

# ICR TREATMENT STUDY ANALYSIS

## Base Analysis and Data Review Comments

<b>Treatment Study ID</b>	1025
<b>Study Protocol</b>	GAC RSSCT treatment study
<b>Plant ICR Number</b>	368
<b>PWS Name</b>	Three Rivers Filtration Plant (Ft. Wayne)
<b>City, State, Zip</b>	Ft. Wayne, IN 46805

### Major comments:

1. Sample used for treatment study influent was taken after full-scale softening (primary mix, primary flocculation, and primary settling). Report indicates that no further bench-scale pretreatment was conducted (other than filtration). Figure 1 in report (plant schematic) shows that full-scale treatment after the treatment study sample location included primary recarbonation, secondary mix (chlorine dioxide and ferric sulfate added), secondary flocculation, secondary settling, secondary recarbonation, and filtration. Of these processes, only filtration was simulated on the water batch sampled. An explanation should be given as to why the additional full-scale processes (other than disinfectant addition) were not simulated. Did secondary coagulation not contribute to DBP precursor removal, and therefore simulation of it was not required?

*Response: The sample was collected after primary recarbonation prior to chlorine dioxide feed. Most DBP precursors are removed during primary treatment, therefore, only filtration followed as a final treatment.*

2. SDS incubation temperatures ranged from 21 to 22°C. Were targeted SDS temperatures representative of distribution system temperatures during the quarters sampled for the treatment study, or was a constant SDS temperature chosen?

*Response: All SDS incubation temperatures were constant at room temperature.*

### General Comments:

1. Treatment study influent sample was collected after full-scale softening, where settled pH was probably relatively high, >9. However, RSSCT influent samples taken during the four quarters of testing indicate that the averaged influent pH ranged between 6.6 and 7.3. Was a pH adjustment step included? If so, how was the target GAC influent pH chosen?

*Response: The pH of the Ft. Wayne water measured after arriving at EE&T was 7.4. This sample was sent overnight to EE&T immediately after sampling at the WTP. No pH adjustment was used.*

3. Measured dry bed density was reported as 0.50 g/cm<sup>3</sup> for all quarters. Experimental results of dry bed density measurement were probably not reported.

*Response: Dry bed experimental results were not reported.*

4. Full-scale temperature of 21°C reported for all quarters, although full-scale temperature probably varied quarterly. Design may need to be recalculated using actual full-scale temperatures and adjusting Reynold's number.

*Response: The temperatures reported for the influent water were measured from the influent feed water prior to RSSCT testing.*

5. Report indicates that a 5-µm in-line filter was used during RSSCT testing (page 7), while Problems Encountered section indicates the use of 1, 5, and 10 µm pore size filters (page 21). The *Data Collection Spreadsheets* indicate that a 1 µm pore size filter was used during all quarters.

*Response: We actually used 1 to 2 µm, 5 to 6 µm, and 20 to 30 µm Teflon filter discs during the study. Different sizes were used as needed to reduce pressure buildup due to plugging of the filter.*

6. Quarter 1: GAC effluent SDS-TTHM levels exceeded those formed in the influent for both EBCT contactors.

*Response: Yes, after approximately 250 full-scale days the SDSTHM concentration of the 10- and 20-min effluent reached 100 percent breakthrough, and was measured at or above the average SDSTHM influent concentration.*

7. Quarter 3: GAC effluent UV<sub>254</sub> levels exceeded those formed in the influent for both EBCT contactors.

*Response: Similar to the response to comment 6, the UV<sub>254</sub> concentration of the effluent apparently reached 100 percent breakthrough.*

8. Quarter 4: GAC effluent SDS-HAA6 levels exceeded those formed in the influent for both EBCT contactors.

*Response: The SDSHAA6 concentration possibly reached 100 percent breakthrough.*

9. GAC influent SUVA values were low: 1.3 - 1.8 L/mg-m.

10. Appendix Tables A.1 - A.4: These tables contain RSSCT design parameters. First two lines indicate values for "Diameter (large column)" and "Diameter (small column)". Note that the values given refer to particle diameter, not column diameter.

*Response: We are aware that the diameter refers to the size of carbon particles. The Appendix table is misleading and will be modified.*

11. Tables 2 and 8 in report: bromide units should read "mg/L" instead of "µg/L".

*Response: Tables 2 and 8 will be corrected to show bromide in "mg/L".*

### **Outlier Data:**

25 outliers removed.

**Cell:** A1

**Comment:** 1025-SAS.xls 2/9/00 15:02

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

**Cell:** C9

**Comment:** 1025-10-01 - Run 1 (DBCM) 2/9/00 14:58  
Original value (CoefA0) = 0.6677 New value = 1.056  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D9

**Comment:** 1025-10-01 - Run 1 (DBCM) 2/9/00 14:58  
Original value (CoefAf) = 0.8921 New value = 5.7035  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E9

**Comment:** 1025-10-01 - Run 1 (DBCM) 2/9/00 14:58  
Original value (CoefB) = 1.1924 New value = 21.0281  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F9

**Comment:** 1025-10-01 - Run 1 (DBCM) 2/9/00 14:58  
Original value (CoefD) = 0.0503 New value = 0.0444  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J9

**Comment:** 1025-10-01 - Run 1 (DBCM) 2/9/00 14:58  
Original value (S) = 0 New value = -0.0082  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C10

**Comment:** 1025-10-01 - Run 1 (DCAA) 2/9/00 14:10  
Original value (CoefA0) = -3.4836 New value = -0.9687  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D10

**Comment:** 1025-10-01 - Run 1 (DCAA) 2/9/00 14:10  
Original value (CoefAf) = 40.2011 New value = 64.4522  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E10

**Comment:** 1025-10-01 - Run 1 (DCAA) 2/9/00 14:10  
Original value (CoefB) = 6.7821 New value = 16.5179  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F10

**Comment:** 1025-10-01 - Run 1 (DCAA) 2/9/00 14:10  
Original value (CoefD) = 0.0235 New value = 0.018  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J10

**Comment:** 1025-10-01 - Run 1 (DCAA) 2/9/00 14:10  
Original value (S) = -0.0246 New value = -0.1283  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C12

**Comment:** 1025-10-01 - Run 1 (HAA5) 2/9/00 14:13  
Original value (CoefA0) = -4.7652 New value = -5.7889  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D12

**Comment:** 1025-10-01 - Run 1 (HAA5) 2/9/00 14:13  
Original value (CoefAf) = 70.3067 New value = 122.9874  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E12

**Comment:** 1025-10-01 - Run 1 (HAA5) 2/9/00 14:13  
Original value (CoefB) = 8.061 New value = 10.0703  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F12

**Comment:** 1025-10-01 - Run 1 (HAA5) 2/9/00 14:13  
Original value (CoefD) = 0.0268 New value = 0.0156  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J12

**Comment:** 1025-10-01 - Run 1 (HAA5) 2/9/00 14:13  
Original value (S) = -0.0667 New value = -0.2904  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C13

**Comment:** 1025-10-01 - Run 1 (HAA6) 2/9/00 14:15  
Original value (CoefA0) = -5.6719 New value = -4.3669  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D13

**Comment:** 1025-10-01 - Run 1 (HAA6) 2/9/00 14:15  
Original value (CoefAf) = 74.1331 New value = 106.8174  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E13

**Comment:** 1025-10-01 - Run 1 (HAA6) 2/9/00 14:15  
Original value (CoefB) = 7.2045 New value = 11.4572  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F13

**Comment:** 1025-10-01 - Run 1 (HAA6) 2/9/00 14:15  
Original value (CoefD) = 0.0262 New value = 0.0183  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J13

**Comment:** 1025-10-01 - Run 1 (HAA6) 2/9/00 14:15  
Original value (S) = -0.0648 New value = -0.2772  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C14

**Comment:** 1025-10-01 - Run 1 (HAA9) 2/9/00 14:14  
Original value (CoefA0) = -12.0242 New value = -0.0618  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D14

**Comment:** 1025-10-01 - Run 1 (HAA9) 2/9/00 14:14  
Original value (CoefAf) = 85.1415 New value = 103.5132  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E14

**Comment:** 1025-10-01 - Run 1 (HAA9) 2/9/00 14:14  
Original value (CoefB) = 2.8959 New value = 16.0747  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F14

**Comment:** 1025-10-01 - Run 1 (HAA9) 2/9/00 14:14  
Original value (CoefD) = 0.019 New value = 0.0206  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J14

**Comment:** 1025-10-01 - Run 1 (HAA9) 2/9/00 14:14  
Original value (S) = -0.0885 New value = -0.3008  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C15

**Comment:** 1025-10-01 - Run 1 (MBAA) 2/9/00 14:12  
Original value (CoefA0) = 0.0553 New value = 0.7878  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D15

**Comment:** 1025-10-01 - Run 1 (MBAA) 2/9/00 14:12  
Original value (CoefAf) = 6.315 New value = 12.9245  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E15

**Comment:** 1025-10-01 - Run 1 (MBAA) 2/9/00 14:12  
Original value (CoefB) = 2.6921 New value = 20.6442  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F15

**Comment:** 1025-10-01 - Run 1 (MBAA) 2/9/00 14:12  
Original value (CoefD) = 0.0055 New value = 0.0122  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J15

**Comment:** 1025-10-01 - Run 1 (MBAA) 2/9/00 14:12

Original value (S) = -0.0169 New value = -0.0206  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C16

**Comment:** 1025-10-01 - Run 1 (MCAA) 2/9/00 09:41  
Original value (CoefA0) = 0 New value = 3.085  
Fewer than 6 points above MRL. Step function applied.

**Cell:** D16

**Comment:** 1025-10-01 - Run 1 (MCAA) 2/9/00 09:41  
Original value (CoefAf) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** E16

**Comment:** 1025-10-01 - Run 1 (MCAA) 2/9/00 09:41  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** F16

**Comment:** 1025-10-01 - Run 1 (MCAA) 2/9/00 09:41  
Original value (CoefD) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** J16

**Comment:** 1025-10-01 - Run 1 (MCAA) 2/9/00 09:41  
Original value (S) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** K16

**Comment:** 1025-10-01 - Run 1 (MCAA) 2/9/00 09:41  
Original value (t0) = 0 New value = 155.483  
Fewer than 6 points above MRL. Step function applied.

**Cell:** C30

**Comment:** 1025-10-02 - Run 3 (DBAA) 2/9/00 14:23  
Original value (CoefA0) = 0 New value = -0.1597  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D30

**Comment:** 1025-10-02 - Run 3 (DBAA) 2/9/00 14:23  
Original value (CoefAf) = 2.38 New value = 2.5843  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E30

**Comment:** 1025-10-02 - Run 3 (DBAA) 2/9/00 14:23  
Original value (CoefB) = 10 New value = 19.9998  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F30

**Comment:** 1025-10-02 - Run 3 (DBAA) 2/9/00 14:23  
Original value (CoefD) = 0.15 New value = 1.5486

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J30

**Comment:** 1025-10-02 - Run 3 (DBAA) 2/9/00 14:23

Original value (S) = 0 New value = -0.0329

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C32

**Comment:** 1025-10-02 - Run 3 (DCAA) 2/9/00 14:21

Original value (CoefA0) = 0.4566 New value = -0.8029

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D32

**Comment:** 1025-10-02 - Run 3 (DCAA) 2/9/00 14:21

Original value (CoefAf) = 7.778 New value = 9.165

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E32

**Comment:** 1025-10-02 - Run 3 (DCAA) 2/9/00 14:21

Original value (CoefB) = 1222048.25165329 New value = 367.7509

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F32

**Comment:** 1025-10-02 - Run 3 (DCAA) 2/9/00 14:21

Original value (CoefD) = 0.9453 New value = 0.3866

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J32

**Comment:** 1025-10-02 - Run 3 (DCAA) 2/9/00 14:21

Original value (S) = -0.1003 New value = 0

Poor peak curve fit. Data was refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C37

**Comment:** 1025-10-02 - Run 3 (MBAA) 2/9/00 14:22

Original value (CoefA0) = 2.2262 New value = 2.4509

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D37

**Comment:** 1025-10-02 - Run 3 (MBAA) 2/9/00 14:22

Original value (CoefAf) = 12.495 New value = 2.6939

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E37

**Comment:** 1025-10-02 - Run 3 (MBAA) 2/9/00 14:22

Original value (CoefB) = 106.8164 New value = 9.7194

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F37

**Comment:** 1025-10-02 - Run 3 (MBAA) 2/9/00 14:22

Original value (CoefD) = 0.117 New value = 0.0767

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.



**Cell:** J37

**Comment:** 1025-10-02 - Run 3 (MBAA) 2/9/00 14:22  
Original value (S) = 0 New value = 0  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C40

**Comment:** 1025-10-02 - Run 3 (TCAA) 2/9/00 14:20  
Original value (CoefA0) = 0.1089 New value = -0.3583  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D40

**Comment:** 1025-10-02 - Run 3 (TCAA) 2/9/00 14:20  
Original value (CoefAf) = 6.1643 New value = 6.9677  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E40

**Comment:** 1025-10-02 - Run 3 (TCAA) 2/9/00 14:20  
Original value (CoefB) = 2095198611.17095 New value = 1118.6694  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F40

**Comment:** 1025-10-02 - Run 3 (TCAA) 2/9/00 14:20  
Original value (CoefD) = 1.4433 New value = 0.4222  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J40

**Comment:** 1025-10-02 - Run 3 (TCAA) 2/9/00 14:20  
Original value (S) = -0.065 New value = -0.0934  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C44

**Comment:** 1025-10-02 - Run 3 (TSUVA) 2/9/00 09:45  
Original value (CoefA0) = 0 New value = 1.0168  
Fewer than 6 points. Step function applied.

**Cell:** D44

**Comment:** 1025-10-02 - Run 3 (TSUVA) 2/9/00 09:45  
Original value (CoefAf) = 0 New value = 0  
Fewer than 6 points. Step function applied.

**Cell:** E44

**Comment:** 1025-10-02 - Run 3 (TSUVA) 2/9/00 09:45  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points. Step function applied.

**Cell:** F44

**Comment:** 1025-10-02 - Run 3 (TSUVA) 2/9/00 09:45  
Original value (CoefD) = 0 New value = 0  
Fewer than 6 points. Step function applied.

**Cell:** J44

**Comment:** 1025-10-02 - Run 3 (TSUVA) 2/9/00 09:45  
Original value (S) = 0 New value = 0  
Fewer than 6 points. Step function applied.

**Cell:** K44

**Comment:** 1025-10-02 - Run 3 (TSUVA) 2/9/00 09:45  
Original value (t0) = 0 New value = 34.0406  
Fewer than 6 points. Step function applied.

**Cell:** C52

**Comment:** 1025-10-03 - Run 5 (DBAA) 2/9/00 14:32  
Original value (CoefA0) = 0 New value = 1.2  
Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** D52

**Comment:** 1025-10-03 - Run 5 (DBAA) 2/9/00 14:32  
Original value (CoefAf) = 0 New value = 0  
Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** E52

**Comment:** 1025-10-03 - Run 5 (DBAA) 2/9/00 14:32  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** F52

**Comment:** 1025-10-03 - Run 5 (DBAA) 2/9/00 14:32  
Original value (CoefD) = 0 New value = 0  
Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** J52

**Comment:** 1025-10-03 - Run 5 (DBAA) 2/9/00 14:32  
Original value (S) = 0 New value = -0.0815  
Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** C55

**Comment:** 1025-10-03 - Run 5 (DCBAA) 2/9/00 09:54  
Original value (CoefA0) = 0 New value = 1.972  
Fewer than 6 points above MRL. Step function applied.

**Cell:** D55

**Comment:** 1025-10-03 - Run 5 (DCBAA) 2/9/00 09:54  
Original value (CoefAf) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** E55

**Comment:** 1025-10-03 - Run 5 (DCBAA) 2/9/00 09:54  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** F55

**Comment:** 1025-10-03 - Run 5 (DCBAA) 2/9/00 09:54

Original value (CoefD) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** J55

**Comment:** 1025-10-03 - Run 5 (DCBAA) 2/9/00 09:54  
Original value (S) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** K55

**Comment:** 1025-10-03 - Run 5 (DCBAA) 2/9/00 09:54  
Original value (t0) = 0 New value = 36.8007  
Fewer than 6 points above MRL. Step function applied.

**Cell:** C60

**Comment:** 1025-10-03 - Run 5 (MCAA) 2/9/00 09:54  
Original value (CoefA0) = 0 New value = 3.475  
Fewer than 6 points above MRL. Step function applied.

**Cell:** D60

**Comment:** 1025-10-03 - Run 5 (MCAA) 2/9/00 09:55  
Original value (CoefAf) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** E60

**Comment:** 1025-10-03 - Run 5 (MCAA) 2/9/00 09:55  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** F60

**Comment:** 1025-10-03 - Run 5 (MCAA) 2/9/00 09:55  
Original value (CoefD) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** J60

**Comment:** 1025-10-03 - Run 5 (MCAA) 2/9/00 09:55  
Original value (S) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** K60

**Comment:** 1025-10-03 - Run 5 (MCAA) 2/9/00 09:55  
Original value (t0) = 0 New value = 36.8007  
Fewer than 6 points above MRL. Step function applied.

**Cell:** C75

**Comment:** 1025-10-04 - Run 7 (DBCM) 2/9/00 14:46  
Original value (CoefA0) = -2.26 New value = 0.4071  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D75

**Comment:** 1025-10-04 - Run 7 (DBCM) 2/9/00 14:46  
Original value (CoefAf) = 5.79 New value = 2.1315

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E75

**Comment:** 1025-10-04 - Run 7 (DBCM) 2/9/00 14:46

Original value (CoefB) = 0.9761 New value = 19.7801

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F75

**Comment:** 1025-10-04 - Run 7 (DBCM) 2/9/00 14:46

Original value (CoefD) = 0.0341 New value = 0.213

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J75

**Comment:** 1025-10-04 - Run 7 (DBCM) 2/9/00 14:46

Original value (S) = 0 New value = 0

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C82

**Comment:** 1025-10-04 - Run 7 (MCAA) 2/9/00 14:47

Original value (CoefA0) = -2.0811 New value = 0.5088

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D82

**Comment:** 1025-10-04 - Run 7 (MCAA) 2/9/00 14:47

Original value (CoefAf) = 15.51 New value = 7.1451

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E82

**Comment:** 1025-10-04 - Run 7 (MCAA) 2/9/00 14:47

Original value (CoefB) = 4.3471 New value = 19.6985

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F82

**Comment:** 1025-10-04 - Run 7 (MCAA) 2/9/00 14:47

Original value (CoefD) = 0.0111 New value = 0.0339

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J82

**Comment:** 1025-10-04 - Run 7 (MCAA) 2/9/00 14:47

Original value (S) = 0 New value = 0

Peak curve fit with  $S = 0$ . Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C99

**Comment:** 1025-20-01 - Run 2 (DCBAA) 2/9/00 14:18

Original value (CoefA0) = 0 New value = 1.3

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** D99

**Comment:** 1025-20-01 - Run 2 (DCBAA) 2/9/00 14:18

Original value (CoefAf) = 0 New value = 0

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** E99

**Comment:** 1025-20-01 - Run 2 (DCBAA) 2/9/00 14:18

Original value (CoefB) = 0 New value = 0

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** F99

**Comment:** 1025-20-01 - Run 2 (DCBAA) 2/9/00 14:18

Original value (CoefD) = 0 New value = 0

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** J99

**Comment:** 1025-20-01 - Run 2 (DCBAA) 2/9/00 14:18

Original value (S) = 0 New value = -0.0196

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** C115

**Comment:** 1025-20-02 - Run 4 (CHBr3) 2/9/00 15:01

Original value (CoefA0) = 0 New value = 3.37

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** D115

**Comment:** 1025-20-02 - Run 4 (CHBr3) 2/9/00 15:01

Original value (CoefAf) = 0 New value = 0

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** E115

**Comment:** 1025-20-02 - Run 4 (CHBr3) 2/9/00 15:01

Original value (CoefB) = 0 New value = 0

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** F115

**Comment:** 1025-20-02 - Run 4 (CHBr3) 2/9/00 15:01

Original value (CoefD) = 0 New value = 0

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** J115

**Comment:** 1025-20-02 - Run 4 (CHBr3) 2/9/00 15:01

Original value (S) = 0 New value = -0.1053

Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** C120

**Comment:** 1025-20-02 - Run 4 (DCAA) 2/9/00 14:24

Original value (CoefA0) = 0.6929 New value = -1.6867

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D120

**Comment:** 1025-20-02 - Run 4 (DCAA) 2/9/00 14:24

Original value (CoefAf) = 17.01 New value = 62.799

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E120

**Comment:** 1025-20-02 - Run 4 (DCAA) 2/9/00 14:24  
Original value (CoefB) = 115.6832 New value = 53.6903  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F120

**Comment:** 1025-20-02 - Run 4 (DCAA) 2/9/00 14:24  
Original value (CoefD) = 0.1473 New value = 0.0865  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J120

**Comment:** 1025-20-02 - Run 4 (DCAA) 2/9/00 14:24  
Original value (S) = 0 New value = -0.0525  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C121

**Comment:** 1025-20-02 - Run 4 (DCBAA) 2/9/00 09:50  
Original value (CoefA0) = 0 New value = 1.26  
Fewer than 6 points above MRL. Step function applied.

**Cell:** D121

**Comment:** 1025-20-02 - Run 4 (DCBAA) 2/9/00 09:50  
Original value (CoefAf) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** E121

**Comment:** 1025-20-02 - Run 4 (DCBAA) 2/9/00 09:50  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** F121

**Comment:** 1025-20-02 - Run 4 (DCBAA) 2/9/00 09:50  
Original value (CoefD) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** J121

**Comment:** 1025-20-02 - Run 4 (DCBAA) 2/9/00 09:50  
Original value (S) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** K121

**Comment:** 1025-20-02 - Run 4 (DCBAA) 2/9/00 09:50  
Original value (t0) = 0 New value = 28.8272  
Fewer than 6 points above MRL. Step function applied.

**Cell:** C122

**Comment:** 1025-20-02 - Run 4 (HAA5) 2/9/00 14:25  
Original value (CoefA0) = 1.9385 New value = -0.451  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D122

**Comment:** 1025-20-02 - Run 4 (HAA5) 2/9/00 14:25

Original value (CoefAf) = 54.18 New value = 215.2341  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E122

**Comment:** 1025-20-02 - Run 4 (HAA5) 2/9/00 14:25  
Original value (CoefB) = 107.4214 New value = 184.9605  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F122

**Comment:** 1025-20-02 - Run 4 (HAA5) 2/9/00 14:25  
Original value (CoefD) = 0.1461 New value = 0.1245  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J122

**Comment:** 1025-20-02 - Run 4 (HAA5) 2/9/00 14:25  
Original value (S) = 0 New value = -0.2052  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C123

**Comment:** 1025-20-02 - Run 4 (HAA6) 2/9/00 14:30  
Original value (CoefA0) = 2.7645 New value = 2.2624  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D123

**Comment:** 1025-20-02 - Run 4 (HAA6) 2/9/00 14:30  
Original value (CoefAf) = 57.945 New value = 187.0702  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E123

**Comment:** 1025-20-02 - Run 4 (HAA6) 2/9/00 14:30  
Original value (CoefB) = 109.9605 New value = 156.8158  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F123

**Comment:** 1025-20-02 - Run 4 (HAA6) 2/9/00 14:30  
Original value (CoefD) = 0.1465 New value = 0.1247  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J123

**Comment:** 1025-20-02 - Run 4 (HAA6) 2/9/00 14:30  
Original value (S) = 0 New value = -0.211  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C124

**Comment:** 1025-20-02 - Run 4 (HAA9) 2/9/00 14:26  
Original value (CoefA0) = 2.7544 New value = 0.2437  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D124

**Comment:** 1025-20-02 - Run 4 (HAA9) 2/9/00 14:26  
Original value (CoefAf) = 60.03 New value = 365.0961

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E124

**Comment:** 1025-20-02 - Run 4 (HAA9) 2/9/00 14:26

Original value (CoefB) = 110.5719 New value = 331.0806

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F124

**Comment:** 1025-20-02 - Run 4 (HAA9) 2/9/00 14:26

Original value (CoefD) = 0.1466 New value = 0.1274

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J124

**Comment:** 1025-20-02 - Run 4 (HAA9) 2/9/00 14:26

Original value (S) = 0 New value = -0.224

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C132

**Comment:** 1025-20-02 - Run 4 (TSUVA) 2/9/00 09:48

Original value (CoefA0) = 0 New value = 0.9446

Fewer than 6 points. Step function applied.

**Cell:** D132

**Comment:** 1025-20-02 - Run 4 (TSUVA) 2/9/00 09:48

Original value (CoefAf) = 0 New value = 0

Fewer than 6 points. Step function applied.

**Cell:** E132

**Comment:** 1025-20-02 - Run 4 (TSUVA) 2/9/00 09:48

Original value (CoefB) = 0 New value = 0

Fewer than 6 points. Step function applied.

**Cell:** F132

**Comment:** 1025-20-02 - Run 4 (TSUVA) 2/9/00 09:48

Original value (CoefD) = 0 New value = 0

Fewer than 6 points. Step function applied.

**Cell:** J132

**Comment:** 1025-20-02 - Run 4 (TSUVA) 2/9/00 09:48

Original value (S) = 0 New value = 0

Fewer than 6 points. Step function applied.

**Cell:** K132

**Comment:** 1025-20-02 - Run 4 (TSUVA) 2/9/00 09:48

Original value (t0) = 0 New value = 28.8272

Fewer than 6 points. Step function applied.

**Cell:** C141

**Comment:** 1025-20-03 - Run 6 (DBCM) 2/9/00 14:42

Original value (CoefA0) = 1.7647 New value = 1.8658

Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.



**Cell:** D141

**Comment:** 1025-20-03 - Run 6 (DBCM) 2/9/00 14:42  
Original value (CoefAf) = 2.2148 New value = 2.0487  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E141

**Comment:** 1025-20-03 - Run 6 (DBCM) 2/9/00 14:42  
Original value (CoefB) = 10 New value = 19.954  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F141

**Comment:** 1025-20-03 - Run 6 (DBCM) 2/9/00 14:42  
Original value (CoefD) = 0.0707 New value = 0.2027  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J141

**Comment:** 1025-20-03 - Run 6 (DBCM) 2/9/00 14:42  
Original value (S) = 0 New value = 0  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** C143

**Comment:** 1025-20-03 - Run 6 (DCBAA) 2/9/00 09:57  
Original value (CoefA0) = 0 New value = 1.754  
Fewer than 6 points above MRL. Step function applied.

**Cell:** D143

**Comment:** 1025-20-03 - Run 6 (DCBAA) 2/9/00 09:57  
Original value (CoefAf) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** E143

**Comment:** 1025-20-03 - Run 6 (DCBAA) 2/9/00 09:57  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** F143

**Comment:** 1025-20-03 - Run 6 (DCBAA) 2/9/00 09:57  
Original value (CoefD) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** J143

**Comment:** 1025-20-03 - Run 6 (DCBAA) 2/9/00 09:57  
Original value (S) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** K143

**Comment:** 1025-20-03 - Run 6 (DCBAA) 2/9/00 09:57  
Original value (t0) = 0 New value = 242.8846  
Fewer than 6 points above MRL. Step function applied.

**Cell:** C148

**Comment:** 1025-20-03 - Run 6 (MCAA) 2/9/00 09:57  
Original value (CoefA0) = 0 New value = 5.725  
Fewer than 6 points above MRL. Step function applied.

**Cell:** D148

**Comment:** 1025-20-03 - Run 6 (MCAA) 2/9/00 09:57  
Original value (CoefAf) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** E148

**Comment:** 1025-20-03 - Run 6 (MCAA) 2/9/00 09:57  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** F148

**Comment:** 1025-20-03 - Run 6 (MCAA) 2/9/00 09:57  
Original value (CoefD) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** J148

**Comment:** 1025-20-03 - Run 6 (MCAA) 2/9/00 09:57  
Original value (S) = 0 New value = 0  
Fewer than 6 points above MRL. Step function applied.

**Cell:** K148

**Comment:** 1025-20-03 - Run 6 (MCAA) 2/9/00 09:57  
Original value (t0) = 0 New value = 198.7238  
Fewer than 6 points above MRL. Step function applied.

**Cell:** C150

**Comment:** 1025-20-03 - Run 6 (TCAA) 2/9/00 14:43  
Original value (CoefA0) = 1.0124 New value = 0.8487  
Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D150

**Comment:** 1025-20-03 - Run 6 (TCAA) 2/9/00 14:43  
Original value (CoefAf) = 10.4983 New value = 29.1581  
Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E150

**Comment:** 1025-20-03 - Run 6 (TCAA) 2/9/00 14:43  
Original value (CoefB) = 13001.361 New value = 15.7723  
Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F150

**Comment:** 1025-20-03 - Run 6 (TCAA) 2/9/00 14:43  
Original value (CoefD) = 0.0902 New value = 0.008  
Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J150

**Comment:** 1025-20-03 - Run 6 (TCAA) 2/9/00 14:43

Original value (S) = 0 New value = 0

Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C154

**Comment:** 1025-20-03 - Run 6 (TSUVA) 2/9/00 14:36

Original value (CoefA0) = -0.5716 New value = -1.45

Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D154

**Comment:** 1025-20-03 - Run 6 (TSUVA) 2/9/00 14:36

Original value (CoefAf) = 3.2201 New value = 4.55

Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E154

**Comment:** 1025-20-03 - Run 6 (TSUVA) 2/9/00 14:36

Original value (CoefB) = 4.0082 New value = 45

Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F154

**Comment:** 1025-20-03 - Run 6 (TSUVA) 2/9/00 14:36

Original value (CoefD) = 0.0376 New value = 0.0194

Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J154

**Comment:** 1025-20-03 - Run 6 (TSUVA) 2/9/00 14:36

Original value (S) = 0 New value = 0

Poor type -1 or 1 curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C162

**Comment:** 1025-20-04 - Run 8 (DBAA) 2/9/00 14:52

Original value (CoefA0) = 0 New value = -0.2296

Fewer than 6 points above MRL. Data was fit to peak curve by iterative curve fit procedure.

**Cell:** D162

**Comment:** 1025-20-04 - Run 8 (DBAA) 2/9/00 14:52

Original value (CoefAf) = 0 New value = 3.572

Fewer than 6 points above MRL. Data was fit to peak curve by iterative curve fit procedure.

**Cell:** E162

**Comment:** 1025-20-04 - Run 8 (DBAA) 2/9/00 14:52

Original value (CoefB) = 0 New value = 20.4265

Fewer than 6 points above MRL. Data was fit to peak curve by iterative curve fit procedure.

**Cell:** F162

**Comment:** 1025-20-04 - Run 8 (DBAA) 2/9/00 14:52

Original value (CoefD) = 0 New value = 0.0478

Fewer than 6 points above MRL. Data was fit to peak curve by iterative curve fit procedure.

**Cell:** J162

**Comment:** 1025-20-04 - Run 8 (DBAA) 2/9/00 14:52

Original value (S) = 0 New value = -0.0094

Fewer than 6 points above MRL. Data was fit to peak curve by iterative curve fit procedure.

**Cell:** C163

**Comment:** 1025-20-04 - Run 8 (DBCM) 2/9/00 14:49

Original value (CoefA0) = -0.0411 New value = -0.6567

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D163

**Comment:** 1025-20-04 - Run 8 (DBCM) 2/9/00 14:49

Original value (CoefAf) = 6.4553 New value = 24.9714

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E163

**Comment:** 1025-20-04 - Run 8 (DBCM) 2/9/00 14:49

Original value (CoefB) = 27.7502 New value = 46.3744

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F163

**Comment:** 1025-20-04 - Run 8 (DBCM) 2/9/00 14:49

Original value (CoefD) = 0.0495 New value = 0.0391

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J163

**Comment:** 1025-20-04 - Run 8 (DBCM) 2/9/00 14:49

Original value (S) = 0 New value = -0.0178

Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C176

**Comment:** 1025-20-04 - Run 8 (TSUVA) 2/9/00 10:00

Original value (CoefA0) = 0 New value = 0.6909

Fewer than 6 points. Step function applied.

**Cell:** D176

**Comment:** 1025-20-04 - Run 8 (TSUVA) 2/9/00 10:00

Original value (CoefAf) = 0 New value = 0

Fewer than 6 points. Step function applied.

**Cell:** E176

**Comment:** 1025-20-04 - Run 8 (TSUVA) 2/9/00 10:00

Original value (CoefB) = 0 New value = 0

Fewer than 6 points. Step function applied.

**Cell:** F176

**Comment:** 1025-20-04 - Run 8 (TSUVA) 2/9/00 10:00

Original value (CoefD) = 0 New value = 0

Fewer than 6 points. Step function applied.

**Cell:** J176

**Comment:** 1025-20-04 - Run 8 (TSUVA) 2/9/00 10:00

Original value (S) = 0 New value = 0

Fewer than 6 points. Step function applied.

**Cell:** K176

**Comment:** 1025-20-04 - Run 8 (TSUVA) 2/9/00 10:00  
Original value (t0) = 0 New value = 279.072  
Fewer than 6 points. Step function applied.

## ICR Information

ID / ICR#: IN 5202020 / 368  
 ICR Contact: Mr. Chet Shastri  
 Phone No.: (219) 427 - 1254  
 Period: 4/16/98 - 6/4/98 (48 B-S days)

## Design Information

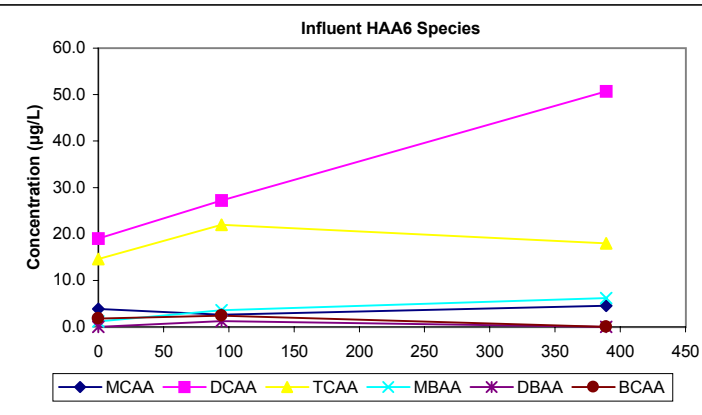
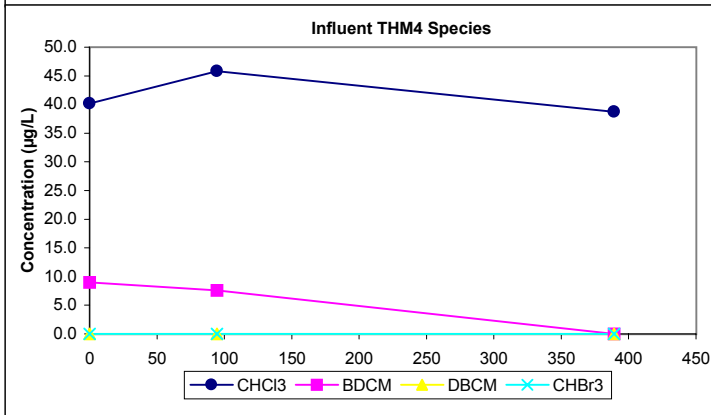
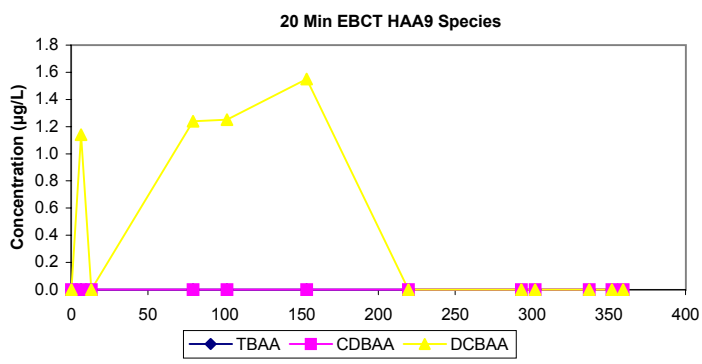
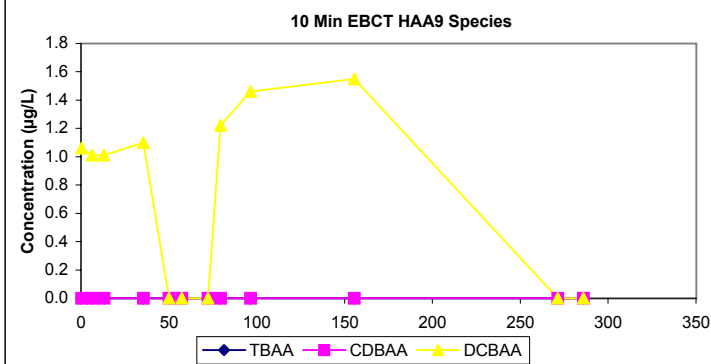
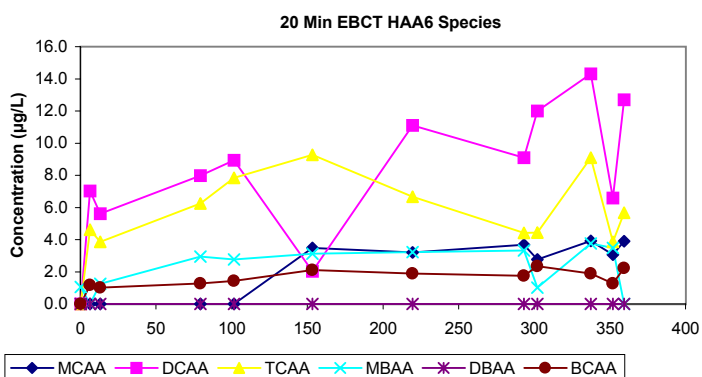
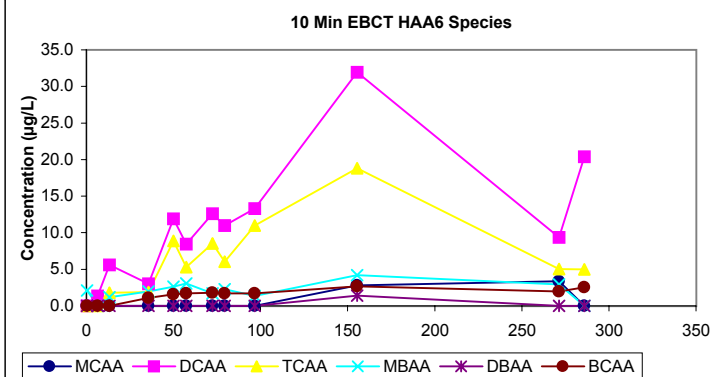
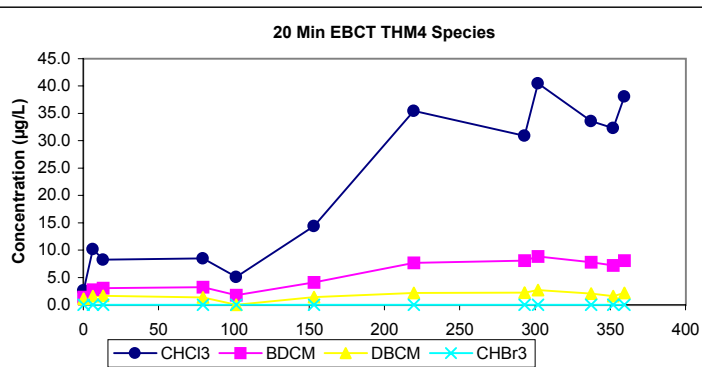
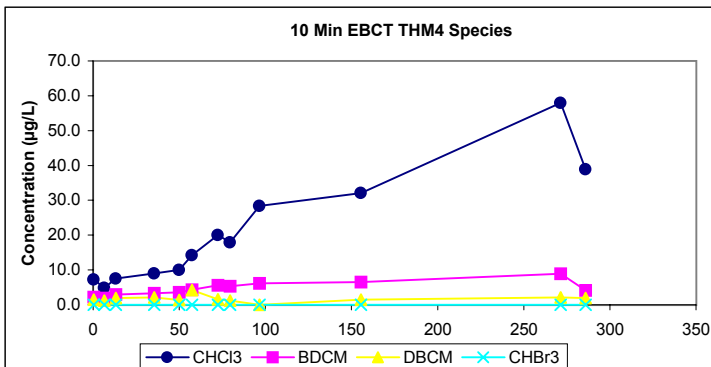
Design TOC: 3.1 mg/L  
 Col Diameter: 8.0 mm  
 Min Reynolds#: 0.43  
 Full-Scale Temp: 15.0 C

Full-Scale GAC Size: 12x40 Bituminous coal  
 Bench-Scale GAC Size: 80x140  
 Scaling Factor: 7.36  
 Meas Dry Bed Density: 0.50 g/cm3

## Water Quality Summary

Influent	Influent				Influent				Res (0)	Mean	SD	Count	Min/Max
	Mean	SD/RD	Count	Min/Max	Mean	SD/RD	Count	Min/Max					
TOC	3.5	0.3	3	3.2 - 3.7									
pH	7.1	0.3	3	6.9 - 7.4									
UV254	0.058	0.005	3	0.052 - 0.061									
SUVA	1.65	0.04	3	1.62 - 1.69									
Bromide	16	11	2	10 - 21									
SDS-TOX	176	49	3	135 - 230									
SDS-THM4	47	8	3	39 - 53									
SDS-HAA6	60	20	3	40 - 79									
Effluent	10 Min EBCT (39 B-S days)				20 Min EBCT (49 B-S days)				Chart Legend:	<div><div><div></div><div>10 Min EBCT</div></div><div><div></div><div>20 Min EBCT</div></div><div><div></div><div>Influent</div></div><div><div></div><div>Influent</div></div></div>			
	Effluent pH	7.3	0.2	12	6.8 - 7.5	7.1	0.2	12					
Effluent Temp	21.3	2.5	12	17.6 - 24.8	23.4	1.3	12	21.2 - 25.5					

## Water Quality Graphs (Continued)



## ICR Information

ID / ICR#: IN 5202020 / 368  
 ICR Contact: Mr. Chet Shastri  
 Phone No.: (219) 427 - 1254  
 Period: 7/20/98 - 8/6/98 (16 B-S days)

## Design Information

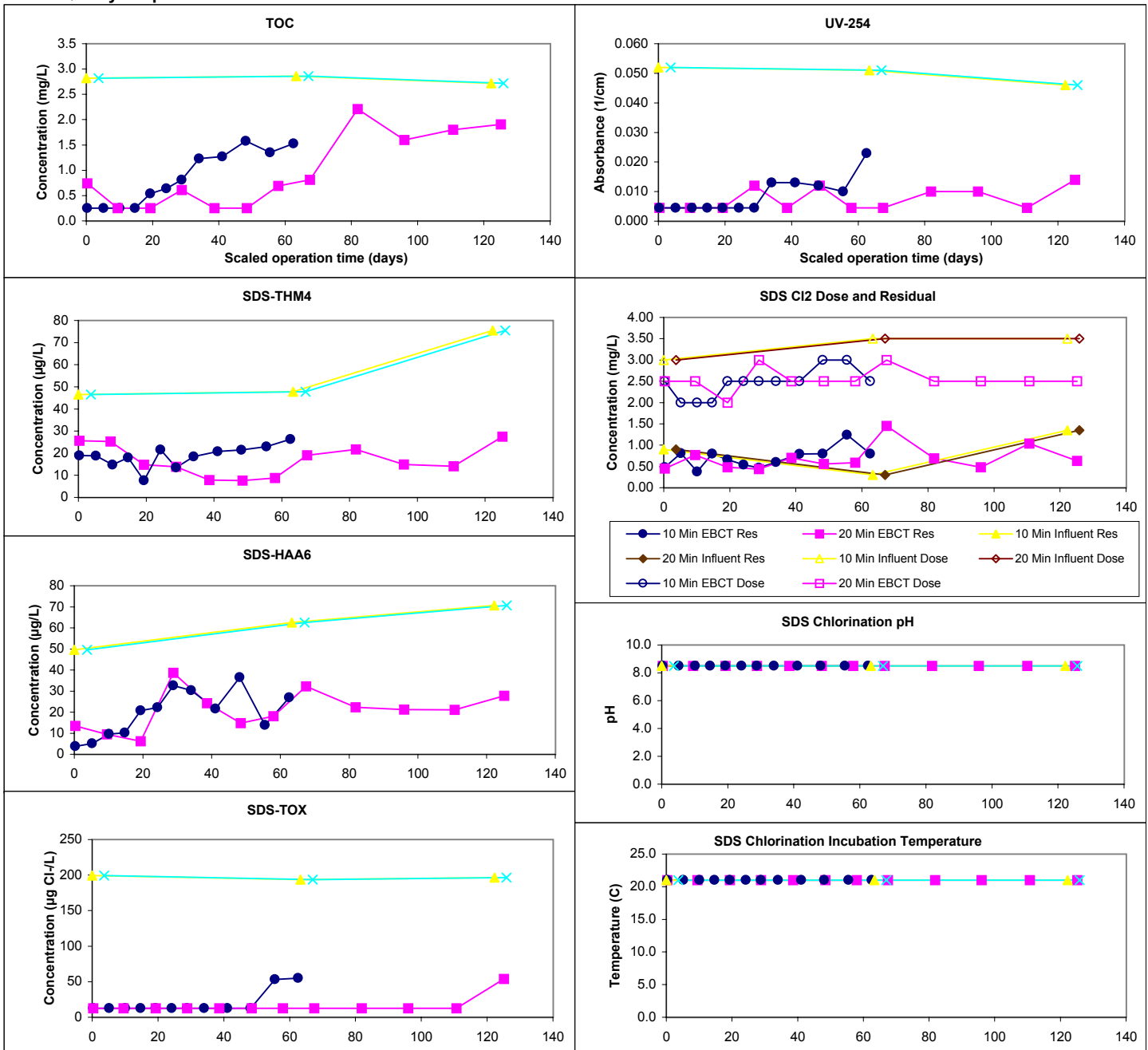
Design TOC: 3.1 mg/L  
 Col Diameter: 8.0 mm  
 Min Reynolds#: 0.56  
 Full-Scale Temp: 26.0 C

Full-Scale GAC Size: 12x40 Bituminous coal  
 Bench-Scale GAC Size: 80x140  
 Scaling Factor: 7.36  
 Meas Dry Bed Density: 0.50 g/cm3

## Water Quality Summary

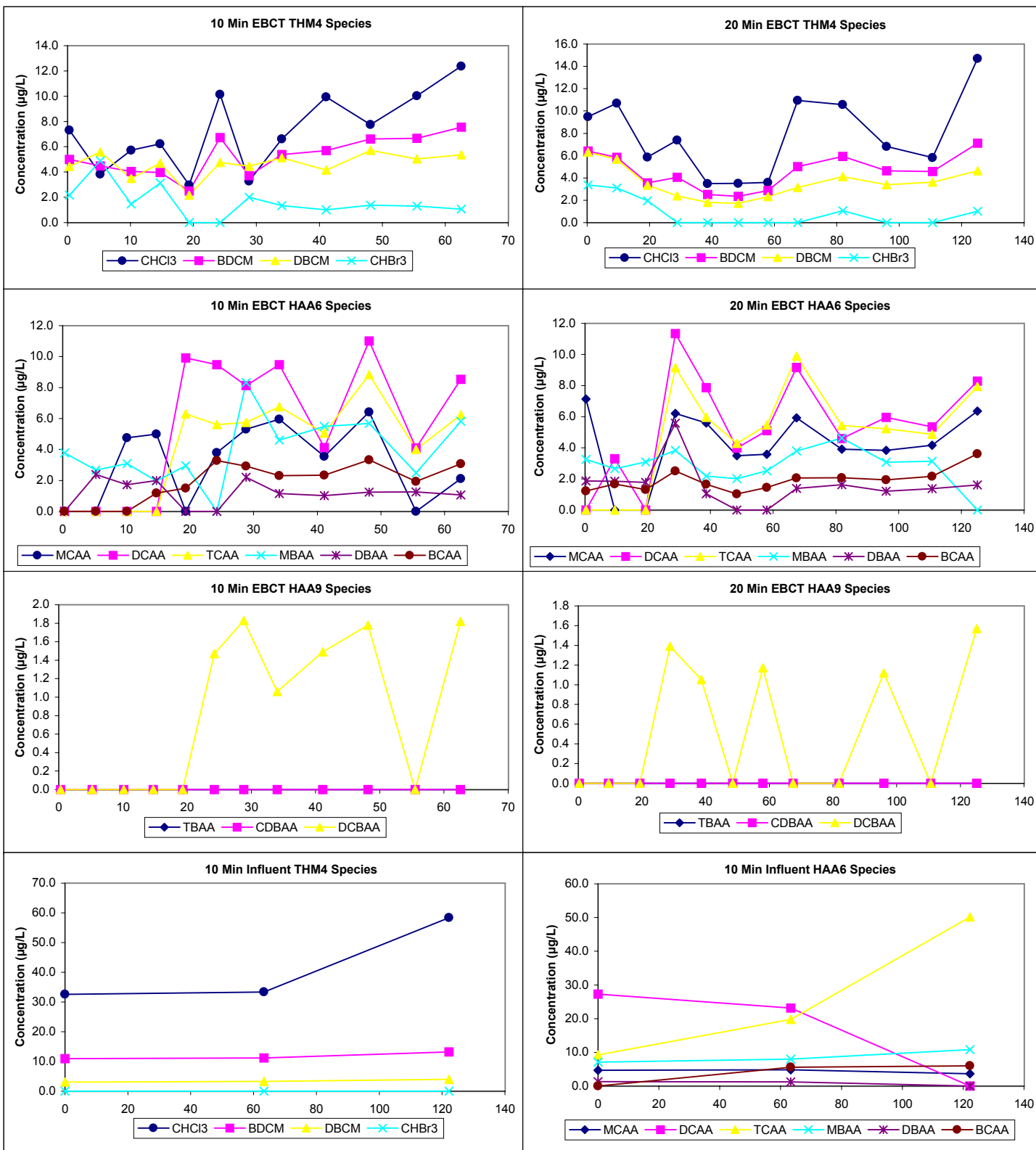
Influent	10 Min Influent				20 Min Influent				Res (0)	Mean	SD	Count	Min/Max
	Mean	SD/RD	Count	Min/Max	Mean	SD/RD	Count	Min/Max					
TOC	2.8	0.1	3	2.7 - 2.9	2.8	0.1	3	2.7 - 2.9		0.73	0.31	30	0.30 - 1.45
pH	7.3	0.5	3	7.0 - 7.8	7.3	0.5	3	7.0 - 7.8	Temp	21.0	0.0	30	21.0 - 21.0
UV254	0.050	0.003	3	0.046 - 0.052	0.050	0.003	3	0.046 - 0.052	pH	8.5	0.0	30	8.5 - 8.5
SUVA	1.77	0.08	3	1.69 - 1.84	1.77	0.08	3	1.69 - 1.84	Time	26.0	0.0	30	26.0 - 26.0
Bromide	40	2	2	39 - 41	40	2	2	39 - 41	Comments:				
SDS-TOX	197	3	3	194 - 200	197	3	3	194 - 200					
SDS-THM4	57	16	3	47 - 76	57	16	3	47 - 76					
SDS-HAA6	61	11	3	50 - 71	61	11	3	50 - 71					
Effluent	10 Min EBCT (9 B-S days)				20 Min EBCT (17 B-S days)				Chart Legend:	<div><div><div></div><div>10 Min EBCT</div></div><div><div></div><div>20 Min EBCT</div></div><div><div></div><div>10 Min Influent</div></div><div><div></div><div>20 Min Influent</div></div></div>			
Effluent pH	6.6	0.5	12	5.6 - 7.4	7.1	0.6	12	6.2 - 8.6					
Effluent Temp	25.0	1.2	12	23.0 - 27.0	25.0	1.4	12	23.0 - 28.0					

## Water Quality Graphs





## Water Quality Graphs (Continued)



## ICR Information

ID / ICR#: IN 5202020 / 368  
 ICR Contact: Mr. Chet Shastri  
 Phone No.: (219) 427 - 1254  
 Period: 11/4/98 - 12/15/98 (41 B-S days)

## Design Information

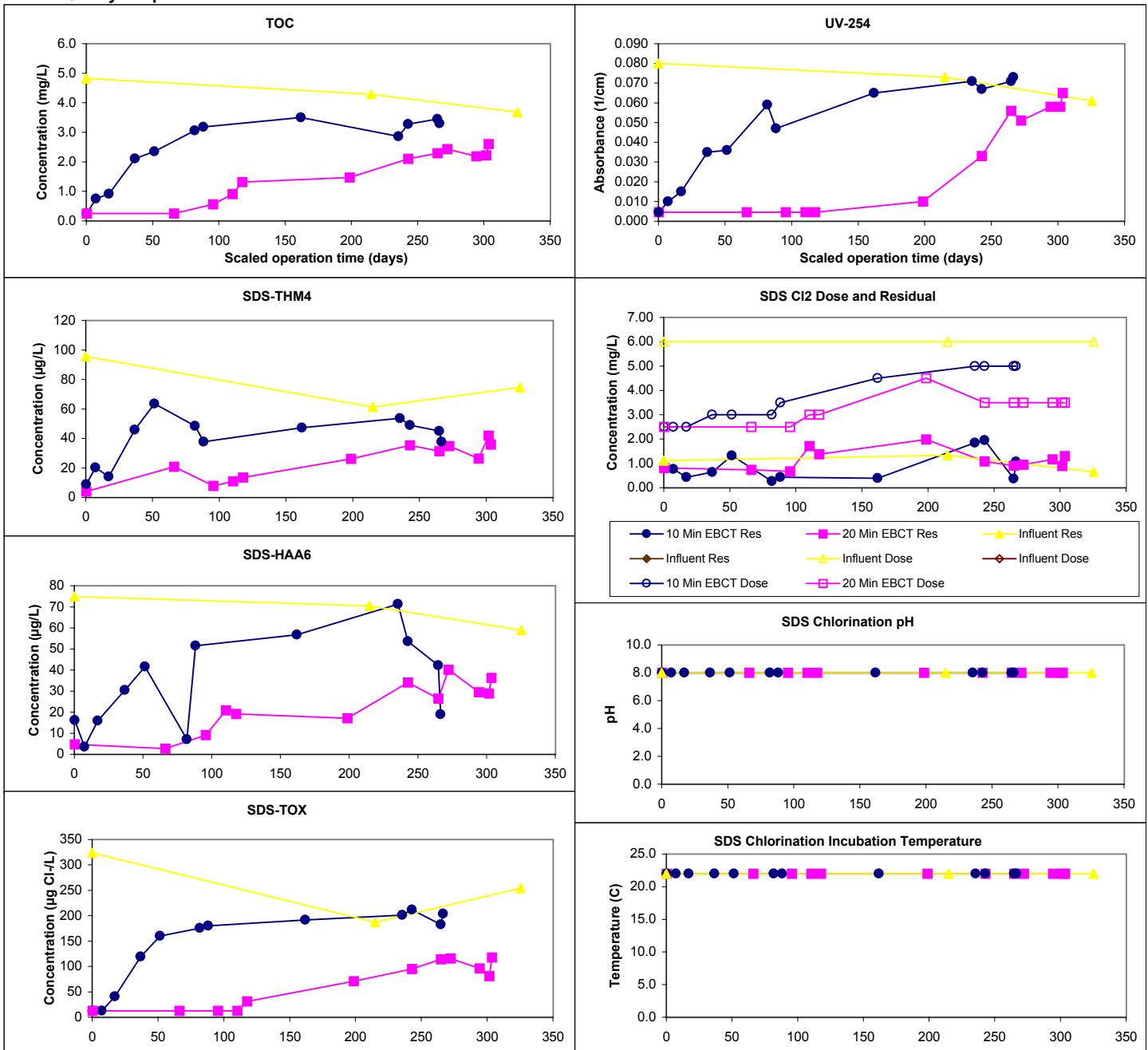
Design TOC: 4.5 mg/L  
 Col Diameter: 8.0 mm  
 Min Reynolds#: 0.38  
 Full-Scale Temp: 10.0 C

Full-Scale GAC Size: 12x40 Bituminous coal  
 Bench-Scale GAC Size: 80x140  
 Scaling Factor: 7.36  
 Meas Dry Bed Density: 0.50 g/cm3

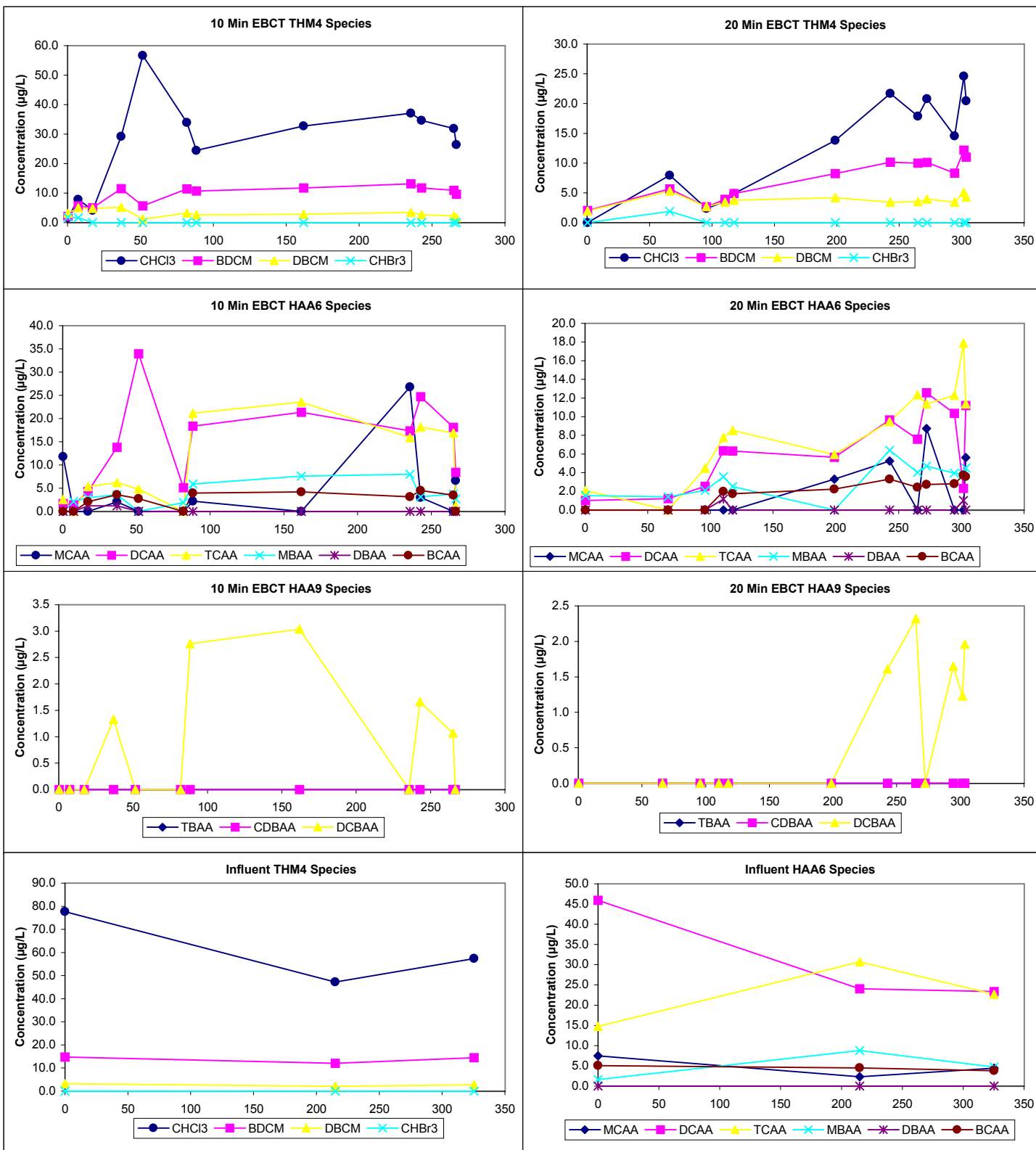
## Water Quality Summary

Influent	Influent				Influent				Res (0)	Mean	SD	Count	Min/Max
	Mean	SD/RD	Count	Min/Max	Mean	SD/RD	Count	Min/Max					
TOC	4.3	0.6	3	3.7 - 4.8									
pH	6.6	0.1	3	6.5 - 6.7									
UV254	0.071	0.010	3	0.061 - 0.080									
SUVA	1.67	0.02	3	1.66 - 1.70									
Bromide	40	0	2	40 - 40									
SDS-TOX	255	69	3	187 - 324									
SDS-THM4	77	17	3	61 - 96									
SDS-HAA6	68	8	3	59 - 75									
Effluent	10 Min EBCT (41 B-S days)				20 Min EBCT (41 B-S days)				Chart Legend:	<div><div><div></div><div>10 Min EBCT</div></div><div><div></div><div>20 Min EBCT</div></div><div><div></div><div>Influent</div></div><div><div></div><div>Influent</div></div></div>			
Effluent pH	7.2	0.3	12	6.6 - 7.6	7.2	0.4	12	6.8 - 7.8					
Effluent Temp	20.0	1.7	12	17.2 - 22.4	21.6	1.2	12	19.1 - 23.5					

## Water Quality Graphs



## Water Quality Graphs (Continued)



## ICR Information

ID / ICR#: IN 5202020 / 368  
 ICR Contact: Mr. Chet Shastri  
 Phone No.: (219) 427 - 1254  
 Period: 3/15/99 - 4/30/99 (46 B-S days)

## Design Information

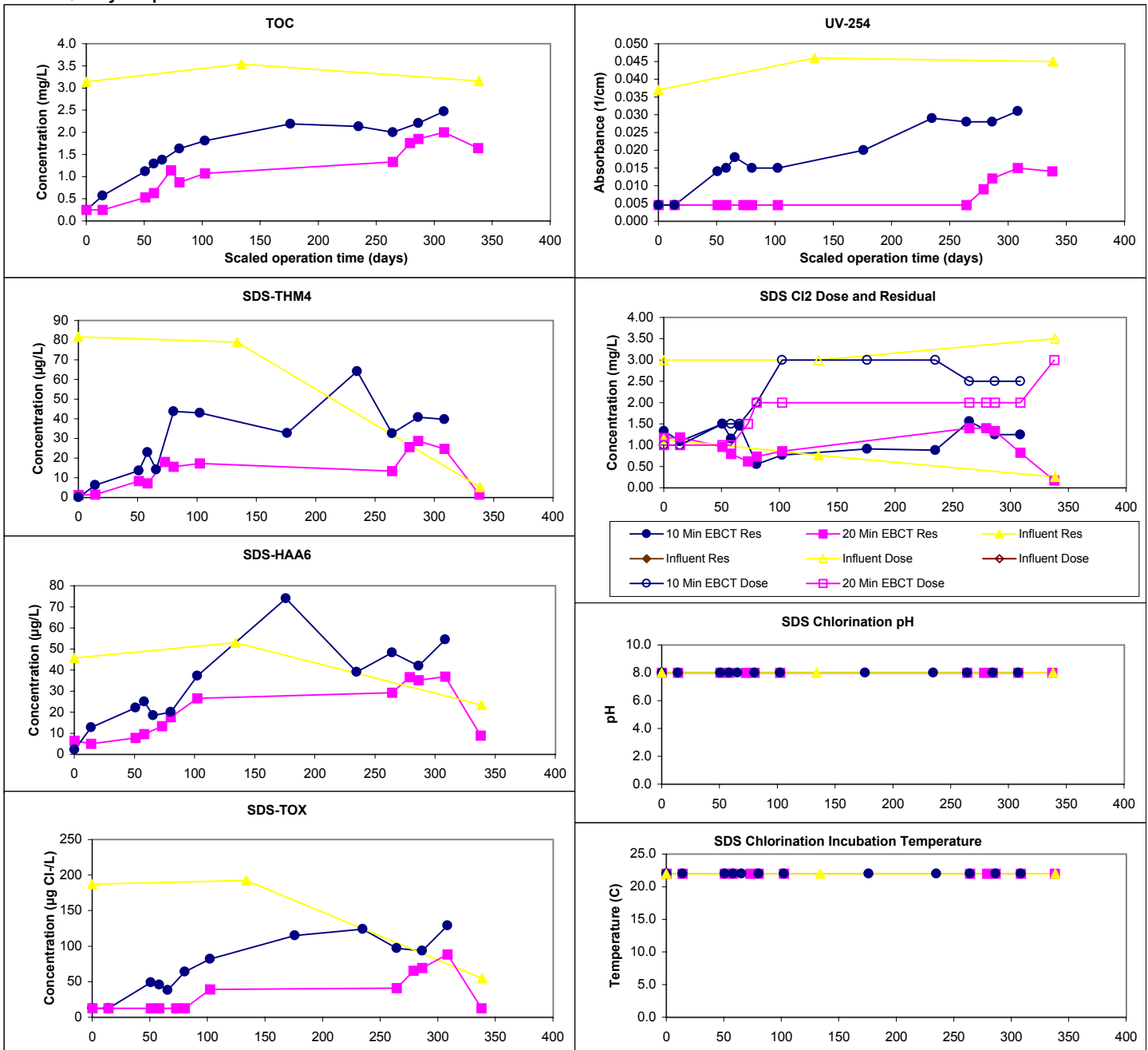
Design TOC: 3.3 mg/L  
 Col Diameter: 8.0 mm  
 Min Reynolds#: 0.40  
 Full-Scale Temp: 12.0 C

Full-Scale GAC Size: 12x40 Bituminous coal  
 Bench-Scale GAC Size: 80x140  
 Scaling Factor: 7.36  
 Meas Dry Bed Density: 0.50 g/cm3

## Water Quality Summary

Influent	Influent				Influent				Res (0)	Mean	SD	Count	Min/Max
	Mean	SD/RD	Count	Min/Max	Mean	SD/RD	Count	Min/Max					
TOC	3.3	0.2	3	3.1 - 3.5									
pH	6.6	0.3	3	6.3 - 6.9									
UV254	0.043	0.005	3	0.037 - 0.046									
SUVA	1.30	0.12	3	1.18 - 1.42									
Bromide	22	0	1	22 - 22									
SDS-TOX	145	78	3	55 - 193									
SDS-THM4	55	43	3	5 - 82									
SDS-HAA6	41	15	3	23 - 53									
Effluent	10 Min EBCT (42 B-S days)				20 Min EBCT (46 B-S days)				Chart Legend:	<div><div></div>10 Min EBCT</div> <div><div></div>20 Min EBCT</div> <div><div></div>Influent</div> <div><div></div>Influent</div>			
Effluent pH	7.9	0.7	12	7.2 - 9.5	8.0	0.7	12	7.4 - 9.6					
Effluent Temp	18.1	3.7	12	11.2 - 22.7	18.1	2.9	12	12.6 - 22.7					

## Water Quality Graphs



## Water Quality Graphs (Continued)

