u> </u> Existing	<u>1</u>	Amended	<u> </u> Continual	<u> </u> Completed		
Authorized Funding	Pre-2024	2024	2025	2026	2027	2028	2029	Total
County			3.000	25.000	7.500	5.392		40.892
State								-
Federal								-
Other Approp.		0.150						0.150
Total Project Cost	-	0.150	3.000	25.000	7.500	5.392	-	41.042

G Fund Water Purification Capital Projects

Sludge Processing Improvements

Project Number: G2501

Debt Account: _____

Project Description: Project to include the study, design and construction of improvements to the existing sludge processing systems. Project will be broken up into phases. Phase 1 work will include improvements to the North Plant incinerators, sludge mixing and dewatering systems. Phase 2 work will include work to consolidate sludge operation to the North Plant via a new sludge forcemain and upgrades to the North Plant incinerator emissions controls. The final scope for Phase 2 emission controls is still being negotiated with DEC. Project has been amended to include the Phase 2 work and the work associated with the Septage and FOG receiving station project. Phase 1, Phase 2 and Septage/FOG receiving work has been consolidated into a single comprehensive project to take advantage EFC funding opportunities, namely the Bipartisan Infrastructure Grant and 0% hardship financing. District will be pursuing additional grants with EFC in 2024.

Amendment(s):

Project Status:	<u>1</u>	New	<u> </u>	Existing	<u> </u>	Amended	<u> </u>	Continual	<u> </u>	Completed
Authorized Funding			Pre-2024	2024	2025	2026	2027	2028	2029	Total
County				1.000	11.500	20.000	20.000	9.000		61.500
State										-
Federal				3.500						3.500
Other										-
Total Project Cost			-	4.500	11.500	20.000	20.000	9.000	-	65.000

Water Purification District Capital Plan Summary: All Projects

Project Status:	<u>1</u>	New	<u>1</u>	Existing	<u>2</u>	Amended	<u>0</u>	Continual	<u>0</u>	Completed
Authorized Funding			Pre-2024	2024	2025	2026	2027	2028	2029	Total
County			-	1.250	20.850	90.000	47.400	16.686	-	176.186
State			-	-	-	-	-	-	-	-
Federal			-	3.500	-	-	-	-	-	3.500
Other			0.150	0.300	-	-	-	-	-	0.450
Total Project Cost			0.150	5.050	20.850	90.000	47.400	16.686	-	180.136

Nicholas J. Despart

From: Kenyon Lennox, Rachel (EFC) <Rachel.KenyonLennox@efc.ny.gov>
Sent: Wednesday, February 26, 2025 5:13 PM
To: Gaudio, Angelo; Starr, Bonnie L (DEC); Ruglis, Victoria R (DEC); Maxwell, Samuel V (DEC); LaFond, Kyle D (DEC); Weidman, John (DEC); Potter, Benjamin J (DEC); Osterlitz, Logan (DEC); Frazier, Kevin O (DEC); Gabriel, Trish M (DEC); LaLone, Christopher (DEC); Cronin, Michael P (DEC); Schwank, Michelle L (DEC); Wood, Steven J (DEC); Waldron, Ryan P (DEC); tyler.masick@albanycountyny.gov; craig.hurteau@albanycountyny.gov; Karen W. Clark; Murphy, Tracy; Ruane, T.J.; Sagan, Cameron; pgitlen@WOH.com; Pellegrini, Edward A (DEC); Rusin, Karen (EFC); Spath, Jack (EFC); Budris, Michael (EFC); Brizzell, William A (EFC); Nicholas J. Despart
Subject: RE: ACWPD Sludge Processing Improvements Project-PER Revision 4 Submission
Follow Up Flag: Follow up
Flag Status: Flagged

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Hello all,

The New York State Environmental Facilities Corporation (EFC) and the New York State Department of Environmental Conservation (DEC) Division of Water have reviewed the engineering report entitled "Sludge Processing Improvements Study" dated February 2025 by Barton & Loguidice and offer the following comments for your consideration. Please transmit a response to these comments and a revised report no later than Friday, March 14, 2025 to avoid delays in obtaining funding for this project. DEC will be providing additional comments from the Division of Air Resources in a separate letter.

1. Include the SPDES Permit numbers, NY0026875 (North) and NY0026867 (South), on the cover of the report.
2. Discuss any project impacts to Disadvantaged Communities (DAC) and provide a map.
3. Expand on Section 3.4 to discuss operational and equipment concerns noted in previous DEC inspections related to FOG and sludge processing.
4. Strengthen the discussion in the report on how the proposed upgrades will benefit water quality, ability for the facilities meet SPDES permit limits, and maintain compliance under 6 NYCRR Part 750.
5. FOG
 - a. Clarify if a dual FOG/septage receiving station will be installed at the North Plant. The executive summary notes that the North Plant will receive a new FOG/septage receiving station. In the alternatives analysis it appears that a dual FOG/septage receiving system would only be installed in if anaerobic digestion was implemented. However, the recommended alternative (pg. 574) allocates \$8.5 million for "Contract 1 - FOG and Septage receiving station," which aligns with the cost of "FOG Receiving Alternative 1 - Hydronic Separation" (pg. 562).
 - b. The report identifies FOG in the WWTP influent as a problem that negatively impacts downstream processes. It then proposes handling excess FOG at the front of the plant, mirroring current operations. Please note that Part 750-2.8 (1) indicates that the disposal system shall not receive wastes beyond its design capacity without written approval by DEC. The report should be reworded to assure that the facility will be operated in accordance with regulations, limiting FOG receiving to what the facility is capable of treating.
 - c. The report mentions the potential to utilize excess biofuel within the facility. Clarify when this is planned, specifically whether it will be included in this project scope or a future project scope. If it

is part of this project scope, provide details on the intended applications and resulting energy savings, and include in the project budget.

6. Confirm that all installed equipment will meet TR-16 section 1.2.1(h). New and modified critical equipment and non-critical equipment should be protected against flood damage up to a certain water surface elevation above the 100-year flood elevation. The EFC/DEC Engineering Report Outline provides additional considerations for flood resiliency in Appendix D. (e.g. air compressors for sludge mixing tanks).
7. Sludge Thickening/Pumping System
 - a. North Plant
 - i. Please select and justify the preferred pump type (rotary lobe or progressive cavity) and DAFT replacement (screw presses or gravity belt thickeners) for implementation, as required by the Engineering Report Outline.
 - ii. The executive summary notes the North plant will receive 2 new sludge thickeners and 1 new dewatering unit. Please ensure the executive summary is consistent with the project that is being proposed in the body of the report.
 - b. South Plant
 - i. The executive summary indicates that the South plant will receive new sludge pumps, thickeners, and dewatering units. However, the report does not discuss the scope and cost of these upgrades.
8. Incinerators:
 - a. Section 4.1 explains that the proposed incineration work is not a "modification" as defined in 40 CFR 60.4930 and is instead classified as "maintenance." Consider omitting the term "maintenance" since EFC does not fund operation and maintenance costs.
 - b. Tables 9-7 and 9-8 list spare pinion/bull gears with the note "on shelf spare set." Clarify what this means. Will this project supply a spare set, or does the County already have a spare set that will be installed as part of this project? If the spare set is to be used, will another spare set be purchased? Spare parts will not be eligible for SRF financing.
 - c. This evaluation did not include a hazardous material survey. Confirm the project budget accounts for this variable.
8. Include a table summarizing and quantifying the selected alternative and its cost estimate in the report's recommended alternatives section.
9. Include the anticipated BODR submission date in the project schedule.

Best,

Rachel Kenyon Lennox, P.E.
518.402.7396 (p)

From: Gaudio, Angelo <Angelo.Gaudio@albanycountyny.gov>

Sent: Tuesday, February 11, 2025 5:38 PM

To: Starr, Bonnie L (DEC) <Bonnie.Starr@dec.ny.gov>; Ruglis, Victoria R (DEC) <Victoria.Ruglis@dec.ny.gov>; Maxwell, Samuel V (DEC) <samuel.maxwell@dec.ny.gov>; LaFond, Kyle D (DEC) <Kyle.LaFond@dec.ny.gov>; Weidman, John (DEC) <john.weidman@dec.ny.gov>; Potter, Benjamin J (DEC) <benjamin.potter@dec.ny.gov>; Osterlitz, Logan (DEC) <logan.osterlitz@dec.ny.gov>; Frazier, Kevin O (DEC) <Kevin.Frazier@dec.ny.gov>; Gabriel, Trish M (DEC) <trish.gabriel@dec.ny.gov>; LaLone, Christopher (DEC) <christopher.lalone@dec.ny.gov>; Cronin, Michael P (DEC) <michael.cronin@dec.ny.gov>; Schwank, Michelle L (DEC) <michelle.schwank@dec.ny.gov>; Wood, Steven J (DEC) <Steven.Wood@dec.ny.gov>; Waldron, Ryan P (DEC) <ryan.waldron@dec.ny.gov>; tyler.masick@albanycountyny.gov; craig.hurteau@albanycountyny.gov; kclark@bartonandloguidice.com; Murphy, Tracy <Tracy.Murphy@albanycountyny.gov>; Ruane, T.J. <truane@woh.com>; Sagan, Cameron <Cameron.Sagan@albanycountyny.gov>; pgitlen@WOH.com; Pellegrini, Edward A (DEC) <edward.pellegrini@dec.ny.gov>; Rusin, Karen (EFC) <Karen.Rusin@efc.ny.gov>; Spath, Jack (EFC) <Jack.Spath@efc.ny.gov>; Kenyon Lennox, Rachel (EFC) <Rachel.KenyonLennox@efc.ny.gov>; Budris, Michael (EFC)

<Michael.Budris@efc.ny.gov>; Brizzell, William A (EFC) <William.Brizzell@efc.ny.gov>

Subject: ACWPD Sludge Processing Improvements Project-PER Revision 4 Submission

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Ben,

Please see the attached transmittal letter for the revised PER (Revision 4) for the District's Sludge Processing Improvement Project. Also attached is a letter reconfirming the District financial commitment to maintaining our facilities as discussed at the January 31st meeting. A copy of the attached commitment letter is also included in the revised PER.

The PER can be downloaded using either the link below or the link in the attached transmittal letter. If you have any issues with the link please let me know.

<https://liquidfiles.bartonandloguidice.com/message/NVsJGpTu89ensMgopa4uIj>

If it would helpful to your review we can make ourselves available for another meeting to discuss the PER and any questions the Department may have.

Thanks,
Angelo

Angelo Gaudio, P.E.
Executive Director
Albany County Water Purification District
1 Canal Road, South
Albany, New York 12204
tel 518.447.1624
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February 27, 2025

Angelo Gaudio, P.E.
Albany County Water Purification District
1 Canal Road South
Albany, NY 12204

Re: Scenario 5 Plan Disapproval and
Request for Revised Submittal

Angelo Gaudio:

On February 11, 2025, the New York State Department of Environmental Conservation (Department) received a revised engineering plan (Scenario 5 Plan) submitted by the Albany County Water Purification District (ACWPD or the District) as required under Order on Consent R4-2017-0426-210 as modified on January 10, 2022 (Order). The Scenario 5 Plan proposes to continue incinerating sludge at both the North and South Plants in accordance with the current Air Title V permits. The submission of Scenario 5 Plan follows the Department's disapproval of previously submitted engineering plans on August 19, 2024 and December 11, 2024.

Yesterday afternoon, the Department's Division of Water provided comments on Scenario 5, jointly with the Environmental Facilities Corporation (EFC), and requested the submission of a revised plan by March 14, 2025 (EFC/DOW Comment Letter).

DEC's review of the Scenario 5 Plan is subject to Section X of Order, which states in pertinent part:

1. All documents, which Respondent must submit pursuant to this Order, are subject to Department approval.
2. The Department shall review each of the submittals Respondent makes pursuant to this Order to determine whether it was prepared, and whether the work done to generate the data and other information in the submittal was done, in accordance with this Order and generally accepted technical and scientific principles. The Department shall notify Respondent in writing of its approval or disapproval of the submittal. All Department-approved submittals shall be incorporated into and become an enforceable part of this Order; and Respondent shall implement them in accordance with their respective schedules and terms, as approved.

3.
 - a. **If the Department disapproves a submittal, it shall so notify Respondent in writing and shall specify the reasons for its disapproval. Within the timeframe set forth in that written notification, Respondent shall make a revised submittal to the Department that addresses and resolves all the Department's stated reasons for disapproving the first submittal.**
 - b. **After receipt of the revised submittal, the Department shall notify Respondent in writing of its approval or disapproval.** If the revised submission is not approvable as submitted, the Department, at its option, may disapprove it or may approve it on condition that Respondent accepts such modifications as may be specified by Department to make it approvable. If Respondent does not accept such modifications, the revised submission will be disapproved. If the Department disapproves the revised submittal, Respondent shall be in violation of this Order. If the Department approves the revised submittal, it shall be incorporated into and become an enforceable part of this Order. (emphasis added)

The Department has reviewed the Scenario 5 Plan, disapproves the submittal, and requests that Respondent make a revised submittal to be titled “Scenario 6” to the Department by March 14, 2025 that addresses and resolves the below deficiencies:

1. Appendix M information related to incinerator operation and emissions control must be incorporated and required to be implemented as part of Scenario 6, including implementation of Table 2-1; and
2. The final design must be submitted to and approved by the Department;

This determination is based on, but is not necessarily limited to, the below inconsistencies noted by the Division of Air Resources in the submitted revised plan and/or areas that will require additional detail in the final design:

1. Section 9.0 of Scenario 5 on page 62, notes the sludge processing equipment and the multi-health incinerators at both plants are in need of rehabilitation in order to remain in service and references a Brown and Caldwell technical memorandum, located in Appendix M, as summarizing the current condition of the incinerators and the upgrades needed.
2. Section 9.6 (Scenario 5), beginning on page 76, describes the Enhanced Incinerator Rehabilitation but fails to include or even mention the installation of afterburners in both North Plant Incinerators.
3. Section 11.0 on page 91 recommends implementation of Scenario 5 as discussed in Section 9.6 (above).
4. Section 11.1.1 discusses “opportunities” for enhanced energy and emissions of scenario 5. Page 92 mentions installation of afterburners at the North Plant. Using the word “opportunities” for installation of

afterburners, which are not mentioned in Scenario 5, is noncommittal and unacceptable.

5. Appendix M, beginning on page 430 of the submitted PDF, is an Incineration Technical Memo from Eric Muir of Brown and Caldwell dated February 4, 2025.
6. Section 3.2.3.1 of Appendix M states that ACWPD has decided to implement afterburning at the North Plant. This section further describes using Hearth 1 of each incinerator as an afterburner.
7. Section 3.3 of Appendix M also states existing burner configuration of the North Plant will be reviewed and decided during the detailed design phase.
8. Section 3.4 of Appendix M discusses the wet scrubber. The afterburner operating at 1400F increases the flue gas flows and the scrubbers would need to be modified or replaced. Scrubber replacement is not discussed in Section 9.6 (Scenario 5). Brown and Caldwell stated scrubber design will be evaluated during the detailed design phase.
9. Appendix M Table 4-1 states a cost of \$2,600,000 for the wet scrubber replacement.
10. Appendix M Table 2-1 states instrumentation and controls need to be replaced due to age and obsolescence. No detail is given on this system. The detailed design phase will need to include these details. Section 9.6 (Scenario 5) also mentions replacement of the instrumentation and control system with no details.
11. Appendix M Table 4-1 states a cost of \$3,099,000 for instrumentation and controls.

Please contact me if you have any questions regarding this matter.

Regards,



John M. Weidman, P.E.
Acting Regional Director

ec: C. Hurteau
T. Ruane
P. Gitlen
C. LaLone
M. Cronin
B. Potter
B. Starr
V. Ruglis
E. Gallagher



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 4

1130 North Westcott Road, Schenectady, NY 12306-2014

P: (518) 357-2069 | F: (518) 357-2593

www.dec.ny.gov

April 16, 2024

Angelo Gaudio, Executive Director
Albany County Water Purification District
1 Canal Road, South
Albany NY, 12204

Emailed to: angelo.gaudio@albanycountyny.gov

Re: Lead Agency Coordination Response
Albany County Water Purification District
Sludge Processing Improvements Project
North Plant, South Plant & 6-inch Force
Main from South Plant to North Plant
Town of Colonie, Village of Menands &
City of Albany, Albany County

Dear Director Gaudio:

This letter responds to your correspondence of February 26, 2024 regarding lead agency coordination for the project referenced herein, under Article 8 (State Environmental Quality Review – SEQR) of the Environmental Conservation Law and 6 NYCRR Part 617. The New York State Department of Environmental Conservation (the DEC) has the following interest in this project:

Name of Action: Albany County Water Purification District
Sludge Processing Improvements Project

DEC Contact Person: Trish Gabriel, Environmental Analyst II

SEQR Classification: ☒ Type I ☐ Unlisted ☐ Type II

DEC Position: Based on the information provided:

- ☒ DEC has no objection to the Albany County Legislature assuming lead agency status for this action.
- ☐ DEC wishes to assume lead agency status for this action.
- ☐ DEC needs additional information in order to respond (see comments).
- ☐ DEC cannot be lead agency because it has no jurisdiction in this action.

****The DEC must be notified immediately if the project/proposed action scope changes, or the EAF is revised.***



Department of
Environmental
Conservation

Pre-Application Meeting

DEC highly recommends a pre-application meeting with the Region 4 office be scheduled once more detailed plans are developed for the 6-inch force main proposed to carry sludge from the South Plant to the North Plant along the western bank of the Hudson River. This meeting will allow DEC to clarify your objectives and provide recommendations on any proposed work. Upon receipt of your pre-application meeting request, DEC staff will work to schedule a date and time where all program staff can be present on-site. We will also invite staff from other agencies, such as the US Army Corps of Engineers and the NYS Department of State, which may be interested in participating in the meeting.

Possible DEC Permitting Requirements

A review of NYS protected resources near or within the project site was performed using existing GIS data (see enclosed Project Location and NYS Resources Map). Please note that jurisdictional maps are meant to provide approximate sizes and locations of resources. Actual field conditions may vary from those depicted on the maps. The following provides a summary of potential State permitting requirements for the project based on the results of the protected resources review and project information submitted with your correspondence.

SPDES Discharge Permit

Prior to construction of any new or modified waste disposal system or modification of a facility or service area generating wastewater that could alter the design volume of, or the method or effect of treatment or disposing of the sewage, industrial waste or other wastes, from an existing disposal system, the permittee shall submit to the regional water engineer an approvable engineering report, plans, and specifications in accordance with standards accepted by the DEC (6 NYCRR Part 750-2.10).

Please note that in accordance with Part 750-2.7 (a), the permittee shall give at least 45 days advance notice to the regional water engineer of any change in the permitted facility or activity that the permittee knows or has reason to know would occur as part of a construction project, which is part of the permittee's routine maintenance program, or which the permittee knows or has reason to know about 60 or more days before it occurs, and that is very likely or certain to result in a bypass or other noncompliance with permit requirements.

Air Resources

Additional engineering information must be provided regarding the North Plant sewage sludge incinerator rehabilitation (SSI) before air pollution control and air permitting requirements can be determined by the DEC. Please note that the proposed North Plant SSI rehabilitation project also will require review by US Environmental Protection Agency.

Protection of Waters and Freshwater Wetlands Program

While its clear from submitted documents and the project map provided that the proposed project area would intersect with State-regulated water resources, there is not sufficient detail to allow for a thorough permitting requirements review. Please provide detailed plans and information related to project areas proposed to fall within Article 15 and 24 jurisdictional areas, along with mapped floodway and floodplain. Additional information on proposed construction methods and a project timeline are also required. As proposed, this force main would be located within close proximity to regulated water resources and sensitive habitat associated with the Hudson River. Please elaborate on any contingency plans developed to manage possible construction complications or potential future infrastructure failures and/or operations difficulties.

Based on current GIS data, the Hudson River is Class C with C standards in the vicinity of the proposed project. Any disturbance to the river below the mean high water mark will require an Article 15 Excavation and Fill Permit. If an Article 15 permit is not required for the project, please keep in mind that water quality standards must be maintained at all times. Activities which result in sedimentation and/or turbid waters may constitute a violation of water quality standards and the Environmental Conservation Law (ECL). All necessary precautions should be taken to prevent contamination of the stream by silt, sediment, fuels, solvents, lubricants, or any other pollutant associated with the project. All disturbed areas should be stabilized promptly after construction and all soils and debris resulting from the project should be moved to a location where they cannot enter the stream during periods of heavy rain.

Water Quality Certification

If disturbance to the river below the mean (ordinary) high water mark and/or to federal wetlands will result from project construction, a permit from the US Army Corps of Engineers (USACE) may be required. A Water Quality Certification, pursuant to Section 401 of the Federal Clean Water Act, may be needed from the DEC when a USACE permit is required. The DEC recommends you contact the USACE directly regarding federal wetlands and waters of the U.S. regulatory jurisdictions and permitting requirements. The USACE NY District regulatory program for this area is handled out of the USACE Upstate Regulatory Field Office in Watervliet NY. The Regulatory Field Office general phone number is (518) 266-6351 and the general email address is cenan-r-permit-app@usace.army.mil. Please refer to this DEC website link <http://www.dec.ny.gov/permits/6546.html> for more information on Water Quality Certifications, including state procedures instituted in response to USEPA rules.



SPDES General Permit for Construction Activities Stormwater Discharge

Construction activities involving soil disturbance of one or more acre(s), including disturbances of less than one acre that are part of a larger common plan of development, should obtain coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001). Review of SWPPP documents should be coordinated between DEC and impacted MS4 communities.

Please note that in accordance with the SPDES Multi-Sector General Permit (GP-0-23-001) (MSGP) Part 1 (C)(4), discharges from industrial activity resulting from construction activities are ineligible for coverage under the MSGP and separate SPDES permit coverage should be obtained.

Endangered or Threatened Species Incidental Take Permit

The current GIS data indicates shortnose sturgeon (endangered), bald eagle (threatened), peregrine falcon, and Alewife floater (unlisted) have been documented to occur in the project site vicinity. Preliminary comments from Bureau of Wildlife staff include concerns about noise and construction impacts to peregrine falcons nesting on the Dunn Memorial Bridge. The North and South plants are within a half mile of active bald eagle nests, but greater than 0.25 miles. Bald eagles are protected by Environmental Conservation Law (ECL) section 11-0535 and the New York Code of Rules and Regulations (6 NYCRR Part 182).

If the proposed action will result in a “take” of a threatened or endangered species, a Part 182 Incidental Take Permit will be required from the DEC prior to starting any work on the project. A “take” is defined within ECL §11-0535 regulations as an activity interfering with an essential behavior or habitat occupied by threatened or endangered species. Once additional project details are known, DEC staff will be able to advise on applicable work windows to protect listed species to avoid potential impacts. If Albany County is unable to adhere to work windows, wildlife staff will need to see detailed plans for work timelines, limits of disturbance, including noise disturbances to determine whether a monitor would be needed or whether an Incidental Take Permit will be needed.

Additional Information

Cultural Resources

Your project site appears to be located within an area of potential historical or archeological significance. If approvals/permits are ultimately needed from this DEC, consultation with the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) will likely be required in order to better evaluate this project’s impacts on these resources. To initiate consultation with OPRHP, please visit their project submission website at

<https://cris.parks.ny.gov/>. Please add Trish Gabriel at trish.gabriel@dec.ny.gov to the list of contacts for your project.

Please note that construction activities that have the potential to affect historic and/or archeological resources are not eligible for coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001) unless documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act is received from OPRHP for the project site.

Floodplains

The proposed project appears to be located within a mapped floodplain or floodway. Encroachments in floodplains, such as the construction or modification of structures, can potentially increase flood water heights. Please contact the City of Albany and Village of Menands municipal floodplain administrator (usually the Code Enforcement Office or Building Inspector) as this proposal may require a municipal floodplain development permit. Please also provide a discussion of resiliency efforts given flood risk within the proposed project area.

Environmental Justice (CP-29)

Your project/site is located within a potential Environmental Justice (EJ) area. If approvals or permits are needed from this DEC, a determination may need to be made as to whether the project will result in potential adverse environmental impacts that are likely to affect this potential Environmental Justice area. More information on Environmental Justice can be found on the DEC's website at <http://www.dec.ny.gov/public/333.html>.

CLCPA

As you may know, the Climate Leadership and Community Protection Act (CLCPA) became effective January 1, 2020. (Chapter 106 of the Laws of 2019). Among other requirements, the CLCPA directs state agencies to determine if the decisions they make are consistent with the Statewide greenhouse gas (GHG) emission limits established by the CLCPA in Environmental Conservation Law (ECL) Article 75. In the case of the DEC, this includes determining if permits issued are consistent with or would interfere with the attainment of the Statewide GHG emission limits in ECL Article 75. In addition, the CLCPA requires that permitting and other administrative decisions by DEC and other state agencies not disproportionately burden Disadvantaged Communities.

To address Section 7(2) of CLCPA, please provide a CLCPA analysis following the procedures described in [DAR-21: The Climate Leadership and Community Protection Act and Air Permit Applications](#) (DAR-21). As discussed in DAR-21, the analysis must include any upstream emissions that are attributable to the project. These emissions should be

calculated using the emission factors found in Appendix A: *Emission Factors for Use by State Agencies and Applicants* of the most recent Statewide Greenhouse Gas Emissions Report.

To address Section 7(3) of CLCPA, the DEC is required to ensure that its permitting decisions do not disproportionately burden disadvantaged communities and prioritize the reduction of GHG and co-pollutant emissions in disadvantaged communities. Please see <https://climate.ny.gov/Resources/Disadvantaged-Communities-Criteria> for an interactive map of communities that meet the disadvantaged community criteria. This applies to GHG and co-pollutant emissions from new projects and increases in emissions from existing facilities. If this project is in, or potentially impacts, a disadvantaged community, please calculate the GHG and co-pollutant emissions from the project and their impacts on the disadvantaged community, including any information on existing burdens/criteria used to identify the disadvantaged community. The analysis must also discuss any alternatives or design measures that will be used to reduce the impact of those emissions on the disadvantaged community. If you conclude that existing measures are enough to address these impacts, that should be discussed as well. In addition, an enhanced public participation plan (EPPP) must be prepared for the project. The development of the EPPP should follow the procedural guidance in Section V.D of the Commissioner's Policy on Environmental Justice and Permitting (CP-29), available at: <https://dec.ny.gov/get-involved/environmental-justice/related-policy-regulations>.

Before preparing and submitting the information identified above, please contact the Region 4 Division of Environmental Permits analyst assigned to the application to arrange a meeting to discuss the applicability of CLCPA and the preparation of the analysis.

Remediation Site(s) and/or Site Spill(s) History

DEC Spill Response program staff requests more detail on the biofuel product that will be generated from the new fats, oils and grease (FOG) receiving station at the North Plant. Specifically, how will it be stored and what are the expected quantities. This information will be used to verify whether the generated material will fall into or affect existing CBS or PBS registrations at either of the plants.

Program staff also noticed that several older spills associated with the plants were missed on the full Environmental Assessment Form (FEAF), including the following by plant location and DEC ID number:

North Plant: 0903871, 1306080, 9705242, 9809669, 9813169, 9903219

South Plant: 0802322, 0907730, 8709304, 9007102, 1410991



Please feel free to contact me by e-mail at trish.gabriel@dec.ny.gov or by telephone at (518) 357-2445 if you have any questions.

Sincerely,



Patricia M. Gabriel
Deputy Regional Permit Administrator

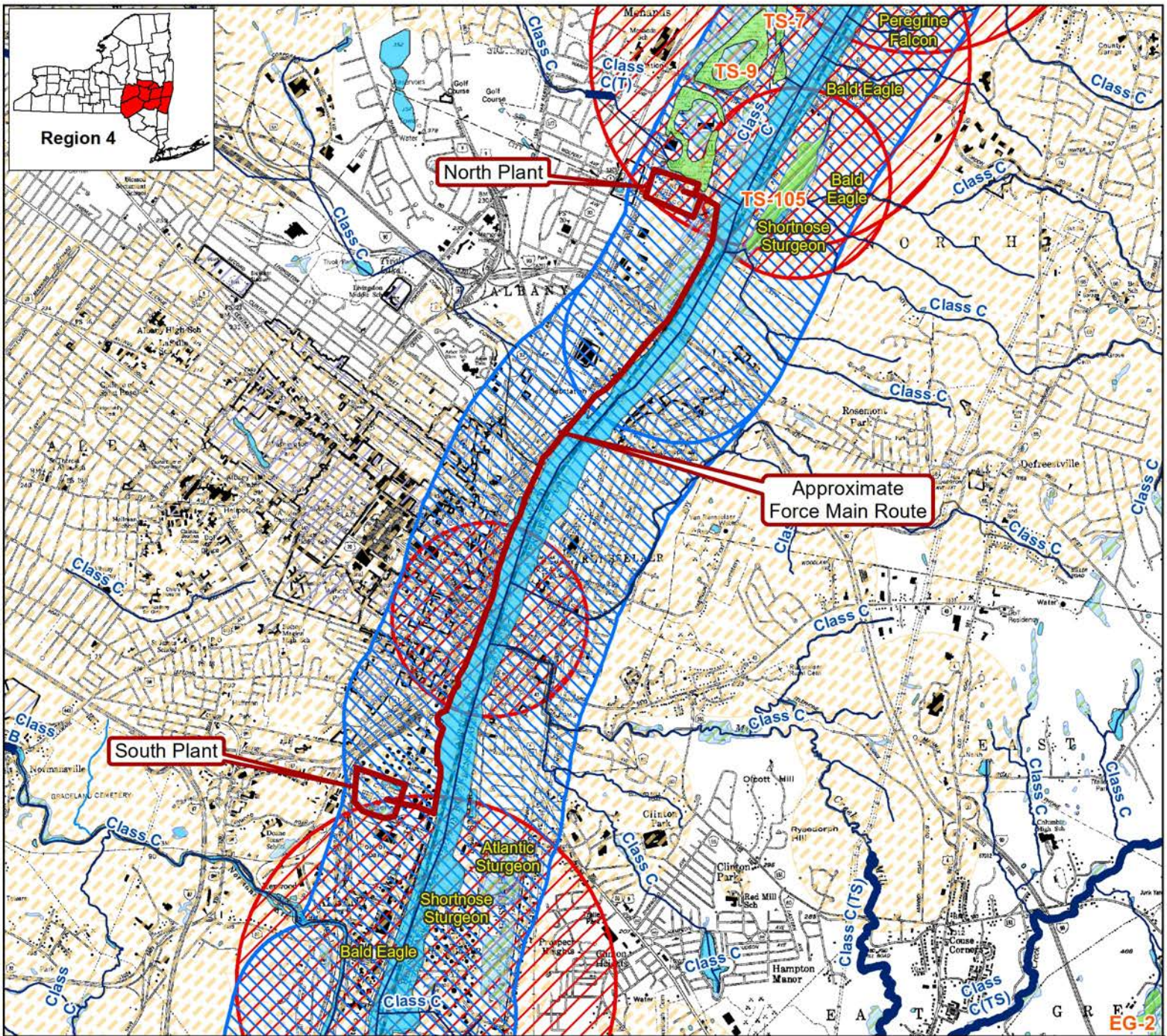
Encls.: Project Location & NYS Resources Map, DAC & EJ Map

ecc: Kate Malcolm, RPA
Victoria Ruglis, RA
Anthony Luisi, RD
Ben Potter, RAPCE
Bonnie Starr, R4 DOW
David Sherman, R4 DOW
Theresa Swenson, R4 BEH (Stamford)
Nicole Campbell, R4 BOW
Josh Haugh, R4 Spills Response Program
Joanne Cunningham, Albany County Legislature
Gupika Muddappa, Albany County Planning Board
Grete L. Day, Barton & Loguidice





Division of Environmental Permits Projection: NAD_1983_UTM_Zone_18N



Region 4

North Plant

South Plant

Approximate
Force Main Route

PROJECT LOCATION & NYS RESOURCES MAP

ALBANY COUNTY WATER PURIFICATION DISTRICT
North & South Plant
Sludge Processing
Improvements Project
City of Albany & Town of Colonie
Albany County

April 16, 2024

1 inch = 4,000 feet

Legend

Regulated Freshwater Wetlands

- Class 1 Wetland
- Class 2 Wetland
- Class 3 Wetland
- Class 4 Wetland

Water Quality Classifications

- Unprotected
- Protected

National Wetlands Inventory - Color

- Emergent, Forested/Shrub
- Riverine, Lake, Pond
- Other

E&T Animals - Recent

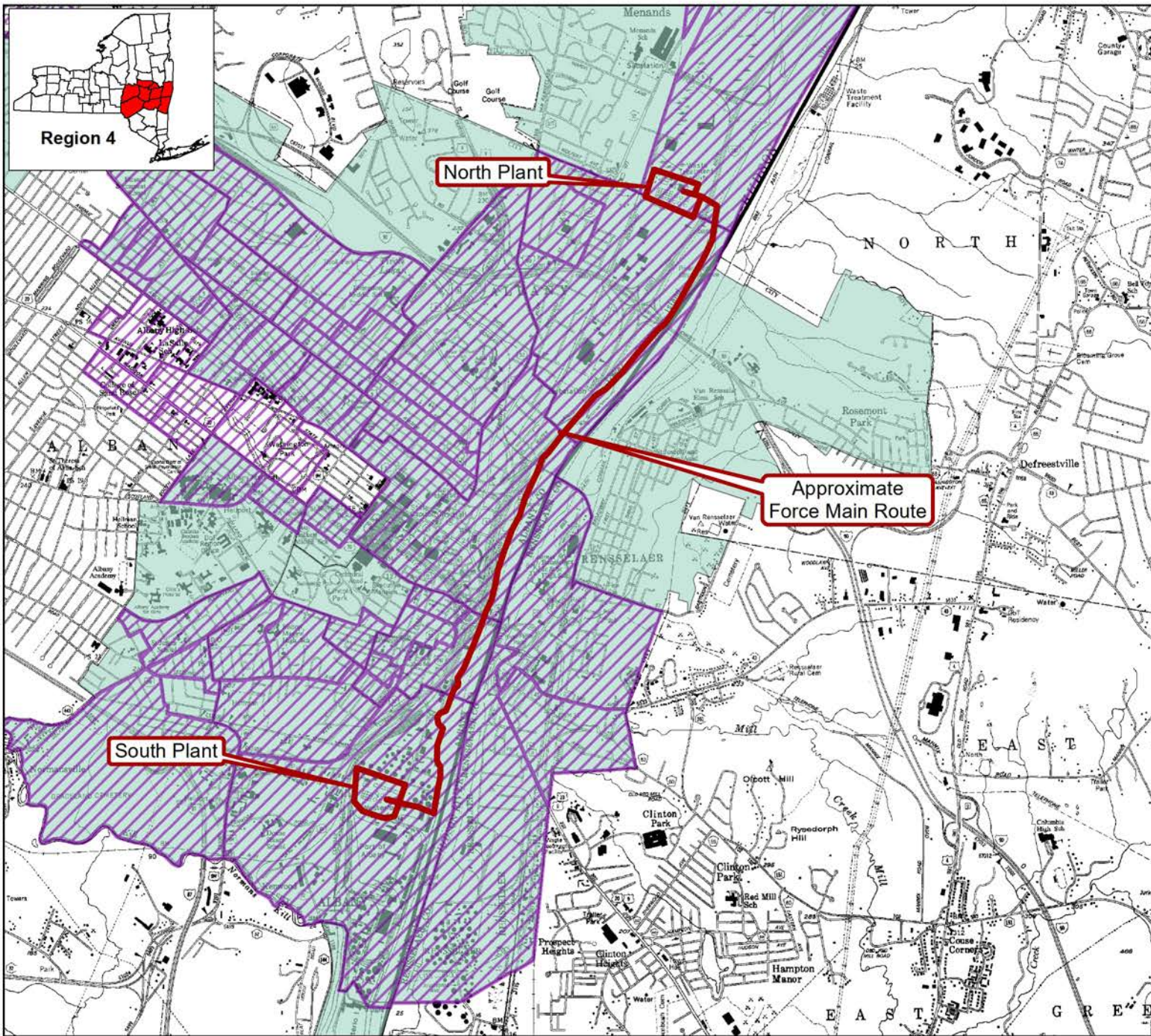
- All except fish
- Fish

Cultural Resources

- Cultural Resources
- National/State Historic Register Site
- State Historic Park
- State Historic Site

**NEW YORK STATE**
Department of Environmental Conservation

Disclaimer: This map was prepared by the NYSDEC Division of Environmental Permits using the most current data available. It is deemed accurate but is not guaranteed. NYSDEC is not responsible for any inaccuracies in the data and does not necessarily endorse any interpretations or products derived from the data.



PROJECT LOCATION & NYS RESOURCES MAP

ALBANY COUNTY WATER PURIFICATION DISTRICT North & South Plant Sludge Processing Improvements Project City of Albany & Town of Colonie Albany County

April 16, 2024

0 2,000 4,000 6,000 8,000 Feet

1 inch = 4,000 feet

Legend

-  Potential EJ Area
-  Disadvantaged Communities (DAC)

Disclaimer: This map was prepared by the NYSDEC Division of Environmental Permits using the most current data available. It is deemed accurate but is not guaranteed. NYSDEC is not responsible for any inaccuracies in the data and does not necessarily endorse any interpretations or products derived from the data.



Department of
Environmental
Conservation

Appendix P
Engineering Certification and Smart Growth Forms



ENGINEERING REPORT CERTIFICATION

To Be Provided by the Professional Engineer Preparing the Report

During the preparation of this Engineering Report, I have studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is being sought from the New York State Clean Water State Revolving Fund. In my professional opinion, I have recommended for selection, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account the cost of constructing the project or activity, the cost of operating and maintaining the project or activity over the life of the project or activity, and the cost of replacing the project and activity.

Title of Engineering Report: Sludge Processing Improvements Study

Date of Report 03/14/2025

Professional Engineer's Name: Karen W. Clark

Signature: 

Date: 03/14/2025



Smart Growth Assessment Form

This form should be completed by an authorized representative of the applicant, preferably the project engineer or other design professional.¹

Section 1 – General Applicant and Project Information

Applicant: Albany County Water Purification District Project No.:

Project Name: Sludge Processing Improvements Study

Is project construction complete? ☐ Yes, date: ☒ No

Please provide a brief project summary in plain language including the location of the area the project serves:

Consolidation of the ACWPD South and North plants solids handling processes to the North Plant. Project would involve rehabilitation of the North Plant sludge incinerators, as well as the construction of an HDPE forcemain to convey liquid sludge from the South Plant to the North Plant. Project also involves various other capital improvements to the sludge processing equipment at the facility.

Section 2 – Screening Questions

A. Prior Approvals

1. Has the project been previously approved for Environmental Facilities Corporation (EFC) financial assistance? ☐ Yes ☒ No
2. If yes to A(1), what is the project number(s) for the prior approval(s)? Project No.:
3. If yes to A(1), is the scope of the previously-approved project substantially the same as the current project? ☐ Yes ☐ No

If your responses to A(1) and A(3) are both yes, please proceed to Section 5, Signature.

B. New or Expanded Infrastructure

1. Does the project involve the construction or reconstruction of new or expanded infrastructure? ☒ Yes ☐ No

Examples of new or expanded infrastructure include, but are not limited to:

- (i) The addition of new wastewater collection/new water mains or a new wastewater treatment system/water treatment plant where none existed previously;
- (ii) An increase of the State Pollutant Discharge Elimination System (SPDES) permitted flow capacity for an existing wastewater treatment system; and OR

¹ If project construction is complete and the project was not previously financed through EFC, an authorized municipal representative may complete and sign this assessment.

- (iii) An increase of the permitted water withdrawal or the permitted flow capacity for the water treatment system such that a Department of Environmental Conservation (DEC) water withdrawal permit will need to be obtained or modified, or result in the Department of Health (DOH) approving an increase in the capacity of the water treatment plant.

If your response to B(1) is no, please proceed to Section 5, Signature.

Section 3 –Smart Growth Criteria

Your project must be consistent with all relevant Smart Growth criteria. For each question below please provide a response and explanation.

1. Does the project use, maintain, or improve existing infrastructure?

☒ Yes ☐ No

Explain your response:

The project uses and improves existing North Plant solids handling infrastructure.

2. Is the project located in a (1) municipal center, (2) area adjacent to a municipal center, or (3) area designated as a future municipal center, as such terms are defined herein (please select one response)?

☐ Yes, my project is located in a municipal center, which is an area of concentrated and mixed land uses that serves as a center for various activities, including but not limited to: central business districts, main streets, downtown areas, brownfield opportunity areas (see www.dos.ny.gov for more information), downtown areas of local waterfront revitalization program areas (see www.dos.ny.gov for more information), areas of transit-oriented development, environmental justice areas (see www.dec.ny.gov/public/899.html for more information), and hardship areas (projects that primarily serve census tracts or block numbering areas with a poverty rate of at least twenty percent according to the latest census data).

☒ Yes, my project is located in an area adjacent to a municipal center which has clearly defined borders, is designated for concentrated development in the future in a municipal or regional comprehensive plan, and exhibits strong land use, transportation, infrastructure, and economic connections to an existing municipal center.

☐ Yes, my project is located in an area designated as a future municipal center in a municipal or comprehensive plan and is appropriately zoned in a municipal zoning ordinance

☐ No, my project is not located in a (1) municipal center, (2) area adjacent to a municipal center, or (3) area designated as a future municipal center.

Explain your response and reference any applicable plans:

The project area is located in and around the City of Albany and the Village of Menands. The proposed sludge forcemain would pass through the Corning Riverfront Preserve.

3. Is the project located in a developed area or an area designated for concentrated infill development in a municipally-approved comprehensive land use plan, local waterfront revitalization plan, and/or brownfield opportunity area plan?

☐Yes ☒No

Explain your response and reference any applicable plans:

4. Does the project protect, preserve, and enhance the State's resources, including surface and groundwater, agricultural land, forests, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources?

☒Yes ☐No

Explain your response:

The project protects the State's resources, including the Hudson River and local air quality.

5. Does the project foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, the diversity and affordability of housing in proximity to places of employment, recreation and commercial development, and the integration of all income and age groups?

☐Yes ☒No

Explain your response:

6. Does the project provide mobility through transportation choices including improved public transportation and reduced automobile dependency?

☐Yes ☐No ☒N/A

Explain your response:

7. Does the project involve coordination between State and local government, intermunicipal planning, or regional planning?

☒Yes ☐No

Explain your response and reference any applicable plans:

This project would require significant coordination between ACWPD, local governments, and government agencies, specifically in regards to the final routing and installation of the sludge forcemain.

8. Does the project involve community-based planning and collaboration?

☐ Yes ☒ No

Explain your response and reference any applicable plans:

9. Does the project support predictability in building and land use codes?

☐ Yes ☐ No ☒ N/A

Explain your response:

10. Does the project promote sustainability by adopting measures such as green infrastructure techniques, decentralized infrastructure techniques, or energy efficiency measures?

☒ Yes ☐ No

Explain your response and reference any applicable plans:

Energy efficiency measures are a key consideration in the project's design. Consolidation of sludge management between the two facilities will present a major opportunity for energy savings. Upgrades to the sludge tank mixing system will save significant energy and installation of the FOG system will generate a renewable fuel source

11. Does the project mitigate future physical climate risk due to sea-level rise, storm surges, and/or flooding, based on available data predicting the likelihood of future extreme weather events, including hazard risk analysis data, if applicable?

☒ Yes ☐ No

Explain your response and reference any applicable plans:

The project will be designed with storm and flood resiliency in mind.

Section 4 – Miscellaneous

1. Is the project expressly required by a court or administrative consent order? ☒ Yes ☐ No

If yes, and you have not previously provided the applicable order to EFC/DOH, please submit it with this form.

Section 5 – Signature

By signing below, you agree that you are authorized to act on behalf of the applicant and that the information contained in this Smart Growth Assessment is true, correct and complete to the best of your knowledge and belief.

Applicant: Albany County Water Purification District	Phone Number: 518-447-1624
Name and Title of Signatory: Karen W. Clark, Senior Associate	
Signature: Karen W. Clark	Date: 6/14/2023

The experience to
listen
The power to
solveSM

Barton
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