

**Lawler,
Matusky
& Skelly
Engineers LLP**

Environmental Science & Engineering Consultants

May 8, 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 – MARCH 2000**

Dear Mr. Hoffman:

Attached please find the Monthly Report for March 2000, the fifth 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 3,744,760 gallons of water was processed. The influent VOC concentration was 156.1 ppb; the plant removed approximately 93.0% of the influent VOCs. Effluent concentrations of total VOCs, manganese and iron were within discharge limitations. Influent compliance data has revealed that MTBE is present at concentrations of 8.8 ppb. The presence of MTBE, a gasoline additive, is indicative of a gasoline spill and not typically found at a site impacted by dry cleaner operations. This may indicate that groundwater contained within the extraction system's radius of influence is impacted by a nearby gasoline spill. Effluent MTBE concentration in March 2000 was 0.8 ppb. Currently, there is no guidance value for MTBE concentrations in groundwater. Historically, a guidance concentration of 50 ppb was used but this is under re-evaluation. Lastly, the air compressor circuit breaker tripped frequently in the month of March. LMS recommends that the design be reviewed to ensure that it is adequate and to develop a plan to prevent frequent shutdowns due to the air compressor circuit breaker tripping. Please respond accordingly.

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

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

Monthly Operations Report

March-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
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 (to date)	January-00	February-00	March-00	Total 2000
Flow Rate	gpm	105	160.44	160.39	160.2	-
Gallons processed	gallons	3,715,002	4,154,420	5,390,400	3,744,760	13,289,580
Percent of Time Operating	%	57%	62%	86%	56%	-
Influent VOC concentration	ug/L	117	67.4	100.3	156.1	-
Effluent VOC concentration	ug/L	2.22	1.5	2	11.1	-
VOC removal efficiency	%	97.3%	97.8%	98.0%	92.9%	-
Pounds of VOCs Treated	lb	4.4	2.28	4.42	4.53	11
Influent Total Iron	ug/L	529	1270	308	689	-
Influent Total Manganese	ug/L	377	593	542	517	-
Effluent Total Iron	ug/L	76	100	32	32	-
Effluent Total Manganese	ug/L	566	583	533	492	-
Total Iron removal efficiency	%	77.2%	92.1%	89.6%	95.4%	-
Total Manganese removal efficiency	%	1.3%	1.7%	1.7%	4.8%	-
Sodium hypochlorite (12%)	lb	687	500	500	500	1,500
Polymer	lb	35	0	0	0	0
Hydrogen peroxide (50%)	lb	3381	4538	4538	4538	13,615
Caustic (50%)	lb	1277	5534	5534	5534	16,601
Hydrochloric Acid	lb	92	0	0	0	0
Cartridge Filters	ea	1	3	0	0	3
Spare Parts or other	at cost	\$620	\$196	\$0	\$0	\$196
Consumables cost	\$	\$3,100	\$4,162	\$3,516	\$3,516	\$11,194
Sludge generated (20% dewatered)	gal	25	25	25	25	75
Sludge disposed of	gal	26	0	0	0	0
Sludge disposal cost	\$	\$70.58	\$0.00	\$0.00	\$0.00	\$0.00
Gas (estimated)	therms	876	800	800	800	2,400
Electricity (estimated)	kw hr	41115	37,800	37,800	37,800	113,400
Utilities cost	\$	\$4,007	\$3,682	\$3,682	\$3,682	\$11,046
Compliance Sampling	at cost	\$990.37	\$655.50	\$650.00	\$650.00	\$1,956
Redevelopment	at cost	\$2,867	\$0.00	\$0.00	\$0.00	\$0
Operator	Month	\$10,172	\$5,790	\$6,500	\$7,000	\$19,290
Management & Engineering	at cost	\$3,403	\$931	\$1,239.99	\$1,200.00	\$3,371
Services cost	\$	\$17,432	\$7,376	\$8,390	\$8,850	\$24,616
Operating Cost (Estimated)	\$	\$24,609	\$15,221	\$15,588	\$16,048	\$46,857

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	0.5	U				
Vinyl Chloride	2	ug/L	0.5	U	0.5	U				
1,1-Dichloroethene	5	ug/L	0.1	J	0.5	U				
Trichloroethene	5	ug/L	1	1	1					
Tetrachloroethene	5	ug/L	54	E	87	140	E			
1,1-Dichloroethane	5	ug/L	0.2	J	0.5	U				
Toluene	5	ug/L	0.5	U	0.5	0.5	U			
cis-1,2-Dichloroethene	5	ug/L	0.3	J	0.6	0.8				
trans-1,2-Dichloroethene	5	ug/L	0.5	U	0.5	U				
Methylene Chloride	N/A	ug/L	0.5	U	1.6	JD	0.5	U		
1,1,1-Trichloroethane	N/A	ug/L	0.5			0.5	U			
Chloroform	N/A	ug/L	0.2	J	0.2	0.5	U			
Bromodichloromethane	N/A	ug/L	0.5	U		0.5	U			
Trichlorofluoromethane	N/A	ug/L	0.5	U		0.5	U			
Methyl tert-Butyl Ether	N/A	ug/L	7.6	9.4	8.8					
Total VOCs	N/A	ug/L	67.4	100.3	156.1					
Iron (total)	600 ⁴	ug/L	1270	308	689					
Manganese (total)	600 ⁴	ug/L	593	542	517					
Alkalinity	N/A	mg/L	27	29	16					
Total Suspended Solids	N/A	mg/L	10	U	10	U				
Total Solids	N/A	mg/L	159	162	145					
Effluent										
Constituents	Discharge Criteria	units	January	February	March	April	May	June		
Chlorobenzene	5	ug/L		U	0.5	U				
Vinyl Chloride	2	ug/L		U	0.5	U				
1,1-Dichloroethene	5	ug/L		U	0.5	U				
Trichloroethene	5	ug/L		U	0.5	U				
Tetrachloroethene	5	ug/L	0.7	1.4	4.2					
1,1-Dichloroethane	5	ug/L		U	0.5	U				
Toluene	5	ug/L		U	0.2	JB	0.5	U		
cis-1,2-Dichloroethene	5	ug/L		U	0.5	U				
trans-1,2-Dichloroethene	5	ug/L		U	0.5	U				
Methylene Chloride	N/A	ug/L		U	0.5	U				
1,1,1-Trichloroethane	N/A	ug/L	0.3	J	0.5	U				
Chloroform	N/A	ug/L	0.3	J	0.7	B				
Bromodichloromethane	N/A	ug/L	0.2	J	0.4	J				
Methyl tert-Butyl Ether	N/A	ug/L		U	0.4	0.8				
Total VOCs	N/A	ug/L	1.5	2	11.1					
Iron (total)	600 ⁴	ug/L	100	32	32	U				
Manganese (total)	600 ⁴	ug/L	583	533	492					
Alkalinity	N/A	mg/L	2	U	38	41				
Total Suspended Solids	N/A	mg/L	10	U	10	U	10	U		
Total Solids	N/A	mg/L	170		171	163				

Notes:

- Analytical data analyzed by STL Laboratories.
- (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) pesticides/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

2000 Compliance Sampling

Influent										
Constituents	Discharge Criteria	units	July	August	September	October	November	December		
Chlorobenzene	5	ug/L								
Vinyl Chloride	2	ug/L								
1,1-Dichloroethene	5	ug/L								
Trichloroethene	5	ug/L								
Tetrachloroethene	5	ug/L								
1,1-Dichloroethane	5	ug/L								
Toluene	5	ug/L								
cis-1,2-Dichloroethene	5	ug/L								
trans-1,2-Dichloroethene	5	ug/L								
Methylene Chloride	N/A	ug/L								
1,1,1-Trichloroethane	N/A	ug/L								
Chloroform	N/A	ug/L								
Bromodichloromethane	N/A	ug/L								
Trichlorofluoromethane	N/A	ug/L								
Methyl tert-Butyl Ether	N/A	ug/L								
Total VOCs	N/A	ug/L								
Iron (total)	600 ⁴	ug/L								
Manganese (total)	600 ⁴	ug/L								
Alkalinity	N/A	mg/L								
Total Suspended Solids	N/A	mg/L								
Total Solids	N/A	mg/L								
Effluent										
Constituents	Discharge Criteria	units	July	August	September	October	November	December		
Chlorobenzene	5	ug/L								
Vinyl Chloride	2	ug/L								
1,1-Dichloroethene	5	ug/L								
Trichloroethene	5	ug/L								
Tetrachloroethene	5	ug/L								
1,1-Dichloroethane	5	ug/L								
Toluene	5	ug/L								
cis-1,2-Dichloroethene	5	ug/L								
trans-1,2-Dichloroethene	5	ug/L								
Methylene Chloride	N/A	ug/L								
1,1,1-Trichloroethane	N/A	ug/L								
Chloroform	N/A	ug/L								
Bromodichloromethane	N/A	ug/L								
Methyl tert-Butyl Ether	N/A	ug/L								
Total VOCs	N/A	ug/L								
Iron (total)	600 ⁴	ug/L								
Manganese (total)	600 ⁴	ug/L								
Alkalinity	N/A	mg/L								
Total Suspended Solids	N/A	mg/L								
Total Solids	N/A	mg/L								

Notes:

1. Analytical data analyzed by STL Laboratories.
2. (U) Undetected.
3. (J) Estimate value. Result is below sample practical quantification instrument detection limit.
4. The combined effluent concentration of Iron and Manganese.
5. N/A - No limit established for this site.
6. (E) Estimate value.
7. N-A - Not Analyzed
8. "-" indicates not performed.
9. Bold values exceed discharge limits.
10. (P) pesticide/aroclor target analyte. Greater than 25% di

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

Graphical Data Trends

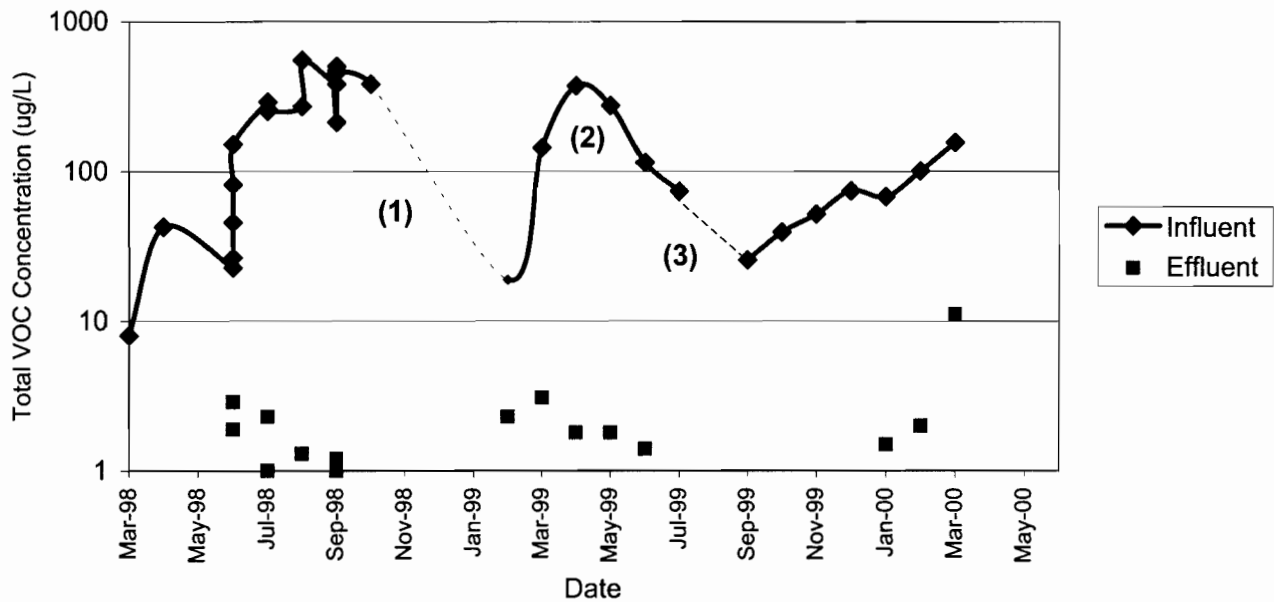


Figure 1 - Total Volatile Organic Compound (VOC) Influent and Effluent Trends

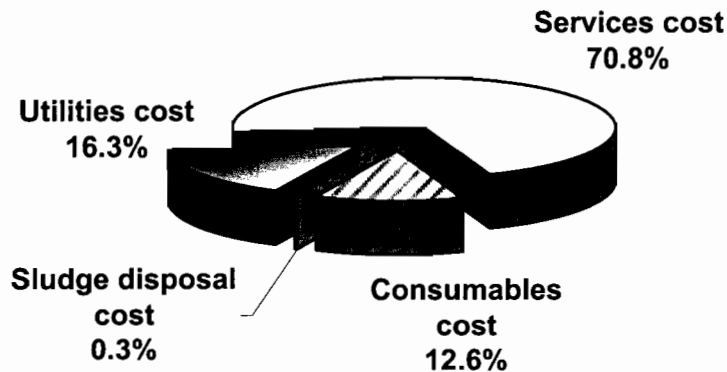


Figure 2 - Monthly Average Operating Cost Breakdown - to date is \$24,609
Avg. Monthly operating costs in the Year 2000 is \$15,619

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.

Groundwater Remediation - Operations and Maintenance Costs to Date

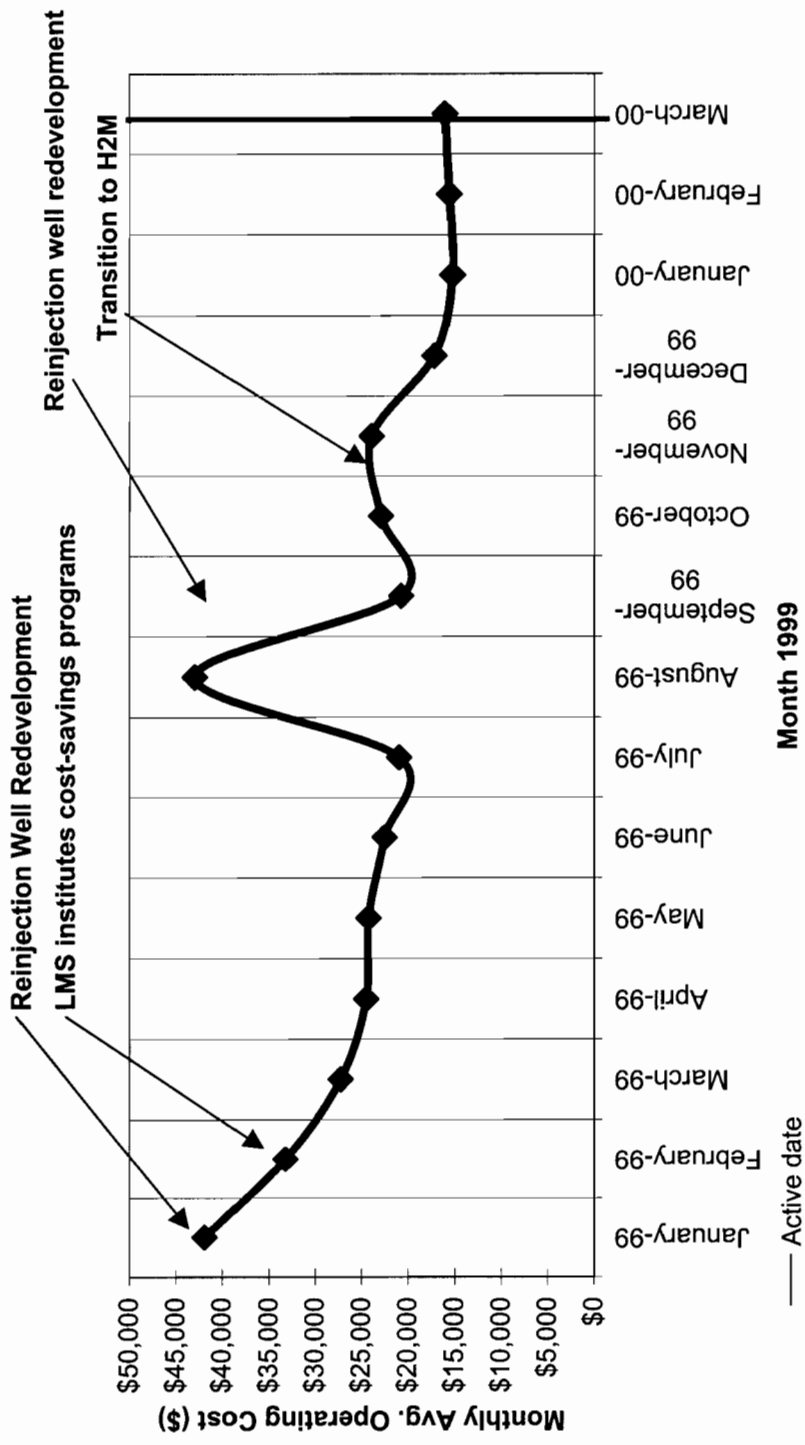


Figure 3 - Average Operating Cost Trends (Estimated)

Servall Laundry Site
Site No. 1-52-077
Groundwater Remediation

Summary Notes and Action Items

Month	Notes	Action	Resolutions
January	None		
February	MTBE detected, indicative of a gasoline spill unrelated to Servall site		
March	Increase in PCE concentration. Air compressor circuit trip was often	Effluent concentrations below effluent limit.	Recommend the air compressor circuit is re-designed to prevent frequent faults. NYSDEC to respond.
April			
May			
June			
July			
August			
September			
October			
November			
December			



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May 2, 2000

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

Re: Servall Laundry QWETP
Bay Shore, New York
March 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 March 2000 is provided below.

Overview

Routine equipment maintenance was performed and daily process equipment readings were collected during the month.

Event Schedule

The following timeline represents specific tasks completed during the month of February.

- 3/1/00 Installed clean filters in the effluent filter containers.
- 3/6/00 System went off-line. The air compressor circuit breaker was reset to correct.
- 3/8/00 The monthly water compliance samples were collected, packed in ice, and shipped to Severn-Trent Laboratories via Federal Express, overnight delivery.
- 3/10/00 System went off-line. The air compressor circuit breaker was reset to correct.
- 3/13/00 System went off-line. The air compressor circuit breaker and the sand filter circuit breaker were reset to correct.

- 3/14/00 Installed clean filters in the effluent filter containers.
- 3/15/00 System went off-line. The air compressor circuit breaker was reset to correct.
- 3/17/00 System went off-line. The air compressor circuit breaker was reset to correct.
- 3/22/00 System went off-line. The air compressor circuit breaker and the sand filter pump circuit breaker were reset to correct.

Installed clean filters in the effluent filter containers.

- 3/23/00 Switched sand filter pump 6B off and turned sand filter pump 6A on.

System went off-line. The air compressor circuit breaker was reset to correct.

- 3/24/00 Changed the caustic pump setting from 50/45 to 50/35.

Switched sand filter pump 6A off and turned sand filter pump 6B on.

- 3/27/00 System went off-line. The air compressor circuit breaker was reset to correct.

- 3/28/00 Switched sand filter pump 6B off and turned sand filter pump 6A on.

Installed clean filters in the effluent filter tanks.

Available treatment chemical volumes as of the end of March, 2000 are approximated as follows:

Tank	Level	Volume
Acid	54 in.	2644 gal
Caustic	8 in.	400 gal
Peroxide	50 in.	2472 gal

Plant Performance

Between February 29, 2000 and March 31, 2000, the treatment plant discharged 3,744,760 gallons of treated water. The average flowrate of the UV/Oxidation system was 160.20 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.

The air compressor circuit breaker tripped often for this reporting period. As the filters from the effluent filter tanks were removed, it was observed that these filters were more heavily impacted than in previous months. In addition, the effluent filters for this reporting period needed to be replaced more often, as well as to be cleaned for a longer duration, than in previous months. The cause of this change in loading was not directly apparent and will be investigated during April.

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 (631) 756-8000, extension 1623.

Very truly yours,

HOLZMACHER, McLENDON, & MURRELL, P.C.



Philip J. Schade, P.E.
Project Manager



David Nadler
Environmental Scientist

DWN/

enclosures

cc: Gary J. Miller, P.E./H2M

Daily Operation Check List

Servall Laundry Site

Page 1 of 2

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Tuesday	Wednesday	Thursday	Friday	Monday
Date	2/21/00	2/22/00	2/23/00	2/24/00	2/25/00	2/26/00	2/27/00	2/28/00	2/29/00	3/1/00
Time	9:00	9:40	9:30	16:00	14:25	11:30	9:20	8:40	9:20	8:55
Extraction Well Level (feet)	63.2	61.9	63.0	54.8	54.7	55.4	55.5	55.8	56.1	55.7
Influent Flow Rate (gpm)	161.81	159.92	161.21	161.03	159.92	159.74	158.39	159.72	158.22	159.20
Influent Filter in Service (yes/no)	no	no	no	no	no	no	no	no	no	no
Inlet Pressure (psi)	20	20	20	20	20	20	20	20	20	20
Outlet Pressure (psi)	18	20	18	16	18	26	20	20	20	20
Cartridge Filter Flow Rate (gpm)	140.75	140.94	141.27	142.00	141.02	141.11	140.81	141.23	142.80	142.11
Equalization Tank										
Level (inches)	52.01	52.03	51.86	52.63	51.99	51.97	52.03	51.08	52.61	51.92
pH	7.29	7.37	7.41	7.40	7.38	7.41	7.40	7.39	7.40	7.38
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Acid Pump Settings: Speed / Stroke	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
UV/Oxidation Pump in Service (4A/4B)	4A	4A	4A	4A	4A	4A	4A	4A	4A	4A
UV/Oxidation Flow Rate (gpm)	153.10	151.37	152.77	151.23	149.98	151.62	152.11	151.90	150.36	151.66
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	9919.13	9942.90	9967.08	9997.14	10019.52	10111.66	10133.98	10156.11	10182.74	10243.01
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	5984.86	5984.86	5984.86	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	ON	ON	ON
KV	258	258	258	258	258	258	258	258	258	258
Amps	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Time	8346.45	8370.21	8394.40	8424.47	8446.84	8538.97	8561.29	8584.29	8607.55	8670.53
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)	11	10	11	12	14	12	11	12	11	11
Totalizer Reading (gpm)	7830190	79144350	79363340	796347100	798359720	800650100	80285300	81053100	81301190	8194200

Daily Operation Check List
Servall Laundry Site

Page 2 of 2

Date	2/21/00	2/22/00	2/23/00	2/24/00	2/25/00	2/26/00	2/27/00	2/28/00	2/29/00	3/1/00	3/2/00	3/3/00	3/6/00
pH Adjust Tank													
Level (inches)	51.00	49.94	50.88	51.02	49.98	49.94	50.51	50.49	50.13	51.31			
pH	6.86	6.84	6.88	6.81	6.81	6.80	6.79	6.68	6.73	6.72			
Mixer (on/off)	on	on	on	on	on	on	on	on	on	on			
Caustic Pump Settings: Speed / Stroke	50/35	50/35	50/45	50/45	50/45	50/45	50/45	50/45	50/45	50/45			
Polymer Feed Settings	OFF	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	6B	6B			
Sand Filters													
Filter # 1 inlet pressure (psi)	20	18	20	20	20	20	20	20	20	20	20	20	20
Filter #1 outlet pressure (psi)	18	20	18	18	20	22	20	20	22	20	22	20	20
Filter # 2 inlet pressure (psi)	18	18	20	18	18	18	20	20	20	20	20	20	22
Filter #2 outlet pressure (psi)	16	18	18	18	20	20	22	20	20	20	22	20	22
Filter # 3 inlet pressure (psi)	18	20	18	20	20	20	20	22	20	20	22	20	22
Filter #3 outlet pressure (psi)	18	20	18	20	18	20	22	20	22	22	22	20	22
Filter # 4 inlet pressure (psi)	20	20	20	18	18	20	20	20	20	20	20	20	20
Filter #4 outlet pressure (psi)	16	22	20	20	20	22	20	20	22	20	22	18	18
Effluent Flow Rate (gpm)	141.19	135.76	140.22	140.88	141.76	138.61	140.07	141.08	141.38	140.55			
Effluent Filter in Service (yes/no)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
Inlet Pressure (psi)	18	16	18	16	16	16	16	16	16	16			
Outlet Pressure (psi)	10	9	10	10	10	10	10	10	10	10			
Reinjection Well Level (feet)	61.08	63.32	62.91	61.81	63.97	63.82	62.73	61.61	60.88	61.24			
Chemical Storage Levels													
Caustic Level (NaOH)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
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)	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9			
Air Compressor (psi)	160	140	150	150	140	150	150	150	150	150			
Compressed Air Dryer (on/off)	on	on	on	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	60/85	60/85	60/85			
Chlorine Residual Concentration (mg/l)	0.2	0.1	0.2	0.2	0.2	0.4	0.3	0.2	0.2	0.2			

Daily Operation Check List
Servall Laundry Site

Page 1 of 2

Tuesday

Day	Tuesday	Wednesday	Thursday	Friday	Monday	Tuesday	Wednesday	Thursday	Friday	Monday
Date	3/7/00	3/8/00	3/9/00	3/10/00	3/13/00	3/14/00	3/15/00	3/16/00	3/17/00	3/20/00
Time	9:05	8:55	9:00	8:50	8:40	9:55	8:30	9:00	9:05	8:45
Extraction Well Level (feet)	61.83	61.44	55.3	54.1	55.3	54.2	52.73	51.38	52.29	59.1
Influent Flow Rate (gpm)	156.72	156.12	155.87	157.21	156.39	155.22	154.23	156.20	155.61	153.20
Influent Filter in Service (yes/no)	no	no	no	no	no	no	no	no	no	no
Inlet Pressure (psi)	20	20	20	20	20	20	20	20	20	20
Outlet Pressure (psi)	20	20	18	16	16	16	18	16	16	18
Cartridge Filter Flow Rate (gpm)	142.11	143.62	142.12	141.38	142.66	143.70	142.31	143.61	144.23	143.72
Equalization Tank										
Level (inches)	52.10	51.86	51.60	52.08	51.11	52.20	51.63	52.80	51.18	52.37
pH	7.26	7.27	7.27	7.25	7.28	7.26	7.29	7.28	7.28	7.30
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Acid Pump Settings: Speed / Stroke	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
UV/Oxidation Pump in Service (4A/4B)	4A	4A	4A	4A	4A	4A	4A	4A	4A	4A
UV/Oxidation Flow Rate (gpm)	154.26	154.00	159.61	158.21	157.29	156.38	155.27	154.31	155.22	154.63
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	10267.48	10292.33	10318.56	10343.60	10377.71	10395.21	10420.13	10444.66	10459.03	10476.73
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	5984.86	5984.86	5984.86	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	on	on	on
KV	258	258	258	258	258	258	258	258	258	258
Amps	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Time	8694.38	8719.64	8745.81	8770.12	8803.62	8824.01	8849.72	8873.81	8896.22	8904.03
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)	13	12	12	13	12	13	12	12	11	11
Totalizer Reading (gpm)	82118630	82322990	82527340	82752910	83059110	83260870	83462570	83664270	83865970	83951310



H2M GROUP

Daily Operation Check List Servall Laundry Site

Page 2 of 2

Date	3/7/00	3/8/00	3/9/00	3/10/00	3/13/00	3/14/00	3/15/00	3/16/00	3/17/00	3/20/00
pH Adjust Tank										
Level (inches)	58.73	52.46	52.92	52.88	51.93	52.08	51.86	52.61	52.45	51.83
pH	6.74	6.75	6.68	6.69	6.72	6.74	6.70	6.68	6.67	6.65
Mixer (on/off)	on	on	on	on	on	on	on	on	on	on
Caustic Pump Settings: Speed / Stroke	50/45	50/45	50/45	50/45	50/45	50/45	50/45	50/45	50/45	50/45
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)	6B	6B	6B	6B	6B	6B	6B	6B	6B	6B
Sand Filters										
Filter # 1 inlet pressure (psi)	20	20	20	20	20	20	20	20	20	20
Filter # 1 outlet pressure (psi)	20	20	22	22	20	22	20	22	22	22
Filter # 2 inlet pressure (psi)	22	20	22	22	22	20	22	20	20	20
Filter # 2 outlet pressure (psi)	20	18	20	22	22	22	20	22	20	20
Filter # 3 inlet pressure (psi)	20	20	20	20	20	20	20	20	22	20
Filter # 3 outlet pressure (psi)	22	18	20	20	22	20	20	20	22	20
Filter # 4 inlet pressure (psi)	20	22	20	20	20	20	20	20	20	20
Filter # 4 outlet pressure (psi)	18	20	20	20	18	20	22	18	20	22
Effluent Flow Rate (gpm)	142.36	143.41	141.38	142.37	141.36	143.27	144.22	145.66	146.11	145.41
Effluent Filter in Service (yes/no)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Inlet Pressure (psi)	16	16	16	16	16	18	18	18	18	18
Outlet Pressure (psi)	16	12	10	10	10	10	10	10	10	10
Reinjection Well Level (feet)	62.07	61.83	61.47	62.33	61.42	61.56	62.81	61.87	62.30	61.90
Chemical Storage Levels										
Caustic Level (NaOH)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Peroxide Level (H ₂ O ₂)	76.9	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3	58.3
Acid Level (H ₂ SO ₄)	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9
Air Compressor (psi)	150	160	150	150	140	150	140	150	160	160
Compressed Air Dryer (on/off)	on	on	on	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	60/85	60/85	60/85
Chlorine Residual Concentration (mg/l)	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1

Daily Operation Check List
Servall Laundry Site

Page 1 of 2

Day	Tuesday	Wednesday	Thursday	Friday	Monday	Tuesday	Wednesday	Thursday	Friday	Monday
Date	3/21/00	3/22/00	3/23/00	3/24/00	3/27/00	3/28/00	3/29/00	3/30/00	3/31/00	4/3/00
Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Extraction Well Level (feet)	56.1	56.2	58.9	59.9	57.2	66.3	59.5	57.7	58.3	60.2
Influent Flow Rate (gpm)	157.29	158.32	105.30	160.17	164.32	159.28	161.20	165.38	161.24	167.73
Influent Filter in Service (yes/no)	no	no	no	no	no	no	no	no	no	no
Inlet Pressure (psi)	20	20	15	20	20	20	20	20	20	20
Outlet Pressure (psi)	18	18	15	15	16	16	16	18	16	16
Cartridge Filter Flow Rate (gpm)	146.61	148.08	145.34	144.38	145.88	144.19	144.37	145.72	144.39	144.70
Equalization Tank										
Level (inches)	51.89	52.03	53.12	52.72	53.27	52.33	52.86	51.87	52.66	50.99
pH	7.44	7.46	7.89	7.88	7.79	7.81	7.88	7.85	7.79	7.69
Mixer (on/off)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Acid Pump Settings: Speed / Stroke	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
UV/Oxidation Pump in Service (4A/4B)	4A	4A	4A	4B	4B	4B	4B	4B	4B	4B
UV/Oxidation Flow Rate (gpm)	155.81	156.45	177.58	168.37	171.23	173.41	172.39	171.61	172.53	172.19
UV/Oxidation Unit										
Lamp # 1 (on/off)	on	on	on	on	on	on	on	on	on	on
KV	258.25	258.52	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	10:40:27	10:40:40	10:50:56	10:51:05	10:52:22	10:53:02	10:53:04	10:54:17	10:55:33	10:58:33
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	5:08:18	5:08:48	5:08:48	5:08:48	5:08:48	5:08:48	5:08:48	5:08:48	5:08:48	5:08:48
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	7.0	7.0	7.0	7.0	7.0	7.8	7.8	7.8	7.8	7.8
Time	8:20:27	8:23:67	8:24:85	8:27:76	8:31:41	8:36:01	8:40:12	8:44:30	8:48:64	8:52:44
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)	14	13	16	15	14	15	14	13	14	15
Totalizer Reading (gpm)	84106100	84217410	84227502	84250450	84250900	84261100	8426430	8440000	8440970	8441870

[illegible]

Servall Laundry Process Control Samples

Date	2/17/06	2/18/06	2/21/06	2/22/06	2/23/06	2/24/06	2/25/06	2/29/06	3/1/06	3/2/06	3/3/06	3/6/06
Time	9:10	9:25	9:30	9:50	9:45	16:25	14:40	11:45	9:50	9:55	9:50	9:30
Influent												
Flow	161.22	160.72	161.81	159.92	161.21	161.03	159.92	159.74	158.39	159.72	158.22	159.20
pH	5.68	5.65	5.67	5.50	5.63	5.71	5.80	5.44	5.61	5.63	5.60	5.64
Iron	0.4	0.4	0.4	0.7	0.6	0.5	0.4	0.5	0.4	0.4	0.4	0.4
UVOX												
Peroxide Residual	11 ^{m3/g}	12 ^{m3/g}	11 ^{m3/g}	10 ^{m3/g}	11 ^{m3/g}	12 ^{m3/g}	14 ^{m3/g}	12 ^{m3/g}	11	12	11	11
pH	6.01	6.16	6.20	5.72	6.01	5.82	5.68	5.45	5.62	5.61	5.68	5.66
Effluent												
pH	6.23	6.27	6.28	6.13	6.17	6.18	6.80	6.26	6.31	6.42	6.29	6.31
Iron	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
Chlorine	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.4	0.3	0.2	0.2	0.2

Date	3/7/06	3/8/06	3/9/06	3/10/06	3/13/06	3/14/06	3/15/06	3/16/06	3/17/06	3/20/06	3/21/06	3/22/06
Time	9:35	9:15	9:20	9:15	9:00	10:20	9:05	9:25	9:25	9:05	8:55	8:45
Influent												
Flow	156.72	156.12	155.87	157.2	156.39	155.22	154.23	156.20	155.61	153.20	157.28	158.32
pH	5.62	5.67	5.71	5.68	5.72	5.73	5.69	5.70	5.70	5.68	5.81	5.77
Iron	0.3	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.5
UVOX												
Peroxide Residual	13	12	12	13	12	13	12	12	11	11	14	13
pH	5.67	5.70	5.68	5.72	5.68	5.74	5.69	5.69	5.73	5.68	5.61	5.72
Effluent												
pH	6.28	6.18	6.23	6.21	6.20	6.23	6.21	6.19	6.25	6.19	6.28	6.20
Iron	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1
Chlorine	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.3	0.2

Servall Laundry Process Control Samples

Date	3/23/00	3/24/00	3/27/00	3/28/00	3/29/00	3/30/00	3/31/00
Time	9:00	9:05	9:30	9:55	9:25	9:00	9:25
Influent							
Flow	165.30	160.17	164.32	159.28	161.20	165.38	161.24
pH	5.51	5.55	5.62	5.68	5.70	5.81	5.79
Iron	0.5	0.4	0.4	0.4	0.4	0.4	0.3
UVOX							
Peroxide Residual	16	15	14	15	14	13	14
pH	6.02	6.09	6.12	6.07	6.12	6.10	6.07
Effluent							
pH	7.05	6.98	6.83	6.84	6.83	6.72	6.83
Iron	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Chlorine	0.2	0.2	0.2	0.2	0.2	0.2	0.3

Date							
Time							
Influent							
Flow							
pH							
Iron							
UVOX							
Peroxide Residual							
pH							
Effluent							
pH							
Iron							
Chlorine							