ICR TREATMENT STUDY ANALYSIS

Base Analysis and Data Review Comments

Treatment Study ID 1059

Study Protocol GAC RSSCT treatment study

Plant ICR Number 702

PWS Name City of Odessa

City, State, Zip Odessa, TX 79760

These are general comments that do not need to be responded to directly.

Major comments:

(none)

General Comments:

1. In-line filtration using a 0.2 µm pore size filter was performed; the *Treatment Studies Manual* recommended the use of a 1.0 µm pore size filter.

   Response: A 0.2-µm in-line filter was incorporated for all RSSCT studies to minimize headloss formation and to render sample collection reasonable. High and frequent headloss formation were experienced in a previous study, eventhough the carbon fines were minimized with the rinsing process. No head-loss problems were experienced following this change.

2. Table 10 incorrectly lists incubation times used; text values are correct.

   Response: Correct. The times for August, November and January should be 24 hours. Values in Table 10 were based on the average flowrate.

Outlier Data:

No outliers were removed.

Cell: A1
Comment: 1059_SAS.xls 2/1/00 19:00

All curve fits reviewed and approved. See below for log of refit datasets.

1059_SAS.xls 2/2/00 22:01

Curve fit review updated and approved. See below for log of refit datasets.

Cell: C3
Comment: 1059-10-01 - Run 1 (BDCM) 2/1/00 18:28
Original value (CoefA0) = 0 New value = -0.4089
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: D3
Comment: 1059-10-01 - Run 1 (BDCM) 2/1/00 18:28
Original value (CoefAf) = 0 New value = 3.7141
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: E3
Comment: 1059-10-01 - Run 1 (BDCM) 2/1/00 18:28
Original value (CoefB) = 0 New value = 28.418
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: F3
Comment: 1059-10-01 - Run 1 (BDCM) 2/1/00 18:28
Original value (CoefD) = 0 New value = 0.0497
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: J3
Comment: 1059-10-01 - Run 1 (BDCM) 2/1/00 18:28
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: C26
Comment: 1059-10-02 - Run 3 (CDBAA) 2/2/00 21:22
Original value (CoefA0) = 0 New value = 2.275
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: D26
Comment: 1059-10-02 - Run 3 (CDBAA) 2/2/00 21:22
Original value (CoefAf) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: E26
Comment: 1059-10-02 - Run 3 (CDBAA) 2/2/00 21:22
Original value (CoefB) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: F26
Comment: 1059-10-02 - Run 3 (CDBAA) 2/2/00 21:22
Original value (CoefD) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: J26
Comment: 1059-10-02 - Run 3 (CDBAA) 2/2/00 21:22
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: K26
Comment: 1059-10-02 - Run 3 (CDBAA) 2/2/00 21:22
Original value (T0) = 0 New value = 48.9218
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: C47
Comment: 1059-10-03 - Run 5 (BDCM) 2/1/00 18:37
Original value (CoefA0) = 0 New value = -0.1302
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: D47
Comment: 1059-10-03 - Run 5 (BDCM) 2/1/00 18:37
Original value (CoefAf) = 0 New value = 1.653
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: E47
Comment: 1059-10-03 - Run 5 (BDCM) 2/1/00 18:37
Original value (CoefB) = 0 New value = 186.9083
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: F47
Comment: 1059-10-03 - Run 5 (BDCM) 2/1/00 18:37
Original value (CoefD) = 0 New value = 0.1099
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: J47
Comment: 1059-10-03 - Run 5 (BDCM) 2/1/00 18:37
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: C54
Comment: 1059-10-03 - Run 5 (DCAA) 2/1/00 15:26
Original value (CoefA0) = 0 New value = 1
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: D54
Comment: 1059-10-03 - Run 5 (DCAA) 2/1/00 15:26
Original value (CoefAf) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: E54
Comment: 1059-10-03 - Run 5 (DCAA) 2/1/00 15:26
Original value (CoefB) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: F54
Comment: 1059-10-03 - Run 5 (DCAA) 2/1/00 15:26
Original value (CoefD) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: J54
Comment: 1059-10-03 - Run 5 (DCAA) 2/1/00 15:26
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: K54
Comment: 1059-10-03 - Run 5 (DCAA) 2/1/00 15:26
Original value (T0) = 0 New value = 21.6542
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: C55
Comment: 1059-10-03 - Run 5 (DCBAA) 2/2/00 21:27

Original value (CoefA0) = 0 New value = 1.1
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: D55
Comment: 1059-10-03 - Run 5 (DCBAA) 2/2/00 21:27
Original value (CoefAf) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: E55
Comment: 1059-10-03 - Run 5 (DCBAA) 2/2/00 21:27
Original value (CoefB) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: F55
Comment: 1059-10-03 - Run 5 (DCBAA) 2/2/00 21:27
Original value (CoefD) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: J55
Comment: 1059-10-03 - Run 5 (DCBAA) 2/2/00 21:27
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: K55
Comment: 1059-10-03 - Run 5 (DCBAA) 2/2/00 21:27
Original value (T0) = 0 New value = 75.9489
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: C112
Comment: 1059-20-02 - Run 4 (BCAA) 2/2/00 21:55
Original value (CoefA0) = 0 New value = -0.4442
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: D112
Comment: 1059-20-02 - Run 4 (BCAA) 2/2/00 21:55
Original value (CoefAf) = 0 New value = 3.6152
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: E112
Comment: 1059-20-02 - Run 4 (BCAA) 2/2/00 21:55
Original value (CoefB) = 0 New value = 20.26
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: F112
Comment: 1059-20-02 - Run 4 (BCAA) 2/2/00 21:55
Original value (CoefD) = 0 New value = 0.0191
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: J112
Comment: 1059-20-02 - Run 4 (BCAA) 2/2/00 21:55
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: C113
Comment: 1059-20-02 - Run 4 (BDCM) 2/2/00 21:24
Original value (CoefA0) = 0 New value = 1.1667
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: D113
Comment: 1059-20-02 - Run 4 (BDCM) 2/2/00 21:24
Original value (CoefAf) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: E113
Comment: 1059-20-02 - Run 4 (BDCM) 2/2/00 21:24
Original value (CoefB) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: F113
Comment: 1059-20-02 - Run 4 (BDCM) 2/2/00 21:24
Original value (CoefD) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: J113
Comment: 1059-20-02 - Run 4 (BDCM) 2/2/00 21:24
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: K113
Comment: 1059-20-02 - Run 4 (BDCM) 2/2/00 21:24
Original value (T0) = 0 New value = 141.7497
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: C114
Comment: 1059-20-02 - Run 4 (CDBAA) 2/1/00 15:24
Original value (CoefA0) = 0 New value = 2
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

1059-20-02 - Run 4 (CDBAA) 2/2/00 21:56
Original value (CoefA0) = 2 New value = -0.5249
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: D114
Comment: 1059-20-02 - Run 4 (CDBAA) 2/1/00 15:24
Original value (CoefAf) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

1059-20-02 - Run 4 (CDBAA) 2/2/00 21:56
Original value (CoefAf) = 0 New value = 7.0826
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: E114
Comment: 1059-20-02 - Run 4 (CDBAA) 2/1/00 15:24
Original value (CoefB) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

1059-20-02 - Run 4 (CDBAA) 2/2/00 21:56
Original value (CoefB) = 0 New value = 26.5402
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: F114
Comment: 1059-20-02 - Run 4 (CDBAA) 2/1/00 15:24
Original value (CoefD) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

1059-20-02 - Run 4 (CDBAA) 2/2/00 21:56
Original value (CoefD) = 0 New value = 0.0214
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: J114
Comment: 1059-20-02 - Run 4 (CDBAA) 2/1/00 15:24
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

1059-20-02 - Run 4 (CDBAA) 2/2/00 21:56

Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: K114
Comment: 1059-20-02 - Run 4 (CDBAA) 2/1/00 15:24
Original value (T0) = 0 New value = 40.3913
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

1059-20-02 - Run 4 (CDBAA) 2/2/00 21:56
Original value (T0) = 40.39 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: C134
Comment: 1059-20-03 - Run 6 (BCAA) 2/1/00 18:45
Original value (CoefA0) = 0 New value = -0.4493
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: D134
Comment: 1059-20-03 - Run 6 (BCAA) 2/1/00 18:45
Original value (CoefAf) = 0 New value = 3.5039
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: E134
Comment: 1059-20-03 - Run 6 (BCAA) 2/1/00 18:45
Original value (CoefB) = 0 New value = 20.2548
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: F134
Comment: 1059-20-03 - Run 6 (BCAA) 2/1/00 18:45
Original value (CoefD) = 0 New value = 0.024
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: J134
Comment: 1059-20-03 - Run 6 (BCAA) 2/1/00 18:45
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: C135
Comment: 1059-20-03 - Run 6 (BDCM) 2/2/00 21:28
Original value (CoefA0) = 0 New value = 1.15
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: D135
Comment: 1059-20-03 - Run 6 (BDCM) 2/2/00 21:28
Original value (CoefAf) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: E135
Comment: 1059-20-03 - Run 6 (BDCM) 2/2/00 21:28
Original value (CoefB) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: F135
Comment: 1059-20-03 - Run 6 (BDCM) 2/2/00 21:28
Original value (CoefD) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: J135
Comment: 1059-20-03 - Run 6 (BDCM) 2/2/00 21:28
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: K135
Comment: 1059-20-03 - Run 6 (BDCM) 2/2/00 21:28
Original value (T0) = 0 New value = 142.0225
Fewer than 6 points above MRL, average above 1/2 MRL. Step function applied.

Cell: C142
Comment: 1059-20-03 - Run 6 (DCAA) 2/1/00 18:44
Original value (CoefA0) = 0 New value = 3.5
Fewer than 6 points above MRL, average above 1/2 MRL. Peak curve/step function combination applied.

Cell: D142
Comment: 1059-20-03 - Run 6 (DCAA) 2/1/00 18:44
Original value (CoefAf) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Peak curve/step function combination applied.

Cell: E142
Comment: 1059-20-03 - Run 6 (DCAA) 2/1/00 18:44
Original value (CoefB) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Peak curve/step function combination applied.

Cell: F142
Comment: 1059-20-03 - Run 6 (DCAA) 2/1/00 18:44
Original value (CoefD) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Peak curve/step function combination applied.

Cell: J142
Comment: 1059-20-03 - Run 6 (DCAA) 2/1/00 18:44
Original value (S) = 0 New value = -0.0457
Fewer than 6 points above MRL, average above 1/2 MRL. Peak curve/step function combination applied.

Cell: C156
Comment: 1059-20-04 - Run 8 (BCAA) 2/1/00 18:53
Original value (CoefA0) = 0 New value = -0.3132
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: D156
Comment: 1059-20-04 - Run 8 (BCAA) 2/1/00 18:53
Original value (CoefAf) = 0 New value = 3.167
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: E156
Comment: 1059-20-04 - Run 8 (BCAA) 2/1/00 18:53
Original value (CoefB) = 0 New value = 22.8468
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: F156
Comment: 1059-20-04 - Run 8 (BCAA) 2/1/00 18:53
Original value (CoefD) = 0 New value = 0.0299
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: J156
Comment: 1059-20-04 - Run 8 (BCAA) 2/1/00 18:53
Original value (S) = 0 New value = 0
Fewer than 6 points above MRL, average above 1/2 MRL. Logistic function (type 1) applied.

Cell: C158
Comment: 1059-20-04 - Run 8 (CDBAA) 2/1/00 18:54
Original value (CoefA0) = -1.85 New value = -0.3712
Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

Cell: D158
Comment: 1059-20-04 - Run 8 (CDBAA) 2/1/00 18:54

Original value (CoefAf) = 4.9585 New value = 4.1768
Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

Cell: E158
Comment: 1059-20-04 - Run 8 (CDBAA) 2/1/00 18:54
Original value (CoefB) = 10916.3216 New value = 30.7079
Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

Cell: F158
Comment: 1059-20-04 - Run 8 (CDBAA) 2/1/00 18:54
Original value (CoefD) = 0.1735 New value = 0.0463
Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

Cell: J158
Comment: 1059-20-04 - Run 8 (CDBAA) 2/1/00 18:54
Original value (S) = 0 New value = 0
Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

City of Odessa | **Bench-Scale RSSCT Treatment Study Summary** | **Quarter:** 1

ICR Information

ID / ICR#: TX0680002 / 702
ICR Contact: Ms. Debbie McReynolds
Phone No.: (915) 335-4625
Period: 5/5/98 - 5/22/98 (17 B-S days)

Design Information

Design TOC: 4.8 mg/L
Col Diameter: 11.0 mm
Min Reynolds#: 0.52
Full-Scale Temp: 21.6 C

Full-Scale GAC Size: 12x40 Bituminous coa
Bench-Scale GAC Size: 100x200
Scaling Factor: 9.36
Meas Dry Bed Density: 0.50 g/cm3

Water Quality Summary

	Influent				Influent			
Influent	Mean	SD/RD	Count	Min/Max	Mean	SD/RD	Count	Min/Max
TOC	4.8	0.1	3	4.7 - 4.9				
pH	7.9	0.1	3	7.9 - 8.0				
UV254	0.067	0.001	3	0.066 - 0.067				
SUVA	1.39	0.04	3	1.36 - 1.43				
Bromide	1390	40	2	1370 - 1410				
SDS-TOX	217	10	3	205 - 225				
SDS-THM4	207	17	3	191 - 225				
SDS-HAA6	46	3	3	44 - 49				
Effluent	**10 Min EBCT**			(12 B-S days)	**20 Min EBCT**			(17 B-S days)
Effluent pH	8.0	0.0	15	8.0 - 8.1	8.1	0.1	15	8.0 - 8.2
Effluent Temp	23.0	0.0	15	23.0 - 23.0	23.0	0.0	15	23.0 - 23.0

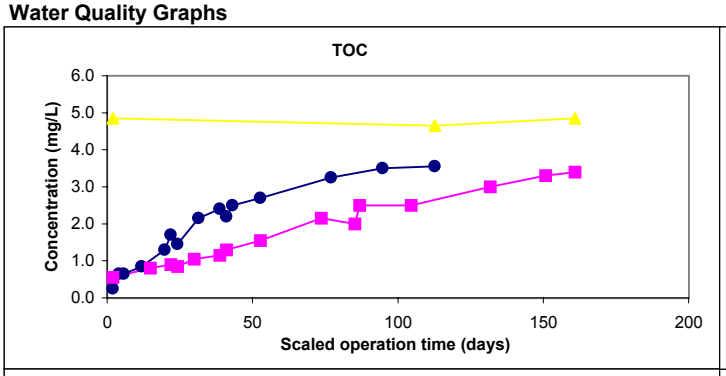
Cumulative SDS Conditions

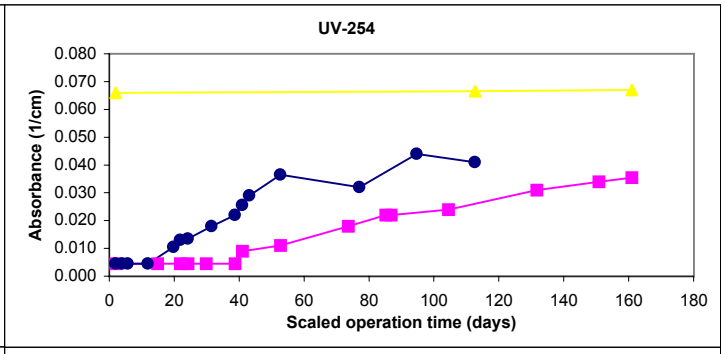
	Mean	SD	Count	Min/Max
Res (0)	0.96	0.18	33	0.73 - 1.38
Temp	17.0	0.0	33	17.0 - 17.0
pH	8.2	0.1	33	8.0 - 8.3
Time	15.0	0.0	33	15.0 - 15.0

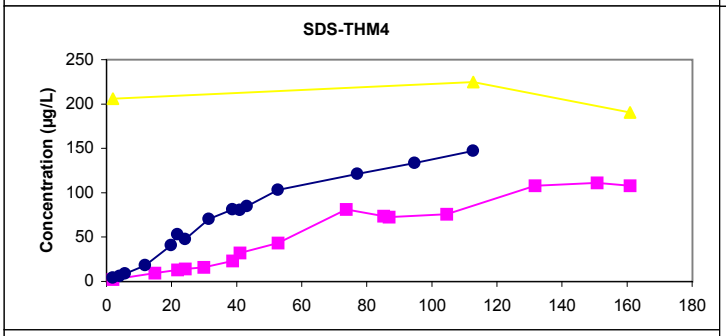
Comments:

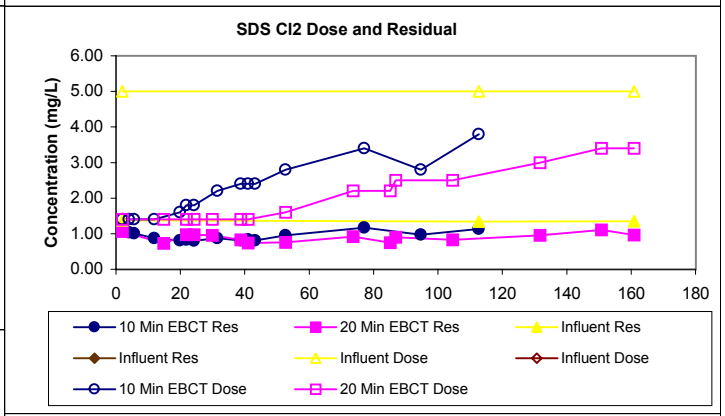
Chart Legend: 10 Min EBCT; 20 Min EBCT; Influent; Influent

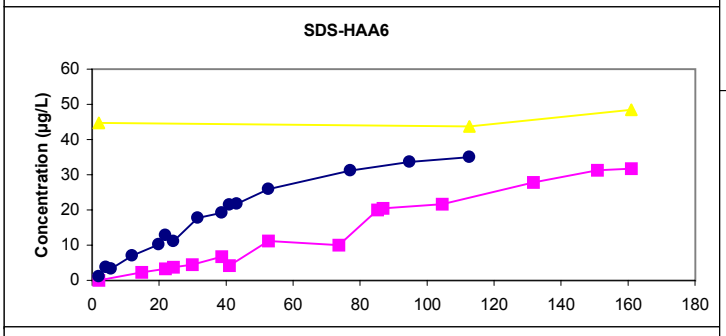
Water Quality Graphs

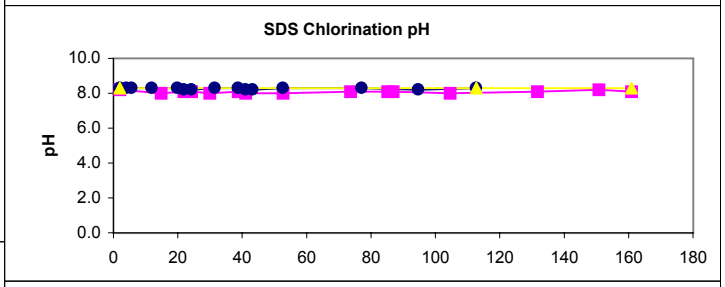


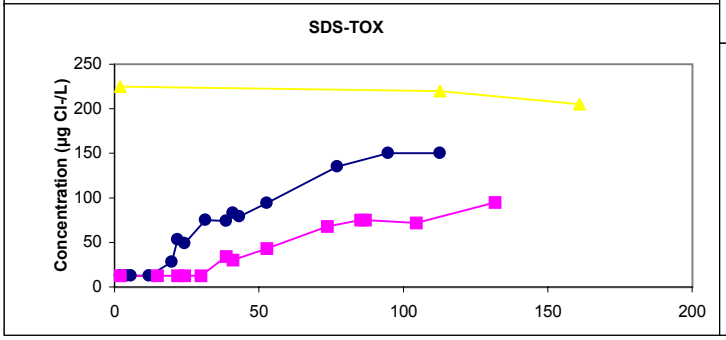


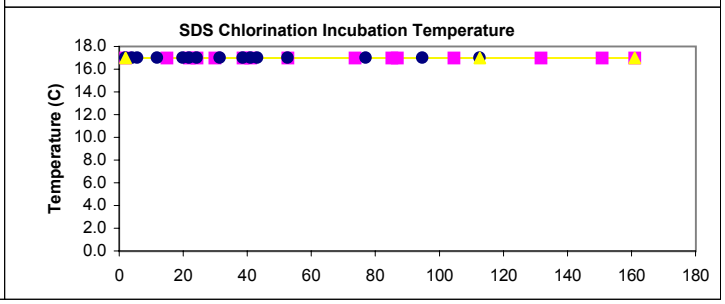




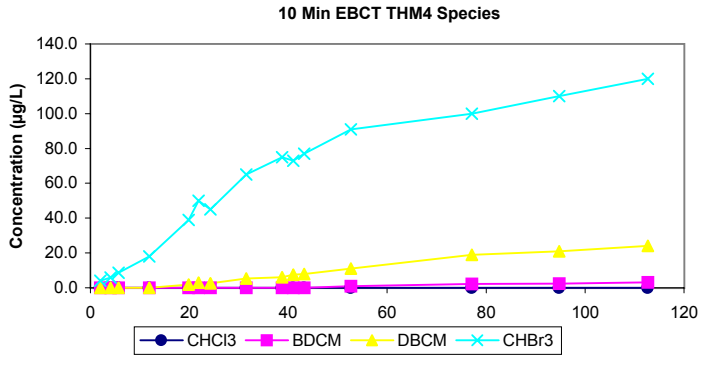


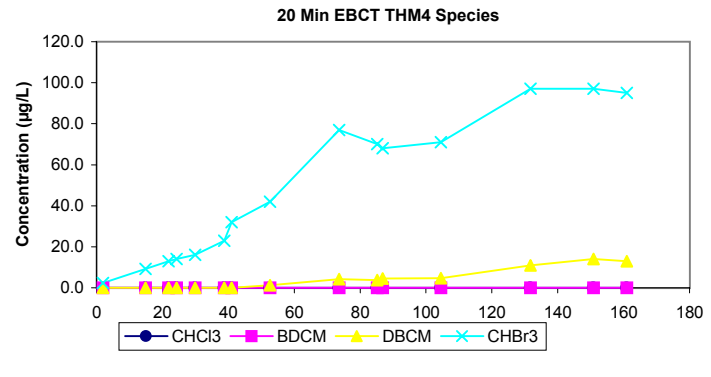


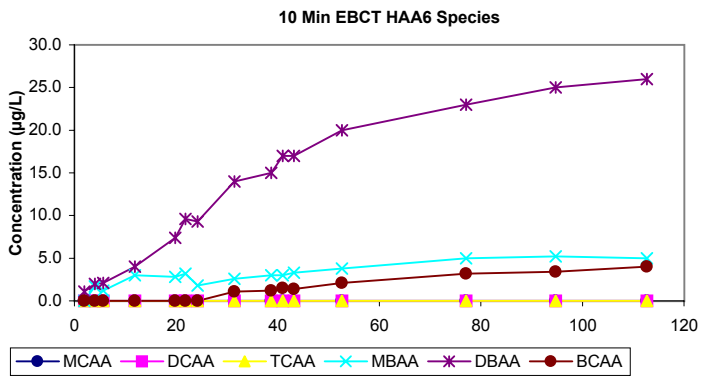


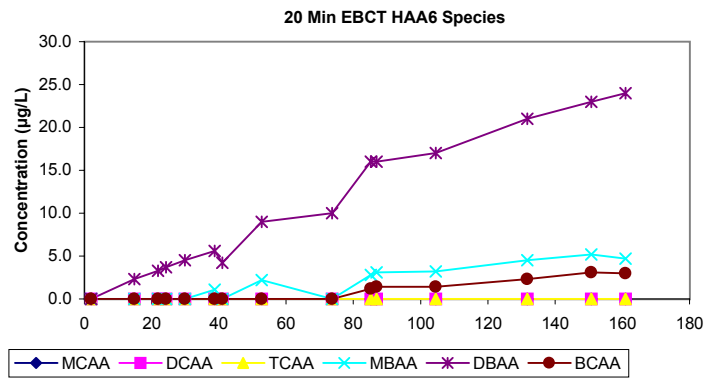


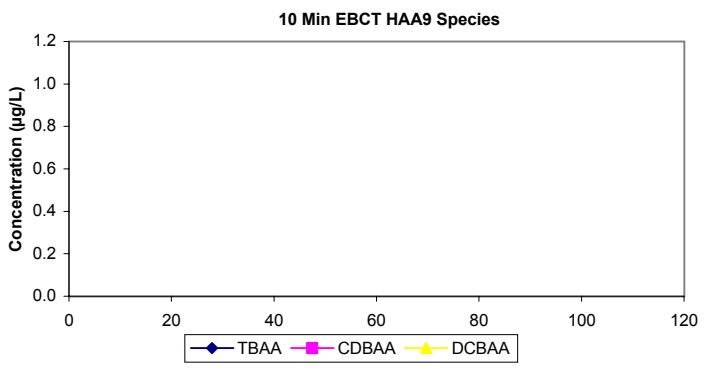
Water Quality Graphs (Continued)

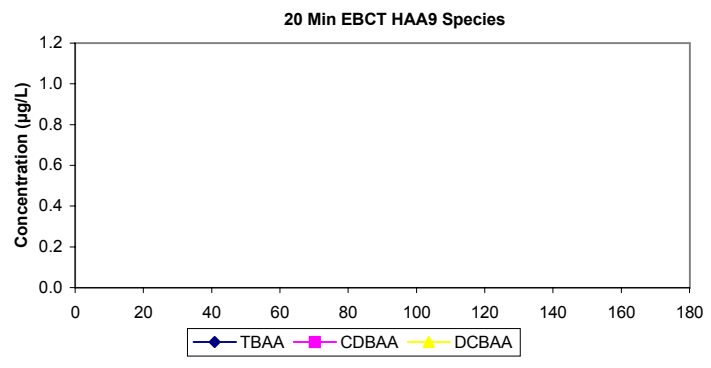


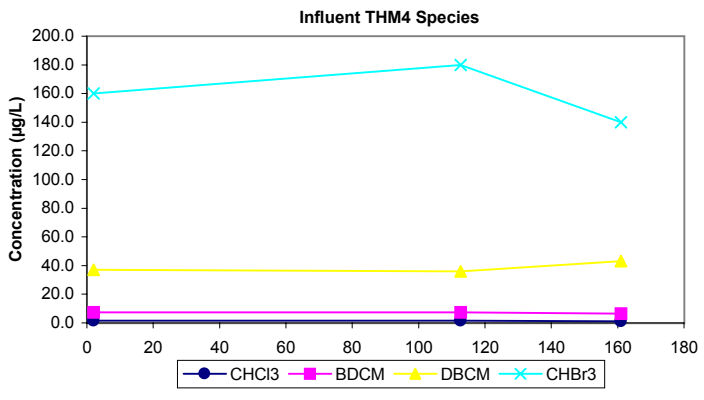


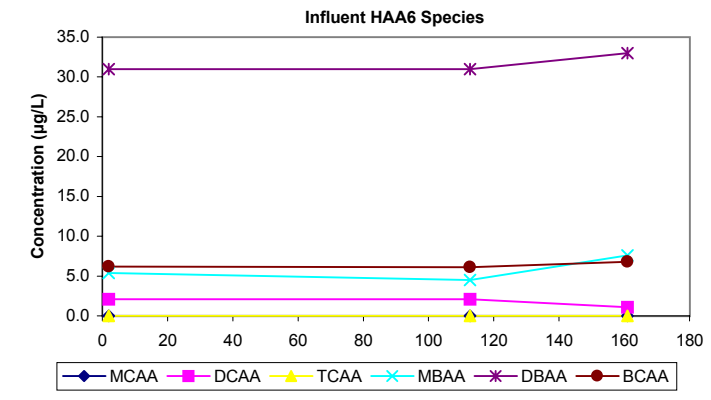












City of Odessa | **Bench-Scale RSSCT Treatment Study Summary** | **Quarter:** 2

ICR Information

ID / ICR#: TX0680002 / 702
ICR Contact: Ms. Debbie McReynolds
Phone No.: (915) 335-4625
Period: 9/16/98 - 10/5/98 (19 B-S days)

Design Information

Design TOC: 4.7 mg/L
Col Diameter: 11.0 mm
Min Reynolds#: 0.60
Full-Scale Temp: 27.3 C

Full-Scale GAC Size: 12x40 Bituminous coa
Bench-Scale GAC Size: 100x200
Scaling Factor: 9.36
Meas Dry Bed Density: 0.50 g/cm3

Water Quality Summary

	Influent				Influent			
Influent	Mean	SD/RD	Count	Min/Max	Mean	SD/RD	Count	Min/Max
TOC	4.3	0.0	3	4.2 - 4.3				
pH	8.0	0.2	3	7.8 - 8.2				
UV254	0.050	0.001	3	0.050 - 0.051				
SUVA	1.18	0.02	3	1.16 - 1.20				
Bromide	1810	80	2	1770 - 1850				
SDS-TOX	238	46	3	200 - 290				
SDS-THM4	208	13	3	194 - 217				
SDS-HAA6	36	0	3	36 - 37				
Effluent	**10 Min EBCT**			(8 B-S days)	**20 Min EBCT**			(19 B-S days)
Effluent pH	8.1	0.1	15	8.0 - 8.2	8.1	0.1	15	8.0 - 8.4
Effluent Temp	22.8	0.8	15	21.0 - 24.0	22.7	0.7	15	22.0 - 24.0

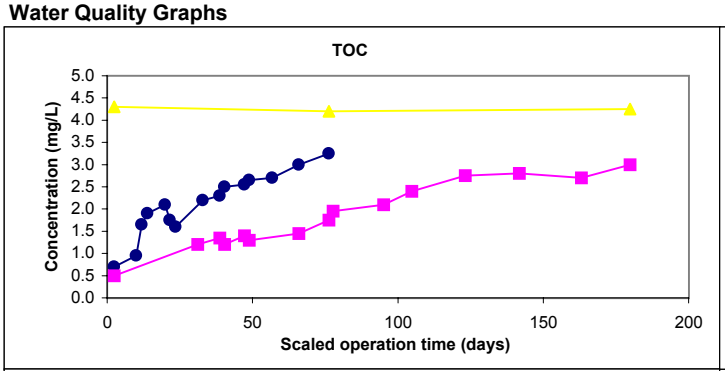
Cumulative SDS Conditions

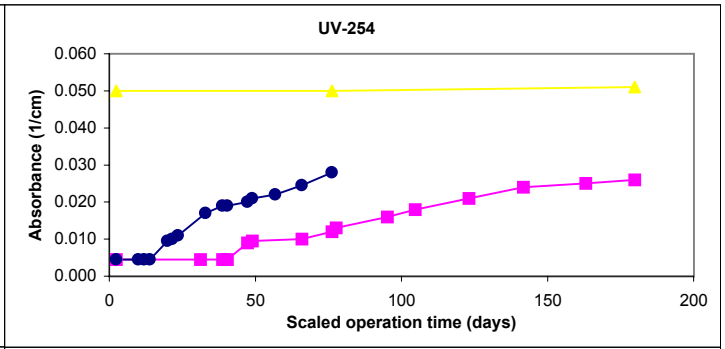
	Mean	SD	Count	Min/Max
Res (0)	0.82	0.21	33	0.52 - 1.15
Temp	22.4	0.5	33	22.0 - 23.0
pH	8.2	0.1	33	8.0 - 8.4
Time	23.8	0.1	33	23.7 - 24.0

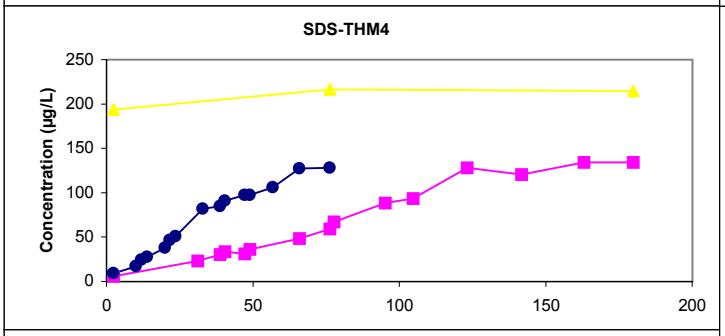
Comments:

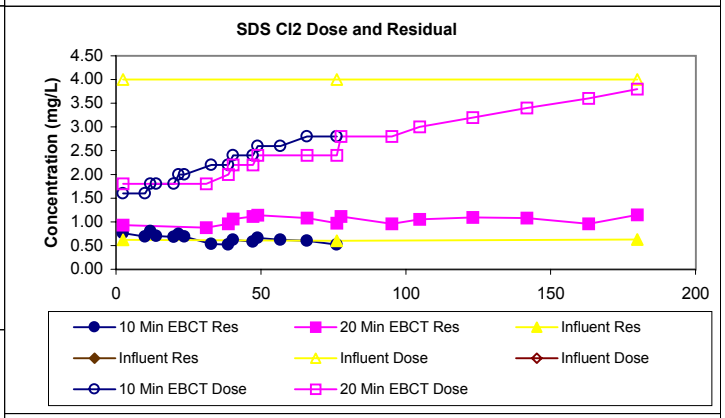
Chart Legend: 10 Min EBCT; 20 Min EBCT; Influent; Influent

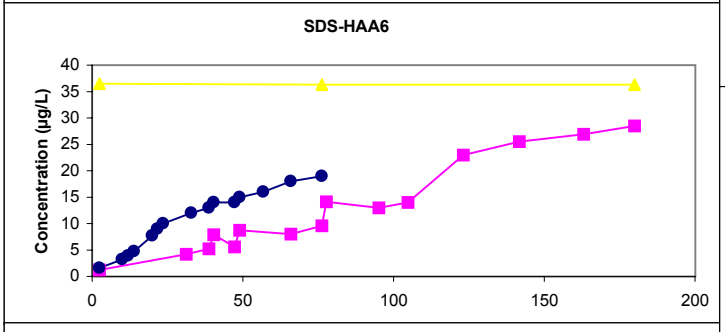
Water Quality Graphs

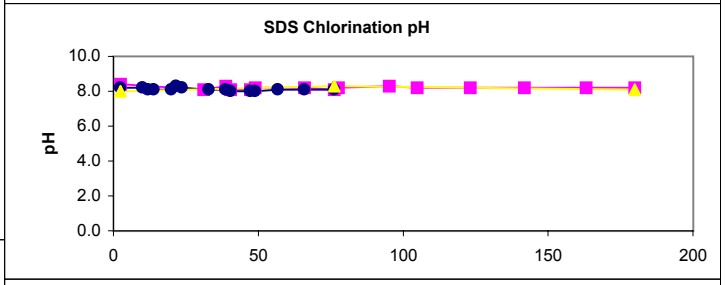


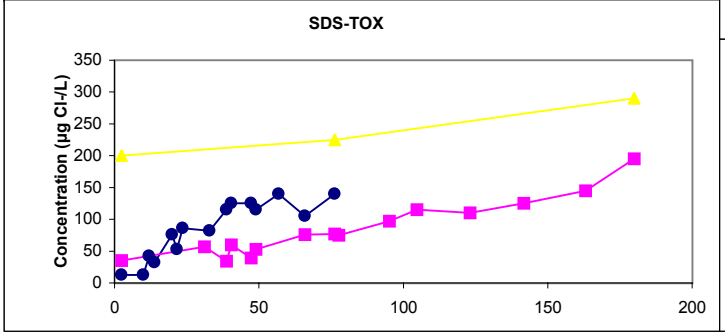


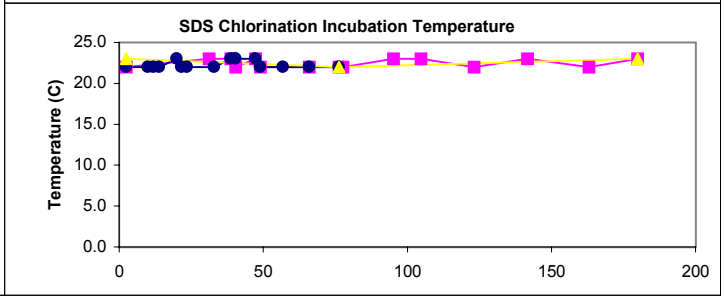




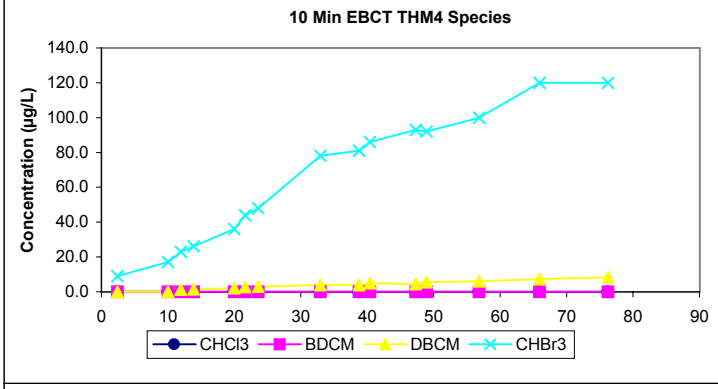


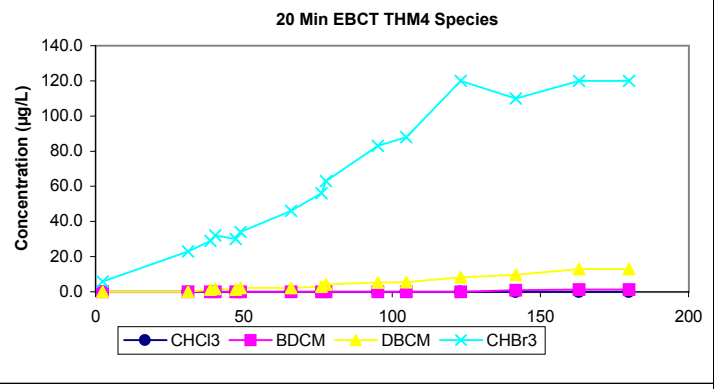


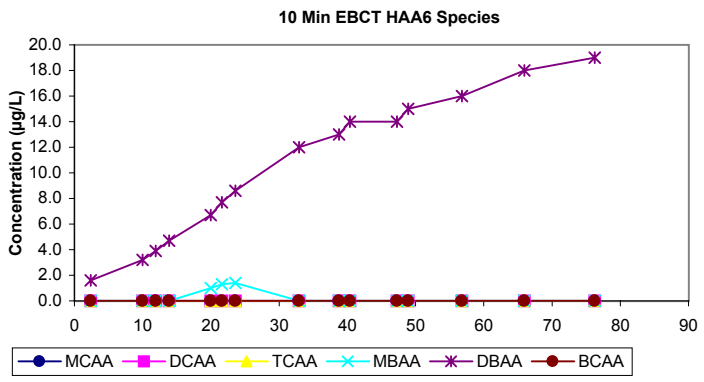


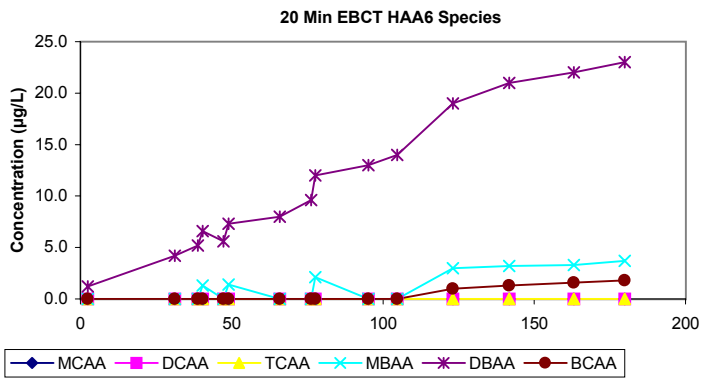


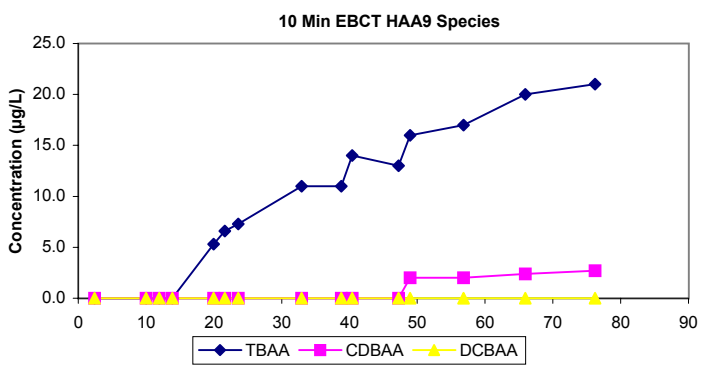
Water Quality Graphs (Continued)

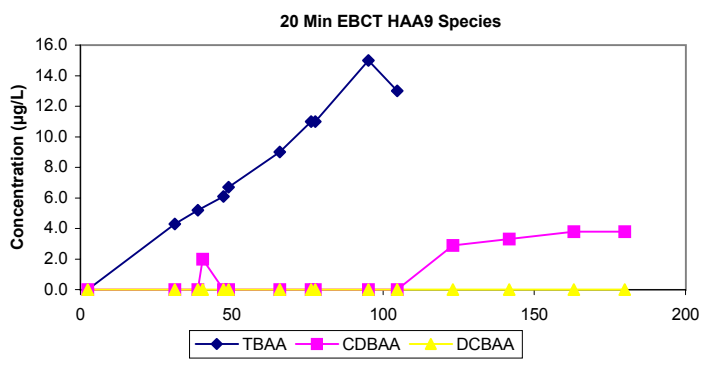


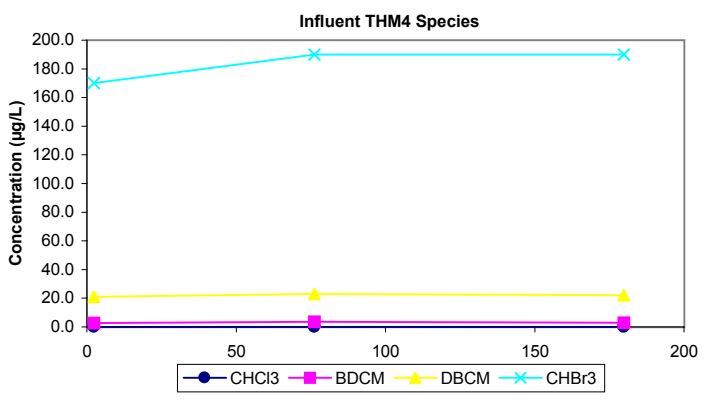


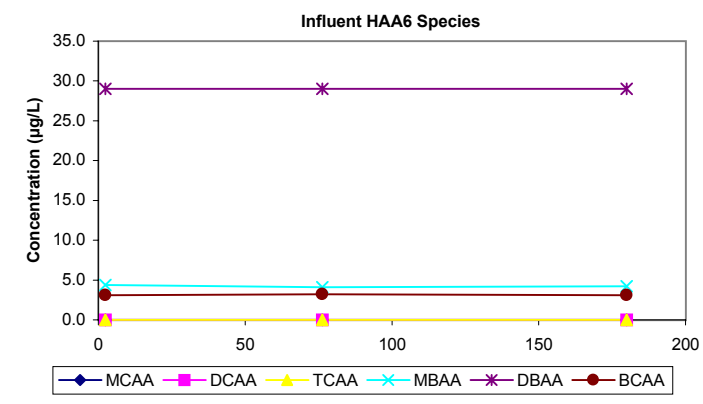












City of Odessa | **Bench-Scale RSSCT Treatment Study Summary** | **Quarter:** 3

ICR Information

ID / ICR#: TX0680002 / 702
ICR Contact: Ms. Debbie McReynolds
Phone No.: (915) 335-4625
Period: 12/1/98 - 12/17/98 (16 B-S days)

Design Information

Design TOC:	3.7 mg/L	**Full-Scale GAC Size:**	12x40 Bituminous coa
Col Diameter:	11.0 mm	**Bench-Scale GAC Size:**	100x200
Min Reynolds#:	0.45	**Scaling Factor:**	9.36
Full-Scale Temp:	15.4 C	**Meas Dry Bed Density:**	0.50 g/cm3

Water Quality Summary

	Influent				Influent			
Influent	Mean	SD/RD	Count	Min/Max	Mean	SD/RD	Count	Min/Max
TOC	4.0	0.1	3	3.9 - 4.1				
pH	8.0	0.1	3	7.9 - 8.0				
UV254	0.051	0.000	3	0.051 - 0.052				
SUVA	1.29	0.03	3	1.26 - 1.31				
Bromide	1160	40	2	1140 - 1180				
SDS-TOX	175	10	3	165 - 185				
SDS-THM4	134	2	3	132 - 136				
SDS-HAA6	54	2	3	53 - 57				
Effluent	**10 Min EBCT**			(9 B-S days)	**20 Min EBCT**			(16 B-S days)
Effluent pH	13.3	20.7	15	7.7 - 88.0	8.0	0.2	15	7.7 - 8.2
Effluent Temp	22.4	0.5	15	22.0 - 23.0	22.5	0.5	15	22.0 - 23.0

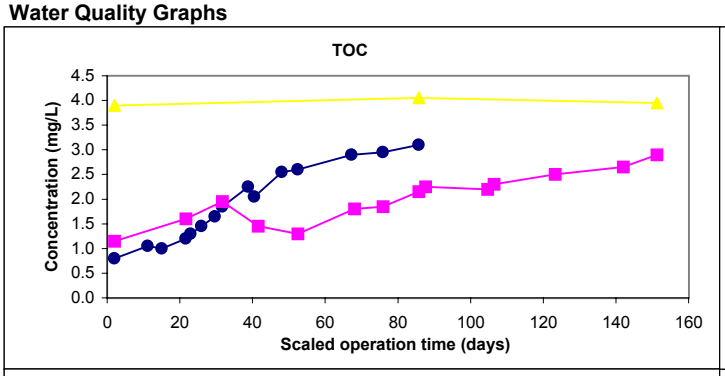
Cumulative SDS Conditions

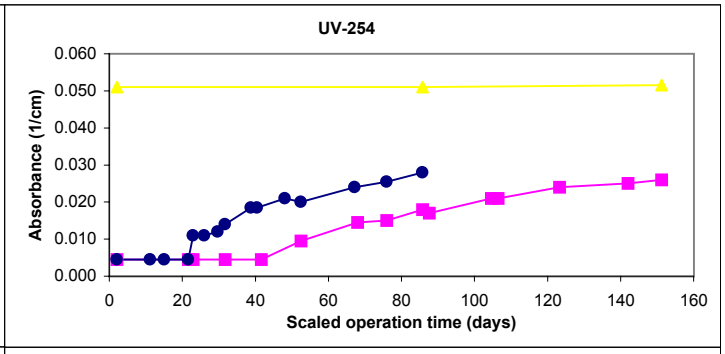
	Mean	SD	Count	Min/Max
Res (0)	0.99	0.24	33	0.63 - 1.40
Temp	22.4	0.5	33	22.0 - 23.0
pH	8.1	0.1	33	8.0 - 8.2
Time	24.0	0.0	33	23.9 - 24.0

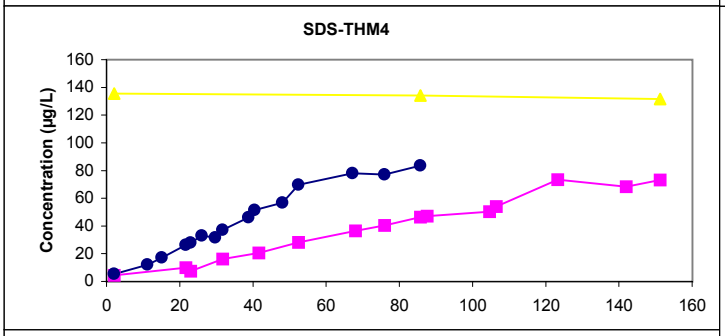
Comments:

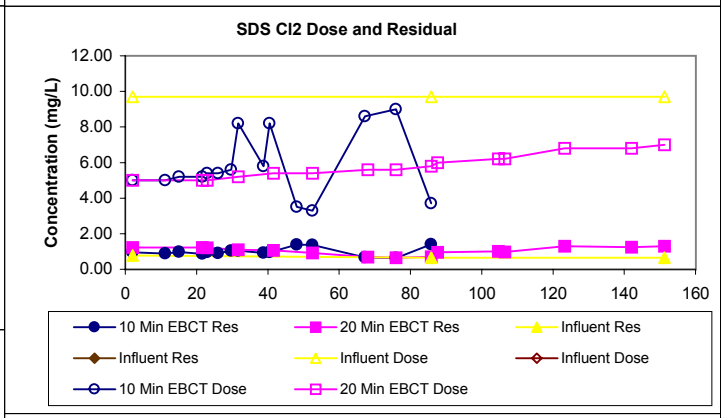
Chart Legend: 10 Min EBCT; 20 Min EBCT; Influent; Influent

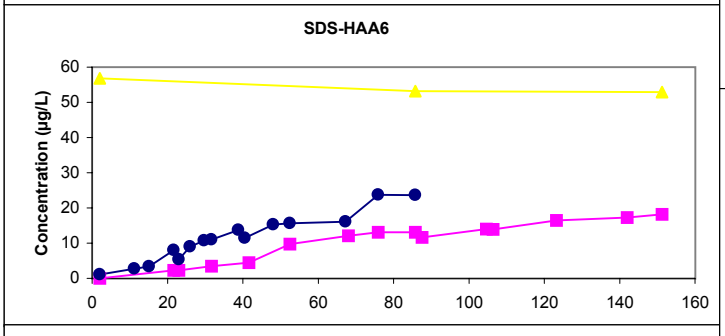
Water Quality Graphs

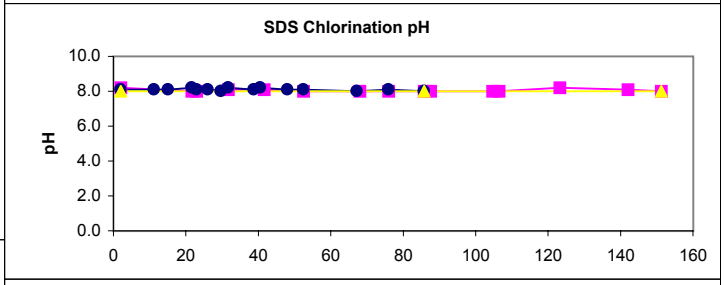


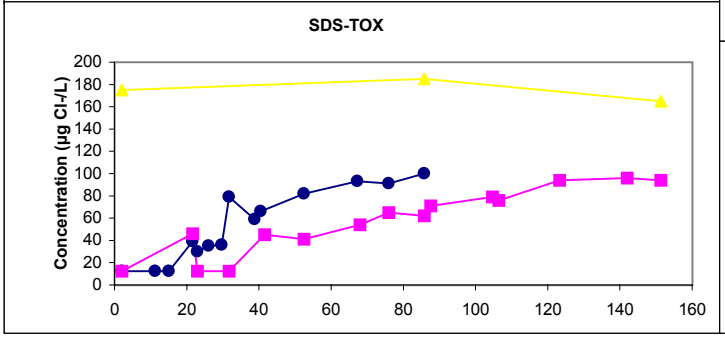


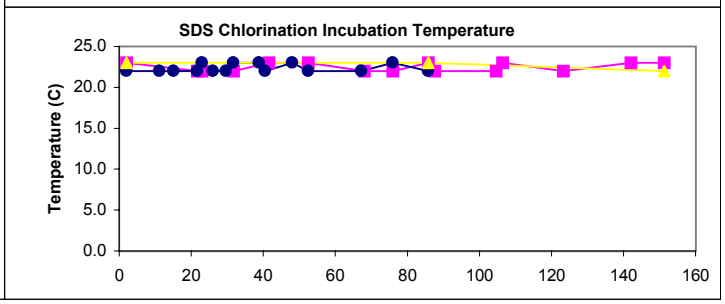




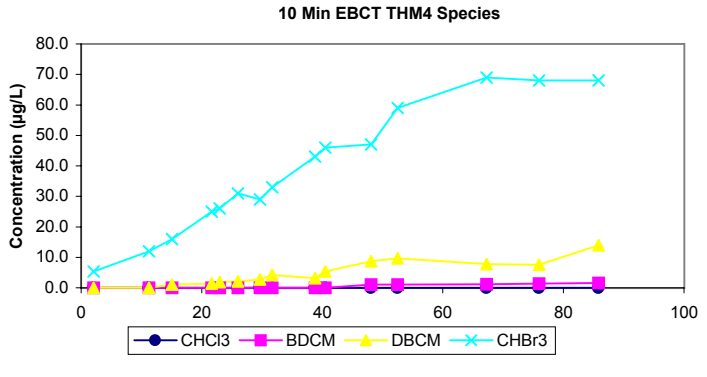


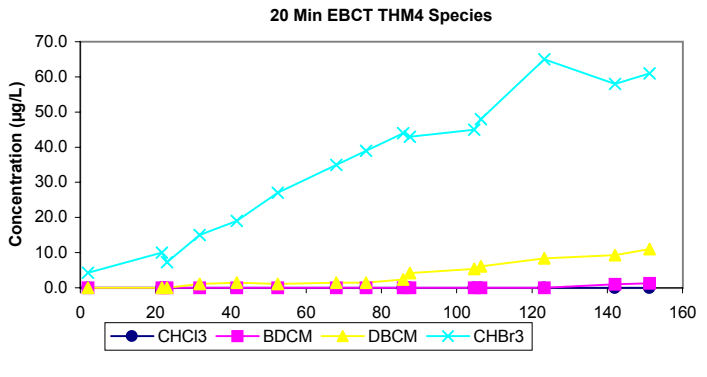


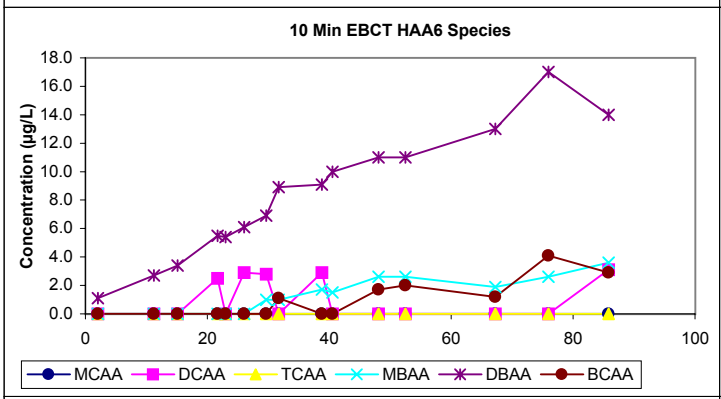


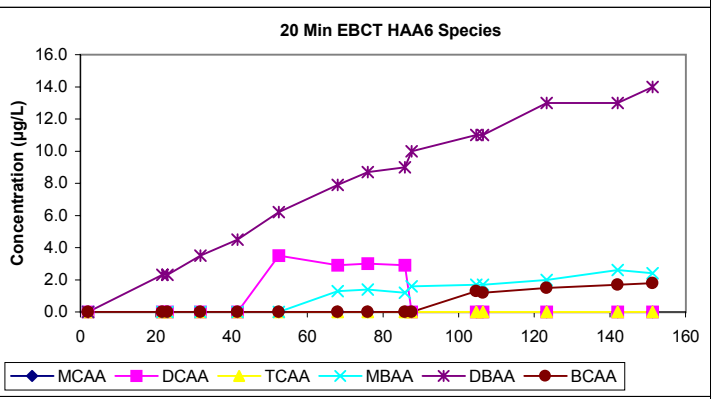


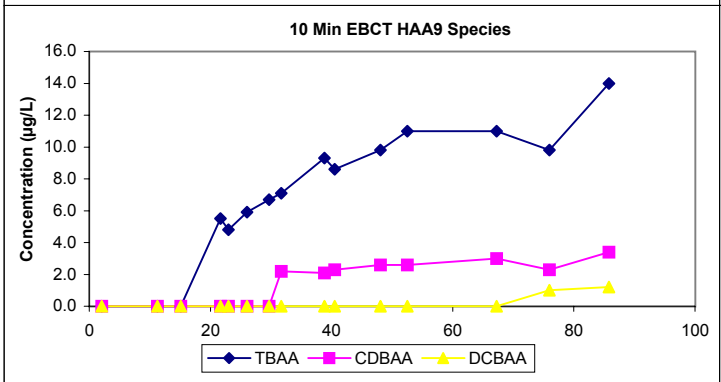
Water Quality Graphs (Continued)

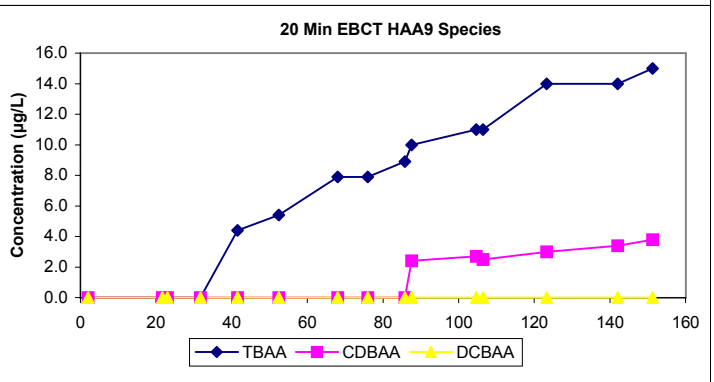


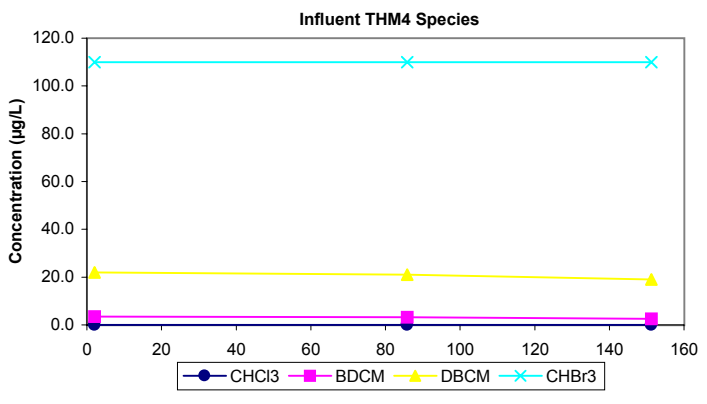


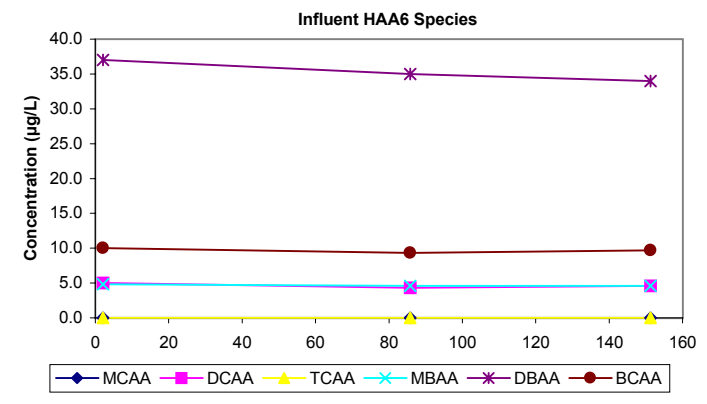












City of Odessa | **Bench-Scale RSSCT Treatment Study Summary** | **Quarter:** 4

ICR Information

ID / ICR#: TX0680002 / 702
ICR Contact: Ms. Debbie McReynolds
Phone No.: (915) 335-4625
Period: 2/16/99 - 3/3/99 (15 B-S days)

Design Information

Design TOC: 5.0 mg/L
Col Diameter: 11.0 mm
Min Reynolds#: 0.42
Full-Scale Temp: 13.2 C

Full-Scale GAC Size: 12x40 Bituminous coa
Bench-Scale GAC Size: 100x200
Scaling Factor: 9.36
Meas Dry Bed Density: 0.50 g/cm3

Water Quality Summary

Influent	Influent Mean	SD/RD	Count	Min/Max	Influent Mean	SD/RD	Count	Min/Max
TOC	5.0	0.1	3	4.9 - 5.1				
pH	8.0	0.1	3	7.9 - 8.1				
UV254	0.061	0.001	3	0.061 - 0.062				
SUVA	1.23	0.01	3	1.23 - 1.24				
Bromide	1450	100	2	1400 - 1500				
SDS-TOX	368	3	3	365 - 370				
SDS-THM4	192	9	3	183 - 201				
SDS-HAA6	38	1	3	37 - 39				
Effluent	**10 Min EBCT**			(6 B-S days)	**20 Min EBCT**			(15 B-S days)
Effluent pH	8.1	0.1	15	8.0 - 8.3	8.2	0.1	15	8.0 - 8.3
Effluent Temp	22.4	0.5	15	22.0 - 23.0	22.3	0.5	15	22.0 - 23.0

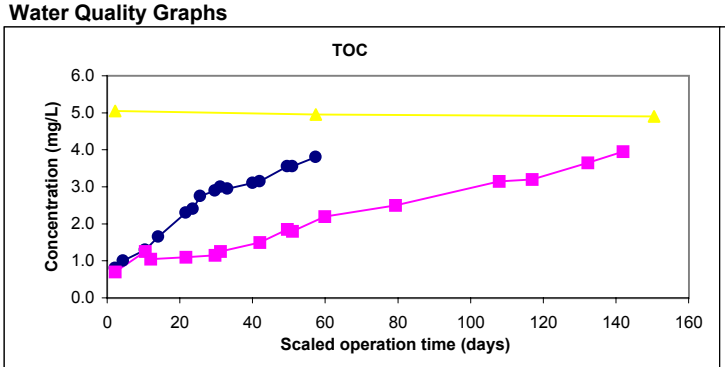
Cumulative SDS Conditions

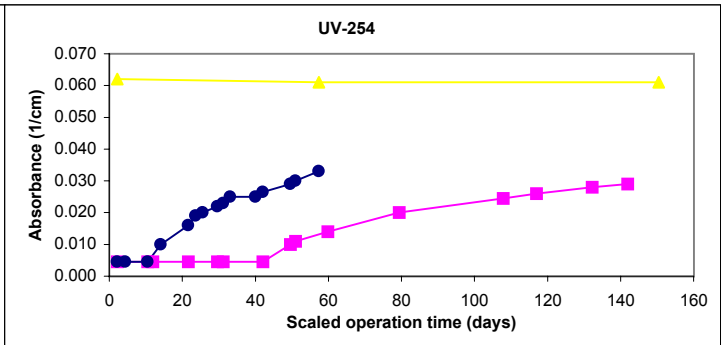
	Mean	SD	Count	Min/Max
Res (0)	1.05	0.21	33	0.73 - 1.39
Temp	13.4	0.5	33	13.0 - 14.0
pH	8.3	0.1	33	8.1 - 8.4
Time	24.0	0.1	33	23.9 - 24.1

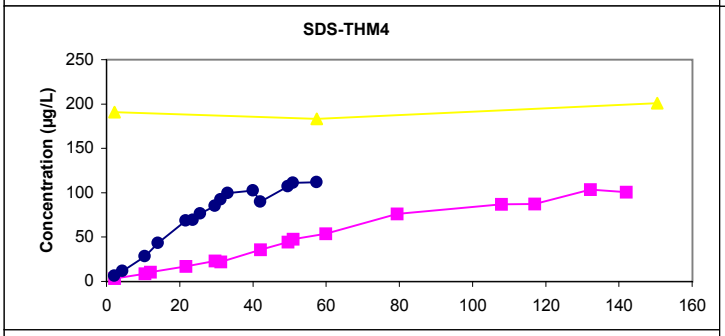
Comments:

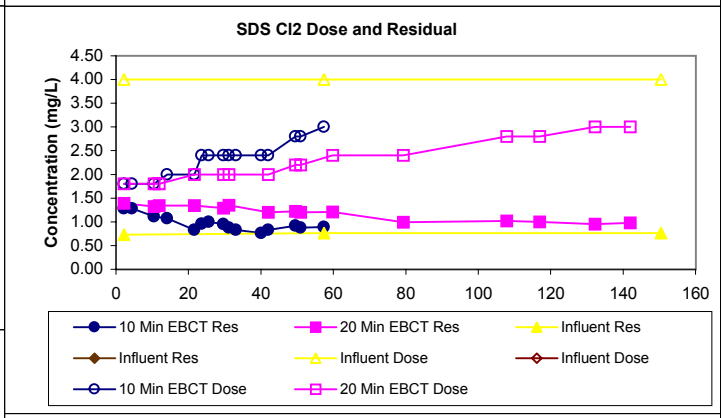
Chart Legend: 10 Min EBCT; 20 Min EBCT; Influent; Influent

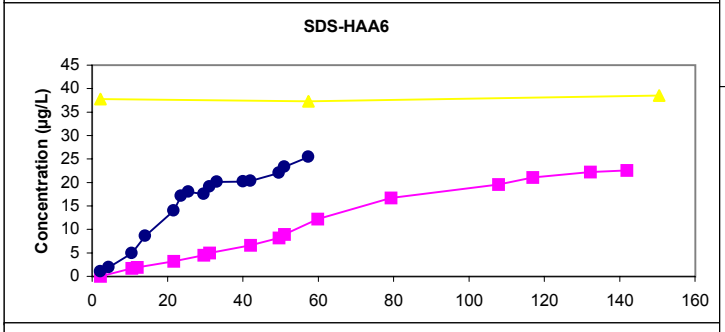
Water Quality Graphs

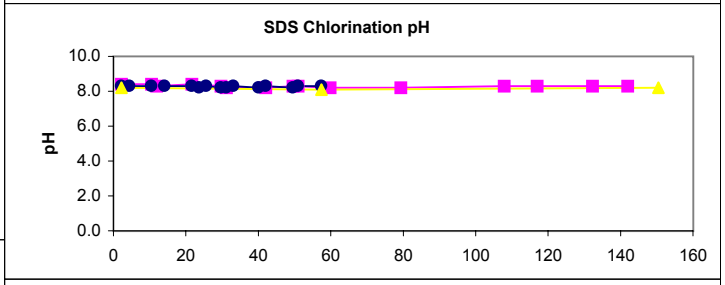


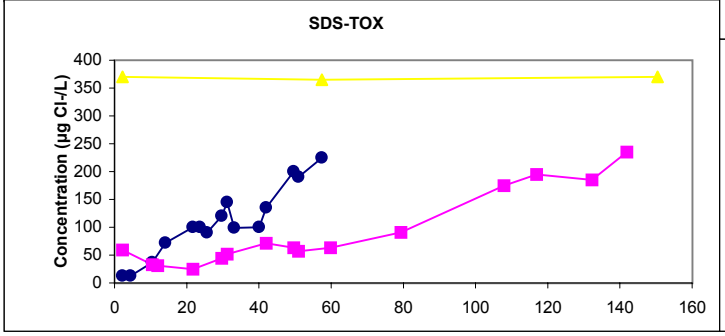


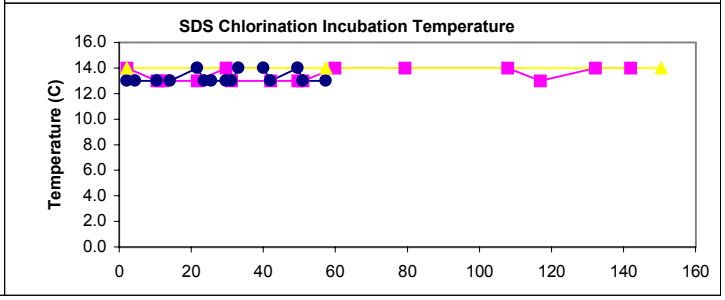












Water Quality Graphs (Continued)