

**Lawler
Matusky
& Skelly
Engineers LLP**

Environmental Science & Engineering Consultants

February 25, 2000

February 25, 2000
File No. 650-395

Mr. Carl Hoffman
New York State Department of Environmental Conservation
Operation and Maintenance Section - Bureau of Hazardous Site Control
Division of Environmental Remediation
50 Wolf Road
Albany, New York 12233-7010

Re: **Servall Laundry Site
Bay Shore, Suffolk County
Site No. 1-52-077, Work Assignment No. D002676-39.2
Monthly Report - JANUARY 2000**

Dear Mr. Hoffman:

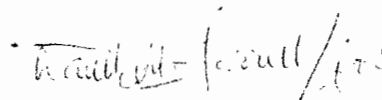
Attached please find the Monthly Report for January 2000, the third monthly report submitted under Work Assignment No. D002676-39.2.

The plant operated at an average flow rate of 160 gpm for the month and a total volume of 4,154,420 gallons of water was processed. The influent VOC concentration was 67.4 ppb; the plant removed approximately 90.4% of the influent VOC. Effluent concentrations of total manganese and total iron were within discharge limitations.

LMS will continue to provide task management of the plant operations until September 30, 2000 unless otherwise directed by the NYSDEC.

If you have any questions or comments please feel free to contact me at x 249.

Very Truly Yours,



Robert DeGiorgio, P.E.
Project Manager

Enclosures

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Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation
Operation and Maintenance

Monthly Operations Report

January-00

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Environmental Science & Engineering Consultants
One Blue Hill Plaza
Pearl River, New York 10965

650-395

Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation
Operation and Maintenance

Monthly Operations Report

Summary Report
Compliance Sampling
Graphical Data Trends
Summary Notes and Action Items (none for January 2000)
H2M Reports

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Environmental Science & Engineering Consultants
One Blue Hill Plaza
Pearl River, New York 10965

650-395

Servall Laundry
Site No. 1-52-077
Groundwater Remediation -2000 Operation and Maintenance
Summary Report

Plant Operating Data	unit	Monthly Average	January-00
Flow Rate	gpm	96	160.44
Gallons processed	gallons	3,583,836	4,154,420
Percent of Time Operating	%	55%	62%
Influent VOC concentration	ug/L	114	67.4
Effluent VOC concentration	ug/L	1.89	6.5
VOC removal efficiency	%	97.0%	90.4%
Pounds of VOCs Treated	lb	4.3	2.11
Influent Total Iron	ug/L	535	1270
Influent Total Manganese	ug/L	576	593
Effluent Total Iron	ug/L	84	100
Effluent Total Manganese	ug/L	575	583
Total Iron removal efficiency	%	74.4%	92.1%
Total Manganese removal efficiency	%	1.0%	1.7%
Sodium hypochlorite (12%)	lb	716	500
Polymer	lb	40	0
Hydrogen peroxide (50%)	lb	3203	4538
Caustic (50%)	lb	503	5534
Hydrochloric Acid	lb	106	0
Cartridge Filters	ea	1	0
Spare Parts or other	at cost	\$701	\$0
Consumables cost	\$	\$2,954	\$3,516
Sludge generated (20% dewatered)	gal	25	25
Sludge disposed of	gal	30	0
Sludge disposal cost	\$	\$81.44	\$0.00
Gas (estimated)	therms	887	800
Electricity (estimated)	kw hr	41625	37,800
Utilities cost	\$	\$4,057	\$3,682
Compliance Sampling	at cost	\$1,042.73	\$655.50
Redevelopment	at cost	\$3,308	\$0.00
Operator	Month	\$10,906	\$8,500
Management & Engineering	at cost	\$3,739	\$931
Services cost	\$	\$18,996	\$10,087
Operating Cost (Estimated)	\$	\$26,088	\$17,285

Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation - Operation and Maintenance

2000 Compliance Sampling

Influent									
Constituents	Discharge Criteria	units	January	February	March	April	May	June	
Chlorobenzene	5	ug/L	0.5	U					
Vinyl Chloride	2	ug/L	0.5	U					
1,1-Dichloroethene	5	ug/L	0.1	J					
Trichloroethene	5	ug/L	1						
Tetrachloroethene	5	ug/L	54	E					
1,1-Dichloroethane	5	ug/L	0.2	J					
Toluene	5	ug/L	0.5	U					
cis-1,2-Dichloroethene	5	ug/L	0.3	J					
trans-1,2-Dichloroethene	5	ug/L	0.5	U					
Methylene Chloride	N/A	ug/L	0.5	U					
1,1,1-Trichloroethane	N/A	ug/L	0.5						
Chloroform	N/A	ug/L	0.2	J					
Bromodichloromethane	N/A	ug/L	0.5	U					
Trichlorofluoromethane	N/A	ug/L	0.5	U					
Methyl tert-Butyl Ether	N/A	ug/L	7.6						
Total VOCs	N/A	ug/L	67.4						
Iron (total)	600 ⁴	ug/L	1270						
Manganese (total)	600 ⁴	ug/L	593						
Alkalinity	N/A	mg/L	27						
Total Suspended Solids	N/A	mg/L	10	U					
Total Solids	N/A	mg/L	159						
Effluent									
Constituents	Discharge Criteria	units	January	February	March	April	May	June	
Chlorobenzene	5	ug/L	0.5	U					
Vinyl Chloride	2	ug/L	0.5	U					
1,1-Dichloroethene	5	ug/L	0.5	U					
Trichloroethene	5	ug/L	0.5	U					
Tetrachloroethene	5	ug/L	0.7						
1,1-Dichloroethane	5	ug/L	0.5	U					
Toluene	5	ug/L	0.5	U					
cis-1,2-Dichloroethene	5	ug/L	0.5	U					
trans-1,2-Dichloroethene	5	ug/L	0.5	U					
Methylene Chloride	N/A	ug/L	0.5	U					
1,1,1-Trichloroethane	N/A	ug/L	0.3	J					
Chloroform	N/A	ug/L	0.3	J					
Bromodichloromethane	N/A	ug/L	0.2	J					
Methyl tert-Butyl Ether	N/A	ug/L	0.5	U					
Total VOCs	N/A	ug/L	6.5						
Iron (total)	600 ⁴	ug/L	100						
Manganese (total)	600 ⁴	ug/L	583						
Alkalinity	N/A	mg/L	2	U					
Total Suspended Solids	N/A	mg/L	10	U					
Total Solids	N/A	mg/L	170						

Notes:

- Analytical data analyzed by STL Laboratories, February 1999.
- (U) Undetected.
- (J) Estimate value. Result is below sample practical quantitation limit, but above the instrument detection limit.
- The combined effluent concentration of Iron and Manganese will not exceed 1,000 ug/L.
- N/A - No limit established for this site.
- (E) Estimate value.
- N-A - Not Analyzed
- "-" indicates not performed.
- Bold values exceed discharge limits.
- (P) pesticide/aroclor target analyte. Greater than 25% difference between the two GC columns.

Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation - Operation and Maintenance

Graphical Data Trends

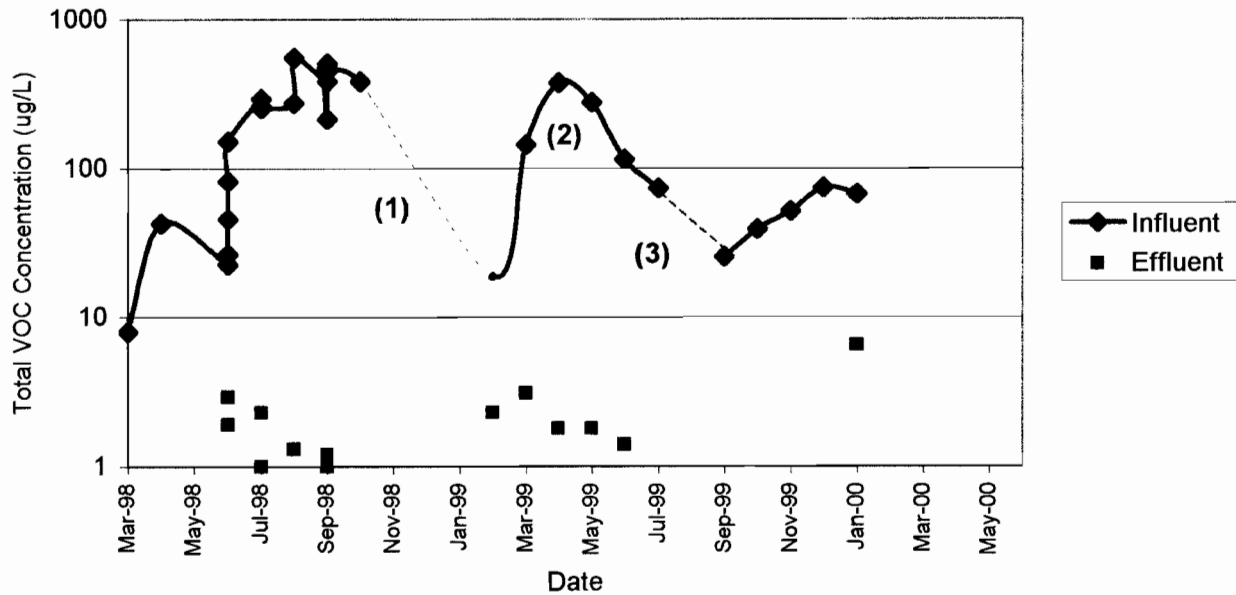


Figure 1 - Total Volatile Organic Compound (VOC) Influent and Effluent Trends

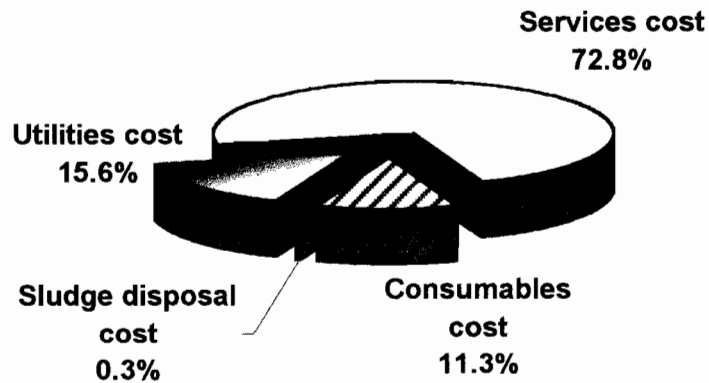


Figure 2 - Monthly Average Operating Cost Breakdown - to date is \$26,088

NOTES

1. Plant down due to reinjection well fouling (November 19, 1998 to January 23, 1999)
2. Brief Shut down in May: May 8- May 10, 1999
3. Low influent flow due to reinjection well fouling.

Servall Laundry
Site No. 1-52-077

Groundwater Remediation - Operations and Maintenance Costs to Date

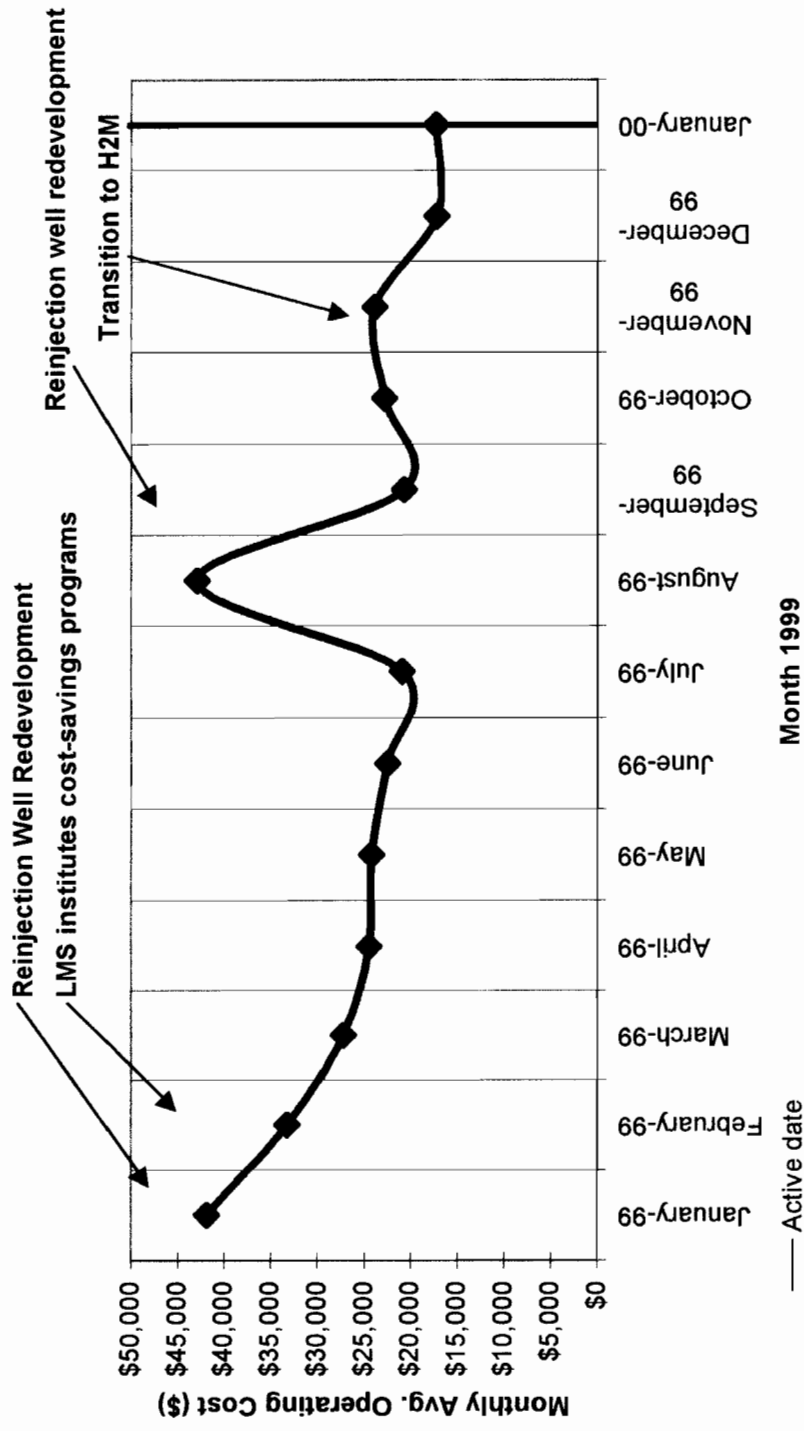


Figure 3 - Average Operating Cost Trends



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February 2, 2000

Robert J. DeGiorgio, P.E.
Lawler, Matusky & Skelly Engineers, LLP
One Blue Hill Plaza
Pearl River, NY 10965

Re: Servall Laundry QWETP
Bay Shore, New York
January 2000 Operations Report

Dear Mr. DeGiorgio:

As you are aware, Holzmacher, McLendon & Murrell, P.C. (H2M) is currently conducting the daily operation and maintenance duties for the above referenced site. A summary of activity with respect to the groundwater extraction and treatment plant for the month of January, 2000 is provided below:

Overview

Routine equipment maintenance was performed and daily process equipment readings were collected during the month. As indicated in our January 26, 2000 letter and pursuant to your January 19, 2000 letter, the gradual pumping of sulfuric acid into the process stream for depletion of on-site sulfuric acid bulk storage has been eliminated.

Event Schedule

The following timeline represents specific tasks completed during the January period.

- 1/3/00 Adjusted instantaneous trip setting for air compressor breaker. Breaker set to trip at 135 amps instantaneous peak. Adjusted air-compressor's upper limit set point to 175 psi from 170 psi. During high air demand (backwash cycle) air compressor now cycles on every 3 minutes 30 seconds for a 2 minute duration.

Inspected compressed air system's air lines and found multiple air leaks. Tightened all threaded connections in an effort to eliminate some of the leaks.

- 1/4/00 Sodium hypochlorite pump not functioning properly. Pump's ball valves stuck. Ball valves flushed with water and pump returned to service.

- 1/5/00 Diaphragm pump for tank 12B stopped working. Disassembled pump and found debris lodged in one of the ball valves and discharge line. Debris cleared and pump returned to service.

Sodium hypochlorite pump not functioning properly. Pump's ball valves stuck. Ball valves flushed with water and pump returned to service.
- 1/6/00 Started repairing compressed air system's airlines. Replaced pipe threading associated with supply airline for pump 12B. Eight inch section of copper supply airline for pump 12B found to contain multiple pinholes.
- 1/7/00 Faulty section of supply airline for pump 12B replaced.
- 1/11/00 Effluent filters removed, placed in acid wash solution (hydrochloric acid) and replaced with previously cleaned filters. Collected monthly compliance samples, packed them on ice and shipped them to Severn-Trent Laboratories for analysis. Samples sent via Federal Express, overnight delivery.
- 1/12/00 Adjusted sand filter backwash cycle interval to 18 hour from 24 hours. Master control panel error reading indicated high discharge pressure in filters. Investigative troubleshooting indicated high discharge filter pressure was related to clogged sand filters as a result of the frequency of the backwash cycling.
- 1/14/00 Performed filter press operation. Filter press operation ran twice as to fully empty all sludge from the settling tank. Two 55-gallon drums of solids removed from filter media following the filter press operation. Treatment system off-line during operation due to high air demand of filter press.
- 1/17/00 Last supply of sodium hypochlorite exhausted. Sodium hypochlorite on order from Tridon Chemical.
- 1/18/00 Received two 55-gallon drums of 12% to 15% sodium hypochlorite solution from Tridon Chemical. Three empty 55-gallon drums returned to Tridon Chemical for deposit credit. Effluent filters removed, placed in acid wash solution (hydrochloric acid) and replaced with filters which were soaking in acid wash.
- 1/19/00 Collected additional compliance samples. Correspondence from Severn-Trent Laboratories indicated that additional sample volume was needed for monthly

analysis. Samples packed on ice and shipped to Severn-Trent Laboratories for analysis. Samples sent via Federal Express, overnight delivery.

- 1/20/00 Increased stroke of sodium hypochlorite pump to 90 from 85. Pump speed remains set at 60.
- 1/21/00 Increased speed of sodium hydroxide pump to 40 from 35 to increase pH of effluent to between 6 and 9 units. Effluent pH testing indicated pH to be below 6.
- 1/24/00 Increased speed of sodium hydroxide pump to 45 from 40 to increase pH of effluent to between 6 and 9 units. Effluent pH testing indicated the pH has increased since the January 21, 2000 adjustment, however the pH is still below 6.
- 1/25/00 Multiple power fluctuations occurred resulting in the treatment system going off-line. The power fluctuations are attributed to a major snowstorm that hit the local area. Investigated inaccurate tank level readings for Sulfuric acid, hydrogen peroxide and sodium hydroxide tanks. Hydrogen peroxide tank level sensor believed to be faulty or possibly faulty wiring. The other tank level sensors appear to work, however they may require sensor cleaning and/or calibration. Further investigations are being performed.
- 1/26/00 Sulfuric acid usage discontinued and sodium hydroxide pump stroke reduced to 10 to compensate for elimination of acid.

Plant Performance

Between December 30, 1999 and January 31, 2000, the treatment plant discharged 4,154,420 gallons of treated water. The average flowrate of the UV/Oxidation system was 160.44 gallons per minute, during operating conditions. Operational data and daily chemistry records for the respective monitoring period have been included as an attachment to this report.

Adjustment of the air-compressor's set points and breaker instantaneous trip setting as well as elimination of major airline leaks has minimized plant shutdown. Plant shutdown still occurs and is believed to be associated with power fluctuations in the local power grid. Apparently high wind and/or storm events cause fluctuations in the power supply, resulting in tripping of facility breakers.



Mr. Robert DeGiorgio
February 2, 2000
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Waste Disposal

No waste was shipped off-site during the reporting period.

If you should have any questions or require additional information, please contact Philip Schade at (516) 756-8000, extension 1623.

Very truly yours,

HOLZMACHER, McLENDON & MURRELL, P.C.

A handwritten signature in black ink, appearing to be 'PS', written over a horizontal line.

Philip J. Schade, P.E.
Project Manager

A handwritten signature in black ink, appearing to be 'SEH', written over a horizontal line.

Scott E. Hamarich
Project Engineer

SEH/
enclosures

Daily Operation Check List
Servall Laundry Site

Page 1 of 2

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Monday	Tuesday
Date	1/24/00	1/25/00	1/26/00	1/27/00	1/28/00	1/31/00	2/1/00
Time	18:00	12:05	10:05	12:50	8:15	7:50	9:00
Extraction Well Level (feet)	58.0	63.1	55.4	52.3	53.4	54.0	53.7
Influent Flow Rate (gpm)	160.06	160.08	165.79	160.26	160.05	162.03	160.14
Influent Filter in Service (yes/no)	no	no	no	no	no	no	no
Inlet Pressure (psi)	20	20	20	20	20	20	20
Outlet Pressure (psi)	17	17	17	18	17	26	18
Cartridge Filter Flow Rate (gpm)	140.92	141.02	139.68	140.68	140.78	142.25	140.52
Equalization Tank							
Level (inches)	51.95	51.96	52.09	52.00	52.10	58.11	52.01
pH	3.64	3.17	2.63	6.53	6.71	6.81	6.9
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Acid Pump Settings: Speed / Stroke	20/35	20/35	OFF	OFF	OFF	OFF	OFF
UV/Oxidation Pump in Service (4A/4B)	4A	4A	4A	4A	4A	4A	4A
UV/Oxidation Flow Rate (gpm)	153.76	149.73	147.27	155.05	153.51	183.70	155.45
UV/Oxidation Unit							
Lamp # 1 (on/off)	on	on	on	on	on	on	on
KV	252	252	252	252	252	252	252
Amps	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Time	9403.17	9422.03	9427.83	9454.20	9473.61	9513.47	9539.07
Lamp # 2 (on/off)	off	off	off	off	off	off	off
KV	0	0	0	0	0	0	0
Amps	0	0	0	0	0	0	0
Time	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86
Lamp # 3 (on/off)	on	on	on	on	on	on	on
KV	258	258	258	258	258	258	258
Amps	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Time	7830.52	7849.39	7855.17	7881.54	7900.94	7940.80	7966.40
Peroxide Pump Settings: Speed / Stroke	50/50	50/50	50/50	50/50	50/50	50/50	50/50
Peroxide Residual Concentration (mg/l)	16	15	15	18	14	13	11
Totalizer Reading (gpm)	74286790	74457800	74503490	74741780	74916740	75274610	75506720

Daily Operation Check List
Servall Laundry Site

Page 2 of 2

Date	1/24/00	1/25/00	1/26/00	1/27/00	1/28/00	1/31/00	2/1/00
pH Adjust Tank							
Level (inches)	49.87	50.19	49.70	49.84	50.03	51.58	49.92
pH	6.31	6.21	6.49	6.00	6.00	5.97	5.99
Mixer (on/off)	ON	ON	ON	ON	ON	ON	ON
Caustic Pump Settings: Speed / Stroke	40/45	50/45	50/10	50/10	50/10	50/10	50/10
Polymer Feed Settings	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Solution Pump: Speed / Stroke							
Dilution Water Rate							
Polymeer Bucket Weight (lbs.)							
Sand Filter Feed Pump in Service (6A/6B)	6B	6B	6B	6B	6B	6B	6B
Sand Filters							
Filter # 1 inlet pressure (psi)	20	20	20	20	20	25	20
Filter # 1 outlet pressure (psi)	16	20	20	20	20	25	20
Filter # 2 inlet pressure (psi)	20	22	20	20	20	25	20
Filter # 2 outlet pressure (psi)	20	20	18	18	20	27	20
Filter # 3 inlet pressure (psi)	20	20	18	20	18	26	20
Filter # 3 outlet pressure (psi)	20	22	18	20	19	27	20
Filter # 4 inlet pressure (psi)	22	22	20	22	18	25	20
Filter # 4 outlet pressure (psi)	20	20	18	18	22	29	25
Effluent Flow Rate (gpm)	141.84	143.07	139.07	142.59	139.57	164.16	140.3
Effluent Filter in Service (yes/no)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inlet Pressure (psi)	17	17	17	16	17	20	20
Outlet Pressure (psi)	10	10	10	9	10	15	12
Reinjection Well Level (feet)	62.46	62.25	61.60	62.30	62.50	63.81	62.29
Chemical Storage Levels							
Caustic Level (NaOH)	0.0	0.0	9.9	9.9	0.0	0.0	0.00
Peroxide Level (H ₂ O ₂)	58.3	58.3	58.3	58.3	58.3	58.3	58.3
Acid Level (H ₂ SO ₄)	55.4	55.4	76.9	76.9	76.9	76.9	76.9
Air Compressor (psi)	130	130	160	150	140	150	150
Compressed Air Dryer (on/off)	ON	ON	ON	ON	ON	ON	ON
Chlorine Pump: Speed / Stroke	60/85	60/85	60/85	60/85	60/85	60/85	60/85
Chlorine Residual Concentration (mg/l)	1.6	1.6	0.8	0.7	0.2	0.1	0.2

Daily Operation Check List
Servall Laundry Site

Page 1 of 2

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Date	1/10/00	1/11/00	1/12/00	1/13/00	1/14/00	1/15/00	1/16/00	1/17/00	1/18/00	1/19/00	1/20/00	1/21/00
Time	17:10	7:50	7:10	7:05	15:00	8:35	7:45	7:45	8:35	7:10	16:00	7:15
Extraction Well Level (feet)	57.6	57.3	62.3	59.6	62.2	54.3	54.3	54.3	54.2	53.8	55.3	56.2
Influent Flow Rate (gpm)	160.90	160.13	159.97	159.98	159.90	160.04	160.04	160.04	159.95	160.18	160.12	160.02
Influent Filter in Service (yes/no)	N0	N0	N0	N0	N0	N0	N0	N0	N0	N0	N0	N0
Inlet Pressure (psi)	16	20	20	20	20	20	20	20	20	20	20	20
Outlet Pressure (psi)	8	16	16	16	16	16	16	16	17	17	17	17
Cartridge Filter Flow Rate (gpm)	141.94	141.16	140.77	140.70	140.75	140.88	140.76	140.95	140.81	140.93		
Equalization Tank												
Level (inches)	52.01	51.99	51.94	51.92	51.92	52.04	51.93	51.89	52.13	51.87		
pH	2.88	2.83	3.50	3.50	2.66	2.61	3.07	3.55	3.55	3.51		
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		
Acid Pump Settings: Speed / Stroke	20/35	20/35	20/35	20/35	20/35	20/35	20/35	20/35	20/35	20/35		
UV/Oxidation Pump in Service (4A/4B)	4B	4B	4A	4A	4A	4A	4A	4A	4A	4A		
UV/Oxidation Flow Rate (gpm)	153.27	154.98	153.26	153.64	156.77	152.32	152.08	149.80	154.41	148.24		
UV/Oxidation Unit												
Lamp # 1 (on/off)	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON		
KV	252	252	252	252	252	252	252	252	252	252		
Amps	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8		
Time	9:38:07	9:14:25	9:10:41	9:18:25	9:20:14	9:23:07	9:25:42	9:27:06	9:30:79	9:32:11		
Lamp # 2 (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF		
KV	0	0	0	0	0	0	0	0	0	0		
Amps	0	0	0	0	0	0	0	0	0	0		
Time	5:08:48	5:08:46	5:08:48	5:08:46	5:08:46	5:08:46	5:08:46	5:08:46	5:08:46	5:08:46		
Lamp # 3 (on/off)	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON		
KV	258	258	258	258	258	258	258	258	258	258		
Amps	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Time	7:56:46	7:57:16	7:57:18	7:57:18	7:57:18	7:57:18	7:57:18	7:57:18	7:57:18	7:57:18		
Peroxide Pump Settings: Speed / Stroke	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50	50/50		
Peroxide Residual Concentration (mg/l)	17	30	15	14	22	9	11	19	14	14		
Totalizer Reading (gpm)	71901590	71955990	72098470	72313090	72492580	72760210	72929000	73129060	73424600	73564670		

Date	1/10/00	1/11/00	1/12/00	1/13/00	1/14/00	1/17/00	1/18/00	1/19/00	1/20/00	1/21/00
pH Adjust Tank										
Level (inches)	53.89	61.63	49.88	50.01	50.18	59.42	50.26	50.12	51.33	50.12
pH	6.43	6.18	6.43	6.44	6.29	6.21	6.36	6.42	6.44	6.51
Mixer (on/off)	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Caustic Pump Settings: Speed / Stroke	35/45	35/45	35/45	35/45	35/45	35/45	35/45	35/45	35/45	40/45
Polymer Feed Settings	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Solution Pump: Speed / Stroke										
Dilution Water Rate										
Polymer Bucket Weight (lbs.)										
Sand Filter Feed Pump in Service (6A/6B)	CB	CB	CB	CB	CB	CB	CB	CB	CB	CB
Sand Filters										
Filter # 1 inlet pressure (psi)	34	36	28	28	28	32	20	18	24	20
Filter #1 outlet pressure (psi)	26	32	24	24	26	30	18	18	22	19
Filter # 2 inlet pressure (psi)	32	36	26	26	26	30	18	19	24	18
Filter #2 outlet pressure (psi)	26	32	24	24	24	30	17	18	22	16
Filter # 3 inlet pressure (psi)	32	36	26	24	25	30	18	19	22	18
Filter #3 outlet pressure (psi)	27	32	24	25	26	30	20	19	24	19
Filter # 4 inlet pressure (psi)	35	38	30	27	29	32	20	22	26	20
Filter #4 outlet pressure (psi)	26	32	24	26	26	30	18	20	23	18
Effluent Flow Rate (gpm)	144.79	138.12	167.28	136.67	139.88	145.97	143.00	140.52	162.49	142.63
Effluent Filter in Service (yes/no)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Inlet Pressure (psi)	20	22	18	20	22	24	12	14	18	16
Outlet Pressure (psi)	10	10	16	10	10	10	10	10	10	10
Reinjection Well Level (feet)	61.79	60.77	63.68	61.41	61.96	62.16	61.96	62.51	64.21	62.57
Chemical Storage Levels										
Caustic Level (NaOH)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Peroxide Level (H ₂ O ₂)	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3
Acid Level (H ₂ SO ₄)	56.9	56.2	56.2	52.2	56.0	55.9	55.9	55.7	55.6	55.5
Air Compressor (psi)	155	150	150	160	140	140	140	130	135	135
Compressed Air Dryer (on/off)	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Chlorine Pump: Speed / Stroke	70/90	70/90	70/90	70/90	60/100	OFF	50/100	65/95	60/90	60/85
Chlorine Residual Concentration (mg/l)	0.0	0.1	0.11	1.3	0.8	NA	0.1	2.4	1.6	0.3

Daily Operation Check List
Servall Laundry Site

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Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Date	12/27/99	12/28/99	12/29/99	12/30/99	1/1/00	1/2/00	1/3/00
Time	9:45	15:15	16:35	16:50	8:10	8:30	9:05
Extraction Well Level (feet)	54.1	54.8	54.1	54.9	55.5	57.1	58.6
Influent Flow Rate (gpm)	160.02	160.09	160.49	160.01	159.88	160.00	159.76
Influent Filter in Service (yes/no)	NO	NO	NO	NO	NO	NO	NO
Inlet Pressure (psi)	20	20	20	20	20	20	20
Outlet Pressure (psi)	15	15	15	15	15	18	16
Cartridge Filter Flow Rate (gpm)	140.20	140.09	140.23	140.28	140.07	140.10	141.52
Equalization Tank							
Level (inches)	52.05	51.84	52.11	51.97	52.08	51.98	51.94
pH	6.69	6.86	5.60	2.98	2.83	3.33	3.40
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Acid Pump Settings: Speed / Stroke	OFF	OFF	OFF	20/35	20/35	20/35	20/35
UV/Oxidation Pump in Service (4A/4B)	4B	4A	4A	4A	4A	4A	4B
UV/Oxidation Flow Rate (gpm)	151.36	149.56	156.04	152.48	148.75	152.58	154.14
UV/Oxidation Unit							
Lamp # 1 (on/off)	ON	ON	ON	ON	ON	ON	ON
KV	252	252	252	252	252	252	252
Amps	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Time	9028.23	9043.52	9047.20	9050.77	9071.42	9116.49	9135.85
Lamp # 2 (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF
KV	0	0	0	0	0	0	0
Amps	0	0	0	0	0	0	0
Time	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86	5984.86
Lamp # 3 (on/off)	ON	ON	ON	ON	ON	ON	ON
KV	258	258	258	258	258	258	258
Amps	7.0	6.8	7.0	7.0	6.8	7.0	7.0
Time	7455.64	7470.93	7474.60	7478.17	7498.82	7543.89	7563.24
Peroxide Pump Settings: Speed / Stroke	50/50	50/50	50/50	50/50	50/50	50/50	50/50
Peroxide Residual Concentration (mg/l)	15	18	17	12	14	16	16
Totalizer Reading (gpm)	70920720	71056960	71088470	71120190	71305160	71710130	71870500

Date	12/27/99	12/28/99	12/29/99	12/30/99	1/3/00	1/4/00	1/5/00	1/6/00	1/7/00
pH Adjust Tank									
Level (inches)	50.12	52.42	55.18	50.03	50.01	50.17	50.19	52.54	50.08
pH	5.97	6.85	6.91	6.49	6.50	6.57	6.55	6.57	6.17
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
Caucic Pump Settings: Speed / Stroke	40/50	40/50	40/50	20/40	20/40	20/40	20/40	20/40	20/45
Polmer Feed Settings	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Solution Pump: Speed / Stroke									
Dilution Water Rate									
Polymeer Bucket Weight (lbs.)									
Sand Filter Feed Pump in Service (6A/6B)	6B	6B	6B	6B	6B	6B	6B	6B	6A
Sand Filters									
Filter # 1 inlet pressure (psi)	26	34	35	24	30	32	32	30	30
Filter #1 outlet pressure (psi)	24	30	32	22	30	31	30	28	24
Filter # 2 inlet pressure (psi)	25	32	34	24	32	32	31	28	28
Filter #2 outlet pressure (psi)	23	30	31	21	30	30	30	28	24
Filter # 3 inlet pressure (psi)	24	32	33	22	30	32	30	28	28
Filter #3 outlet pressure (psi)	24	31	33	22	30	31	32	29	24
Filter # 4 inlet pressure (psi)	28	34	35	24	32	34	34	30	31
Filter #4 outlet pressure (psi)	22	30	32	22	30	30	32	28	24
Effluent Flow Rate (gpm)	140.70	140.36	147.26	141.18	141.10	139.35	143.21	152.78	138.38
Effluent Filter in Service (yes/no)	YES	YES	YES	YES	YES	YES	YES	YES	YES
Inlet Pressure (psi)	18	24	27	16	24	26	26	22	20
Outlet Pressure (psi)	10	10	10	10	10	10	10	10	10
Reinjection Well Level (feet)	61.65	61.86	61.87	61.59	61.45	61.46	61.76	62.35	61.60
Chemical Storage Levels									
Caustic Level (NaOH)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Peroxide Level (H ₂ O ₂)	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3
Acid Level (H ₂ SO ₄)	56.7	56.8	56.6	56.7	57.1	56.7	56.4	56.5	56.5
Air Compressor (psi)	150	150	160	165	165	140	145	160	165
Compressed Air Dryer (on/off)	ON	ON	ON	ON	ON	ON	ON	ON	ON
Chlorine Pump: Speed / Stroke	80/80	80/80	80/80	70/90	70/90	70/90	70/90	70/90	70/90
Chlorine Residual Concentration (mg/l)	0.2	0.3	0.0	1.2	0.9	0.0	0.5	0.1	0.1

Date	12/28/99	12/29/99	12/30/99	1/3/00	1/4/00	1/5/00	1/6/00	1/7/00	1/10/00	1/11/00	1/12/00	1/13/00
Time	15:40	17:05	17:15	17:50	8:30	15:30	8:50	9:30	17:40	8:20	7:25	7:40
Influent												
Flow	160.09	160.49	160.01	159.88	160.00	160.08	160.06	159.76	160.90	160.13	159.97	159.98
pH	6.16	5.69	5.63	5.65	5.44	5.64	5.59	5.73	5.65	5.80	5.60	5.65
Iron	0.7	0.8	0.8	0.8	0.6	0.5	0.4	1.1	0.9	0.9	0.9	0.7
UVOX												
Peroxide Residual	18 m%	17 m%	12 m%	14 m%	5 m%	16 m%	19 m%	16 m%	17 m%	30 m%	15 m%	14 m%
pH	5.98	5.58	3.62	3.79	3.46	3.42	3.43	5.66	3.42	5.66	3.41	3.40
Effluent												
pH	6.05	6.65	4.52	6.60	4.65	4.63	3.46	5.07	5.00	5.77	7.61	4.20
Iron	0.0	0.2	0.0	0.0	0.4	0.0	0.3	0.0	0.0	0.0	0.1	0.0
Chlorine	0.3	0.0	1.2	0.9	0.0	0.5	0.1	0.1	0.0	0.1	0.1	1.3

Date	1/14/00	1/17/00	1/18/00	1/19/00	1/20/00	1/21/00	1/24/00	1/25/00	1/26/00	1/27/00	1/28/00	1/31/00
Time	15:30	8:05	8:55	7:40	16:07	7:35	16:00	13:00	12:30	13:30	9:00	8:30
Influent												
Flow	159.90	160.04	159.95	160.18	160.12	160.02	160.06	160.08	165.79	160.26	160.45	162.03
pH	5.82	5.70	5.72	5.70	5.62	5.63	6.09	5.82	5.70	5.53	5.56	5.64
Iron	0.6	0.6	0.5	0.7	0.7	0.4	0.7	0.5	0.3	0.3	0.3	0.5
UVOX												
Peroxide Residual	22 m%	9 m%	11 m%	19 m%	14 m%	14 m%	16 m%	15 m%	15 m%	18 m%	14 m%	13 m%
pH	3.36	4.23	3.66	3.62	3.49	3.49	3.47	3.47	5.70	5.64	6.19	5.62
Effluent												
pH	5.02	4.36	4.74	4.49	4.34	3.95	4.90	5.39	3.76	6.00	5.98	5.98
Iron	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Chlorine	0.8	N/A	0.1	2.4	1.6	0.3	1.6	1.6	0.8	0.7	0.2	0.1