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Established 1977

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January 10, 2001

Mr. James F. Franks, Administrator
NPDES Enforcement Section
Arkansas Department of Environmental Quality
P.O. Box 8913
Little Rock, AR 72219-8913

Re: NPDES permit AR0020117
Mountain View, AR

Dear Mr. Franks,

Enclosed is a copy of our preliminary engineering report, "Denitrification Options for the Wastewater Plant at Mountain View, Stone County Arkansas". Please review our alternates. The City desires to proceed with the Sulfur Dioxide Injection method of solving the problem. This choice was not only based upon the cost but of the short construction time required.

After your review, please call and if we need to meet with you before proceeding to engineering planning, we are very willing. Thanks.

Yours truly,

Isbell Engineering & Surveying, Inc.

John Ed Isbell, P.E., L.S., President

Cc: Bill Lancaster, Mayor

Preliminary Engineering Report

Denitrification Options for

Waster Water Treatment Plant at the

City of Mountain View, Stone County, Arkansas

Mayor Bill Lancaster

City Council:
Sharon Long
Hollis Dobbins
Chester Passmore
Joe Hogg
Ronda Ivy
Erlene Carter

Water and Sewer Commission:
Jim Rice
Stanton Foll
Dereece Throckmorton
Jewell Shipman
Bruce Stevens

Prepared by:

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GENERAL: The original wastewater plant was constructed in 1969. The overflow/equalization basin and associated piping was added after 1983 for the purpose of handling the inflow/infiltration from the collection system. The biotower, final clarifier, chlorine contact chamber, and associated pumps and piping were added in 1987.

It appears that the biotower was added to nitrify the ammonia, if so, it is doing an excellent job. The nitrifying of the ammonia is raising the Nitrate-Nitrite Nitrogen beyond the limits allowed by the Department of Environmental Quality (DEQ) Permit Number AR0020117. Prior to July 2000, the plant was consistently in violation of these limits and the City of Mountain View entered into a consent decree with DEQ to have the problem corrected by August 1, 2001.

In July of 2000, the operational procedure of the wastewater plant was altered by returning all of the sludge to the head-works. This allowed the primary clarifier to function as an inefficient Anoxic Basin. The Nitrate-Nitrite Nitrogen was significantly reduced. The discharge has had eight unofficial violations since the operation was altered. The problem is that the Primary Clarifier was not designed for this function, thus reducing the purpose of the clarifier and the capacity of the plant. The Nitrate-Nitrite Nitrogen discharge has been at just above or just below the discharge limit.

PROPOSED MODIFICATIONS: Four modifications have been explored. Other options were looked at but discarded as being to expensive and unproven. The four are:

1. Methanol Injection
2. Anoxic Basin
3. Sulfur Dioxide Injection
4. Do Nothing

1. The Methanol injection was considered in 1999. The proposal was to methanol and air in the Equalization Basin and add diversion walls. A new equalization basin with associated pumping and piping was to be built on land that might have to be purchased. This method is not recommended, as the use of Methanol is dangerous and expensive to construct and operate.

2. The Anoxic Basin modification would be built so that the flow would go from the head-works to the Anoxic Basin then return to the primary clarifier. All sludge and bio-tower effluent would be re-circulated through the basin. The basin would be sized to hold 275% of the design flow for a period of two hours. The only mechanical equipment would be a 5 horsepower-floating mixer and the addition of larger re-circulation pumps. Once construction is complete the operating expense would be the power consumption and the depreciation cost of the mixer and pumps.

3. Injection of Sulfur Dioxide gas would take place in the outfall line of the chlorine contact basin. The Sulfur Dioxide gas would dissipate the chlorine and the convert Nitrate-Nitrite Nitrogen to Nitrogen gas, which would escape to the atmosphere. The equipment would be a gas feeder, controller, electrical, and mechanical connections. The

operation cost would consist of the power consumption, chemical, and the equipment depreciation costs.

4. Doing nothing will cause the Department of Environmental Quality (DEQ) to closely consider levying fines against the City of Mountain View. The present operation suggests that there will be a few violations of the discharge permit. Having to pay fines is a complete waste of the citizen's money as it is gone forever with no benefits in return. Maintaining compliance with the permit will be very difficult as all recent tests have been very near the permit limit, with some below and some above. Also, there will be no room for growth and Mountain View is in a growth period.

COSTS:

1. The Methanol injection was investigated in November 1999 and that report estimated the costs to be approximately $500,000. An operation and maintenance cost was not included in that study. No further investigation was done on this alternate because of the danger in using Methanol and the construction cost.

2. Anoxic Basin Construction $196,000

3. Sulfur Dioxide Injection $106,000

4. Do Nothing Fines as levied by DEQ

RECOMMENDATION:

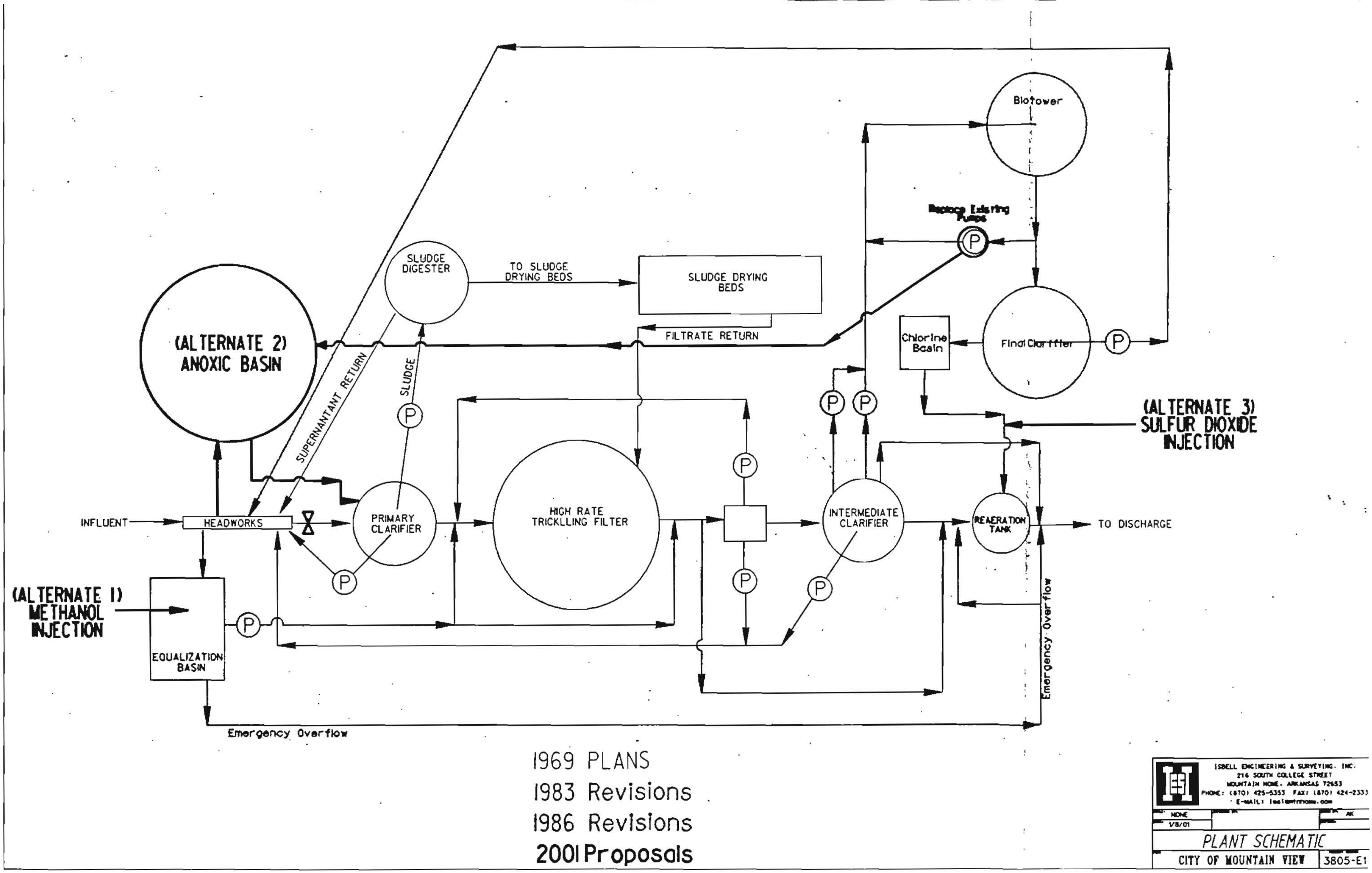
Our recommendation is to proceed to with the engineering plans to install the Sulfur Dioxide Injection as the solution for the Nitrate-Nitrite Nitrogen problem. Upon concurrence by the Department of Environmental Quality (DEQ), the engineering plans could be complete within 60 days and construction complete before the August 1, 2001 deadline imposed on the City of Mountain View by DEQ.

GENERAL RECOMMENDATIONS

There are other on-going problems with the sewer system that need to be addressed. They are:

1. Continue to empty the sludge digester so that it will operate properly. If this is not followed through with the wastewater plant will again be in trouble with violations of the BOD and Suspended Solids limits.
2. Continue to correct the inflow/infiltration problems to relieve the hydraulic loading on the system. This was also a part of the consent decree required by the Department of Environmental Quality (DEQ).
3. Enter into an engineering contract to study the southeast part of the City to provide sewer service to that area. The possible need for an additional wastewater treatment plant in that and other areas would provide new service to approximately 140 new customers. The areas to be covered are the Dave Blevins Addition north of the airport, Bayou Drive, and Flatwoods Subdivision east adjacent to Highway 14. The southeast wastewater plant would relieve some of the present loading on the existing plant and allow growth both east and west of town.
4. Look at other needed repairs and/or renovations to the existing wastewater treatment plant.

"Out of site is out of mind." When people flush and it goes down, they seem to forget about what happens next. The leadership of Mountain View needs to know about and continue to improve the wastewater system.


Biotower
Replace Existing Pumps
SLUDGE DIGESTER
TO SLUDGE DRYING BEDS
SLUDGE DRYING BEDS
FILTRATE RETURN
(ALTERNATE 2) ANOXIC BASIN
SUPERNATANT RETURN
SLUDGE
Chlorine Basin
Final Clarifier
(ALTERNATE 3) SULFUR DIOXIDE INJECTION
INFLUENT
HEADWORKS
PRIMARY CLARIFIER
HIGH RATE TRICKLLING FILTER
INTERMEDIATE CLARIFIER
REAERATION TANK
TO DISCHARGE
(ALTERNATE 1) METHANOL INJECTION
EQUALIZATION BASIN
Emergency Overflow
Emergency Overflow
P
1969 PLANS
1983 Revisions
1986 Revisions
2001 Proposals
ISBELL ENGINEERING & SURVEYING, INC.
216 SOUTH COLLEGE STREET
MOUNTAIN HOME, ARKANSAS 72653
PHONE: (870) 425-5353 FAX: (870) 424-2333
NONE
1/8/01
AK
PLANT SCHEMATIC
CITY OF MOUNTAIN VIEW
3805-E1

Mountain View Sewer System Tests

			PLANT INFLUENT		INDUS. PARK LIFT STATION		CITY		PRIMARY CLARIFIER			TRICKLING FILTE		BIOTOWER		8/15 10 PLANT EFFLUENT		6/7	AVG. MONTH	0.73 MAX FLOW	
YEAR	MONTH	DAY	AMM	N	AMM	N	AMM	N	AMM	N	AMM	N	DO	AMM	N	AMM	N	DO	(mgd)	(mgd)	
1998	8	1														0.30	11.24		0.3803	1	
1998	9	1														0.30	13.70		0.3257	0.9	
1998	10	1														0.79	10.05		0.5871	2	
1998	11	1														0.65	11.24		0.476	1.1	
1998	12	1														0.30	8.00		0.4771	0.85	
1999	1	1														2.76	6.61		0.8065	2.3	
1999	2	1														0.42	6.94		0.4854	1.08	
1999	3	1														1.14	10.80		0.745	1.6	
1999	4	1														1.60	7.99		1	2.3	
1999	5	1														3.90	13.76		0.369	0.7	
1999	6	1														2.40	19.75		0.2962	1.1	
1999	7	1														1.26	19.40		0.4139	0.96	
1999	8	1														3.30	14.30		0.3397	0.43	
1999	9	1														1.32	11.90		0.347	0.51	
1999	10	1														2.80	14.60		0.3448	0.53	
1999	11	1														0.58	13.94		0.327	0.44	
1999	12	1														0.74	12.25		0.4897	1.5	
2000	1	1														1.37	10.60		0.3968	0.94	
2000	2	1														1.54	14.40		0.4155	1.4	
2000	3	1														5.20	11.10		0.6552	1.03	
2000	4	1														2.76	13.00		0.421	0.8	
2000	5	1														3.98	9.88		0.6639	1.72	
2000	7	7	High	3.00	See at Left				12.50	3.00	10.50	1.00		1.25	11.00	0.07	8.00		0.4		
2000	7	10	High	3.00					14.00	3.00	12.25	3.00		0.90	11.00	0.14	9.00		0.4		
2000	7	11	High	3.00					11.50	3.00	7.25	2.00		0.25	8.00	2.00	3.00		0.4		
2000	7	13	High	4.00					8.50	3.00	6.25	2.00		0.50	7.00	1.40	6.00		0.65		
2000	7	14	High	4.00					13.25	4.00	9.50	3.00		0.50	8.00	1.60	8.00		0.4		
2000	7	17	High	4.00					High	2.00	11.75	4.00		0.25	9.00	1.30	8.00		0.35		
2000	7	18	High	3.00					High	3.00	High	3.00		0.75	9.00	2.40	9.00		0.35		
2000	7	19	High	4.00					12.00	4.00	12.50	4.00		0.25	8.00	1.50	7.00		0.35		
2000	7	20	High	4.00					14.50	4.00	High	4.00		2.65	9.00	1.75	7.00		0.55		
2000	7	24	*See at Right		High	3	High	5	High	5.00	12.00	3.00		1.75	10.00	1.75	10.00		0.35		
2000	7	25			High	3	High	3	High	4.00	High	4.00		9.00	9.00	1.80	8.00		0.5		
2000	7	26			High	4	High	4	High	4.00	High	3.00		1.80	10.00	1.80	8.00		0.46		
2000	7	27			High	4	High	4	High	4.00	4.00	4.00		10.25	12.00	4.75	8.00		0.4		
2000	7	28			High	6	High	6	12.25	5.00	9.25	3.00		0.20	11.00	1.45	8.00		0.3		
2000	7	31			High	4	High	4	High	4.00	10.75	3.00		0.70	9.00	1.05	9.00		0.31		
2000	8	1																			
2000	8	2			High	4	High	4	11.00	5.00	9.50	4.00		0.35	10.00	1.45	10.00		0.4		
2000	8	3			High	4	High	4	10.00	5.00	1.25	4.00		1.90	15*	1.30	13.00		0.34	*Return Pumps off	
2000	8	4			High	4	High	4	12.50	6.00	6.00	4.00		0.60	9.00	1.10	9.00		0.28	for Maintainance	
2000	8	7			High	4	High	4	High	4.00	High	4.00		1.00	10.00	0.80	9.00		0.35		
2000	8	8			High	4	High	4	12.00	4.00	High	6.00		0.20	10.00	1.05	10.00		0.4		
2000	8	9			High	4	High	4	13.00	8.00	9.50	6.00		0.50	11.00	1.10	10.00		0.31		
2000	8	14			High	4	High	4	11.25	5.00	9.60	5.00		0.20	10.00	0.85	10.00		0.3		
2000	8	16			High	4	High	4	11.75	4.00	6.50	5.00		0.30	10.00	0.60	10.00		0.25		
2000	8	17			High	2	High	3	12.75	7.00	11.75	7.00		0.60	9.00	0.70	6.00		0.35		
2000	8	22			High	3	High	3	High	2.00	9.60	4.00		3.40	12.00	1.10	9.00		0.3		
2000	8	28			High	3	High	3	High	7.00	11.75	10.00		2.10	15.00	0.90	11.00		0.3		
2000	8	30			High	5	High	5	10.75	6.00	9.00	10.00		0.50	11.00	1.40	9.00		0.3		
2000	8	31			High	5	High	5	9.50	7.00	5.20	6.00		0.05	11.00	0.50	12.00		0.32		
2000	9	1																			
2000	9	6			High	5	High	5	11.25	7.00	4.60	9.00		0.25	10.00	0.45	10.00		0.3		
2000	9	11			High	4	High	4	6.75	7.00	2.90	9.00		0.05	9.00	0.40	8.00		0.4		
2000	9	18			High	5	High	5	7.75	8.00	4.10	8.00		0.50	8.00	0.30	10.00		0.3		
2000	9	19			High	3	High	3	10.00	7.00	4.80	8.00		0.60	10.00	0.50	9.00		0.3		
2000	9	27			High	4	High	4	10.00	6.00	4.70	8.00		0.40	9.00	0.70	9.00		0.4		
2000	9	29			High	4	High	4	9.25	7.00	6.75	8.00		0.40	10.00	0.60	10.00		0.35		
2000	10	1	1.52													0.70	0.93	7.05	0.3207	0.52	
2000	10	3			High	3	High	3	High	6.00	13.00	8.00		0.10	10.00	0.50	10.00		0.43		
2000	10	4			High	3	High	3	8.50	5.00	5.30	8.00		0.30	10.00	0.50	10.00		0.33		
2000	10	9			High	5	High	5	10.00	7.00	3.75	9.00		0.00	10.00	0.20	10.00		0.4		
2000	10	11			14.75	2	14.25	4	5.70	7.00	5.70	9.00		0.90	10.00	0.55	10.00		0.35		
2000	10	16			14.25	4	14..35	4	11.25	4.00	8.75	5.00		0.85	9.00	0.45	8.00		0.43		
2000	10	18			High	4	High	3	8.75	7.00	4.75	10.00		0.30	10.00	0.10	10.00		0.34		
2000	10	19												12.50	11.00	1.75	10.00		0.3	Trick. Filter	
2000	10	20			12.25	3	12.75	3	11.75	6.00				12.25	11.00	2.30	11.00		0.5	By-passed	
2000	10	23			High	3	14	3	8.50	5.00				10.50	14.00	6.00	11.00		0.4	"	
2000	10	24			High	3	10.5	3	9.00	5.00				8.50	10.00	5.75	10.00		0.42	"	
2000	10	25							7.25	7.00				6.50	14.00	7.00	12.00		0.35	"	
2000	10	26			High	4	14.75	4	11.50	7.00				1.75	16.00	5.50	12.00		0.45	"	
2000	10	31			High	3	9.75	3	3.80	7.00				1.00	12.00	1.00	15.00		0.35	"	
2000	11	1			High	3	9.25	3	10.75	6.00				0.70	10.00	0.45	10.00		0.36	"	
2000	11	3			25.5	3	18.5	3	14.00	5.00	1.25	6.00		0.50	9.00	0.65	9.00		0.45		
2000	11	7			30.00	0	22.5	0	6.50	5.00	2.00	8.00	6.70	0.15	9.00	0.20	7.00		0.35	10% Inf. to Trick	
2000	11	13							4.00	5.00	4.10	4.00		0.20	8.00	0.25	8.00		0.75	Filter plus Recircul	
2000	11	16			25	2	22.5	2	9.25	6.00	2.50	8.00		0.20	9.00	0.80	9.00		0.4	Pumps Clarifiers.	
2000	11	17			30	2	30	2	28.00	2.00	5.50	6.00		3.10	8.00	2.80	8.00		0.3		
2000	11	20			11	3	18	3	18.50	3.00	9.75	5.00		0.50	7.00	1.85	9.00		0.47		
2000	11	29			8.6	2	7.5	2	8.25	2.00	7.25	4.00	7.10	0.40	8.00	0.25	8.00		0.6		
2000	12	4									High	2.00		0.05	7.00	2.40	7.00		0.4		
2000	12	5												2.50	8.00	9.25	8.00		0.41		

In December 2000 the following test was run:	ph		Amonia		*Nitrogen				
	Before	After	Before	After	Before	After		Total Flow	33.0435
1.25 ml of Sodium Sulfite per 1,000 ml	7.45	8.66	1.50	1.50	9.00	0.00		Average	0.40297
1.25 ml of Sodium Sulfite per 1,500 ml		8.46		2.80		0.00		% of Capacity	55.20%
1.25 ml of Sodium Sulfite per 2,000 ml		8.32		1.70		0-1			
1.25 ml of Sodium Sulfite per 2,500 ml		7.91		1.20		0-1			

ANOXIC BASIN

Capacity = 275% of design flow of .73 MGD for 2 hours = 167,292 Gallons
= 22,365 Cubic Feet
Available head (Depth) 610-599 = 11' 2,033 Square Feet
45' X 45' Square
51' Dia. Round

Use 51' diameter Round Tank with 12' walls

ITEM	UNIT	QUANTITY	PRICE	AMOUNT
Excavation	C.Y.	1440.00	$20.00	$28,800.00
Reinforced Concrete Floor	C.Y.	52.00	$300.00	$15,600.00
Reinforced Concrete Walls	C.Y.	67.00	$600.00	$40,200.00
New & Reroute Existing Piping	L.F.	500.00	$30.00	$15,000.00
5 H.P. Floating Mixer	L.S.	1.00	$12,500.00	$12,500.00
Electrical	L.S.	1.00	$2,500.00	$2,500.00
Replace Existing Biotower Pumps	L.S.	2.00	$20,000.00	$40,000.00
		Sub-Total		$154,600.00
		Contingency @10%+-		$15,460.00
		Engineering @ 15.25%		$25,934.15
		TOTAL		$195,994.15

SULFUR DIOXIDE INJECTION

ITEM	UNIT	QUANITY	PRICE	AMOUNT
Sulfite Feeder	L.S.	1	$7,500.00	$7,500.00
Controller	L.S.	1	$25,200.00	$25,200.00
Sufite Diffuser	L.S.	1	$20,000.00	$20,000.00
Electrical & Mechanical	L.S.	1	$12,000.00	$12,000.00
Building for Sufite Feeder	L.S.	1	$10,000.00	$10,000.00
Start Up and Freight	L.S.	1	$6,500.00	$6,500.00
		Sub-Total		$81,200.00
		Contingency @10%+-		$8,120.00
		Engineering @ 16.5%		$16,077.60
		TOTAL		$105,397.60