

# ICR TREATMENT STUDY ANALYSIS

## Base Analysis and Data Review Comments

<b>Treatment Study ID</b>	1008
<b>Study Protocol</b>	GAC pilot-scale treatment study
<b>Plant ICR Number</b>	527
<b>PWS Name</b>	City of Columbus
<b>City, State, Zip</b>	Columbus, OH 43215

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

### Major comments:

None.

### General Comments:

1. Units for bromide in Table 1 of the Summary Report should be mg/L, not µg/L.

### Outlier Data:

Four outliers removed.

**Cell:** A1

**Comment:** 1008-SAS.xls 2/9/00 20:38

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

**Cell:** C9

**Comment:** 1008-10-01 - Run 1 (DBCM) 2/9/00 20:18  
Original value (CoefA0) = -0.1092 New value = -0.4595  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D9

**Comment:** 1008-10-01 - Run 1 (DBCM) 2/9/00 20:18  
Original value (CoefAf) = 3.0271 New value = 3.6754  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E9

**Comment:** 1008-10-01 - Run 1 (DBCM) 2/9/00 20:18  
Original value (CoefB) = 6.8264 New value = 845.8553  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F9

**Comment:** 1008-10-01 - Run 1 (DBCM) 2/9/00 20:18  
Original value (CoefD) = 0.1423 New value = 0.5348  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J9

**Comment:** 1008-10-01 - Run 1 (DBCM) 2/9/00 20:18  
Original value (S) = -0.012 New value = -0.0116  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C16

**Comment:** 1008-10-01 - Run 1 (MCAA) 2/9/00 20:21  
Original value (CoefA0) = -0.2667 New value = -0.7486  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D16

**Comment:** 1008-10-01 - Run 1 (MCAA) 2/9/00 20:21  
Original value (CoefAf) = 2.91 New value = 13.5713  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E16

**Comment:** 1008-10-01 - Run 1 (MCAA) 2/9/00 20:21  
Original value (CoefB) = 10.7854 New value = 21.5157  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F16

**Comment:** 1008-10-01 - Run 1 (MCAA) 2/9/00 20:21  
Original value (CoefD) = 0.0648 New value = 0.0356  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J16

**Comment:** 1008-10-01 - Run 1 (MCAA) 2/9/00 20:21  
Original value (S) = 0 New value = -0.0149  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C22

**Comment:** 1008-10-01 - Run 1 (TSUVA) 2/9/00 20:16  
Original value (CoefA0) = -0.9412 New value = -1.0975  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** D22

**Comment:** 1008-10-01 - Run 1 (TSUVA) 2/9/00 20:16  
Original value (CoefAf) = 2.8235 New value = 2.754  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** E22

**Comment:** 1008-10-01 - Run 1 (TSUVA) 2/9/00 20:16  
Original value (CoefB) = 1.0947 New value = 1.4549  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** F22

**Comment:** 1008-10-01 - Run 1 (TSUVA) 2/9/00 20:16  
Original value (CoefD) = 0.0548 New value = 0.1069  
Peak curve fit with S = 0. Refit to type 1 curve fit by iterative curve fit procedure.

**Cell:** J22

**Comment:** 1008-10-01 - Run 1 (TSUVA) 2/9/00 20:16  
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:** C30

**Comment:** 1008-20-01 - Run 2 (DBAA) 2/9/00 20:26  
Original value (CoefA0) = -0.0201 New value = -0.585  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D30

**Comment:** 1008-20-01 - Run 2 (DBAA) 2/9/00 20:26  
Original value (CoefAf) = 2.7 New value = 5.159  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E30

**Comment:** 1008-20-01 - Run 2 (DBAA) 2/9/00 20:26  
Original value (CoefB) = 63.3926 New value = 20.4575  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F30

**Comment:** 1008-20-01 - Run 2 (DBAA) 2/9/00 20:26  
Original value (CoefD) = 0.0677 New value = 0.0646  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J30

**Comment:** 1008-20-01 - Run 2 (DBAA) 2/9/00 20:26  
Original value (S) = 0 New value = -0.0137  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C31

**Comment:** 1008-20-01 - Run 2 (DBCM) 2/9/00 20:22  
Original value (CoefA0) = -0.1239 New value = -1.525  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** D31

**Comment:** 1008-20-01 - Run 2 (DBCM) 2/9/00 20:22  
Original value (CoefAf) = 7.65 New value = 14.8784  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** E31

**Comment:** 1008-20-01 - Run 2 (DBCM) 2/9/00 20:22  
Original value (CoefB) = 70.7603 New value = 23.1961  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** F31

**Comment:** 1008-20-01 - Run 2 (DBCM) 2/9/00 20:22  
Original value (CoefD) = 0.1052 New value = 0.0664  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** J31

**Comment:** 1008-20-01 - Run 2 (DBCM) 2/9/00 20:22  
Original value (S) = 0 New value = -0.0096  
Poor peak curve fit. Data was refit by iterative curve fit procedure.

**Cell:** C37

**Comment:** 1008-20-01 - Run 2 (MBAA) 2/9/00 20:24  
Original value (CoefA0) = 0 New value = 0  
Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** D37

**Comment:** 1008-20-01 - Run 2 (MBAA) 2/9/00 20:24  
Original value (CoefAf) = 0 New value = 3  
Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** E37

**Comment:** 1008-20-01 - Run 2 (MBAA) 2/9/00 20:24  
Original value (CoefB) = 0 New value = 0  
Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** F37

**Comment:** 1008-20-01 - Run 2 (MBAA) 2/9/00 20:24  
Original value (CoefD) = 0 New value = 0  
Fewer than 6 points above MRL. Peak curve/step function combination applied.

**Cell:** J37

**Comment:** 1008-20-01 - Run 2 (MBAA) 2/9/00 20:24

Original value (S) = 0 New value = -0.0706

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

## ICR Information

ID / ICR#: OH2500411 / 527  
 ICR Contact: Mr. Kenneth S. Button  
 Phone No.: (614) 645-7691  
 Period: 4/15/98 - 8/24/98 (131 days)

## Design Information

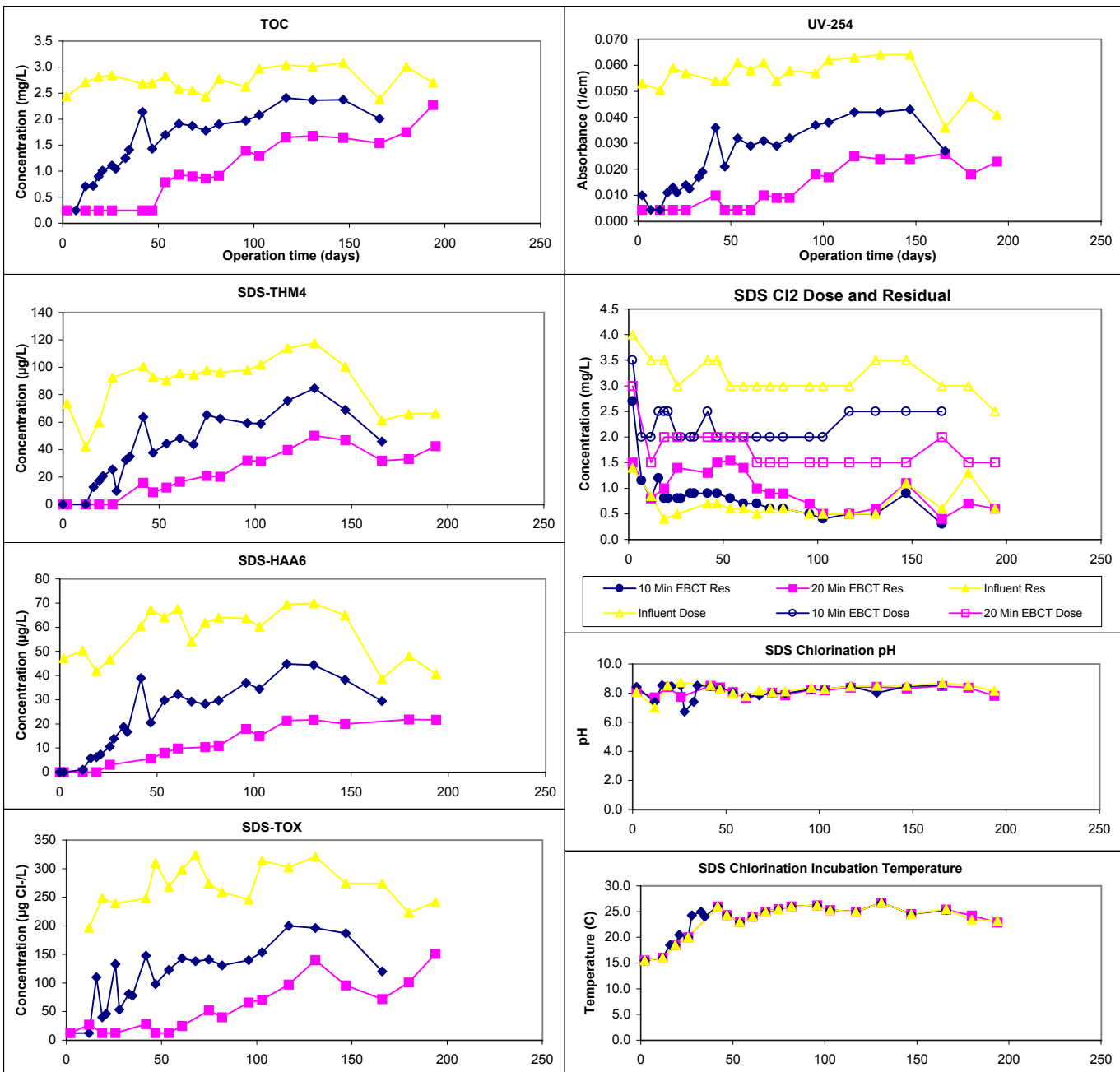
Design TOC: 2.9 mg/L  
 Col Diameter: 75.0 mm

Full-Scale GAC Size: 8x30 US Std Mesh  
 Full-Scale particle dia.: 1.480 mm  
 Meas Dry Bed Density: 500.0 kg/m3

## Water Quality Summary

Influent											
Influent	Mean	SD	Count	Min/Max							
TOC	2.7	0.2	19	2.4 - 3.1	Res (0)	0.87	0.41	51	0.40 - 2.70		
pH	7.4	0.7	19	6.6 - 9.3	Temp	23.0	3.5	50	15.5 - 26.7		
UV254	0.056	0.008	19	0.036 - 0.064	pH	8.2	0.4	49	6.7 - 8.7		
SUVA	2.02	0.24	19	1.5 - 2.4	Time	47.9	0.4	50	47.0 - 49.0		
Bromide	1	5	19	0 - 21	Comments:						
SDS-TOX	270	36	18	196 - 324							
SDS-THM4	87	20	19	42 - 118							
SDS-HAA6	57	10	19	39 - 70							
Ammonia	0.01	0.03	19	0.00 - 0.14							
Effluent	10 Min EBCT (166 days)				20 Min EBCT (194 days)		Chart Legend:  ◆ 10 Min EBCT ■ 20 Min EBCT ▲ Influent				
Effluent pH	7.3	0.7	23	6.5 - 9.5	7.2	0.8				19	6.4 - 9.9
Effluent Temp	19.8	3.7	22	13.0 - 26.1	20.1	3.8				19	14.0 - 25.9

## Water Quality Parameter Graphs



Water Quality Parameter Graphs (Continued)

