

UPDATED 9/17/09

**DESIGN PROPOSAL**

Nazareth Borough Sanitaire #20442-08a

**TABLE A**

**INFLUENT WASTEWATER CHARACTERISTICS AND SITE CONDITIONS**

Average Dry Weather Flow	2,100,000 GPD
Peak Dry Weather Flow	2,500,000 GPD
Peak Wet Weather Flow	4,200,000 GPD
BOD <sub>5</sub> (20°C)	325 mg/l
BOD <sub>5</sub> (20°C)	5,692 lb/day
Suspended Solids	275 mg/l
TKN	45 mg/l
Total Phosphorus	8.00 mg/l
Alkalinity	161 mg/l
Max Wastewater Temperature	29 °C
Min Wastewater Temperature	10 °C
Ambient Air Temperature	0 - 100 °F
Site Elevation	500 ft

**TABLE B**

**ICEAS® EFFLUENT QUALITY (MONTHLY AVERAGE)**

BOD <sub>5</sub> (20°C)	10.00 mg/l
Suspended Solids	10.00 mg/l
NH <sub>3</sub> -N	1.50 mg/l
Total Nitrogen (Future)	6.00 mg/l (Assumed)
Total Phosphorus (Future)	1.00 mg/l (Assumed)

**TABLE C**

**ICEAS PROCESS DESIGN CRITERIA**

F / M	0.065 lb BOD <sub>5</sub> / lb MLSS / day
SVI (after 30 minutes settling)	150 ml/g
MLSS at Bottom Water Level	4,199 mg/l
MLSS at Top Water Level	3,532 mg/l
Waste Sludge Produced (Approx.)	4,085 lb/day
Volume of Sludge Produced (Approx., 0.85% solids)	57,622 GPD
Normal Decant Rate	2,895 GPM
Peak Decant Rate	2,917 GPM
Hydraulic Retention Time	1.36 Days
Sludge Age	20.60 Days

<b>CYCLE</b>	<b>AIR-OFF</b>	<b>AIR-ON</b>	<b>SETTLE</b>	<b>DECANT</b>	<b>TOTAL</b>
Normal	48 min	120 min	72 min	48 min	4.8 hour
Storm	36 min	90 min	36 min	54 min	3.6 hour

**TABLE D**  
**KEY ICEAS DESIGN DETAILS**

Number of ICEAS Basins	4
Top Water Level	15.0 ft
Basin Width	47.0 ft
Basin Length	141.0 ft
Bottom Water Level	12.6 ft
No. of Sludge Holding Tanks	4
SHT Top Water Level	15.0 ft
SHT Width	60.0 ft
SHT Length	47.0 ft
Sludge Storage Time	22 days

<b>ICEAS EQUIPMENT ADDED IN EXPANSION</b>	<b>Motor HP</b>	<b>No. Req.</b>
---	-----------------	-----------------

Decanter Mechanism	22.5 ' Weir length	1 /Basin	2
Decanter Drive Unit		1/2	4
ICEAS Blower	1,880 SCFM	7.3 PSIG	3
ICEAS Fine Bubble Aeration System	1,104	Disc Diffusers/Basin	2
Air Control Valve	14 "		2
Waste Sludge Pump	110.0 GPM	2.4	2
Submersible Mixer (Future Equipment)		15	4
ICEAS Controls Upgrade			1
Motor Control Center			1
Level Transducers			4
D.O. Control (Hach)			4
SHT Blower	1,270 SCFM	7.5 PSIG	4
SHT Coarse Bubble Aeration System			2
Plant-Wide SCADA System			1

<b>ICEAS POWER REQUIREMENTS</b>	<b>(At Average Aeration Depth)</b>	<b>Kwh/Day</b>
---------------------------------	------------------------------------	----------------

Decant Drive Unit	0.4 BHP	4 run	@	4 Hrs/day	4.77
ICEAS Air Blowers	96.8 BHP	2 run	@	20 Hrs/day	2,887.48
Waste Sludge Pump	1.9 BHP	2 run	@	2.2 Hrs/day	6.25
Submersible Mixer	12.0 BHP	4 run	@	4 Hrs/day	143.23
				KWH/DAY	3,041.74
			AVERAGE	KWH/HR	126.74

## **INSTALLATION SUPERVISION AND PLANT START-UP**

Sanitaire shall provide a factory representative to supervise installation of equipment for a period of five (5) days during one (1) trip to the site, and also for plant start-up for a period of five (5) days during one (1) trip to the site.

Additional time not included can be provided to the contractor and/or owner at a rate of \$850.00 per day plus expenses.

### **PRICING**

This estimate does not include any construction field work such as site preparation, unloading of equipment, excavation, backfill, concrete basin, design or construction, equipment installation, anchoring of equipment, field construction or assembly, yard piping, electrical field wiring or hook-up, field painting, or sales and use taxes.

Price to follow.

Respectfully submitted,

Sanitaire

Tyler Kunz  
Regional Manager