APPENDIX A

Point Source Discharges

Point Source Discharges in Subsegment 020201

FILE NUMBER	NPDES	LPDES	COMPANY	FACILITY	LOCATION	FACILITY TYPE	RECEIVING WATER	SIC	INCLUDED IN MODEL?	INCLUDED IN TMDL?
LAG530900			BRIDGELINE GAS DISTR INC	PARADIS GAS PLT OFF	PARADIS 3 M SSW OF BETWEEN LA90 & 631	MOBILE TRAILER OFFICES	HUMBLE CANAL	4952	No	Yes
WP0475			COLLIER'S FISHERIES INC	BAYOU DES ALLEMANDS	DES ALLEMANDS, EAST BANK	SEAFOOD	BAYOU DES ALLEMANDS		Yes	Yes
GP0136		LAG330043	TEXACO E&P INC	PARADIS FIELD	PARADIS FIELD	E&P	BAYOU DES ALLEMANDS		No	No

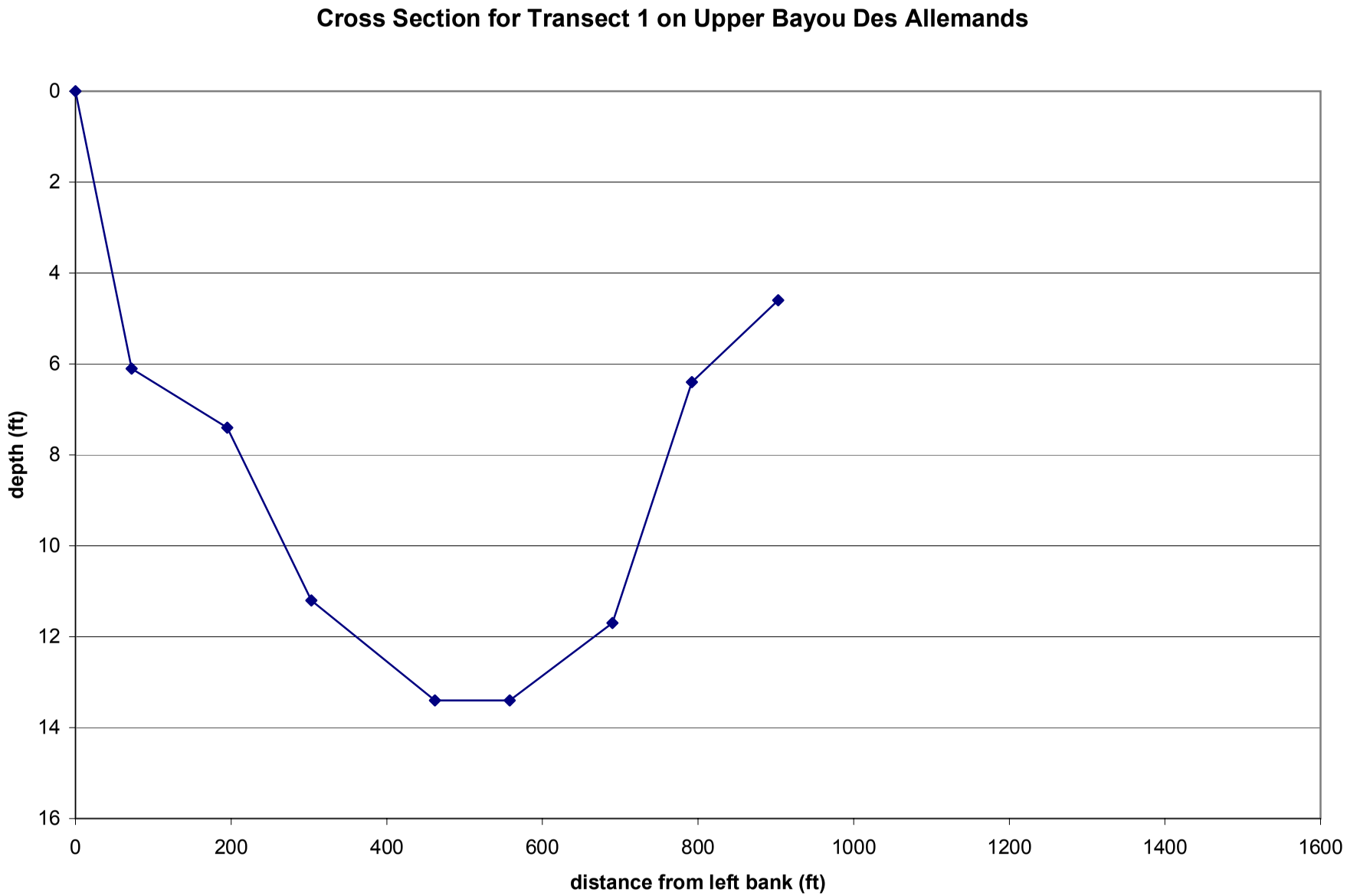
APPENDIX B

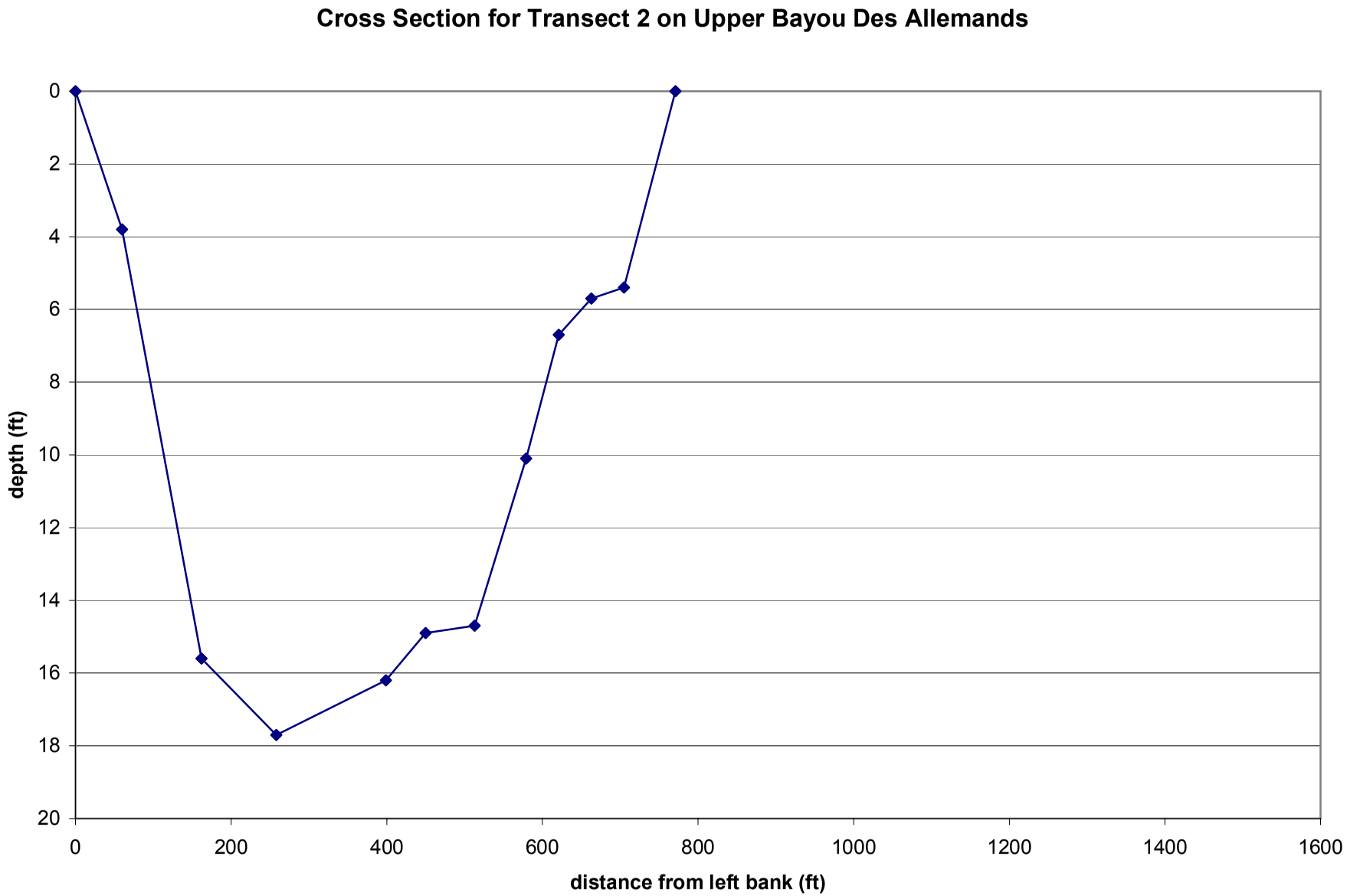
Calibration Survey Results

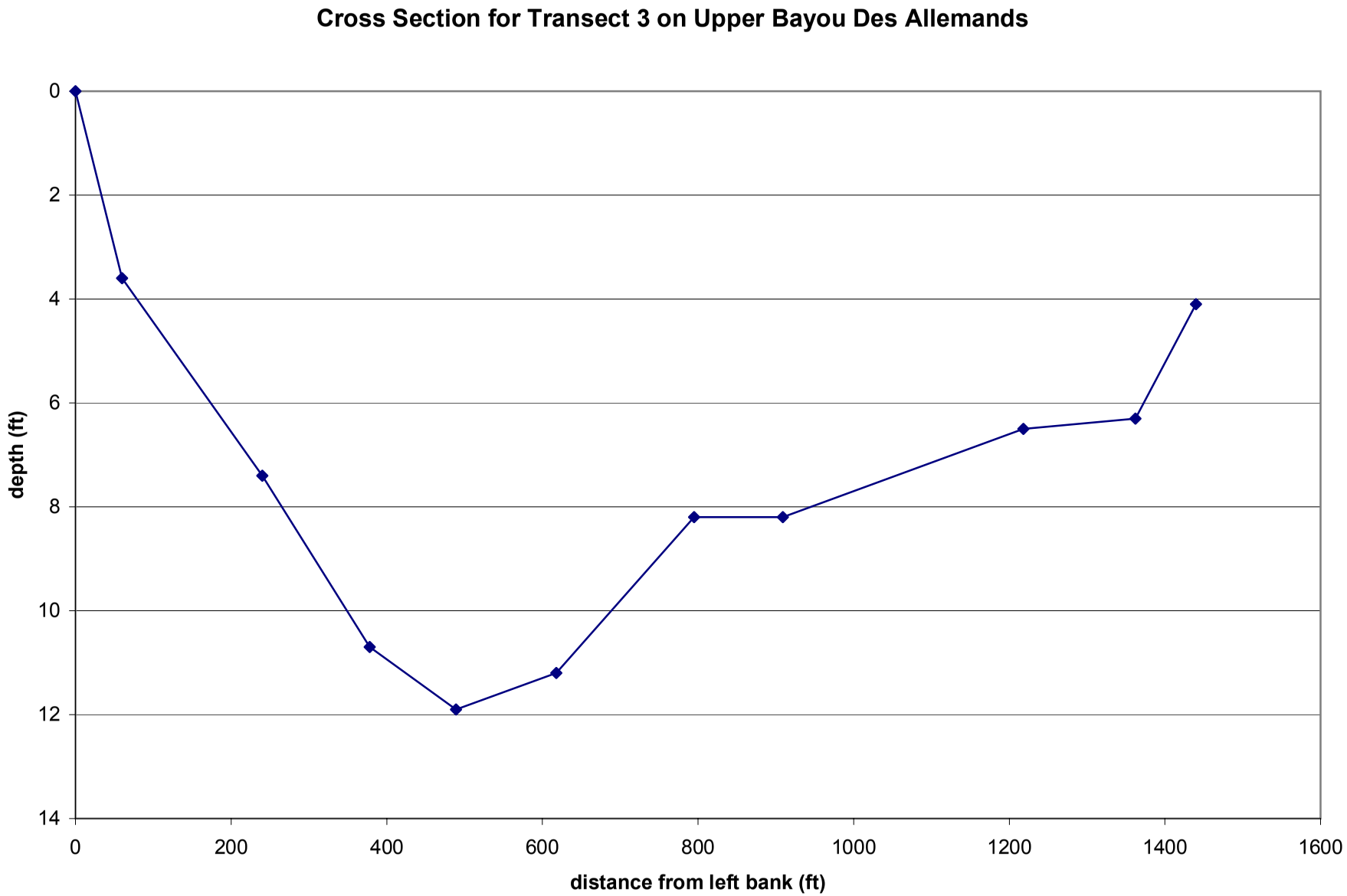
SUMMARY OF DATA COLLECTED DURING CALIBRATION SURVEY- BAYOU DES ALLEMANDS- 020201

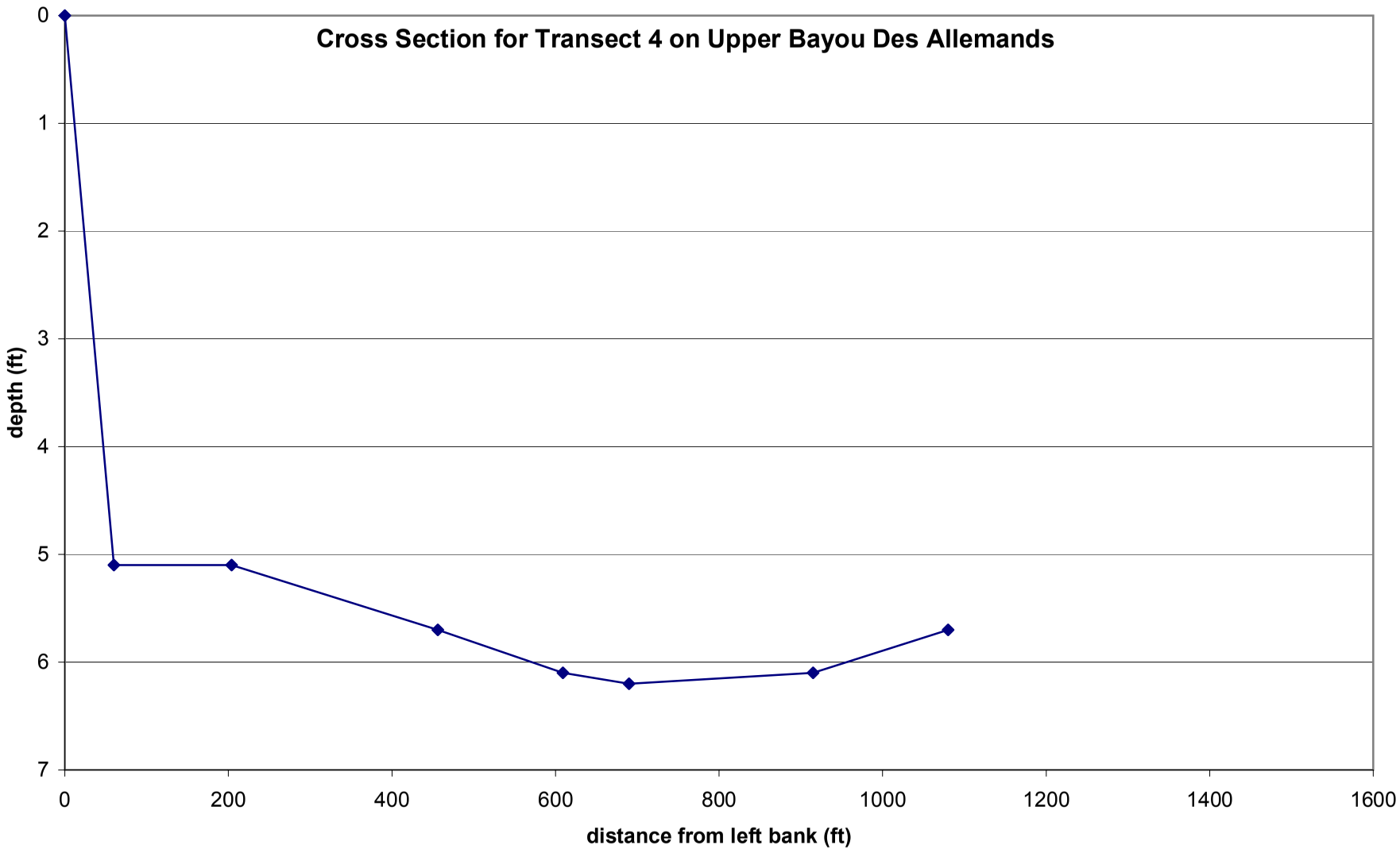
Station	Date	Time	Total Depth of Water (ft)	Total Depth of Water (m)	Depth of WQ Measurements (m)	In situ Measurements Temp. (°C)	DO (mg/L)	DO Sat. (%)	Conduc. (umhos)	pH (su)	Nitrate NO_3-N (mg/L)	Nitrite NO_2-N (mg/L)	NH_3-N (mg/L)	TKN (mg/L)	Ortho P (mg/L)	Total P (mg/L)	Chloro A (mg/L)	TSS (mg/L)
020201-0	8/20/2002	1530	10.8	3.3	1	31.5	5.5	75	493	6.1								
					2	31.0	4.3	58	492	6.0								
					3	31.0	4.2	57	492	6.3								
020201-1	8/20/2002	1040			1	30.8	3.5	47	503	6.3	<0.1	<0.1	0.43	1.70	0.12	0.24	0.031	11
					3	30.8	3.7	50	503	6.3								
					5	30.8	3.5	47	503	6.0								
020201-1A	8/19/2002	1115			0	31.0	2.5	34	590	6.2								
					3.1	30.4	2.3	31	597	6.2								
					6.2	30.3	2.1	28	600	6.2								
020201-2	8/20/2002	1015	10.2	3.1	1	30.7	4.0	54	490	6.4								
					2	30.6	3.9	52	490	6.3								
					3	30.6	3.9	52	490	6.3								
020201-3	8/20/2002	0645	14.8	4.5	1	30.7	4.4	59	480	6.5	<0.1	<0.1	0.32	1.4	0.17	0.31	0.033	12
020201-4	8/20/2002	0720	9.3	2.8	1	28.9	2.2	29	740	6.2	<0.1	<0.1	0.20	1.2	0.12	0.21	0.024	5.1
020201-5	8/19/2002	1535	17.6	5.4	1	32.0												
020201-5	8/20/2002	1400	16.4	5.0	1	31.1	5.9	80	503	6.4								
					3	30.2	4.4	58	490	6.2								
					5	30.1	4.3	57	490	6.3								
020201-6	8/19/2002	1500	7.5	2.3	1	31.7	6.5	89	460	7.2								
					2	30.8	2.8	38	450	6.5								
020201-6A	8/20/2002	1320	7.2	2.2	1	30.3	5.9	79	505	6.4	<0.1	<0.1	0.18	1.4	0.17	0.28	0.035	15
					2	30.2	5.9	78	504	6.6								
020201-6B	8/20/2002	1320			1						<0.1	<0.1	0.10	1.5	0.17	0.29	0.035	16
020201-7	8/19/2002	1445	7.1	2.2	1	32.9	4.7	65	492	6.6								
020201-8	8/19/2002	1415	5.1	1.6	1	33.1	11.3	158	516	9.6								
020201-9	8/20/2002	1345	7.6	2.3	1	30.2	4.5	60	614	6.3								
					2	28.6	2.6	34	612	6.1								
020201-10	8/19/2002	1300	8.3	2.5	1	32.9	9.6	133	450	8.8								
020201-10	8/20/2002	1215			1	30.6	7.8	104	427	6.3	<0.1	<0.1	0.12	1.7	0.12	0.24	0.051	8
					2	29.6	2.1	28	416	5.8								

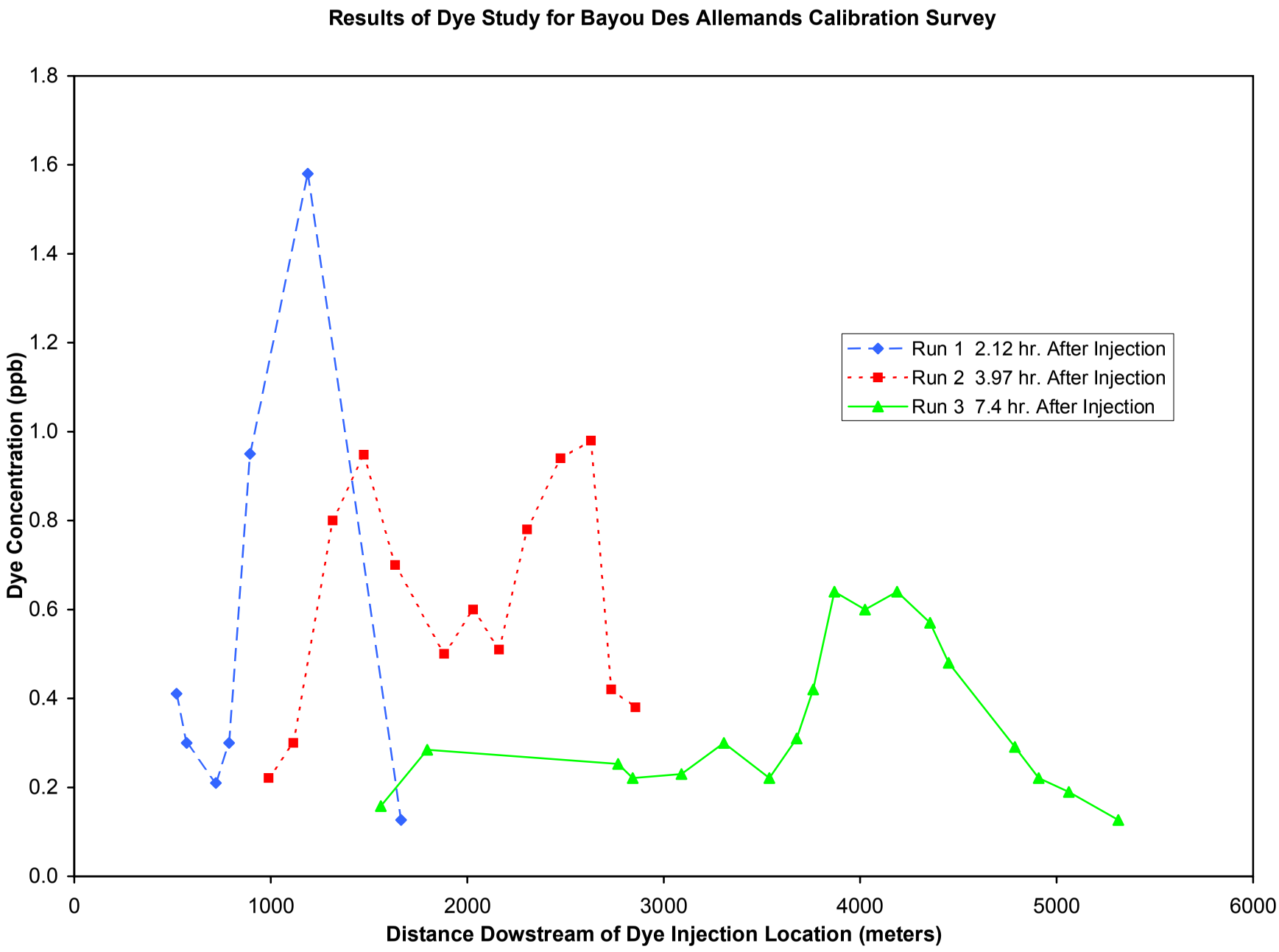
FILE: R:\PROJECTS\2110-611\CD_DES_ALL\APP B CALIB SURVEY\FTN-DATA, UPPPER BAYOU DES ALLEMANDS-CALIBRATION.XLS

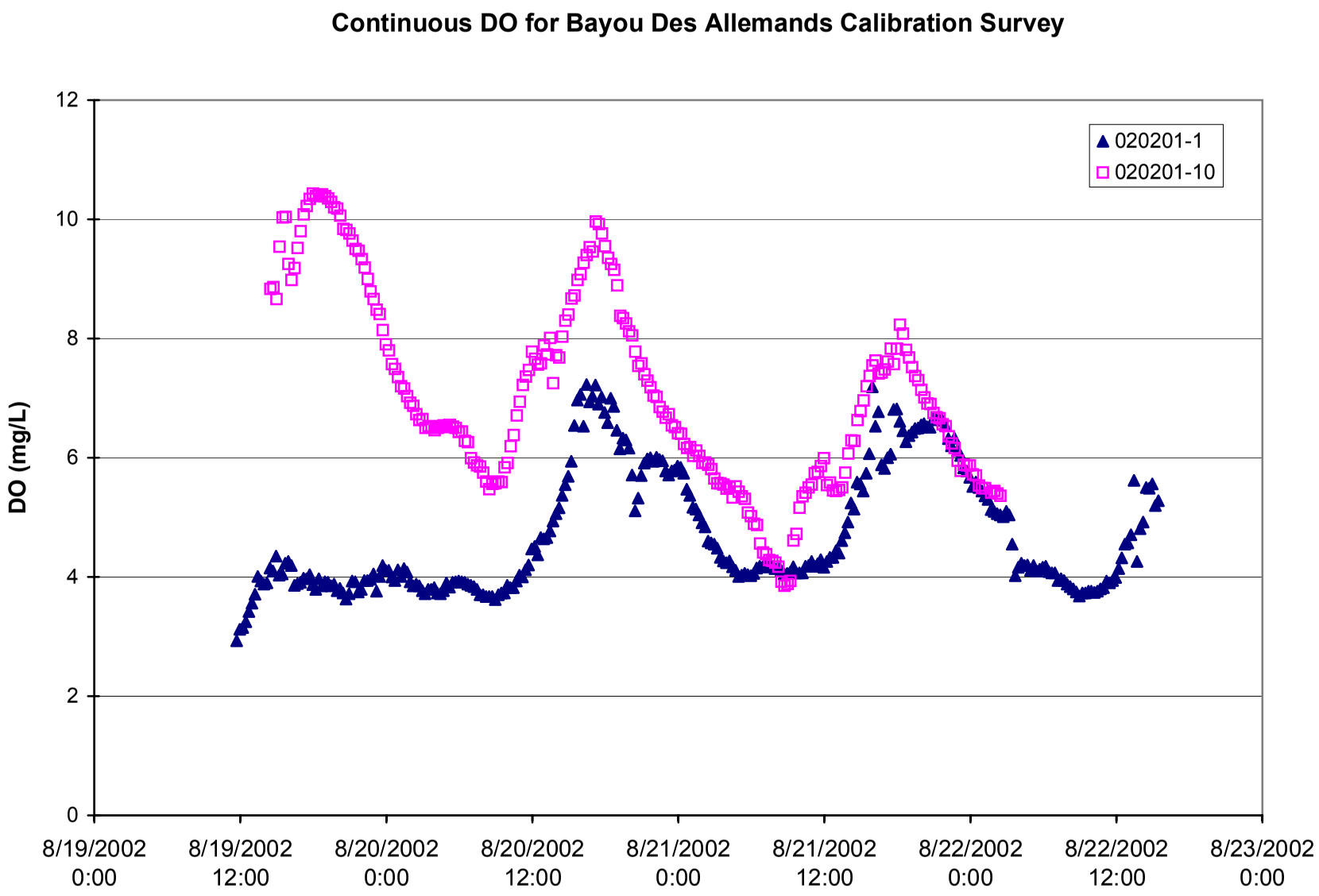

Cross Section for Transect 1 on Upper Bayou Des Allemands
depth (ft)
0
2
4
6
8
10
12
14
16
0
200
400
600
800
1000
1200
1400
1600
distance from left bank (ft)

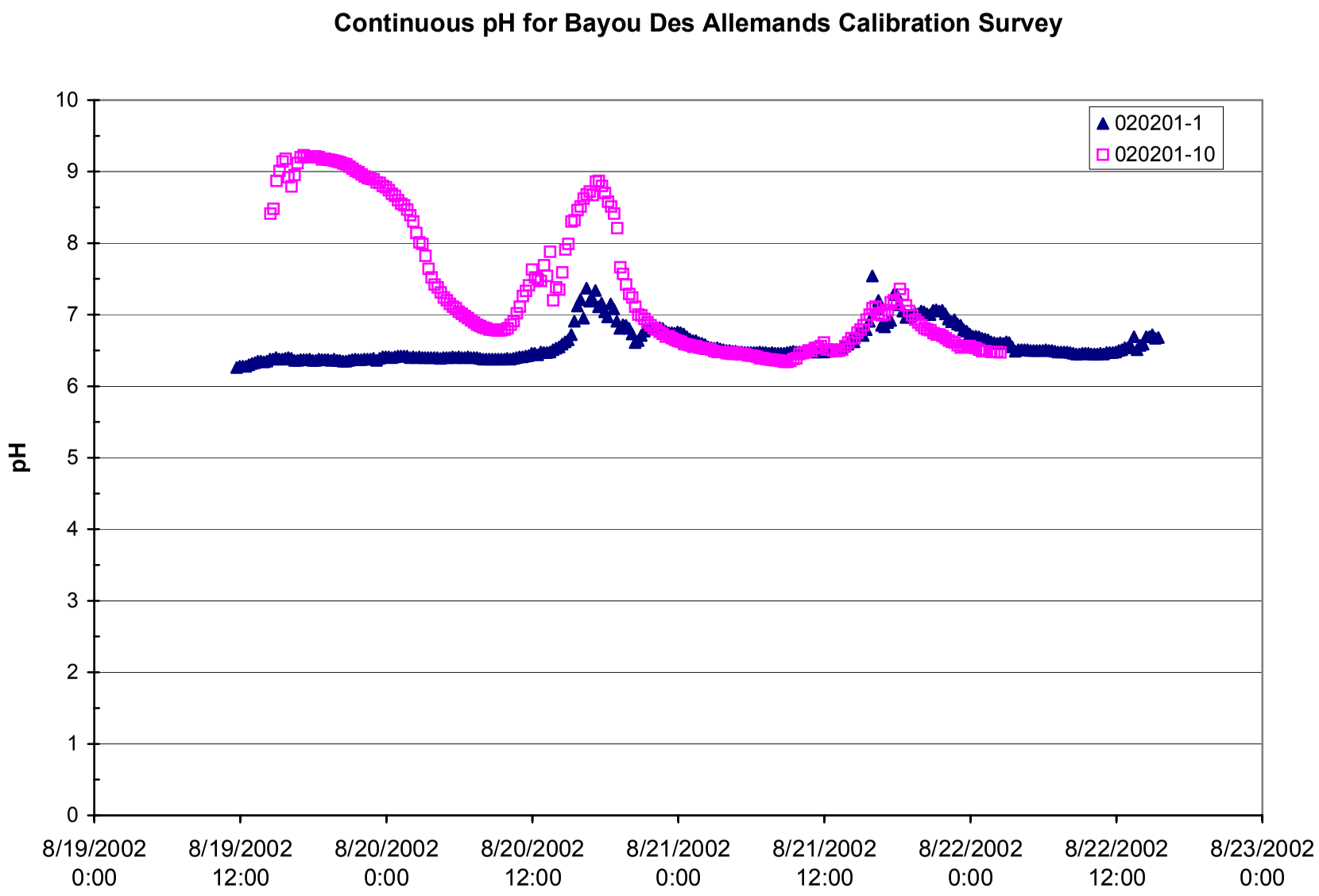

Cross Section for Transect 2 on Upper Bayou Des Allemands
depth (ft)
0
2
4
6
8
10
12
14
16
18
20
0
200
400
600
800
1000
1200
1400
1600
distance from left bank (ft)


Cross Section for Transect 3 on Upper Bayou Des Allemands
depth (ft)
0
2
4
6
8
10
12
14
0
200
400
600
800
1000
1200
1400
1600
distance from left bank (ft)


Cross Section for Transect 4 on Upper Bayou Des Allemands
depth (ft)
0
1
2
3
4
5
6
7
0
200
400
600
800
1000
1200
1400
1600
distance from left bank (ft)


Results of Dye Study for Bayou Des Allemands Calibration Survey
Dye Concentration (ppb)
Distance Dowstream of Dye Injection Location (meters)
Run 1 2.12 hr. After Injection
Run 2 3.97 hr. After Injection
Run 3 7.4 hr. After Injection
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
0
1000
2000
3000
4000
5000
6000


Continuous DO for Bayou Des Allemands Calibration Survey
DO (mg/L)
12
10
8
6
4
2
0
020201-1
020201-10
8/19/2002 0:00
8/19/2002 12:00
8/20/2002 0:00
8/20/2002 12:00
8/21/2002 0:00
8/21/2002 12:00
8/22/2002 0:00
8/22/2002 12:00
8/23/2002 0:00


Continuous pH for Bayou Des Allemands Calibration Survey
pH
10
9
8
7
6
5
4
3
2
1
0
020201-1
020201-10
8/19/2002 0:00
8/19/2002 12:00
8/20/2002 0:00
8/20/2002 12:00
8/21/2002 0:00
8/21/2002 12:00
8/22/2002 0:00
8/22/2002 12:00
8/23/2002 0:00

Summary of CBODu values and Rates for Bayou des Allemands Calibration Survey

Sample No.	CBODu (mg/L)	CBODu rate (1/day)
020201-1*	3.79	0.10
020201-3*	3.08	0.13
020201-4	4.51	0.16
020201-6a*	5.23	0.08
020201-6b*	6.78	0.05
020201-10	3.79	0.10
AVG =	4.53	0.11
AVG of mainstem stations =	4.72	0.09

* denotes mainstem station

FILE: R:\PROJECTS\2110-611\CD_DES_ALL\APP B CALIB SURVEY\CALIB BAYOU DES ALLEMANDS GSBOD.XLS

Instructions for the worksheet:

1. Enter the appropriate data into the green highlighted cells. The 60th or final day analysis data goes into the far right date column. The rest of the analysis data goes in the columns to the left of the 60th or final day values. The NOx data for the analysis start date goes in the NOx section underneath the analysis start date.
2. Click on the "Measured BOD" tab at the bottom of the page and follow that page's instructions. This page can be printed for reporting purposes.

Survey Stream and date: **Upper Bayou Des Allemands Calibration Survey**

Sample Collection date: **Analysis Start date:**

Total BOD data

		Daily analysis start dates:														
Item No.	Sample No.											2	5	9	14	20
1	020201-1											1.00	1.50	2.20	2.80	3.40
2	020201-3											1.00	1.50	2.00	2.50	3.00
3	020201-4											1.00	2.30	3.40	4.00	4.30
4	020201-6a											1.00	1.50	2.60	3.40	4.10
5	020201-6b											1.00	1.50	2.70	3.60	4.40
6	020201-10											1.00	1.50	2.20	2.80	3.40
7																
8																
9																
10																
11																
12																
13																
14																
15																

(NO_2+NO_3) as Nitrogen data (mg/l)

		Daily analysis start dates:														
Item No.	Sample No.											2	5	9	14	20
1	020201-1											0.00	0.00	0.00	0.00	0.00
2	020201-3											0.00	0.00	0.00	0.00	0.00
3	020201-4											0.00	0.00	0.00	0.00	0.00
4	020201-6a											0.00	0.00	0.00	0.00	0.00
5	020201-6b											0.00	0.00	0.00	0.00	0.00
6	020201-10											0.00	0.00	0.00	0.00	0.00
7																
8																
9																
10																
11																
12																
13																
14																
15																

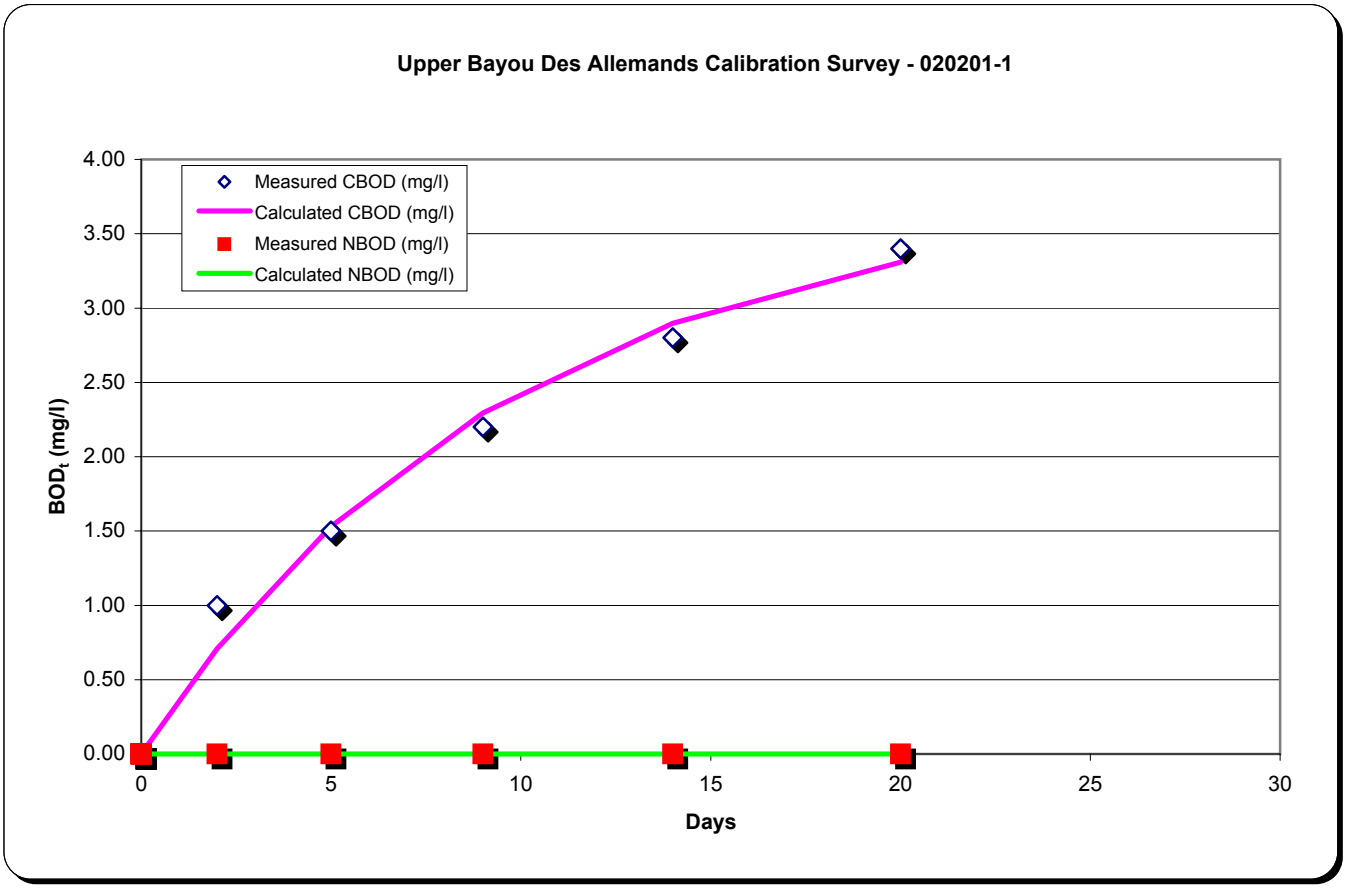
Notes:

1. CBOD detection level was 2.0 mg/L.
2. A CBOD concentration of 1.0 mg/L was assumed for samples with a reported CBOD concentration of <2.0 mg/L on Day 2.
3. A CBOD concentration of 1.5 mg/L was assumed for samples with a reported CBOD concentration of <2.0 mg/L on Day 5.

FILE: R:\PROJECTS\2110-611\CD_DES_ALL\APP B CALIB SURVEY\CALIB BAYOU DES ALLEMANDS GSBOD.XLS

BOD Analysis of the for: **Upper Bayou Des Allemands Calibration Survey - 020201-1**

Measured Data					Calculated Data		
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	
0		0.00					
0	0.00	0.00			0.00	0.00	
2	1.00	0.00	0.00	1.00	0.00	0.71	
5	1.50	0.00	0.00	1.50	0.00	1.53	
9	2.20	0.00	0.00	2.20	0.00	2.29	
14	2.80	0.00	0.00	2.80	0.00	2.90	
20	3.40	0.00	0.00	3.40	0.00	3.31	
					0.00	3.79	**UBOD (mg/l)**
					0.00	0.10	**k rate (1/day)**
					0.00	0.00	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

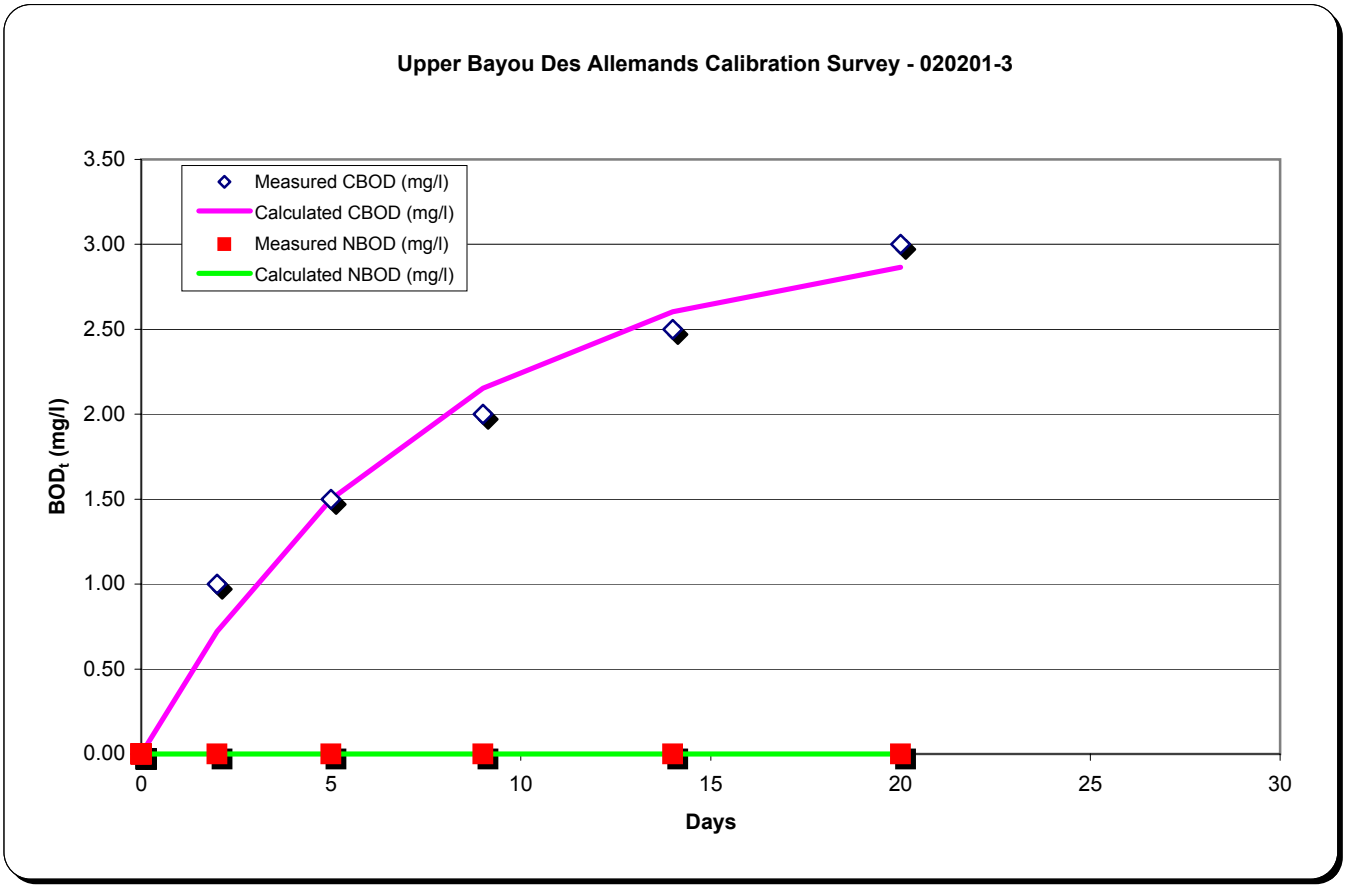
Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Calibration Survey - 020201-3**

Measured Data					Calculated Data		
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	
0		0.00					
0	0.00	0.00			0.00	0.00	
2	1.00	0.00	0.00	1.00	0.00	0.72	
5	1.50	0.00	0.00	1.50	0.00	1.50	
9	2.00	0.00	0.00	2.00	0.00	2.15	
14	2.50	0.00	0.00	2.50	0.00	2.60	
20	3.00	0.00	0.00	3.00	0.00	2.87	
					0.00	3.08	**UBOD (mg/l)**
					0.00	0.13	**k rate (1/day)**
					0.00	0.00	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

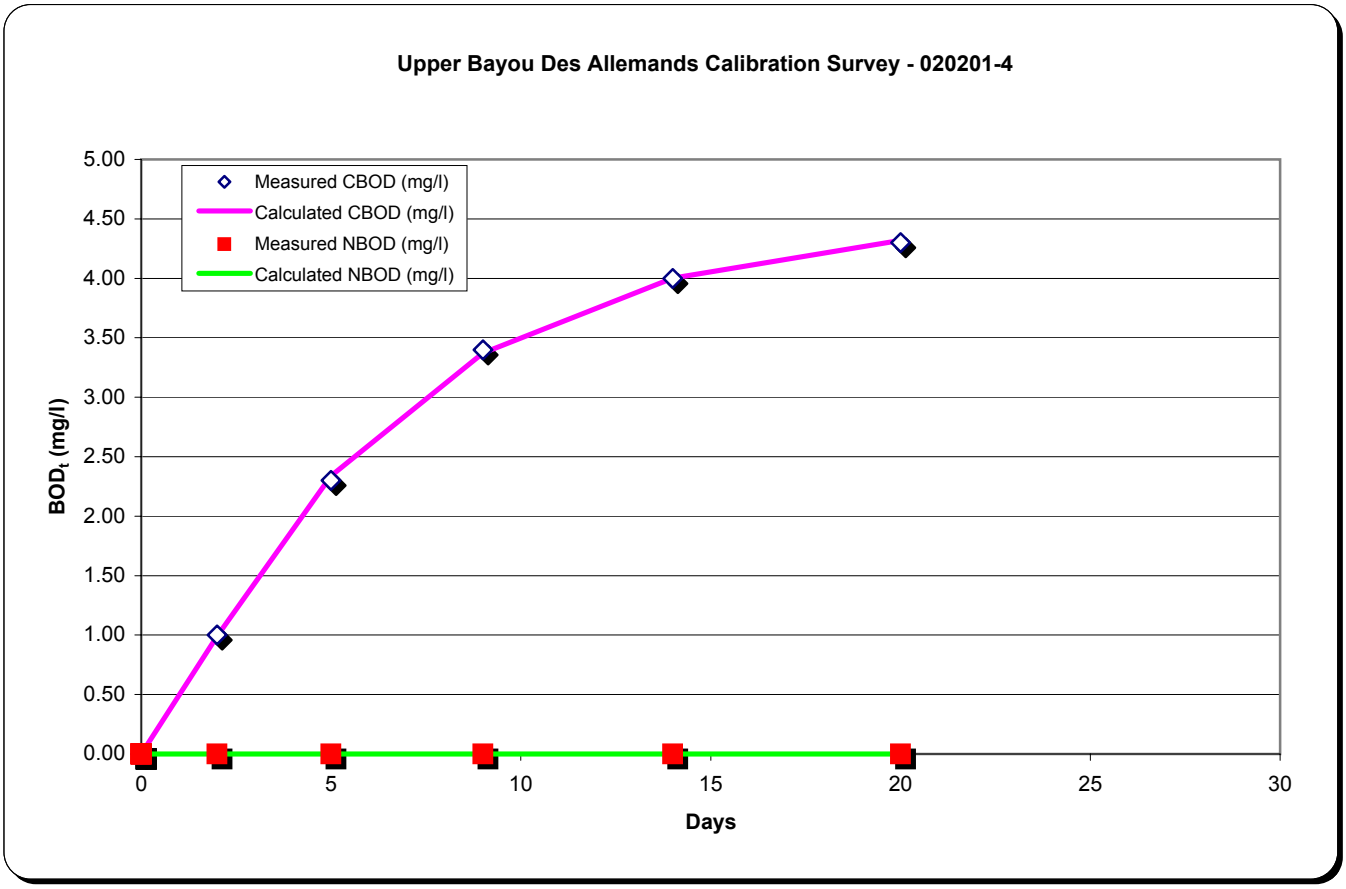
Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Calibration Survey - 020201-4**

Measured Data					Calculated Data		
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	
0		0.00					
0	0.00	0.00			0.00	0.00	
2	1.00	0.00	0.00	1.00	0.00	0.99	
5	2.30	0.00	0.00	2.30	0.00	2.34	
9	3.40	0.00	0.00	3.40	0.00	3.37	
14	4.00	0.00	0.00	4.00	0.00	4.00	
20	4.30	0.00	0.00	4.30	0.00	4.32	
					0.00	4.51	**UBOD (mg/l)**
					0.00	0.16	**k rate (1/day)**
					0.00	0.46	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

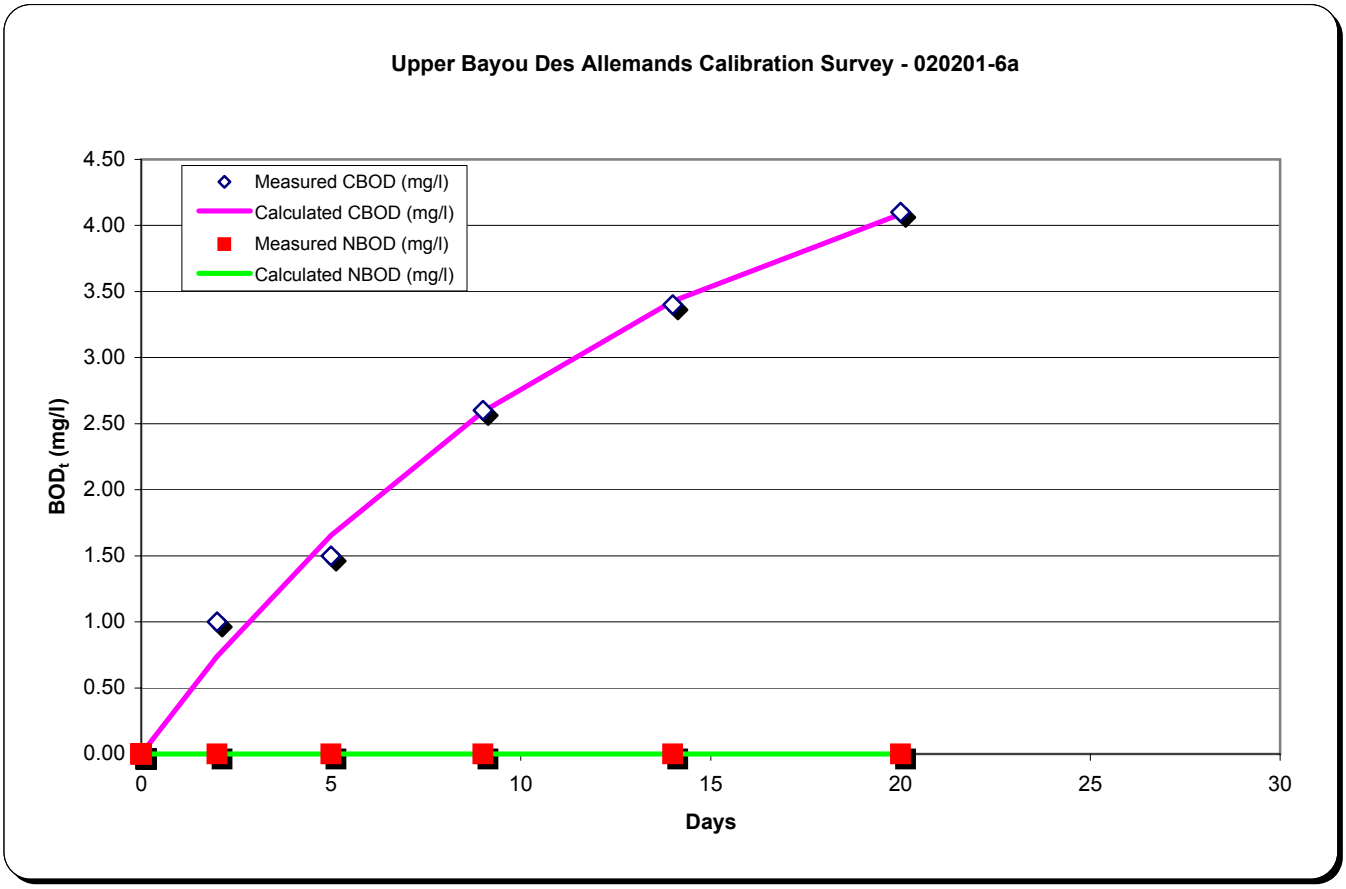
Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Calibration Survey - 020201-6a**

Measured Data					Calculated Data		
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	
0		0.00					
0	0.00	0.00			0.00	0.00	
2	1.00	0.00	0.00	1.00	0.00	0.74	
5	1.50	0.00	0.00	1.50	0.00	1.65	
9	2.60	0.00	0.00	2.60	0.00	2.59	
14	3.40	0.00	0.00	3.40	0.00	3.43	
20	4.10	0.00	0.00	4.10	0.00	4.09	
					0.00	5.23	**UBOD (mg/l)**
					0.00	0.08	**k rate (1/day)**
					0.00	0.00	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

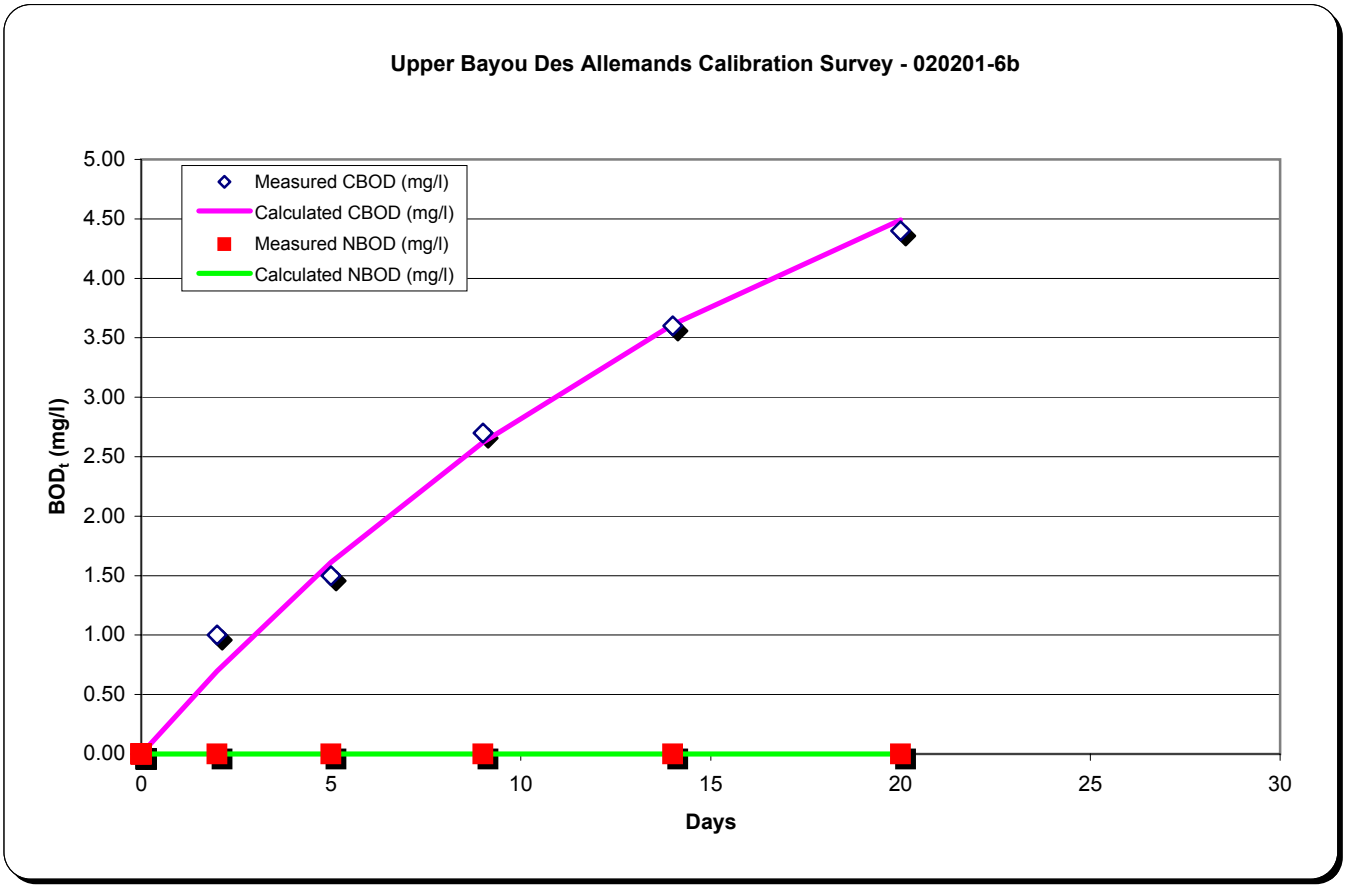
Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Calibration Survey - 020201-6b**

Measured Data					Calculated Data		
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	
0		0.00					
0	0.00	0.00			0.00	0.00	
2	1.00	0.00	0.00	1.00	0.00	0.70	
5	1.50	0.00	0.00	1.50	0.00	1.61	
9	2.70	0.00	0.00	2.70	0.00	2.62	
14	3.60	0.00	0.00	3.60	0.00	3.61	
20	4.40	0.00	0.00	4.40	0.00	4.49	
					0.00	6.78	**UBOD (mg/l)**
					0.00	0.05	**k rate (1/day)**
					0.00	0.00	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

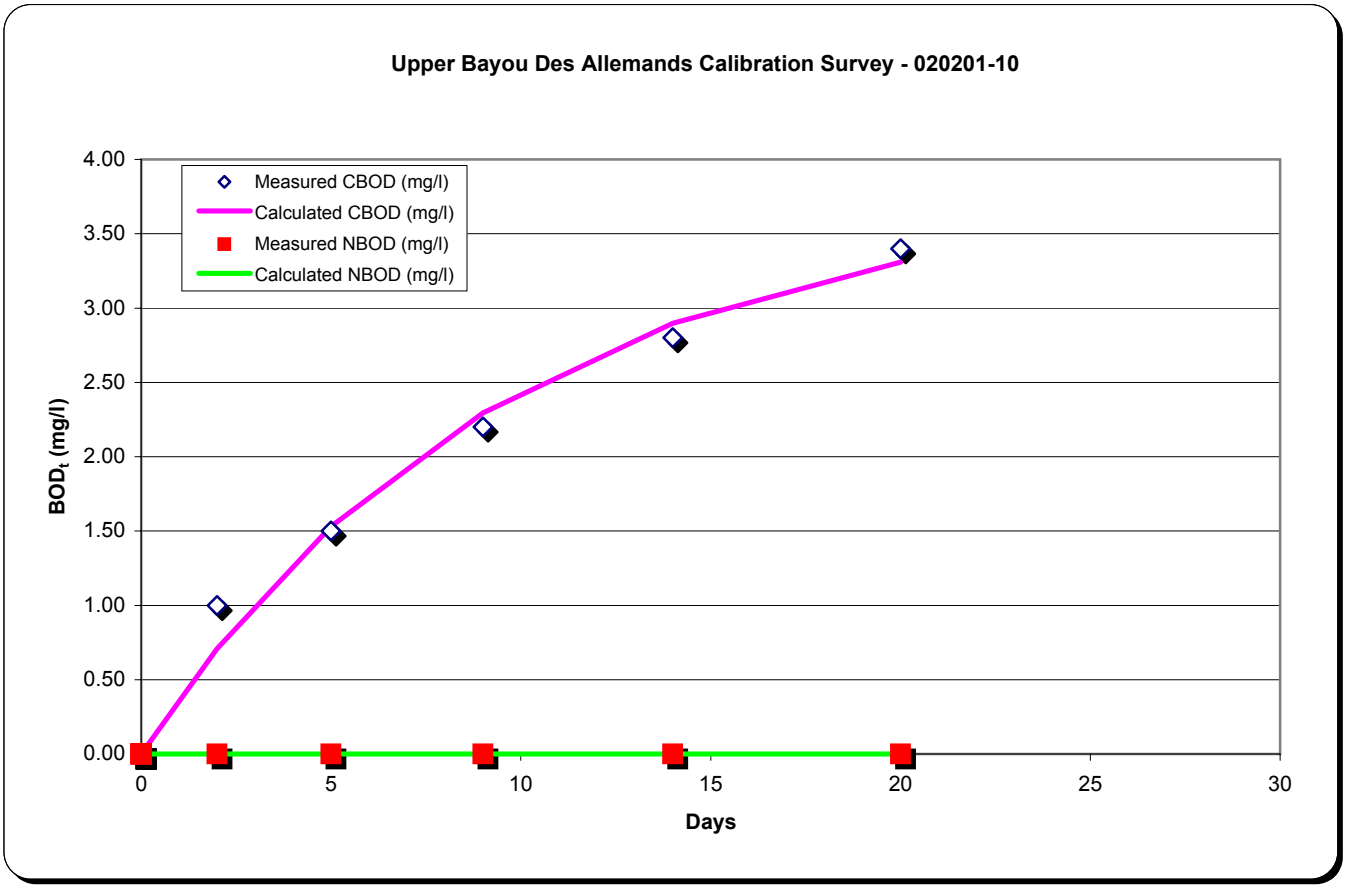
Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Calibration Survey - 020201-10**

Measured Data					Calculated Data		
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	
0		0.00					
0	0.00	0.00			0.00	0.00	
2	1.00	0.00	0.00	1.00	0.00	0.71	
5	1.50	0.00	0.00	1.50	0.00	1.53	
9	2.20	0.00	0.00	2.20	0.00	2.29	
14	2.80	0.00	0.00	2.80	0.00	2.90	
20	3.40	0.00	0.00	3.40	0.00	3.31	
					0.00	3.79	**UBOD (mg/l)**
					0.00	0.10	**k rate (1/day)**
					0.00	0.00	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

APPENDIX C

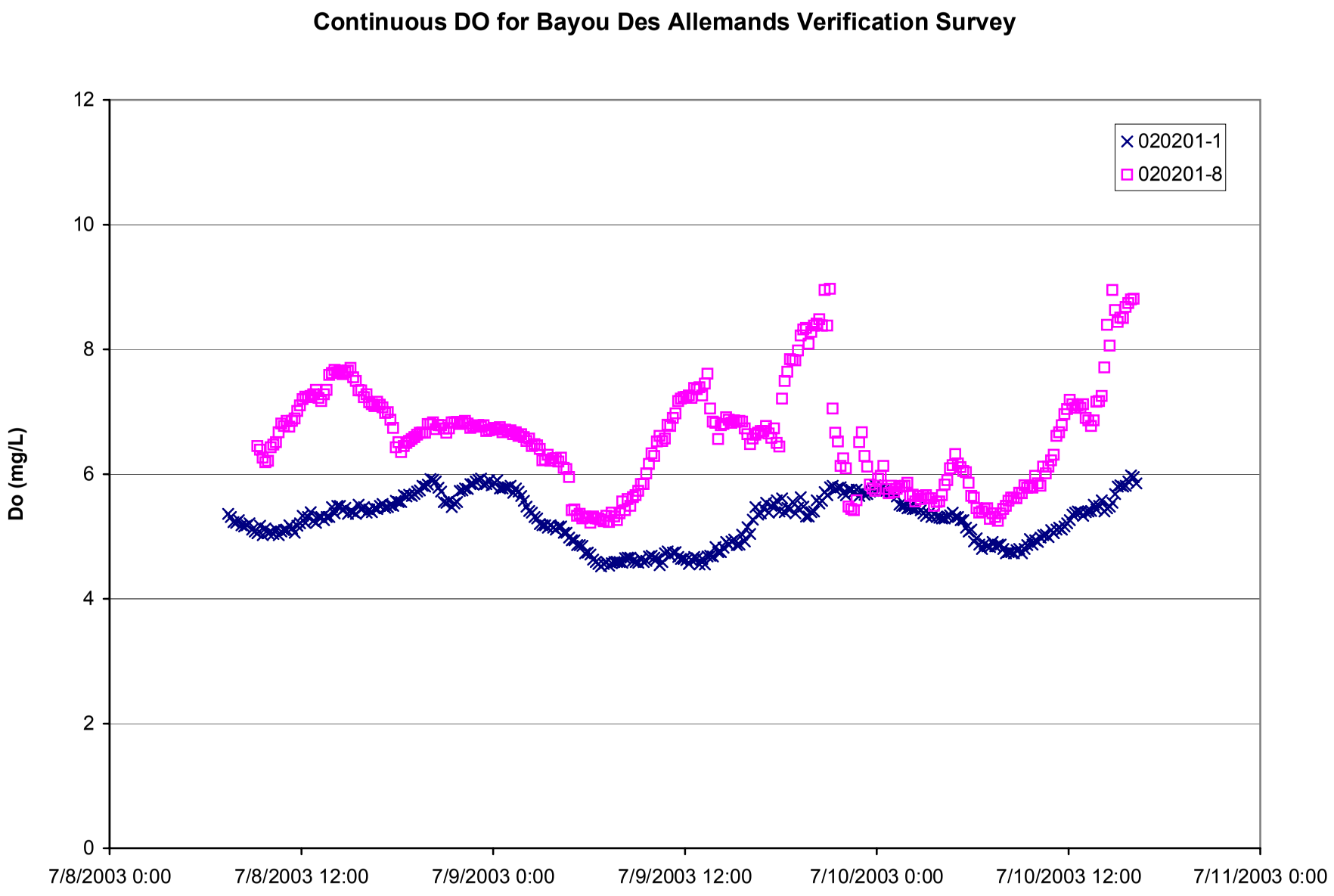
Verification Survey Results

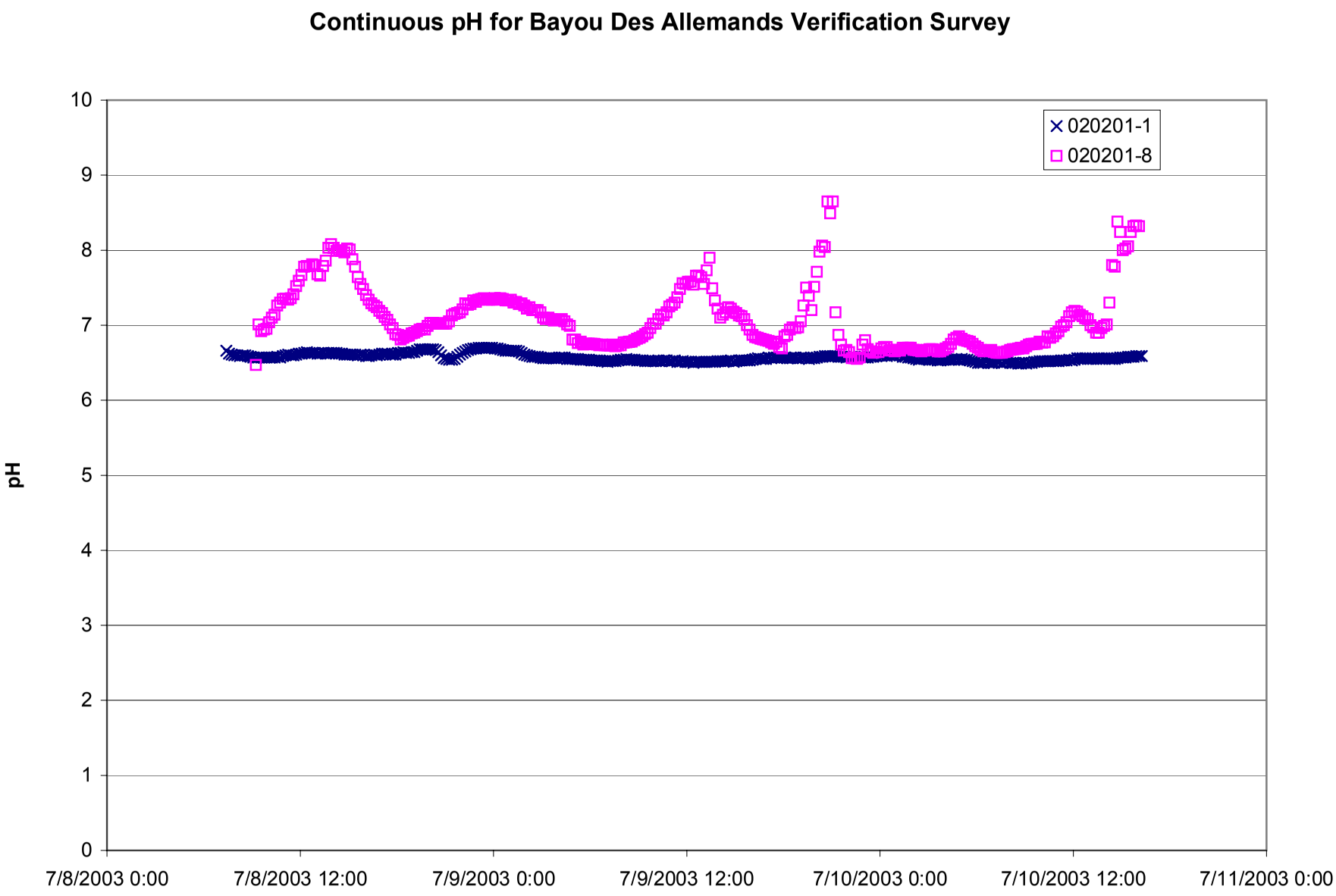
SUMMARY OF DATA COLLECTED DURING VERIFICATION SURVEY- BAYOU DES ALLEMANDS- 020201

Station	Date	Time	Total Depth of Water (ft)	Total Depth of Water (m)	Depth of WQ Measurements (ft)	In situ Measurements Temp (°C)	DO (mg/L)	DO Sat (%)	Conduct. (umhos)	pH (su)	Nitrate NO3-N (mg/L)	NH3-N (mg/L)	TKN (mg/L)	Ortho P (mg/L)	Total P (mg/L)	Chloro A (mg/L)	TSS (mg/L)
020201-0	7/10/2003	1300	11	3.35	0.33	29.4	5.8	76	200	6.4							
					3	28.9	5.1	66	200	6.3							
					6	28.7	4.9	63	200	**							
					9	28.7	3.3	43	240	**							
020201-1	7/10/2003	1330	>15	>4.57	0.33	28.9	5.3	69	200	6.4	< 0.1	0.25	1.5	0.089	0.23	0.04	26
					3	29	5.3	69	200	6.3							
					6	28.9	5.3	69	200	**							
					9	28.9	5.3	69	200	**							
					12	28.9	5.2	68	200	**							
					15	28.8	5.2	67	200	**							
020201-2	7/10/2003	850	8.7	2.65	0.33	28.5	4.9	63	206	6							
					3	28.3	4.5	58	197	6							
					6	28.3	4.6	59	195	**							
					8	28.3	4.6	59	194	**							
020201-3	7/10/2003	1145	11	3.35	0.33	29.6	5.9	78	210	7.1	< 0.1	0.16	1.8	0.074	0.19	0.043	13
					3	28.5	5.1	66	200	7.3							
					6	28.4	4.9	63	200	**							
					9	28.4	4.9	63	200	**							
					11	28.4	4.8	62	190	**							
020201-4	7/10/2003	1100	9.4	2.87	0.33	28.7	1.5	19	360	6.4	< 0.1	0.24	1.3	0.031	0.11	<.02	6.7
					3	28.5	1.2	15	370	6.4							
					6	27.4	0.6	8	400	**							
					9	26.4	0.4	5	390	**							
020201-5	7/10/2003	700	17	5.18	0.33	28.3	5.2	67	194.4	7.4							
					3	28.3	5.22	67	194.6	6.5							
					6	28.2	5	64	190	**							
					9	28.2	4.9	63	190	**							
					12	28.2	4.8	62	190	**							
					15	28.2	4.8	62	190	**							
020201-6A	7/10/2003	1035	6.6	2.01	0.33	29.6	7.8	103	230	7.6	< 0.1	0.19	1.6	0.064	0.2	0.042	12
					3	28.3	6.4	82	220	7							
					6	28	6.2	79	220	**							
020201-6B	7/10/2003	1045	6.6	2.01	0.33	29.4	7.5	98	220	7.5	< 0.1	0.18	1.6	0.064	0.18	0.046	13
					3	29	7.2	94	220	6.9							
					6	28.1	6	77	220	**							
020201-7	7/10/2003	735	7	2.13	0.33	24.7	0.7	8	183	6.3							
					3	24.6	0.2	2	180	6.1							
					6	24.6	0.1	1	180	**							
020201-8	7/10/2003	750	5.4	1.65	0.33	27.7	5.4	69	203	6.8							
					3	27.7	5.2	66	203	6							
					5	27.7	5	64	203	**							
020201-9	7/10/2003	820	7.1	2.16	0.33	26.3	0.2	2	256	6.3							
					3	26.2	0.1	1	256	5.8							
					6	26.2	0.05	1	256	**							
020201-10	7/10/2003	1015	7.6	2.31	0.33	29.1	8.6	112	200	8.5	< 0.1	0.16	1.4	0.069	0.18	0.049	7.6
					3	28.7	8.7	113	210	8.7	< 0.1	0.16	1.3	0.069	0.17	0.045	8.8
					6	28.2	6.4	82	220	**							

Note Stations 4,7, and 9 are on tribs.

FILE: R:\PROJECTS\2110-611\CD_DES_ALL\APP C VERIF SURVEY\DES ALLMANDS_TMDL.XLS


Continuous DO for Bayou Des Allemands Verification Survey
Do (mg/L)
12
10
8
6
4
2
0
7/8/2003 0:00
7/8/2003 12:00
7/9/2003 0:00
7/9/2003 12:00
7/10/2003 0:00
7/10/2003 12:00
7/11/2003 0:00
020201-1
020201-8


Continuous pH for Bayou Des Allemands Verification Survey
pH
10
9
8
7
6
5
4
3
2
1
0
7/8/2003 0:00
7/8/2003 12:00
7/9/2003 0:00
7/9/2003 12:00
7/10/2003 0:00
7/10/2003 12:00
7/11/2003 0:00
020201-1
020201-8

Summary of CBODu values and Rates for Bayou des Allemands Verification Survey

Sample No.	CBODu (mg/L)	CBODu rate (1/day)
020201-1*	3.69	0.20
020201-3*	3.42	0.14
020201-4	2.99	0.20
020201-6a*	5.36	0.17
020201-6b*	5.55	0.22
020201-10*	5.72	0.21
020201-10* (duplicate)	4.87	0.21
AVG =	4.52	0.19
AVG of mainstem stations =	4.77	0.19

* denotes mainstem station

FILE: R:\PROJECTS\2110-611\CD_DES_ALL\APP C VERIF SURVEY\VERIFICATION BAYOU DES ALLEMANDS GSBOD.XLS

Instructions for the worksheet:

1. Enter the appropriate data into the green highlighted cells. The 60th or final day analysis data goes into the far right date column. The rest of the analysis data goes in the columns to the left of the 60th or final day values. The NOx data for the analysis start date goes in the NOx section underneath the analysis start date.
2. Click on the "Measured BOD" tab at the bottom of the page and follow that page's instructions. This page can be printed for reporting purposes.

Survey Stream and date: **Upper Bayou Des Allemands Verification Survey**

Sample Collection date: **Analysis Start date:**

Total BOD data

		Daily analysis start dates:														
Item No.	Sample No.											2	5	9	14	20
1	020201-1											1.00	2.10	3.10	3.60	3.50
2	020201-3											1.00	1.50	2.50	3.10	3.10
3	020201-4											1.00	1.50	2.70	3.00	2.70
4	020201-6a											1.00	2.60	4.00	5.00	5.00
5	020201-6b											2.60	3.30	4.50	5.40	5.60
6	020201-10											2.40	3.40	4.60	5.50	5.90
7	020201-10 duplicate											2.30	2.80	3.90	4.70	5.00
8																
9																
10																
11																
12																
13																
14																
15																

(NO_2+NO_3) as Nitrogen data (mg/l)

		Daily analysis start dates:														
Item No.	Sample No.											2	5	9	14	20
1	020201-1											0.00	0.00	0.00	0.00	0.00
2	020201-3											0.00	0.00	0.00	0.00	0.00
3	020201-4											0.00	0.00	0.00	0.00	0.00
4	020201-6a											0.00	0.00	0.00	0.00	0.00
5	020201-6b											0.00	0.00	0.00	0.00	0.00
6	020201-10											0.00	0.00	0.00	0.00	0.00
7	020201-10 duplicate											0.00	0.00	0.00	0.00	0.00
8																
9																
10																
11																
12																
13																
14																
15																

Notes:

1. CBOD detection level was 2.0 mg/L.
2. A CBOD concentration of 1.0 mg/L was assumed for samples with a reported CBOD concentration of <2.0 mg/L on Day 2.
3. A CBOD concentration of 1.5 mg/L was assumed for samples with a reported CBOD concentration of <2.0 mg/L on Day 5.

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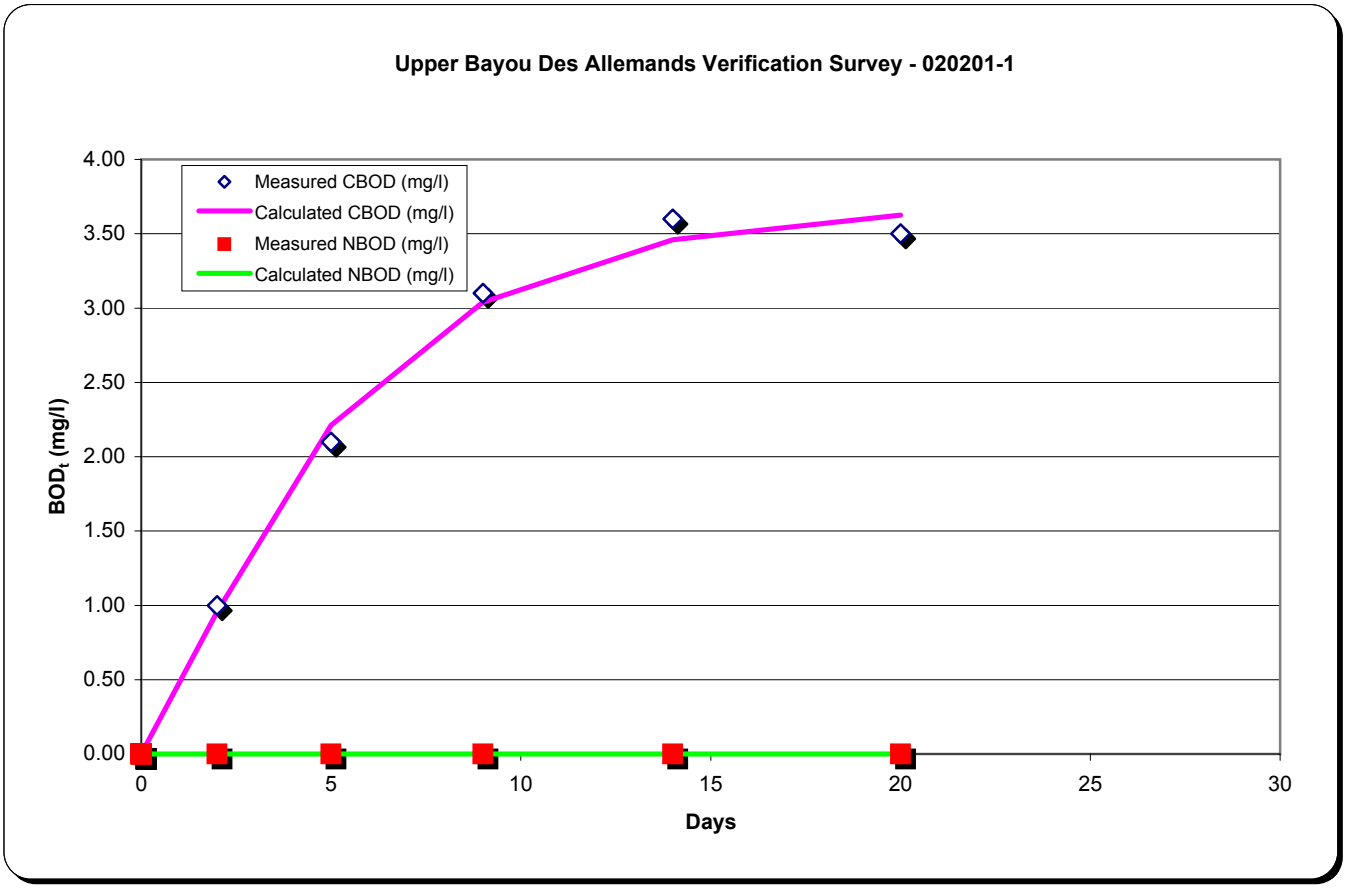
BOD Analysis of the for: **Upper Bayou Des Allemands Verification Survey - 020201-1**

Measured Data					Calculated Data		
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	
0		0.00					
0	0.00	0.00			0.00	0.00	
2	1.00	0.00	0.00	1.00	0.00	0.96	
5	2.10	0.00	0.00	2.10	0.00	2.21	
9	3.10	0.00	0.00	3.10	0.00	3.04	
14	3.60	0.00	0.00	3.60	0.00	3.46	
20	3.50	0.00	0.00	3.50	0.00	3.63	
					0.00	3.69	**UBOD (mg/l)**
					0.00	0.20	**k rate (1/day)**
					0.00	0.53	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

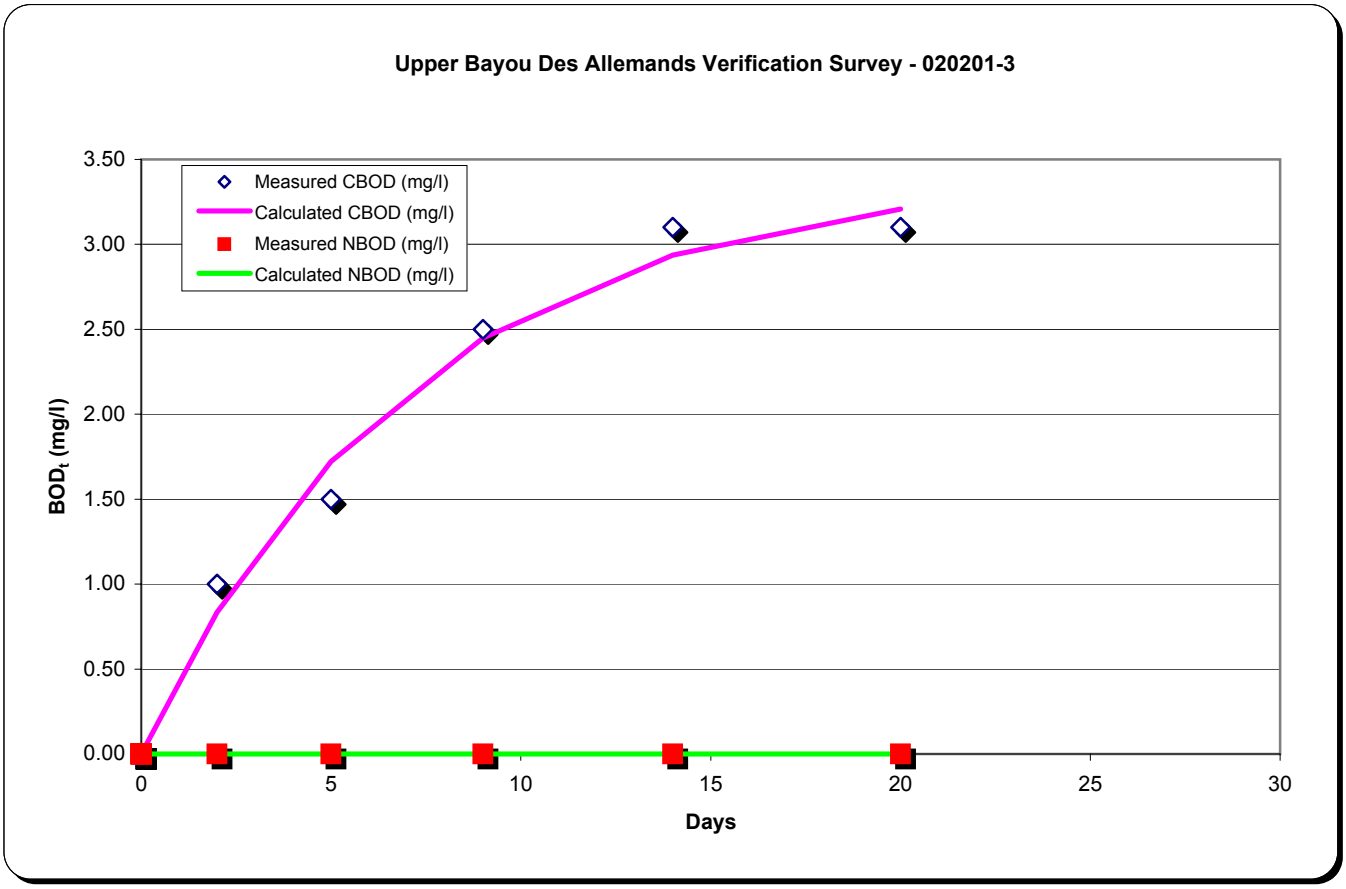
Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Verification Survey - 020201-3**

Measured Data					Calculated Data		
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	
0		0.00					
0	0.00	0.00			0.00	0.00	
2	1.00	0.00	0.00	1.00	0.00	0.84	
5	1.50	0.00	0.00	1.50	0.00	1.72	
9	2.50	0.00	0.00	2.50	0.00	2.45	
14	3.10	0.00	0.00	3.10	0.00	2.94	
20	3.10	0.00	0.00	3.10	0.00	3.21	
					0.00	3.42	**UBOD (mg/l)**
					0.00	0.14	**k rate (1/day)**
					0.00	0.00	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

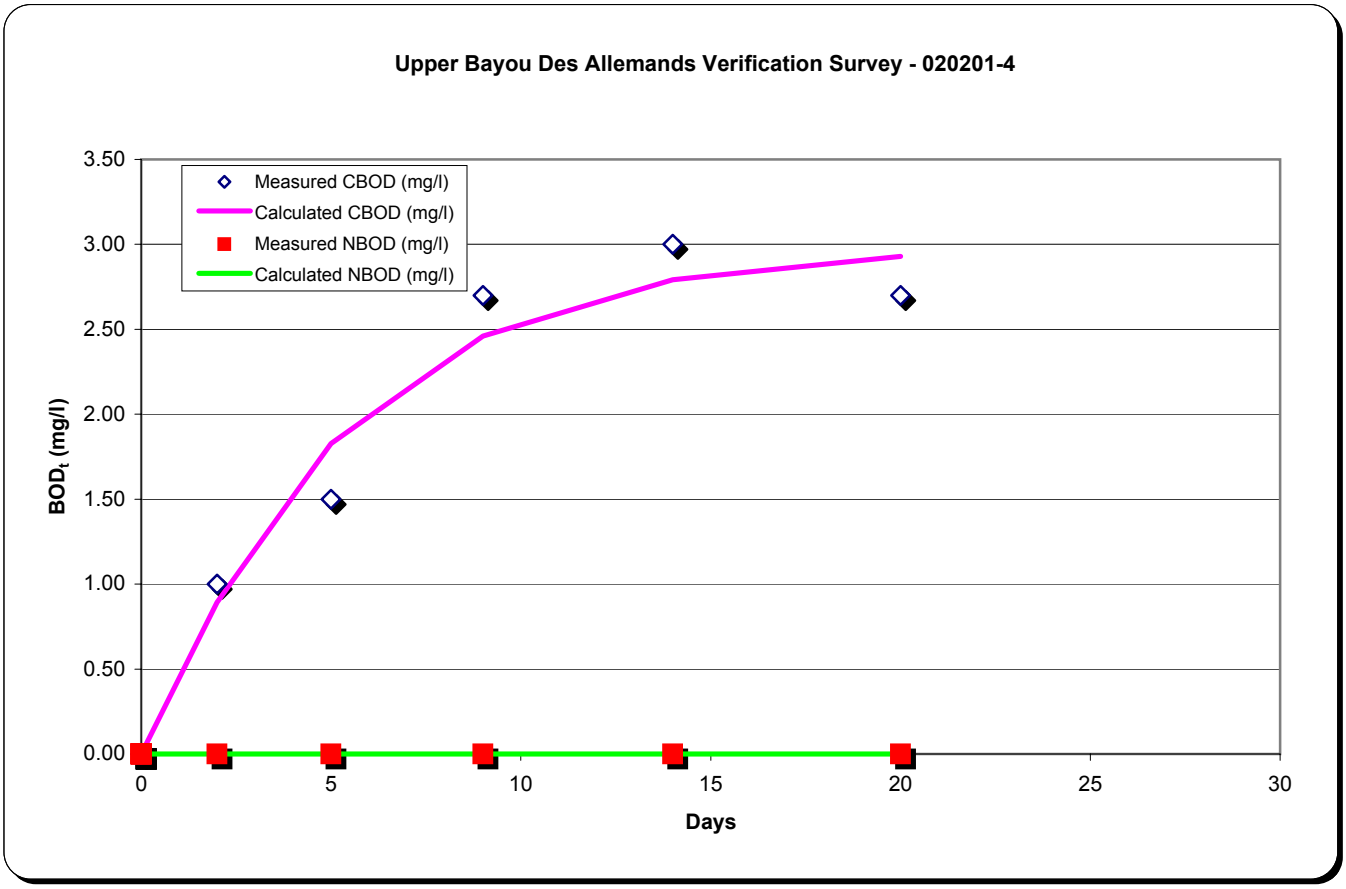
Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Verification Survey - 020201-4**

Measured Data					Calculated Data	
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7
0		0.00				
0	0.00	0.00			0.00	0.00
2	1.00	0.00	0.00	1.00	0.00	0.89
5	1.50	0.00	0.00	1.50	0.00	1.83
9	2.70	0.00	0.00	2.70	0.00	2.46
14	3.00	0.00	0.00	3.00	0.00	2.79
20	2.70	0.00	0.00	2.70	0.00	2.93

0.00	2.99	**UBOD (mg/l)**
0.00	0.20	**k rate (1/day)**
0.00	0.19	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

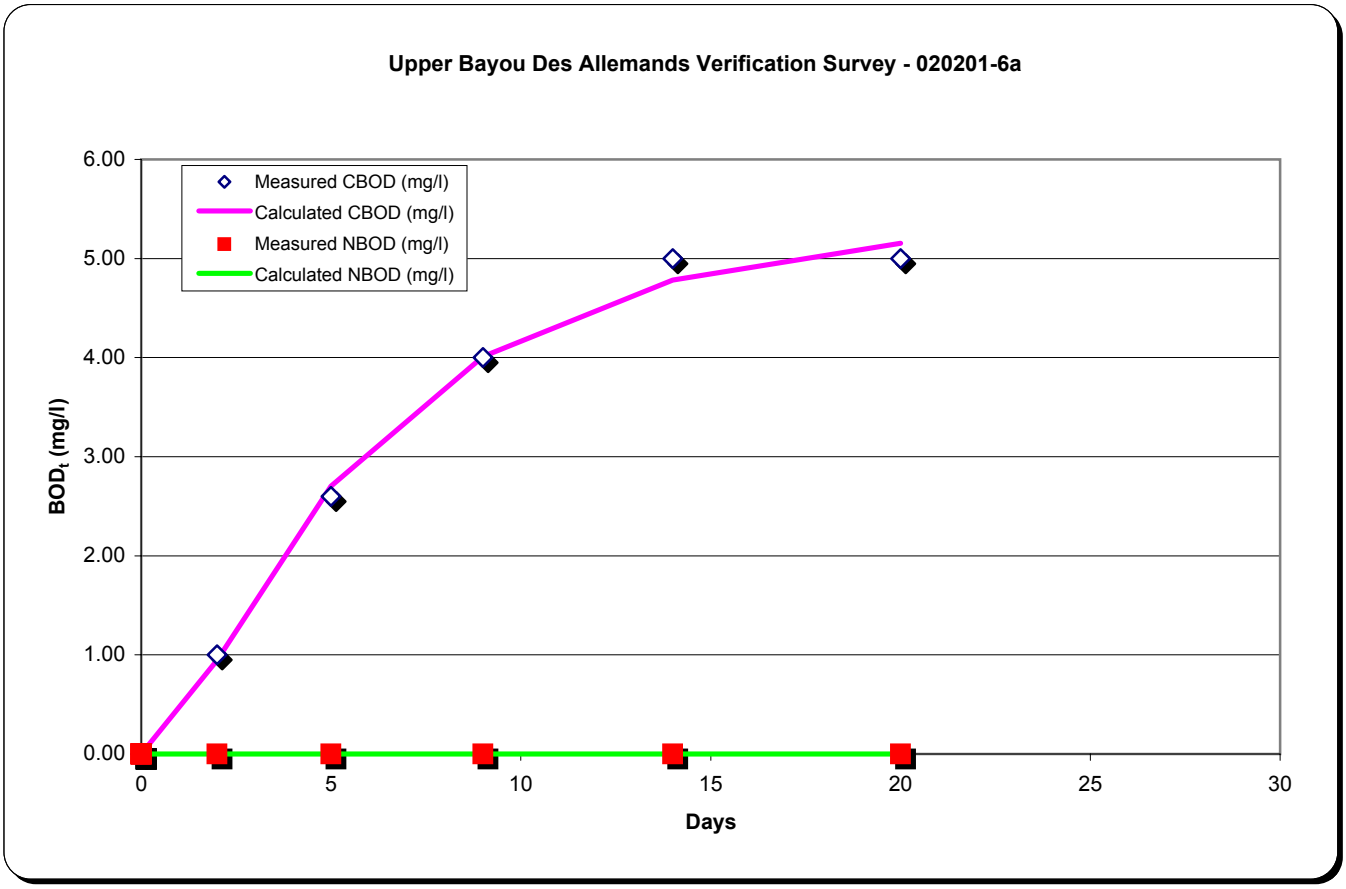
Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Verification Survey - 020201-6a**

Measured Data					Calculated Data	
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7
0		0.00				
0	0.00	0.00			0.00	0.00
2	1.00	0.00	0.00	1.00	0.00	0.95
5	2.60	0.00	0.00	2.60	0.00	2.70
9	4.00	0.00	0.00	4.00	0.00	4.01
14	5.00	0.00	0.00	5.00	0.00	4.78
20	5.00	0.00	0.00	5.00	0.00	5.15

0.00	5.36	**UBOD (mg/l)**
0.00	0.17	**k rate (1/day)**
0.00	0.85	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

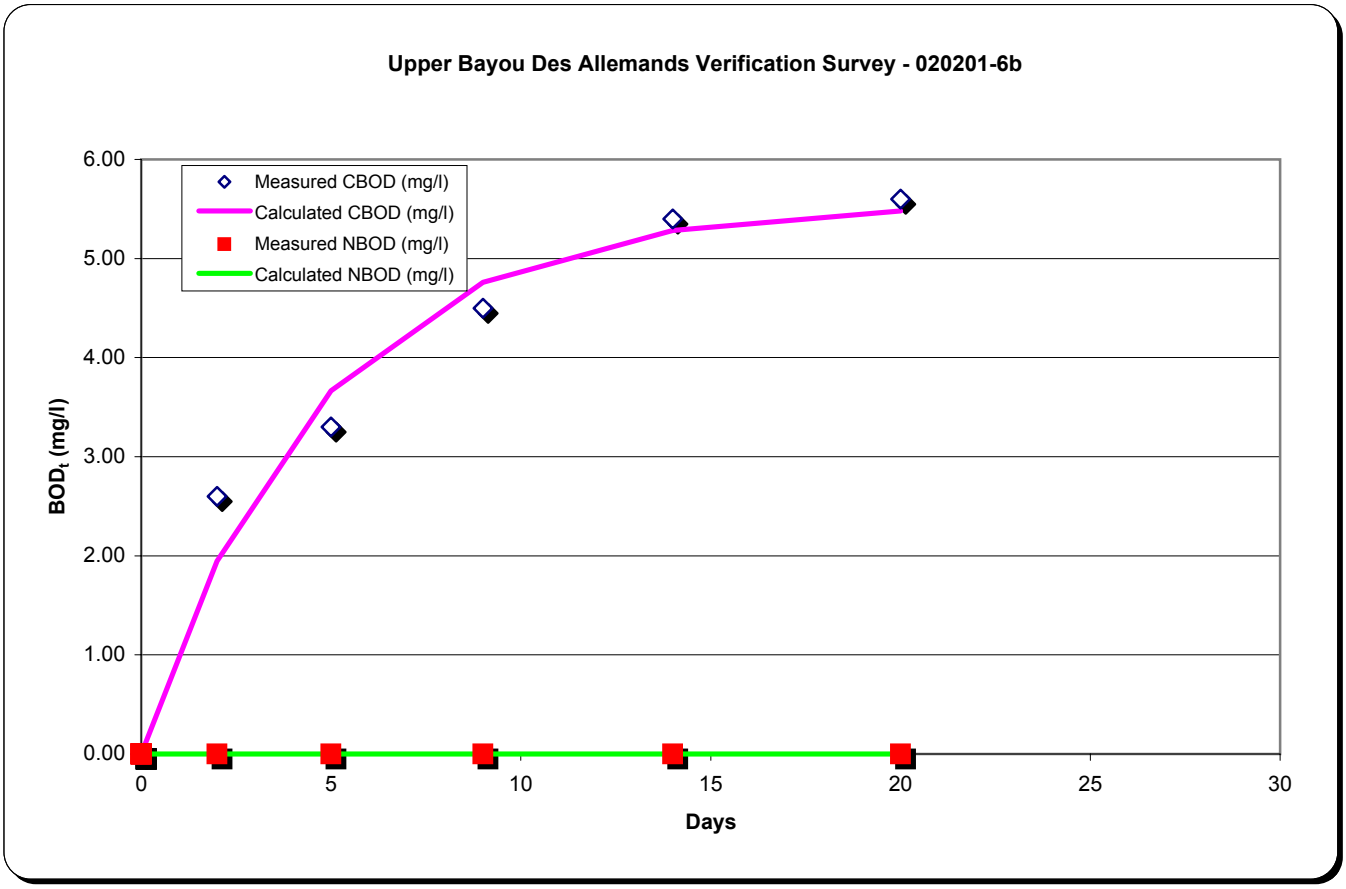
Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Verification Survey - 020201-6b**

Measured Data					Calculated Data	
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7
0		0.00				
0	0.00	0.00			0.00	0.00
2	2.60	0.00	0.00	2.60	0.00	1.95
5	3.30	0.00	0.00	3.30	0.00	3.67
9	4.50	0.00	0.00	4.50	0.00	4.76
14	5.40	0.00	0.00	5.40	0.00	5.28
20	5.60	0.00	0.00	5.60	0.00	5.48

0.00	5.55	**UBOD (mg/l)**
0.00	0.22	**k rate (1/day)**
0.00	0.00	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

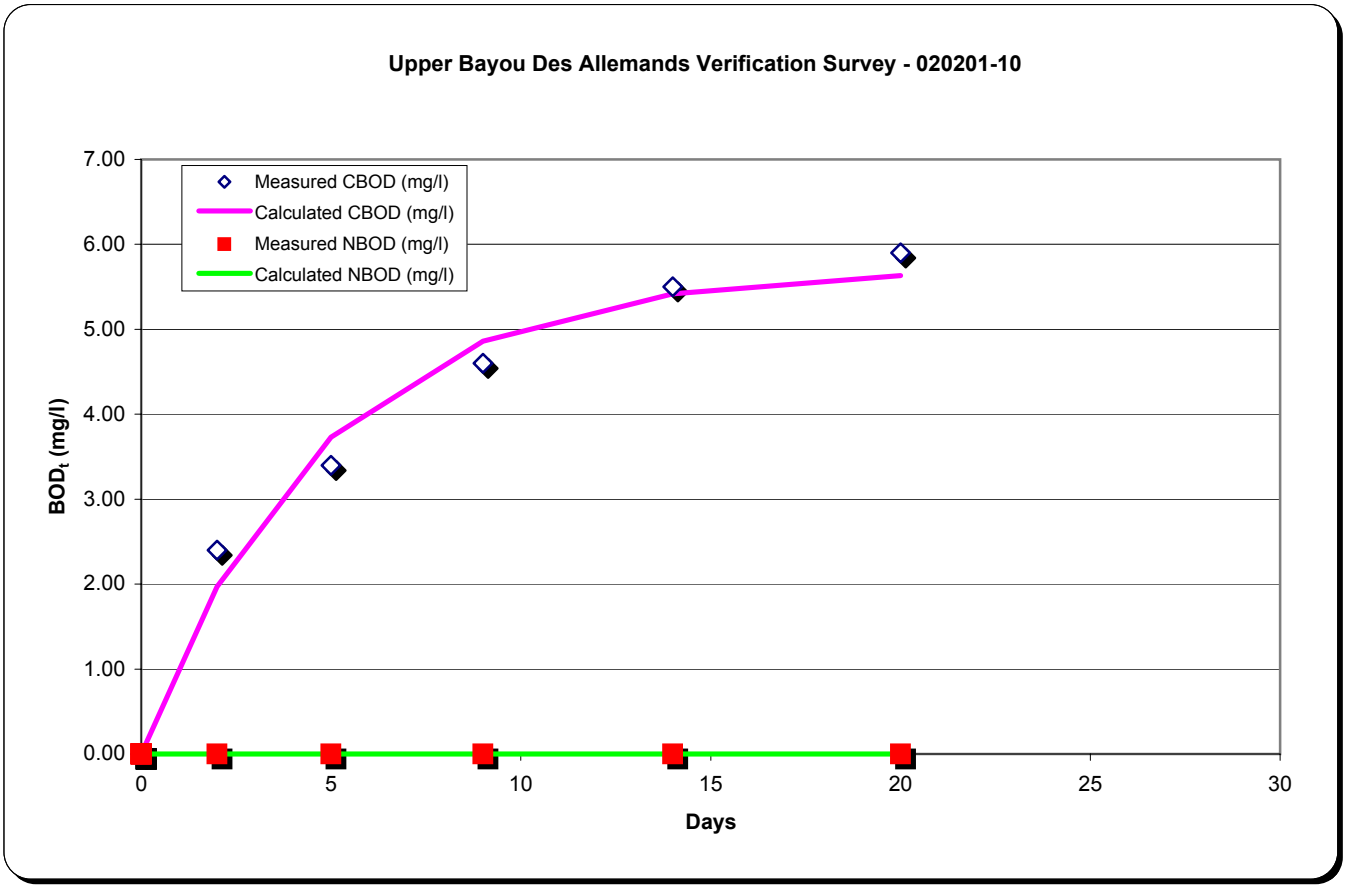
Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Verification Survey - 020201-10**

Measured Data					Calculated Data		
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	
0		0.00					
0	0.00	0.00			0.00	0.00	
2	2.40	0.00	0.00	2.40	0.00	1.97	
5	3.40	0.00	0.00	3.40	0.00	3.73	
9	4.60	0.00	0.00	4.60	0.00	4.86	
14	5.50	0.00	0.00	5.50	0.00	5.42	
20	5.90	0.00	0.00	5.90	0.00	5.63	
					0.00	5.72	**UBOD (mg/l)**
					0.00	0.21	**k rate (1/day)**
					0.00	0.00	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

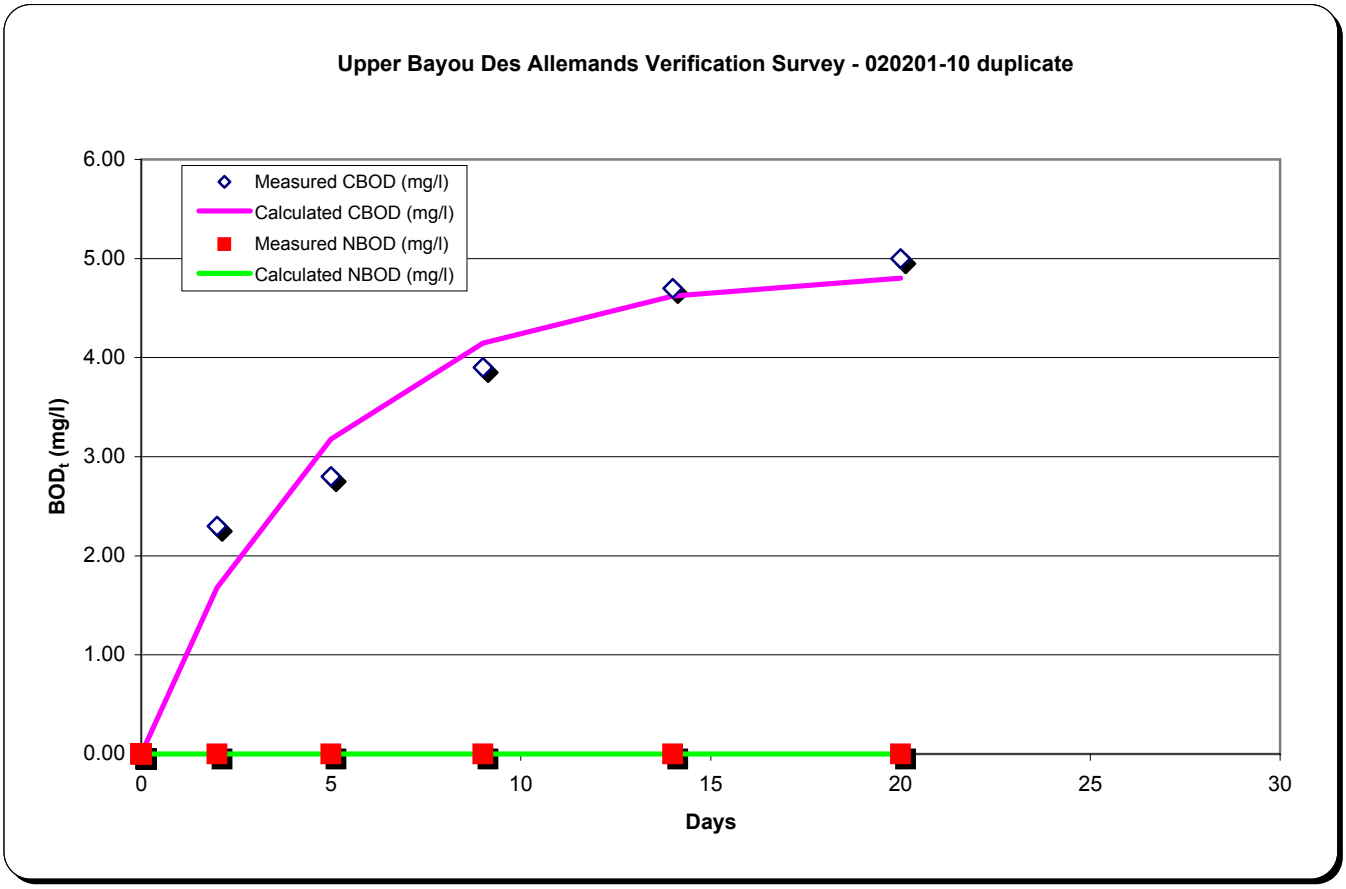
Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

BOD Analysis of the for: **Upper Bayou Des Allemands Verification Survey - 020201-10 duplicate**

Measured Data					Calculated Data	
Days	***Total BOD (mg/l)***	***NOx as N (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***	***NBOD (mg/l)***	***CBOD (mg/l)***
Note 1	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7
0		0.00				
0	0.00	0.00			0.00	0.00
2	2.30	0.00	0.00	2.30	0.00	1.68
5	2.80	0.00	0.00	2.80	0.00	3.18
9	3.90	0.00	0.00	3.90	0.00	4.14
14	4.70	0.00	0.00	4.70	0.00	4.62
20	5.00	0.00	0.00	5.00	0.00	4.80

0.00	4.87	**UBOD (mg/l)**
0.00	0.21	**k rate (1/day)**
0.00	0.00	**Lag time (days)**



Note 1 - Days from the BOD test start date.

Note 2 - Measured total BOD at time in "Days" column.

Note 3 - Measured (NO_2 + NO_3 as nitrogen) at time in "Days" column.

Note 4 - Calculated by multipling the measured (NO_2 +NO_3 as nitrogen) minus the day zero (NO_2 +NO_3 as nitrogen) by 4.57.

Note 5 - Determined by subtracting the calculated NBOD from the measured total BOD.

Note 6 - Calculated from the formula {NBODt=UNBOD[1-e-(k(t-lag))]} using the listed values of UNBOD, k decay rate and lag time.

Note 7 - Calculated from the formula {CBODt=UCBOD[1-e-(k(t-lag))]} using the listed values of UCBOD, k decay rate and lag time.

Note 8 - Nox nondetects were input at 1/2 the detection level = 0.025 mg/l.

APPENDIX D

Dispersion Coefficient Calculations

DYE CONCENTRATIONS VS. DISTANCE FOR BAYOU DES ALLEMANDS (Subsegment 020201)
ASSUMES 1-D ANALYSIS (LATERALLY AND VERTICALLY MIXED) OF SLUG INJECTION
COMPARES THEORETICAL WITH FTN FIELD DATA FROM AUGUST 20, 2002

AVG FLOW =	3444.3	cfs (calculated)
AVG VELOCITY =	0.5	ft/sec (adjusted to get predicted and observed data lined up horizontally)
AVG XS AREA =	6888.5	ft^2 (calculated)
ELAPSED TIME =	7.4	hr (approx elapsed time from injection to 4th set of measurements)
INJECT. MASS =	35	lbs stock solution (20% dye)

PREDICTED MAXIMUM DYE CONCENTRATION =	4.04	ppb	(1-D advective dispersion equation)
ADJUSTMENT FACTOR FOR DYE LOSS =	0.17		(chlorine, adsorption, photodegradation)
ADJUSTED MAXIMUM DYE CONCENTRATION =	0.70	ppb	(after applying dye loss factor)

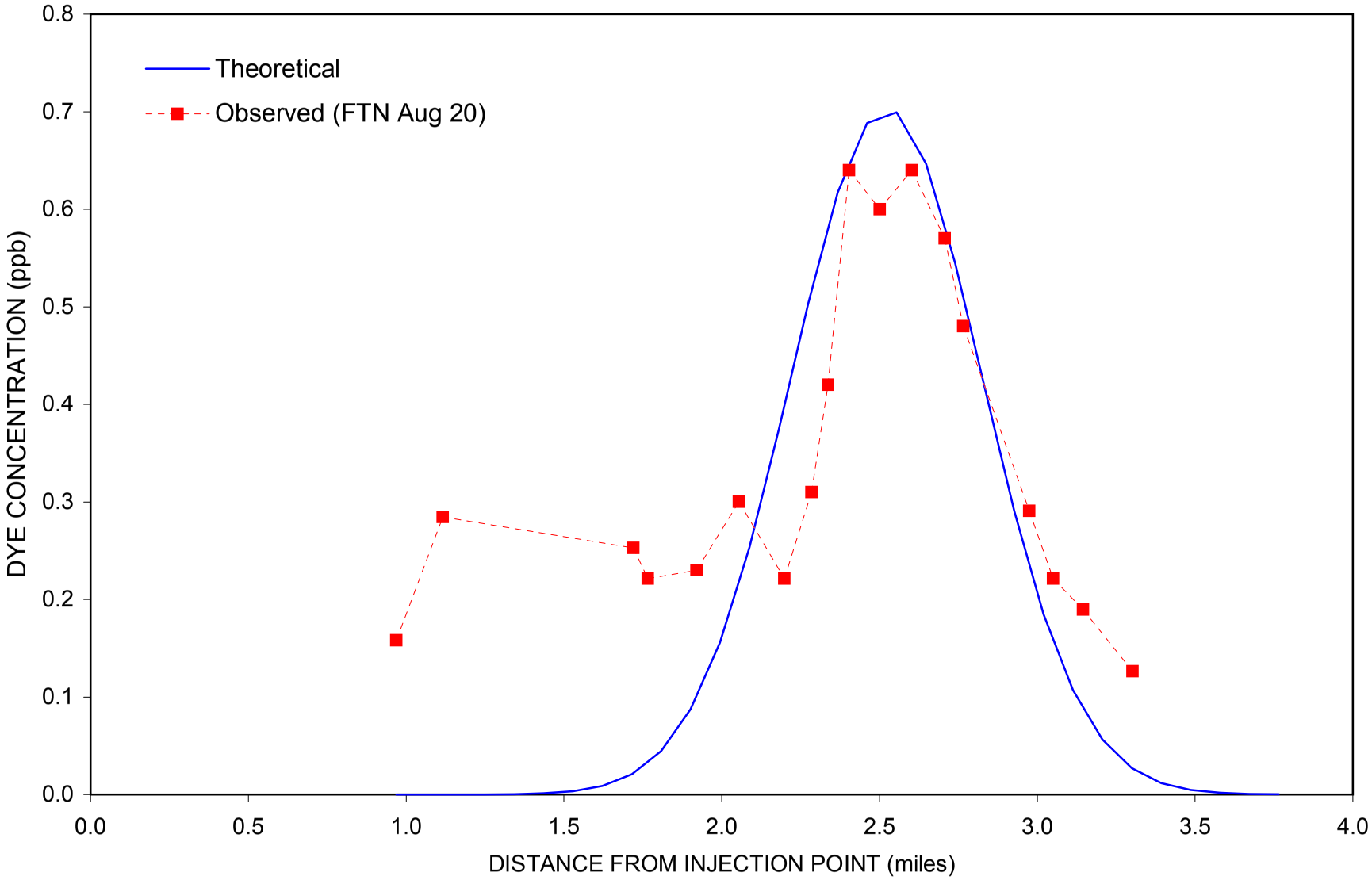
LONGITUDINAL DISPERSION COEFFICIENT =	4.50	m^2/sec	("calibration" factor)

DISTANCE DOWNSTREAM FROM INJECTION (meters)	(miles)	PREDIC. CONC. (ppb)
1560	0.97	0.00
1710	1.06	0.00
1860	1.16	0.00
2010	1.25	0.00
2160	1.34	0.00
2310	1.44	0.00
2460	1.53	0.00
2610	1.62	0.01
2760	1.71	0.02
2910	1.81	0.04
3060	1.90	0.09
3210	1.99	0.16
3360	2.09	0.25
3510	2.18	0.37
3660	2.27	0.50
3810	2.37	0.62
3960	2.46	0.69
4110	2.55	0.70
4260	2.65	0.65
4410	2.74	0.54
4560	2.83	0.42
4710	2.93	0.29
4860	3.02	0.19
5010	3.11	0.11
5160	3.21	0.06
5310	3.30	0.03
5460	3.39	0.01
5610	3.49	0.00
5760	3.58	0.00
5910	3.67	0.00
6060	3.77	0.00

DISTANCE DOWNSTREAM FROM INJECTION (meters)	(miles)	OBSERV. CONC. (ppb)
1560	0.97	0.16
1797	1.12	0.28
2768	1.72	0.25
2842	1.77	0.22
3090	1.92	0.23
3307	2.05	0.30
3538	2.20	0.22
3677	2.28	0.31
3761	2.34	0.42
3868	2.40	0.64
4025	2.50	0.60
4188	2.60	0.64
4356	2.71	0.57
4451	2.77	0.48
4788	2.98	0.29
4909	3.05	0.22
5062	3.15	0.19
5313	3.30	0.13

FILE: R:\PROJECTS\2110-611\CD_DES_ALL\APP D DISPERSION\DISPERSION_BDA-RRB.XLS

SPREAD OF DYE SLUG IN BAYOU DES ALLEMANDS (020201)



APPENDIX E

Model Inputs for Calibration

APPENDIX E. DES ALLEMANDS MODEL INPUTS FOR CALIBRATION

Table E.1. Calibration Inputs for Hydraulics (Data Type 9).

Parameter name or description	Reach(es)	Value used in model	Data Source / Comment
Velocity coefficient, a	1	0.000455	Calculated from measured widths and depths; 1/(width * depth). Widths measured every half kilometer on DOQQs. Depths taken from transects measured August 2002 (calibration survey). Depths assigned to reaches as indicated below in Depth Coefficient.
	2	0.000553	
	3	0.000650	
	4	0.000985	
	5	0.001780	
	6	0.001470	
	7	0.001250	
	8	0.001250	
	9	0.001380	
	10	0.001540	
	11	0.003680	
Velocity exponent, b	1 – 11	1	Set to one because changes in flow rate between calibration and projection are assumed to cause negligible changes in velocity.
Depth coefficient, c	1 – 2	1.52	Depth at calibration survey transect 1, river km 31.94
	3	1.84	Linear interpolation between depths from transects 1 (river km 31.94) and 2 (river km 28.26).
	4 – 5	2.16	Depth at calibration survey transect 2, river km 28.26
	6	2.62	Linear interpolation between depths from transects 2 (river km 28.26) and 3 (river km 25.33)
	7 – 8	3.08	Depth at calibration survey transect 3, river km 25.33
	9	2.79	Linear interpolation between depths from transects 3 (river km 25.33) and 4 (river km 22.29)
	10 – 11	2.5	Depth at calibration survey transect 4, river km 22.29
Depth exponent, d	1 – 11	0	Set to zero because changes in flow rate between calibration and projection are assumed to cause negligible changes in depth.
Depth constant, e	1 – 11	0	

Table E.2. Calibration Inputs for Initial Conditions (Data Type 11).

Parameter name or description	Reach(es)	Value used in model	Data Source / Comment
Temperature, ^{o}C	1 – 2	33.1	Calibration survey on 8/19/02 station 020201-8
	3	31.7	Calibration survey on 8/19/02 station 020201-6 1 m depth
	4	30.3	Calibration survey on 8/20/02 station 020201-6A 1 m depth
	5	30.7	Calibration survey on 8/20/02 average of stations 020201-6A and 020201-5, 1 m depth
	6	31.1	Calibration survey on 8/20/02 station 020201-5 1 m depth
	7	30.7	Calibration survey on 8/20/02 station 020201-3
	8	30.7	Calibration survey on 8/20/02 average of stations 020201-3 and 020201-2, 1 m depth
	9 – 10	30.7	Calibration survey on 8/20/02 station 020201-2 1 m depth
	11	30.8	Calibration survey on 8/20/02 station 020201-1 1 m depth
Salinity, ppt	1 – 3	0.29	Calculated from conductivity. Sources of conductivity measurements same as for temperatures listed above.
	4 – 6	0.28	
	7 – 10	0.27	
	11	0.28	
DO, mg/L	1 – 2	10.76	Calibration survey on 8/19/02 station 020201-8
	3	8.17	Calibration survey on 8/19/02 station 020201-6 1 m depth
	4	5.58	Calibration survey on 8/20/02 station 020201-6A 1 m depth
	5	5.66	Calibration survey on 8/20/02 average of stations 020201-6A and 020201-5, 1 m depth
	6	5.73	Calibration survey on 8/20/02 station 020201-5 1 m depth
	7	5.58	Calibration survey on 8/20/02 station 020201-3
	8	5.37	Calibration survey on 8/20/02 average of stations 020201-3 and 020201-2, 1 m depth
	9 – 10	5.15	Calibration survey on 8/20/02 station 020201-2 1 m depth
	11	3.86	Calibration survey on 8/20/02 station 020201-1 1 m depth
Ammonia N, mg/L	1 – 5	0.14	Calibration survey 8/20/02 average of stations 020201-6A and 020201-6B
	6	0.23	Calibration survey 8/20/02 average of stations 020201-6A, 02021-6B, and 020201-3
	7	0.32	Calibration survey 8/20/02 station 020201-3
	8	0.38	Calibration survey 8/20/02 average of station 020201-3 and 020201-1
	9 – 11	0.43	Calibration survey 8/20/02 station 020201-1

Table E.2. (Continued)

Parameter name or description	Reach(es)	Value used in model	Data Source / Comment
NO3 + NO2 N, mg/L	1 – 11	0.05	Set to half of detection (0.1 mg/L) because all measurements of NO2-N and NO3-N during calibration survey were less than detection
Phosphorus, mg/L	1 – 5	0.17	Calibration survey 8/20/02 average of stations 020201-6A and 020201-6B
	6	0.17	Calibration survey 8/20/02 average of stations 020201-6A, 020201-6B, and 020201-3
	7	0.17	Calibration survey 8/20/02 station 020201-3
	8	0.15	Calibration survey 8/20/02 average of stations 020201-3 and 020201-1
	9 – 11	0.12	Calibration survey 8/20/02 station 020201-1
Chlorophyll, ug/L	1 – 5	35	Calibration survey 8/20/02 average of stations 020201-6A and 020201-6B
	6	34	Calibration survey 8/20/02 average of stations 020201-6A, 020201-6B, and 020201-3
	7	33	Calibration survey 8/20/02 station 020201-3
	8	32	Calibration survey 8/20/02 average of stations 020201-3 and 020201-1
	9 – 11	31	Calibration survey 8/20/02 station 020201-1

Table E.3. Calibration Inputs for Kinetic Coefficients (Data Types 3, 6, 12, 13, and 14).

Parameter name or description	Reach(es)	Value used in model	Data Source / Comment
Reaeration option	1 – 11	3	O'Connor-Dobbins
K_L (surface transfer coefficient)	1 – 11	0.84 m/day	Wind aided reaeration specified due to low velocities and large surface area. Wind speed values and K_L calculations are included in Appendix F
CBODu decay rate	1 – 11	0.09/day	Average of rates calculated from calibration survey data using GSBOD spreadsheet.
Organic N decay rate	1 – 11	0.02/day	Based on literature values. Same as value used in previous DO modeling in southern LA
Ammonia N decay rate	1 – 11	0.10/day	Typical value from previous DO modeling in southern LA
Total daily radiation	1 – 11	416 langleys	Long term average daily solar radiation for New Orleans for August
Nitrogen half saturation constant	1 – 11	0.3 mg/L	QUAL-TX default value
Phosphorus half saturation constant	1 – 11	0.04 mg/L	QUAL-TX default value
Light half saturation constant	1 – 11	10 langleys per hour	Reduced from QUAL-TX default value (30) during calibration
Algae max. growth rate	1 – 11	0.81/day	Calibration parameter
Algae respiration rate	1 – 11	0.10/day	Selected based on literature values
Algae settling rate	1 – 11	0.5 m/day	Selected based on literature values
Secchi depth with no algae present	1 – 11	1.0 m	Assumed based on typical Secchi depth from LDEQ monitoring in Barataria basin
Algae to chlorphyll ratio	1 – 11	0.06 mg algae per µg chlorophyll	Assumes carbon to chlorophyll ratio is 30 (default value in WASP) and carbon is 50% of algal biomass
Conversion of settled algae to SOD	1 – 11	0.08 mg O_2 per µg chlorphyll	Assumes carbon to chlorophyll ratio is 30 (defalult value in WASP) and oxygen consumed per unit of carbon decayed is 32/12 (based on conversion of C to CO2).

Table E.4. Calibration Inputs for NPS Loads (Data Types 12, 13 and 19).

Parameter name or description	Reach	Value used in model	Data Source / Comment
Sediment oxygen demand, g/m2/day	1	0.875	These values were treated as calibration parameters by adjusting them to until the model output was similar to the calibration target values.
	2 – 7	1.000	
	8	1.110	
	9	1.000	
	10	0.875	
	11	0.750	
Benthic ammonia, g/m2/day	1 – 2	0.04	
	3	0.08	
	4	0.12	
	5	0.18	
	6 – 8	0.20	
	9	0.22	
	10	0.24	
	11	0.26	
Benthic phosphorus, g/m2/day	1 – 2	0.04	
	3	0.03	
	4 – 7	0.02	
	8	0.01	
	9 – 11	0.00	
CBODu mass loads, kg/day	1	3840	
	2	2880	
	3	1920	
	4	480	
	5 – 7	96	
	8 – 10	240	
	11	96	
Organic N mass loads, kg/day	1- 11	0	

Table E.5. Calibration Inputs for Headwater (Data Types 20, 21, and 22).

Name of inflow	Parameter name	Value used in model	Data Source / Comment
Headwater Des Allemands	Flow Rate	84.29 m^3/sec	See section 4.8
	Temperature	30.6 C	Calibration survey 8/20/02 station 020201-10, 1 m depth
	Specific conductivity	427 : mhos	
	DO	7.32 mg/L	24 hour average of continuous monitoring data on 8/20/02 from station 020201-10
	CBODu	3.79 mg/L	Calculated in GSBOD spreadsheet using data from station 020201-10 during calibration survey
	NBODu	1.58 mg/L	Calibration survey 8/20/02 station 020201-10 TKN minus ammonia
	Ammonia	0.12 mg/L	Calibration survey 8/20/02 station 020201-10
	NO2 + NO3	0.05 mg/L	Set to half the detection level since measurement was less than detection
	Phosphorus	0.12 mg/L	Calibration survey 8/20/02 station 020201-10
	Chlorophyll	51 ug/L	

Table E.6. Calibration Inputs for Wasteload (Data Types 24, 25, and 26).

Name of inflow	Parameter name	Value used in model	Data Source / Comment
Providence Canal	Flow Rate	4.39 m^3/sec	See Section 4.10
	Temperature	30.2 C	Calibration survey station 020201-9, 1 m depth
	Specific conductivity	614 : mhos	
	DO	4.19 mg/L	Estimated average daily DO (see Section 4.10) using calibration survey 8/20/02 station 020201-10
	CBODu	3.79 mg/L	Calculated from calibration survey 8/20/02 station 020201-10 using GSBOD spreadsheet provided by LDEQ
	NBODu	1.58 mg/L	Calibration survey 8/20/02 station 020201-10 TKN minus ammonia
	Ammonia	0.12 mg/L	Calibration survey 8/20/02 station 020201-10
	NO2 + NO3	0.05 mg/L	Set to half the detection limit because measurement was less than detection
	Phosphorus	0.12 mg/L	Calibration survey 8/20/02 station 020201-10
	Chlorophyll	51 ug/L	
Collier's Fisheries	Flow Rate	0.0044	Assumed
	Temperature	30.8 C	Calibration survey 8/20/02 station 020201-1
	Specific conductivity	503 µmhos	
	DO	2.0 mg/L	Based on guidance in LTP assuming secondary treatment with a mechanical system
	CBODu	69 mg/L	
	Organic N	5.0 mg/L	
	Ammonia	10.0 mg/L	
	NO2 + NO3	10.0 mg/L	
	Phosphorus	5.0 mg/L	
	Chlorophyll	0	Assumed

Table E.7. Calibration Inputs for Lower Boundary Conditions (Data Type 27).

Parameter name	Value used in model	Data Source / Comment
Temperature	31.5 C	Calibration survey 8/20/02 station 020201-0, 1 m depth
Salinity	0.275 ppt	Calculated from calibration survey 8/20/02 station 020201-0 specific conductivity at 1 m
Specific Conductivity	493 : mhos	Calibration survey 8/20/02 station 020201-0, 1 m depth
DO	5.16 mg/L	Estimated daily average DO (see Section 4.10) using calibration survey 8/20/02 station 020201-0, 1 m depth
CBODu	3.79 mg/L	Calculated from calibration survey 8/20/02 station 020201-1 using GSBOD spreadsheet provided by LDEQ
NBODu	1.27 mg/L	Calibration survey 8/20/02 station 020201-1 TKN minus ammonia
Ammonia N	0.43 mg/L	Calibration survey 8/20/02 station 020201-1
NO2 + NO3	0.05 mg/L	Set to half the detection limit because measurement was less than detection
Phosphorus	0.12 mg/L	Calibration survey 8/20/02 station 020201-1
Chlorophyll	31 ug/L	

APPENDIX F

Calculation of K_L (Calibration Survey)

Wind Aided Reaeration for Bayou des Allemands

Wind Aided Reaeration Coefficient Equation (Eq.3-23 from Rates, Constants, and Kinetics publication)

$K_{L\ with\ wind} = K_{L\ without\ wind}\ [1+(0.2395V_w^{1.643})]$ **Equation 1**

V_w = wind velocity in meters per second
K_2 = reaeration in 1/day that does not account for wind effects. For Louisiana equation use K_2 = 0.664/D.
D = depth in meters
$K_L = K_2 * D$ (=oxygen transfer coefficient "a" in model)

Formula to correct wind speed for elevation (obtained from LDEQ):

$V_{w@\ height\ z} = V_{w@\ height\ s}\ [(z/s)^{0.143}]$ **Equation 2**

CALCULATIONS FOR CALIBRATION PERIOD:

Calibration Period: August 20,2002

Station	Average Wind Speed (knots)	Average Wind Speed (m/s)	Height of Wind Measurement (m)	Height for Calculating Wind-Aided K_L (m)	Wind Speed at Surface using Eqn 2 (m/s)	K_L without wind (m/day)	K_L with wind using Eqn 1 (m/day)
New Orleans Intl. Airport	4.0	2.1	10	0.1	1.1	0.664	0.84

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APPENDIX G

Literature Values for Mineralization Rates

TABLE 5-3. RATE COEFFICIENTS FOR NITROGEN TRANSFORMATIONS

PON → DON		DON → NH_3		PON → NH_3		NH_3 → NO_2		NH_3 → NO_3		NO_2 → NO_3		SEDM → NH_3		References
K	θ	K	θ	K	θ	K	θ	K	θ	K	θ	K	θ	
								Calibration Values						
				0.035	(linear)			0.04	(linear)					Thomann et al. (1975)
				0.03**	1.08									Thomann et al. (1979)
				0.03***	1.08			0.12***	1.08			0.0025	1.08	Di Toro & Connolly (1980)
				0.03***	1.08			0.20	1.08					Di Toro & Matystik (1980)
				0.075	1.08			0.09-0.13***	1.08			0.0004	1.08	Thomann & Fitzpatrick (1982)
								0.025***	1.08					O'Connor et al. (1981)
				0.14	(linear)									Salas & Thomann (1978)
				0.001	1.02	0.003-0.03	1.02			0.09	1.02	0.001	1.02	Chen & Orlob (1972, 1975)
0.020	(linear)	0.020	(linear)					0.060	(linear)					Scavia et al. (1976)
0.020	(linear)	0.020	(linear)					0.1	(linear)					Scavia (1980)
0.02	1.020	0.02	1.020					0.1	1.020					Bowie et al. (1980)
0.02	(linear)	0.024	(linear)					0.16	(linear)					Canale et al. (1976)
				0.003	1.020	0.02	1.047			0.25	1.047	0.0015	1.047	Tetra Tech (1980)
				0.1	1.047	0.02	1.047			0.25	1.047	0.0015	1.047	Porcella et al. (1983)
				0.01**	NI							0.95-1.8***	1.14	Nyholm (1978)
				0.005**	1.08									Bierman et al. (1980)
				0.1**	1.02									Jorgensen (1976)
				0.2**	1.072									Jorgensen et al. (1978)

(continued)

APPENDIX H

DO Calculations (Calibration Survey)

Table 1.0. Continuous Data For Station 020201-10. Using only 24 hours.

NOTE:	020201-8	8/19/02	1415	11.3	used time but applied on 8/20/02
	020201-6	8/19/02	15:00	6.5	used time but applied on 8/20/02

Continuous Monitoring Data (D-10)

DATE/TIME	DO (mg/L)	DO as fraction of daily average
8/20/02 0:13	7.80	1.0662
8/20/02 0:28	7.57	1.0348
8/20/02 0:43	7.49	1.0238
8/20/02 0:58	7.35	1.0047
8/20/02 1:13	7.20	0.9842
8/20/02 1:28	7.16	0.9787
8/20/02 1:43	7.03	0.9610
8/20/02 1:58	6.92	0.9459
8/20/02 2:13	6.87	0.9391
8/20/02 2:28	6.73	0.9200
8/20/02 2:43	6.63	0.9063
8/20/02 2:58	6.65	0.9090
8/20/02 3:13	6.50	0.8885
8/20/02 3:28	6.53	0.8926
8/20/02 3:43	6.52	0.8912
8/20/02 3:58	6.46	0.8830
8/20/02 4:13	6.50	0.8885
8/20/02 4:28	6.53	0.8926
8/20/02 4:43	6.54	0.8940
8/20/02 4:58	6.51	0.8899
8/20/02 5:13	6.55	0.8953
8/20/02 5:28	6.52	0.8912
8/20/02 5:43	6.50	0.8885
8/20/02 5:58	6.43	0.8789
8/20/02 6:13	6.44	0.8803
8/20/02 6:28	6.28	0.8584
8/20/02 6:43	6.26	0.8557
8/20/02 6:58	5.99	0.8188
8/20/02 7:13	5.92	0.8092
8/20/02 7:28	5.87	0.8024
8/20/02 7:43	5.85	0.7997
8/20/02 7:58	5.75	0.7860
8/20/02 8:13	5.60	0.7655
8/20/02 8:28	5.47	0.7477
8/20/02 8:43	5.56	0.7600
8/20/02 8:58	5.57	0.7614
8/20/02 9:13	5.60	0.7655
8/20/02 9:28	5.59	0.7641
8/20/02 9:43	5.84	0.7983

Instantaneous Data

Station	DATE	TIME	Measured DO at sampling time (mg/L)	Estimated daily avg DO at this station (mg/L)

Continuous Monitoring Data (D-10)

DATE/TIME	DO (mg/L)	DO as fraction of daily average
8/20/02 9:58	5.91	0.8079
8/20/02 10:13	6.19	0.8461
8/20/02 10:28	6.38	0.8721
8/20/02 10:43	6.71	0.9172
8/20/02 10:58	6.94	0.9487
8/20/02 11:13	7.22	0.9869
8/20/02 11:28	7.36	1.0061
8/20/02 11:43	7.47	1.0211
8/20/02 11:58	7.78	1.0635
8/20/02 12:13	7.66	1.0471
8/20/02 12:28	7.56	1.0334
8/20/02 12:43	7.58	1.0361
8/20/02 12:58	7.88	1.0772
8/20/02 13:13	7.73	1.0566
8/20/02 13:28	8.01	1.0949
8/20/02 13:43		1.0751
8/20/02 13:58	7.72	1.0553
8/20/02 14:13	7.68	1.0498
8/20/02 14:28	8.03	1.0977
8/20/02 14:43	8.30	1.1346
8/20/02 14:58	8.40	1.1482
8/20/02 15:13	8.67	1.1851
8/20/02 15:28	8.72	1.1920
8/20/02 15:43	8.98	1.2275
8/20/02 15:58	9.08	1.2412
8/20/02 16:13	9.27	1.2672
8/20/02 16:28	9.40	1.2849
8/20/02 16:43	9.53	1.3027
8/20/02 16:58	9.46	1.2931
8/20/02 17:13	9.96	1.3615
8/20/02 17:28	9.92	1.3560
8/20/02 17:43	9.76	1.3341
8/20/02 17:58	9.55	1.3054
8/20/02 18:13	9.35	1.2781
8/20/02 18:28	9.25	1.2644
8/20/02 18:43	9.15	1.2508
8/20/02 18:58	8.89	1.2152
8/20/02 19:13	8.38	1.1455
8/20/02 19:28	8.34	1.1400
8/20/02 19:43	8.25	1.1277
8/20/02 19:58	8.12	1.1100
8/20/02 20:13	8.05	1.1004
8/20/02 20:28	7.78	1.0635

Instantaneous Data

Station	DATE	TIME	Measured DO at sampling time (mg/L)	Estimated daily avg DO at this station (mg/L)
020201-6A	8/20/02	13:20	5.90	5.58
020201-9	8/20/02	1345	4.50	4.19
020201-8	8/19/02	1415	11.30	10.76
020201-6	8/19/02	15:00	6.50	5.66

Continuous Monitoring Data (D-10)

DATE/TIME	DO (mg/L)	DO as fraction of daily average
8/20/02 20:43	7.54	1.0307
8/20/02 20:58	7.58	1.0361
8/20/02 21:13	7.40	1.0115
8/20/02 21:28	7.29	0.9965
8/20/02 21:43	7.18	0.9815
8/20/02 21:58	7.04	0.9623
8/20/02 22:13	7.02	0.9596
8/20/02 22:28	6.85	0.9364
8/20/02 22:43	6.77	0.9254
8/20/02 22:58	6.67	0.9118
8/20/02 23:13	6.73	0.9200
8/20/02 23:28	6.54	0.8940
8/20/02 23:43	6.51	0.8899
8/20/02 23:58	6.41	0.8762
Average:	7.32	

Instantaneous Data

Station	DATE	TIME	Measured DO at sampling time (mg/L)	Estimated daily avg DO at this station (mg/L)

FILE: R:\PROJECTS\2110-611\QUAL-TX\DO CALCULATIONS-UP_BDA.XLS

Table 2.0. Continuous Data For Station 020201-1. Using 24 hours.

NOTE: 020201-1a 8/19/02 1115 2.50 used time but applied on 8/20/02

Continuous Monitoring Data (D-1)			Instantaneous Data				
DATE/TIME	DO (mg/L)	DO as fraction of daily average	Station	DATE	TIME	Measured DO at sampling time (mg/L)	Estimated Daily Average DO (mg/L)at sampling time
8/20/02 0:11	4.11	0.8359					
8/20/02 0:26	4.00	0.8135					
8/20/02 0:41	3.94	0.8013					
8/20/02 0:56	4.12	0.8379					
8/20/02 1:11	4.01	0.8155					
8/20/02 1:26	4.14	0.8420					
8/20/02 1:41	4.08	0.8298					
8/20/02 1:56	3.92	0.7972					
8/20/02 2:11	3.85	0.7830					
8/20/02 2:26	3.88	0.7891					
8/20/02 2:41	3.85	0.7830					
8/20/02 2:56	3.77	0.7667					
8/20/02 3:11	3.72	0.7566					
8/20/02 3:26	3.79	0.7708					
8/20/02 3:41	3.79	0.7708					
8/20/02 3:56	3.82	0.7769					
8/20/02 4:11	3.73	0.7586					
8/20/02 4:26	3.72	0.7566					
8/20/02 4:41	3.77	0.7667					
8/20/02 4:56	3.90	0.7932					
8/20/02 5:11	3.83	0.7789					
8/20/02 5:26	3.91	0.7952					
8/20/02 5:41	3.92	0.7972					
8/20/02 5:56	3.93	0.7993					
8/20/02 6:11	3.92	0.7972					
8/20/02 6:26	3.91	0.7952					
8/20/02 6:41	3.88	0.7891	020201-3	8/20/02	645	4.40	5.58
8/20/02 6:56	3.86	0.7850					
8/20/02 7:11	3.84	0.7810					
8/20/02 7:26	3.79	0.7708					
8/20/02 7:41	3.70	0.7525					
8/20/02 7:56	3.70	0.7525					
8/20/02 8:11	3.67	0.7464					
8/20/02 8:26	3.67	0.7464					
8/20/02 8:41	3.67	0.7464					
8/20/02 8:56	3.62	0.7362					
8/20/02 9:11	3.70	0.7525					
8/20/02 9:26	3.73	0.7586					
8/20/02 9:41	3.73	0.7586					

Continuous Monitoring Data (D-1)

DATE/TIME	DO (mg/L)	DO as fraction of daily average
8/20/02 9:56	3.86	0.7850
8/20/02 10:11	3.82	0.7769
8/20/02 10:26	3.82	0.7769
8/20/02 10:41	3.93	0.7993
8/20/02 10:56	4.03	0.8196
8/20/02 11:11	4.00	0.8135
8/20/02 11:26	4.12	0.8379
8/20/02 11:41	4.20	0.8542
8/20/02 11:56	4.47	0.9091
8/20/02 12:11	4.51	0.9172
8/20/02 12:26	4.37	0.8888
8/20/02 12:41	4.66	0.9477
8/20/02 12:56	4.64	0.9437
8/20/02 13:11	4.66	0.9477
8/20/02 13:26	4.77	0.9701
8/20/02 13:41	4.94	1.0047
8/20/02 13:56	5.06	1.0291
8/20/02 14:11	5.16	1.0494
8/20/02 14:26	5.37	1.0921
8/20/02 14:41	5.55	1.1287
8/20/02 14:56	5.69	1.1572
8/20/02 15:11	5.94	1.2081
8/20/02 15:26	6.54	1.3301
8/20/02 15:41	6.97	1.4175
8/20/02 15:56	7.06	1.4358
8/20/02 16:11	6.53	1.3281
8/20/02 16:26	7.23	1.4704
8/20/02 16:41	6.94	1.4114
8/20/02 16:56	7.03	1.4297
8/20/02 17:11	7.22	1.4684
8/20/02 17:26	6.90	1.4033
8/20/02 17:41	7.02	1.4277
8/20/02 17:56	6.76	1.3748
8/20/02 18:11	6.59	1.3403
8/20/02 18:26	7.00	1.4236
8/20/02 18:41	6.86	1.3952
8/20/02 18:56	6.46	1.3138
8/20/02 19:11	6.15	1.2508
8/20/02 19:26	6.33	1.2874
8/20/02 19:41	6.30	1.2813
8/20/02 19:56	6.16	1.2528
8/20/02 20:11	5.71	1.1613

Instantaneous Data

Station	DATE	TIME	Measured DO at sampling time (mg/L)	Estimated Daily Average DO (mg/L)at sampling time
020201-2	8/20/02	1015	4.00	5.15
020201-1	8/20/02	1040	3.50	4.38
020201-1a	8/19/02	1115	2.50	3.07
020201-5	8/20/02	1400	5.90	~~5.7~~3

Continuous Monitoring Data (D-1)

DATE/TIME	DO (mg/L)	DO as fraction of daily average
8/20/02 20:26	5.11	1.0393
8/20/02 20:41	5.32	1.0820
8/20/02 20:56	5.70	1.1592
8/20/02 21:11	5.91	1.2020
8/20/02 21:26	5.98	1.2162
8/20/02 21:41	6.00	1.2203
8/20/02 21:56	5.94	1.2081
8/20/02 22:11	6.01	1.2223
8/20/02 22:26	5.97	1.2142
8/20/02 22:41	5.95	1.2101
8/20/02 22:56	5.78	1.1755
8/20/02 23:11	5.71	1.1613
8/20/02 23:26	5.78	1.1755
8/20/02 23:41	5.79	1.1776
8/20/02 23:56	5.86	1.1918
AVG	4.92	

Instantaneous Data

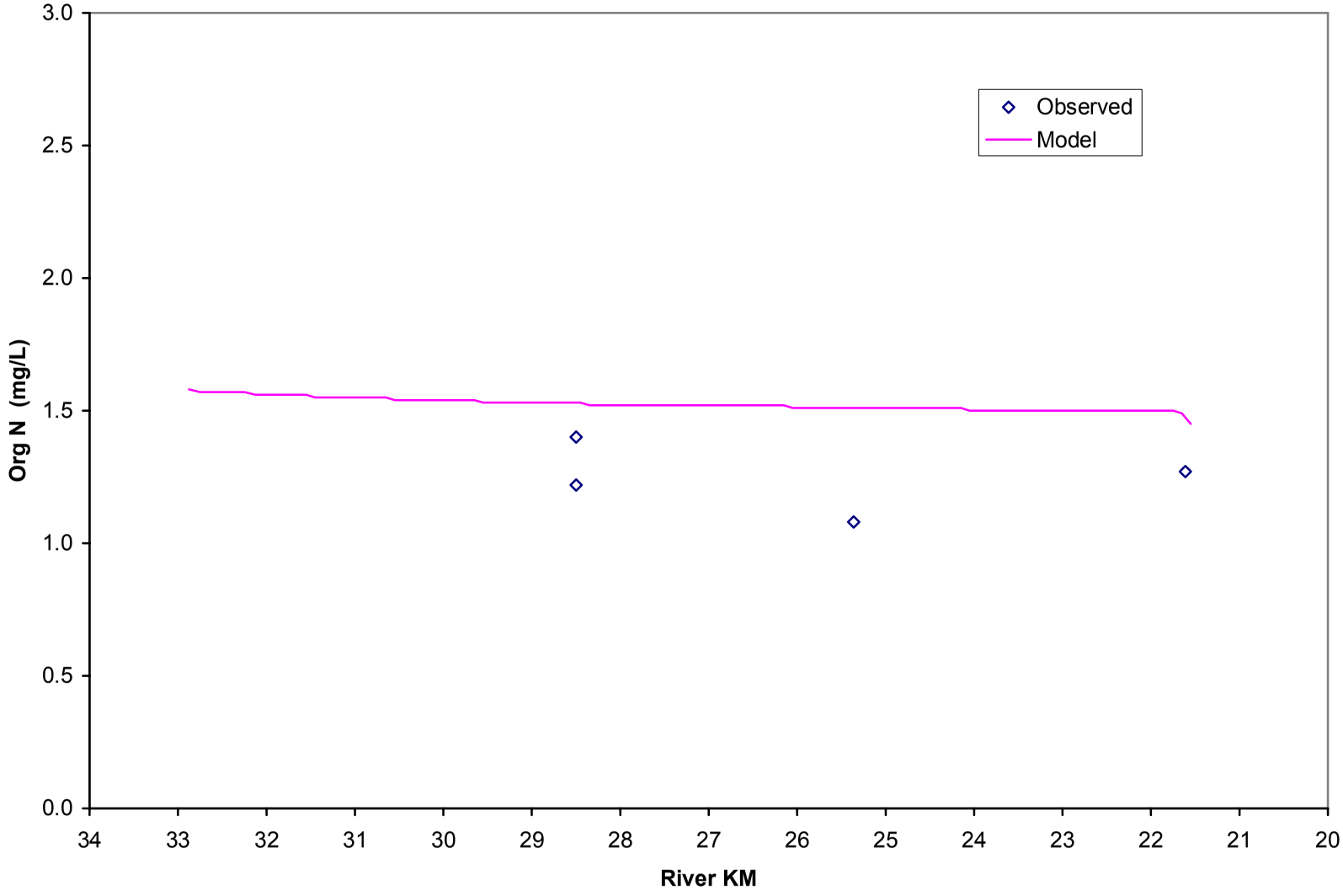
Station	DATE	TIME	Measured DO at sampling time (mg/L)	Estimated Daily Average DO (mg/L)at sampling time

FILE: R:\PROJECTS\2110-611\QUAL-TX\DO CALCULATIONS-UP_BDA.XLS

APPENDIX I

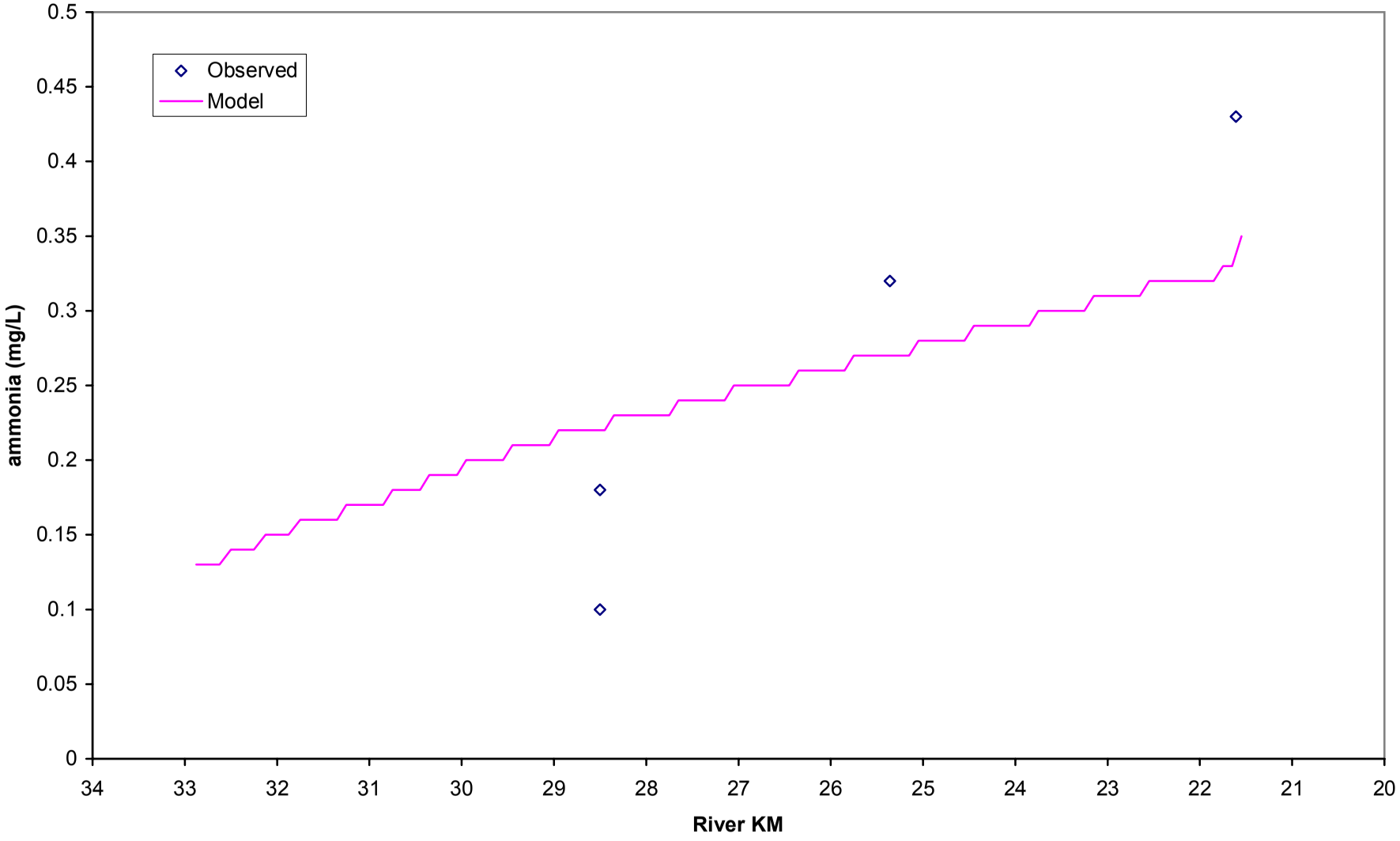
Plots of Calibration Model Results

Figure I-1. Organic Nitrogen calibration for Upper Bayou Des Allemands



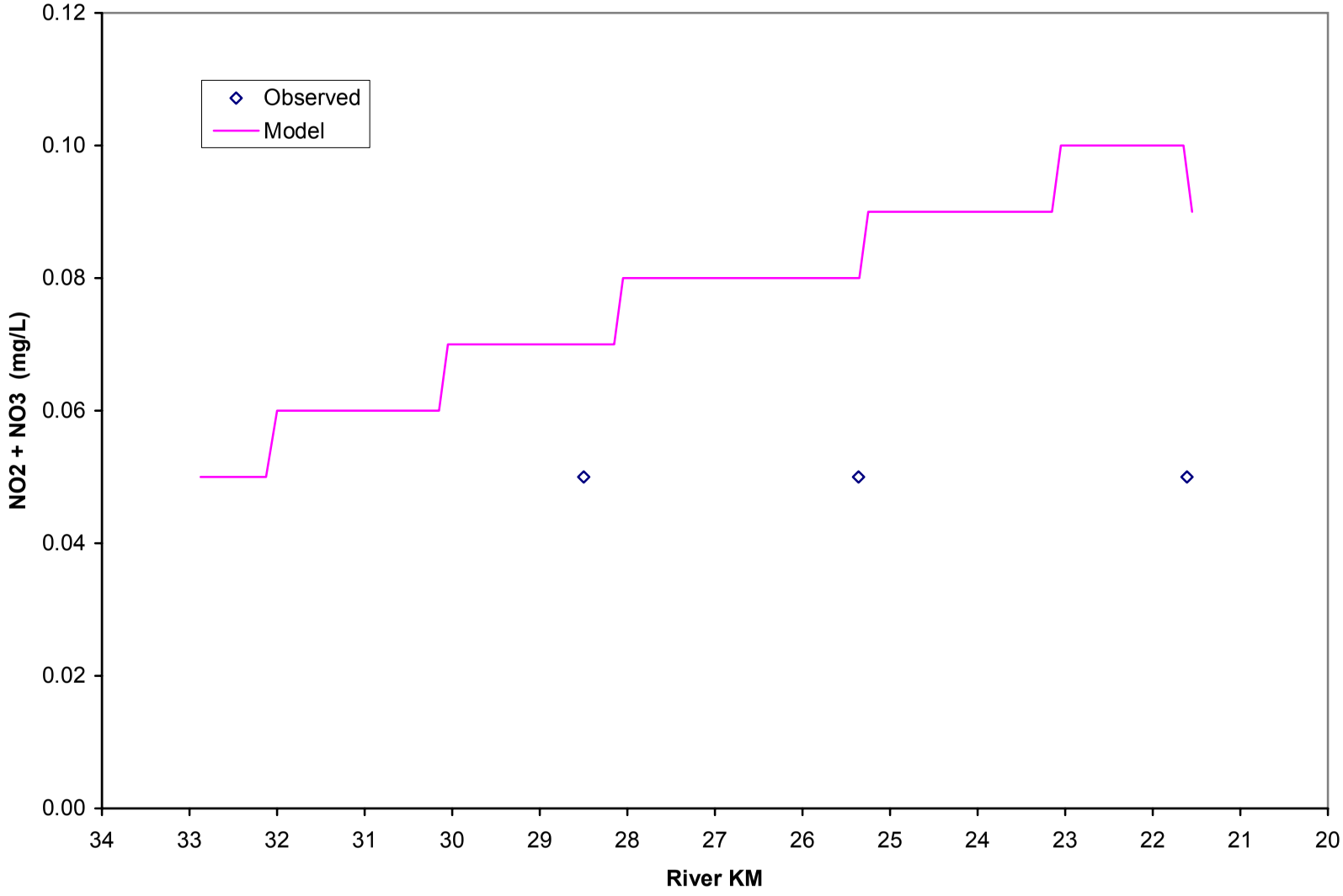
Run8

Figure I-2. Ammonia Calibration for Upper Bayou Des Allemands



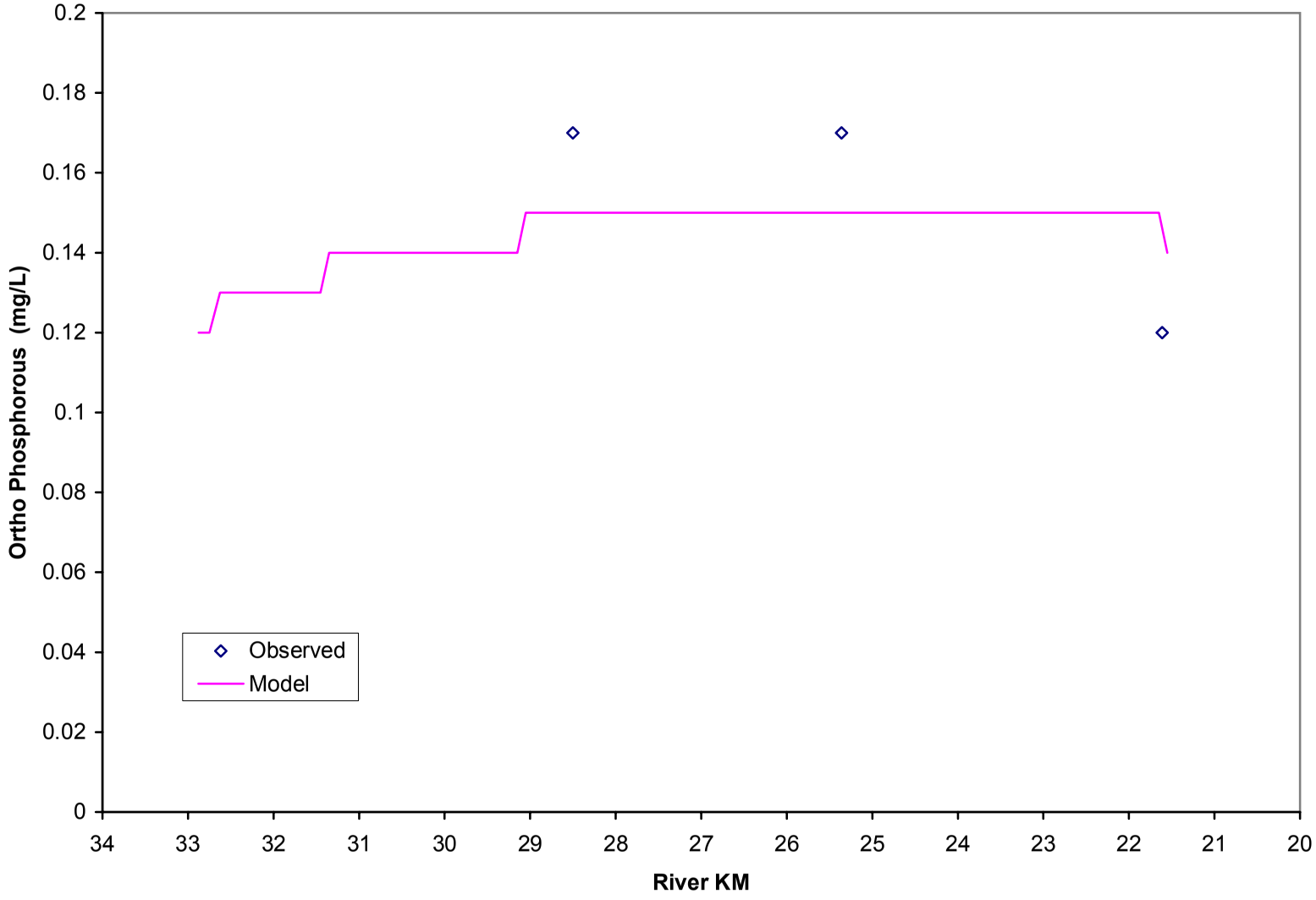
Run8

Figure I-3. NO2+NO3 calibration for Upper Bayou Des Allemands



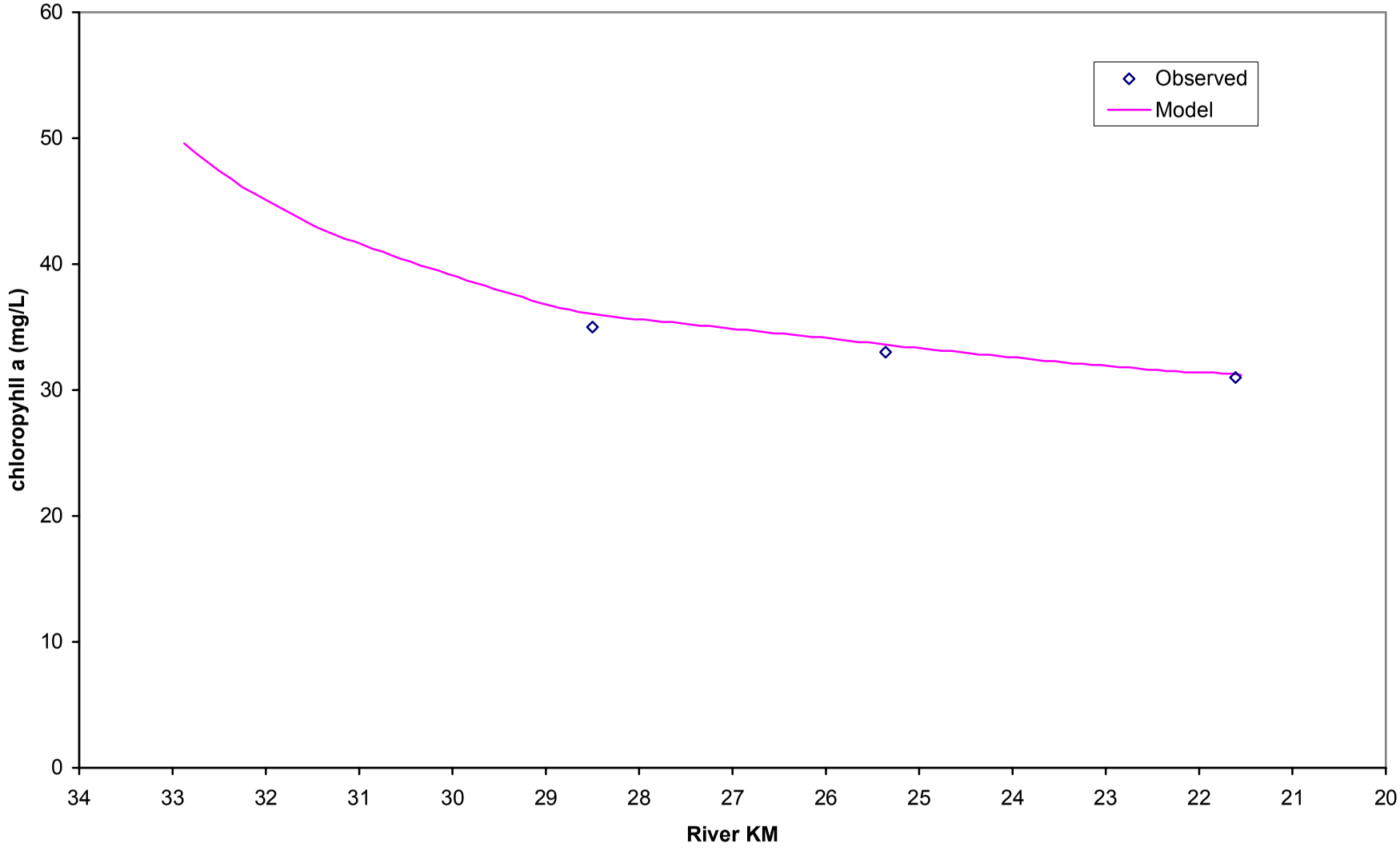
Run8

Figure I-4. Phosphorus calibration for Upper Bayou Des Allemands



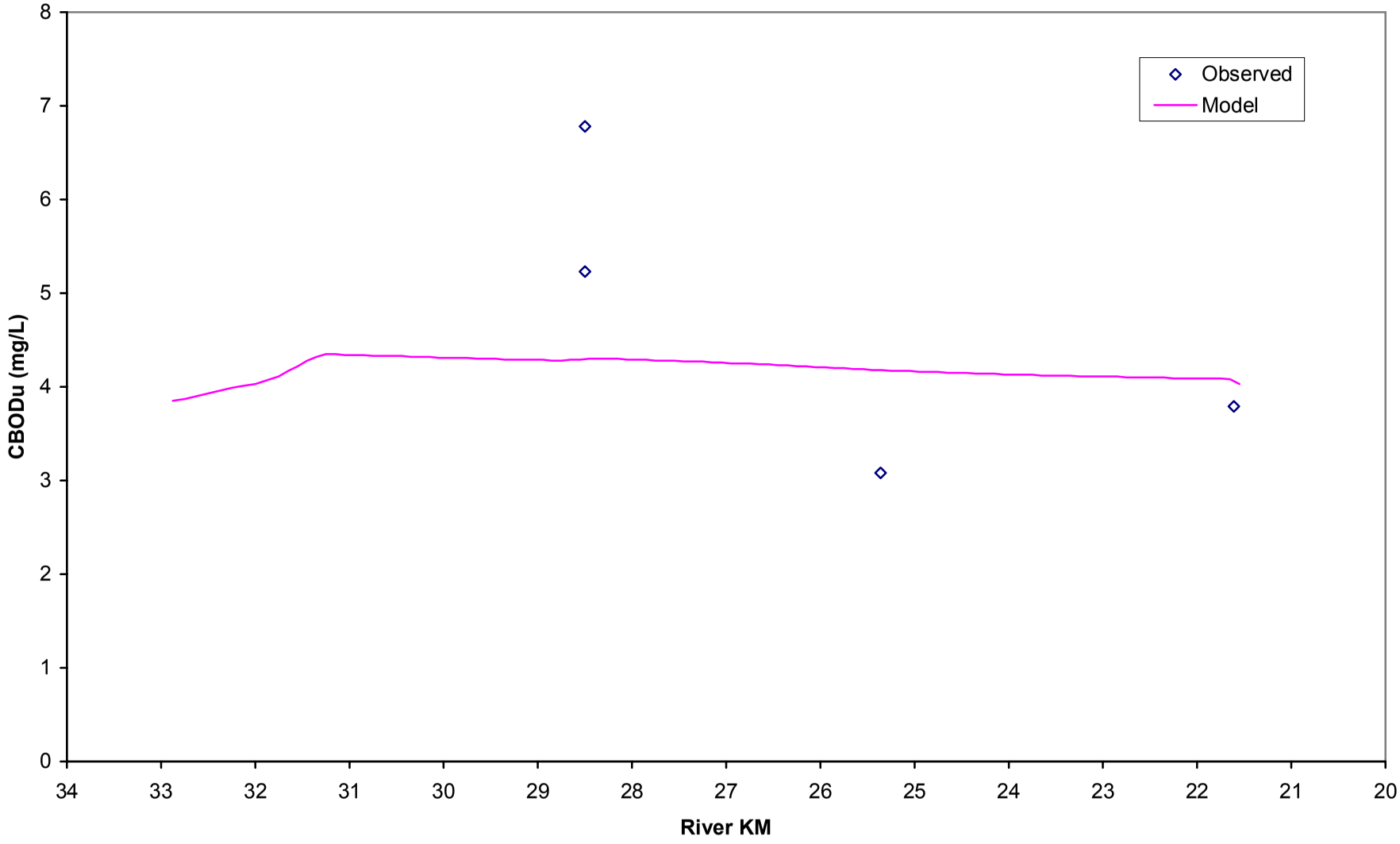
Run8

Figure I-5. Chlorophyll calibration for Upper Bayou Des Allemands



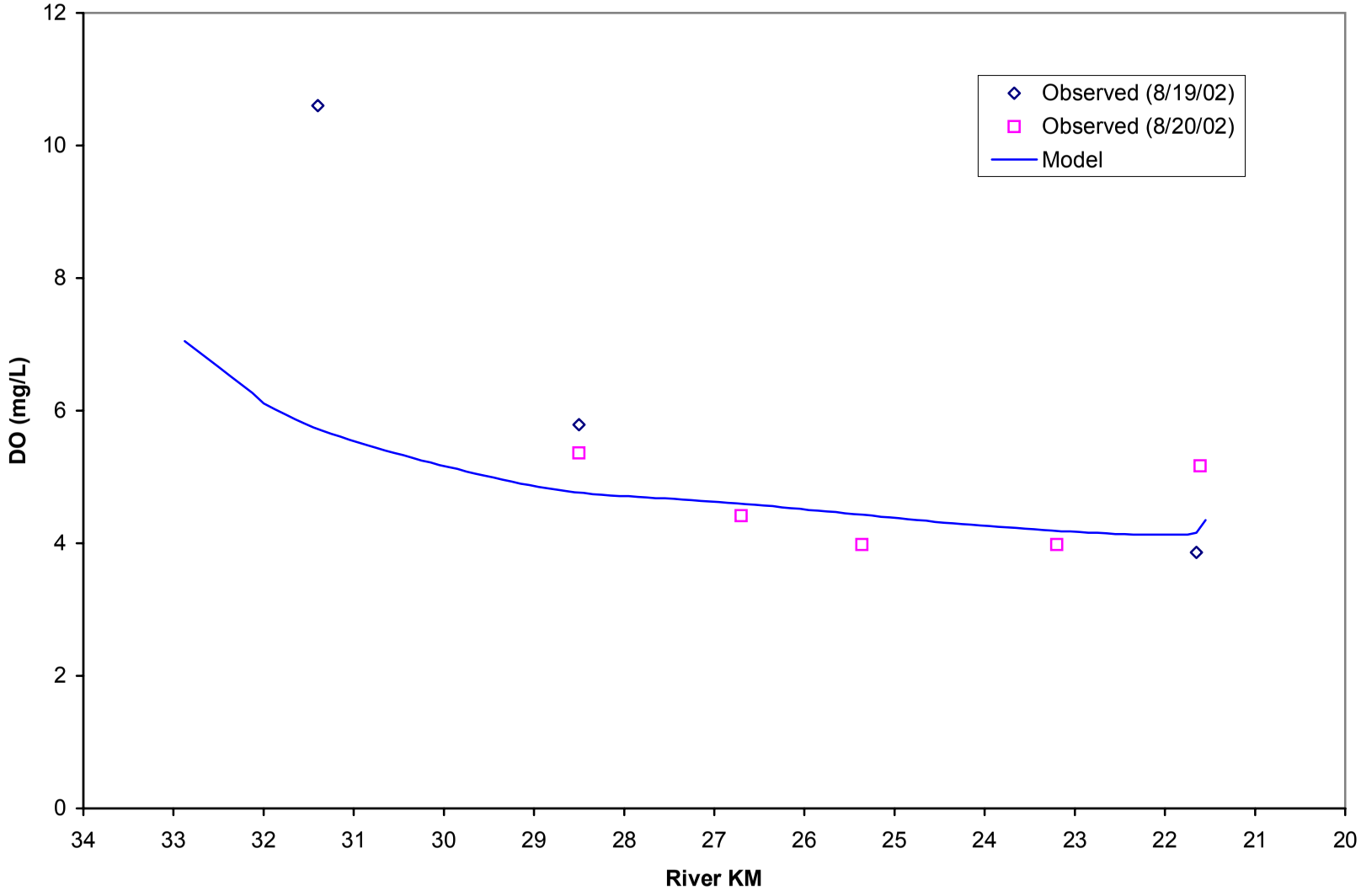
Run8

Figure I-6. CBODu calibration for Upper Bayou Des Allemands



Run8

Figure I-7. DO calibration for Upper Bayou Des Allemands



Run8