BEFORE THE ARKANSAS POLLUTION CONTROL AND ECOLOGY COMMISSION

IN RE: REQUEST BY CLEAN HARBORS EL DORADO, LLC FOR THIRD PARTY RULEMAKING TO AMEND REGULATION NO. 2 **DOCKET NO. 07-001**

REQUEST FOR ADOPTION OF PROPOSED CHANGE TO REGULATION NO. 2

Petitioner, Clean Harbors El Dorado LLC, ("Clean Harbors") hereby comes before the Arkansas Pollution Control and Ecology Commission ("Commission") for its request for adoption of the proposed change to APC&E Regulation No. 2 to amend Water Quality Standards of the State of Arkansas, and submits the following Statement of Basis and Purpose and Responsiveness Summary.

STATEMENT OF BASIS AND PURPOSE

1. The Commission entered Minute Order No. 07-03 granting Clean Harbors's request to initiate rulemaking on the proposed rule change.

2. Clean Harbors' petition requests that the Commission amend Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas (hereafter "Regulation No. 2"), as follows.

3. Specifically, the proposed rule change would modify the total dissolved solids ("TDS"), sulfate, chloride and selenium criteria for the Arkansas Water Quality Standards as follows:

TDS from 138 mg/L to 1,360 mg/L
Sulfate from 41 mg/L to 63 mg/L
Chloride from 19 mg/L to 631 mg/L
Selenium from 5 μg/L to 15.6 μg/L

and

Removal of the Domestic Water Supply use designation for Boggy Creek.

4. Clean Harbors operates a hazardous waste treatment and incineration facility in El Dorado, Union County, Arkansas, which includes a water treatment facility that collects previously contaminated groundwater containing elevated levels of TDS and selenium. Water passes through the treatment system and is discharged to Boggy Creek thence to Bayou de Loutre under the authority of NPDES permit No. AR0037800. The wastewater treatment system has been in existence for approximately eighteen years producing this effluent. An evaluation of the sources of contamination indicates selenium occurs in groundwater under the Clean Harbors facility site, in surface runoff from the facility and in upstream segments of Boggy Creek. The source of the selenium is believed to be primarily

from historic refinery operations in the area surrounding the Clean Harbors facility. The current NPDES permit became effective on October 1, 2004 and the numeric permit limits for TDS and selenium become enforceable November 1, 2007. Sample data from the Clean Harbors treated discharge to Boggy Creek indicates the discharge will not comply with the numeric permit limits. Clean Harbors has determined that site-specific criteria for TDS, sulfate, chloride and selenium in Boggy Creek and the removal of the Domestic Water Supply use designation for Boggy Creek will be protective of existing water quality and aquatic life in Boggy Creek. The creek currently meets all its designated aquatic life uses and no changes to these uses are proposed.

5. Clean Harbors has submitted documentation in accordance with requirements of Section 2.306 of Regulation No. 2, along with additional documentation required pursuant to the Administrative Guidance Document.

6. In particular, Clean Harbors' modification request is supported by the following:

a. Clean Harbors does not discharge TDS, sulfate, chlorides or selenium into Boggy Creek in toxic amounts. The existing selenium concentrations do not limit aquatic life in Boggy Creek and do not adversely affect Bayou de Loutre downstream.

b. The selenium in the Clean Harbors discharge does not accumulate to toxic levels in fish in Boggy Creek or downstream Bayou de Loutre.

c. Clean Harbors' discharge to Boggy Creek does not cause elevated TDS, chloride or selenium concentrations in Bayou de Loutre since those concentrations are historically higher in Bayou de Loutre than Boggy Creek.

d. The direct discharge of treated wastewater by Clean Harbors to Boggy Creek continues to be the most direct, cost effective and environmentally protective method of management of the treated wastewater.

RESPONSIVENESS SUMMARY

A public hearing was held in El Dorado, Arkansas on March 19, 2007 to receive comments concerning the proposed modifications to the TDS, sulfate, chloride and selenium criteria of the Arkansas Water Quality Standards and removal of the designated, but not existing, Domestic Water Supply use for Boggy Creek. The public comment period ended on April 2, 2007.

No third party comments were received by ADEQ on the proposed rule change. On April 2, 2007, Martin Maner, Chief of the Water Division of ADEQ filed comments on the proposed rule change on behalf of the Water Division and Environmental Protection and Technical Services Divisions of ADEQ. ADEQ's comments and Clean Harbor's response are as follows:

Comment No. 1:

Under Regulation No. 2 §2.303, the scope of a use attainability analysis shall be in direct proportion to the project involved and the resource value of the receiving stream. The Divisions have concerns regarding the adequacy of the UAA to assess the project or the resource value to Boggy Creek.

Response:

A UAA Work Plan was prepared and submitted to both the Arkansas Department of Environmental Quality (ADEQ) and the U.S. Environmental Protection Agency (EPA) Region 6 for review and approval prior to beginning field activities associated with this UAA. This Work Plan, when it was finalized (before beginning field activities) to incorporate comments from ADEQ and EPA, described the scope of the UAA as well as the approach to characterize Boggy Creek.

Comment No. 1 (a.): Two Sampling events may not provide an adequate sample size.

Response:

Sampling for fish tissue provided fish selenium tissue measurements for 127 individual fish. All measurements were well below EPA's draft tissue-based selenium criterion of 7.9 ug/g. Only 2 fish showed values above 2 ug/g and these were still below the more conservative toxic threshold of 4 ug/g. Sampling took place on 3 different occasions over two years in the spring and late summer and included a variety of sunfish species as well as larger predators. Given this effort and the low values observed, it seems unlikely that additional sampling would reveal fish with tissue concentrations of selenium above threshold levels.

Sampling was conducted at key locations (upstream and downstream of outfalls and confluences) on Boggy Creek and surrounding streams during summer low flow and spring flow conditions. The number of samples collected followed the approach in the approved Work Plan and therefore, was considered adequate to characterize conditions above and below confluences and outfalls during low flow and spring flow conditions.

Comment No. 1 (b.): The sampling was done in the summer and may not provide a complete and accurate measure of the seasonal water quality conditions in Boggy Creek.

Response:

Sampling was conducted during both summer low flow and spring flow conditions. The most appropriate time of year to evaluate the impact of a point source on a receiving stream is during low flows when the point source has its greatest impact on the water quality of the receiving stream. The purpose of the sampling was to characterize water quality and biological characteristics of Boggy Creek during a time when we expect the greatest influence from the Clean Harbors effluent. Therefore sampling and analysis that is focused on summer low flows is appropriate for the purposes of evaluating the impact of the discharge on water quality.

Comment No. 1 (c.): Quality Assurance of the field data as not dismissed in the UAA.

Response:

A QA/AC summary is provided as an attachment herein (Attachment "A").

Comment No. 2:

The hardness value used in calculating the proposed TDS and chloride site specific criteria is 150 mg/L as $CACO_3$. Data collected by the Department in 2006 - 2007 (N=5) at Highway 82 bridge, shows an average hardness value of 60 mg/ L as $CACO_3$. The cited literature suggests an ameliorative effect on chloride toxicity as hardness increases. The Divisions request Clean Harbors to discuss potential TDS and chloride toxicity using a more relevant upstream hardness value of 60 mg/L as $CACO_3$.

Response:

FTN documented significant dilution of the effluent downstream of the outfall even during low flow conditions. This dilution suggests that lower hardness at Highway 82 is therefore associated with lower TDS and chloride as well. Conditions of low hardness and high TDS/chlorides are not likely to occur. Part of the information that contributed to the calculation of the proposed criteria was toxicity data from laboratory reference tests conducted at an average hardness of 90 mg/L. This information was averaged with the toxicity data collected at the higher hardness (150 mg/L) to obtain the proposed criteria. Therefore the calculation of the proposed TDS and chloride criteria did not include only consideration of high hardness.

Comment No. 3:

Significant instream fluctuations in TDS and chloride concentrations, though not acutely toxic, may create an acute condition where aquatic life can not avoid the change. This condition becomes more important considering the 7Q 10 for Boggy Creek is 0 cfs. There is no discussion of the potential effects of significant instream TDS and chloride fluctuations on aquatic organisms. The Divisions request a discussion on the potential effects of significant instream fluctuations in TDS and chloride on aquatic life.

Response:

The study did not specifically address the toxic effects of fluctuations in TDS and chloride concentrations. We are not aware of studies that address this possibility. However, the standard toxicity test protocol involves transferring test organisms directly from laboratory water (typically having a TDS of approximately 220 mg/L) to the sample with no acclimation to the sample (ambient sample or reference test solution). Therefore the protocol already incorporates a certain degree of shock to the test organisms which should be reflected in the overall response of the test organisms to the sample.

Comment No. 4:

The discussion of the toxicity of selenium does not take into account the higher concentrates of TDS.

Response:

The concern, as we understand it, is that elevated TDS might result in increased bioaccumulation of selenium or lower toxic thresholds of resident species. Selenium bioaccumulation can depend on the form of the metal present in the environment. The literature discusses factors such as redox potential and the source of the metal (e.g. mine tailings, fly ash, seleniferous soils) that affect speciation and the forms of selenium present in the aquatic environment. However, there are no studies in the literature surveyed at this time that identify ionic composition as an important factor in selenium speciation. In addition, the monitoring data from Boggy Creek and Bayou de Loutre do not indicate bioaccumulation in fish above background levels. Therefore it seems unlikely that elevated TDS in Boggy Creek results in higher rates of bioaccumulation.

There are studies in the literature (e.g. Lemly 1993) indicating that environmental conditions such as reduced temperature result in lower toxic thresholds for selenium in fish. This information has been incorporated into EPA's draft selenium criterion. However, there is no evidence in the literature surveyed that elevated TDS results in lower toxic thresholds in fish or other biota. Patterns and dynamics of bioaccumulation and toxic effects in high-TDS systems such as estuaries can result in differences in exposure and effects among species, but these processes are thought to be driven by the properties of the food web (e.g. high rates of accumulation in bivalves, lower rates in zooplankton) with no mention given to factors such as ionic strength or salinity (Stewart et al 2004). Studies of selenium in estuaries (e.g. Luoma and Presser 2000) make no mention of higher rates of bioaccumuation or lower toxic thresholds for biota in those environments compared to freshwater systems.

Nonetheless, it is still possible that elevated TDS in a freshwater system might provide an added incremental stress to biota such that the toxic threshold for selenium is lowered. However, given the very low tissue concentrations measured in the Boggy Creek fish, this effect would have to result in a substantial increase in sensitivity in order for adverse effects to occur. That is, elevated TDS would have to lower the toxic threshold of resident species from 4 - 7.9 ug/L to < 2ug/g. There are no examples of toxic threshold levels this low in the literature surveyed to date as part of this UAA. Therefore it seems unlikely that elevated TDS in Boggy Creek should result in lower toxic thresholds of selenium in fish tissues.

Comment No. 5:

The UAA contains several scientific nomenclature errors, specifically in various tables included in the benthic macro invertebrate and fish community sectors.

Response:

Corrected tables have been prepared and are attached herein (Attachment "B").

Comment No. 6:

Page 4-13 of the UAA refers to Se concentrations in mg/L. These concentrations are exceedingly high and most likely should be in ug/L.

Response:

The indication of selenium concentration in mg/L is incorrect and should be in ug/L.

Comment No. 7:

The alternatives analysis does not adequately examine many available, and less costly alternatives. Other alternatives, such as dilution or an increased flow of cooling tower water may be less costly than the alternatives rejected in the UAA, while also protecting the water quality of Boggy Creek

Response:

Based on discussions with ADEQ in a meeting on April 9, 2007 where this comment was specifically addressed, it is our understanding that the ADEQ now agrees that an appropriate number of alternatives were examined as part of this analysis. The complete alternatives analysis in Section 8.0 of the UAA was covered during this meeting. The analysis did cover the specific alternative mentioned in this comment - i.e. dilution of the effluent due to increasing cooling tower flow using City water from the Sparta Aquifer. This alternative is not feasible and is more costly than the recommended alternatives. It is worth noting that Clean Harbors continues to investigate alternatives to discharging the cooling tower blowdown as part of their company goal of implementing ongoing pollution prevention measures.

WHEREFORE, Petitioner Clean Harbors hereby submits to the Commission the Statement of Basis and Purpose and Responsiveness Summary and respectfully requests the Adoption by Minute Order of the proposed change to APC&E Commission Regulation No. 2.

Respectfully submitted,

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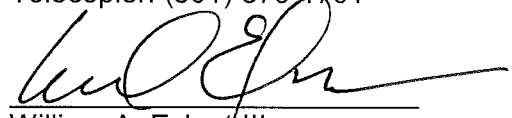

William A. Eckert III
Arkansas Bar No. 78045

Certificate of Service

I, William A. Eckert III, state that I have on this 3rd day of May, 2007, mailed a copy of the foregoing Request For Adoption of Proposed Change To Regulation No. 2 to Ms. Ellen Carpenter, Arkansas Department of Environmental Quality, 8001 National Drive, Little Rock, Arkansas 72219.

William A. Eckert III

QA/AC Summary - Clean Harbors UAA, El Dorado, AR Facility

Critical measurement for this project were:

1. chloride,
2. total dissolved solids (TDS),
3. total selenium in water and sediment,
4. total selenium in whole body fish tissues, and
5. toxicity

QA/AC activities were performed for both laboratory and field analyses. Laboratory QA/AC procedures were carried out per the most recent version of the QA Plan for American Interplex Laboratory (8600 Kanis Rd. Little Rock, AR 72211). For water quality analyses, these activities included, where appropriate, analysis of laboratory control samples, matrix spikes, duplicates and blanks for every batch of ten samples analyzed. For toxicity testing data quality was evaluated by assessing performance criteria (survival and reproduction) in laboratory controls associated with each toxicity test, through routine reference toxicant testing, and by reference toxicity tests run concurrently with each test.

Results of QA/AC sample analyses are presented in Tables 1 - 5. Laboratory and field QC results were within control limits for all critical parameters. QC control parameters were outside of control limits for some dissolved oxygen (DO) and pH measurements on 5/18/06. These parameters are not critical parameters. Because the DO post calibration check deviation is not large, DO data are suitable for purposes of the project. Large post calibration pH deviations for the hand held field sonde indicate that pH data collected in conjunction with water chemistry sample should be used with caution. Field collected pH measurements are not crucial measurements for this project.

Control performance in toxicity tests and the results of associated concurrent and routine reference tests were all well within QC control limits. Therefore all toxicity date are suitable for purposes of this project.

ATTACHMENT "A"

Table 1. QC control limits for water, sediment and tissue analyses.

Analyte	QA/QC Control Parameter					
	Percent Spike Recovery Limits				Sample Duplicate	Blank Result
	Laboratory Control Sample		Matrix Spike			
	% Recovery	RPD	% Recovery	RPD	RPD	
Total Dissolved Solids	85-115	10	NA	NA	10	10 mg/L
Total organic carbon	85-115	10	80-120	10		1 mg/L
Total selenium (water)	85-115	20	75-125	20	20	1 mg/L
Total selenium (sediment)	85-115	20	75-125	20	20	1 mg/L
Total selenium (fish tissue)	85-115	20	75-125	20	20	2 mg/L
Chloride	90-110	10	80-120	10	10	0.2 mg/L
Oil and Grease	79-114	18	NA	NA	18	5 mg/L
Sulfate	90-110	10	80-120	10	10	0.2 mg/L

Table 2. QC Summary for water chemistry analyses.

Parameter	Matrix	Sample Period	Matrix Spike			Lab Control Samples			Sample Duplicate RPD	Blank
			% Recovery		RPD	% Recovery		RPD	RPD	Results
TDS	Water	15-16 May 2006	NA	NA	NA	101	99.2	1.6	1.01	<10
TOC	Water	15-16 May 2006	98.3	95.6	2.02	99.4	99.7	0.372		<1
Selenium (dissolved)	Water	15-16 May 2006	NA	NA	NA	102				<0.0.7
Selenium (total)	Water	15-16 May 2006	99.1	97.4	1.73	100				<0.07
Chloride	Water	15-16 May 2006	X		0.0532	93.7			0.511	<0.2
Sulfate	Water	15-16 May 2006	94.7	96.2	1.33	97.1			1.92	<0.2
Selenium	Sediment	15-16 May 2006	99.6	99.9	0.337	102				<7
Oil and Grease	Sediment	15-16 May 2006	NA	NA	NA	94.5	96.8	2.35		<28
Oil and Grease	Water	15-16 May 2006	NA	NA	NA	92.2	91.2	1.09		<5
Oil and Grease	Water	15-16 May 2006	NA	NA	NA	99.2	102	2.73		<5
TDS	Water	18-17 July 2006	NA	NA	NA	98.4	98.4	0		<10
TOC	Water	18-17 July 2006	101	99.3	0.798	104				<1
TOC	Water	18-17 July 2006				104	104	0.173		
Selenium	Water	18-17 July 2006	99	97.2	1.9	97.5	103	5.45	20.6	<1
Selenium	Water	18-17 July 2006	98	89	9.47	101				<1
Chloride	Water	18-17 July 2006	107	109	0.329	102				<0.2
Sulfate	Water	18-17 July 2006	106	105	0.31	109				<0.2
Selenium	Sediment	18-17 July 2006	No Samples							
Oil and Grease	Water	18-17 July 2006	NA	NA	NA	98.2	102	3.75		<5

RPD = relative percent difference; X = spiking level invalid due to high concentration of analyte in spiked sample

Table 3. QC results for fish tissue analyses of total selenium.

Sample Period	Matrix Spike			Lab Control Samples			Blank
	% Recovery		RPD	% Recovery		RPD	Results
15-16 May 2006	95.3	97.3	1.86	93.2	94.2	1.07	<2
15-16 May 2006	103	102	1.17	102	102	0.197	<2
15-16 May 2006	99	101	0.601	95.8	96.6	0.832	<2
15-16 May 2006	101	101	0	92.8	93	0.215	<2
15-16 May 2006	95.8	99.4	3.69	92.2	92.4	0.217	<2
15-16 May 2006	101	100	0.398	95.2	94.2	0.846	<2
15-16 May 2006	102	103	0.783	94.6	94.4	0.211	<2
15-1 May 2006	97.8	97.2	0.616	96.6	97	0.413	<2
27-29 Sept 2006	87.4	91.6	4.69	93.8	93.4	0.427	<2
27-29 Sept 2006	117	98.2	17.3	98.4	98.6	0.203	<2
27-29 Sept 2006	97.6	97.4	0.205	105			<2
27-29 Sept 2006	99.8	98.6	1.21	96			<2
27-29 Sept 2006	102	97.2	5.02	106			<2

Table 4. QC results for field duplicates and blanks.

ANALYTE	5/15-16/2006				18-19/2006			
	Result		RPD	Blank	Result		RPD	Blank
Total Dissolved Solids	300	290	3.39	<10	1200	1200	0.00	<10
Total Organic Carbon	6.4	6.3	1.57	<1	15	15	0.00	<1
Chloride	0.0041	0.0052	23.66	<0.002	200	200	0.00	0.26
Sulfate	0.0047	0.0064	30.63	<0.002	510	500	1.98	<0.2
Oil and Grease	110	110	0	<0.2	<5	<5	0.00	<5
Dissolved Organic Carbon	4.7	4.7	0	<0.2	12	12	0.00	<1
Dissolved selenium	<5	<5	0	<5	6	6.3	4.88	<1
Total selenium	8.4	8.5	1.18	<1	5.8	6.2	6.67	<1
Sediment Chemistry								
Selenium					<1	<1	0.0	NA

Table 5. QC results for sonde calibrations.

Date	Sonde	DO% Sat	DO mg/l	pH 7.00	pH 10.00	SpC 1500	temp for DO
5/16/2006	Field sonde	100.0	8.44	6.98	10.22	1525	23.57
5/17/2006	Field sonde	100.1	9.93	6.21	9.31	NA	15.53
5/17/2006	Field sonde	107.2	8.74	6.36	9.6	1530	25.39
5/18/2006	5b	93.3	8.5	7.24	NA	NA	19.61
5/18/2006	6	96.1	8.66	7.02	9.9	1509	20.19
5/18/2006	7	100.8	7.65	7.07	9.96	1553	29.41
5/18/2006	4	102.0	8.56	7.05	9.98	1516	23.85

Shaded cells indicate post calibration check results that are outside of control limits.

Table 6. QC summary for toxicity testing.

Sample	Control Survival	Control Reproduction	Concurrent reference test within control limits?	Routine reference test within control limits?
4th Lagoon treated water ("worse case" effluent)	100	28.6	Y	Y
Highway 82 (BC-1)	100	33.7	Y	Y
Control limits	80	15		

Table 4.13. Results of benthic invertebrate collections made during field survey conducted during May 15-18, 2006.

ORDER	FAMILY	GENUS	Location						
			BC-0	BC-1	BC-2	BC-3	CC-1	FC-1	TC-1
Amphipoda	Gammaridae	*Gammarus*	3		4		1		
Bivalva	Unionidea								2
Bivalva	Sphaeriidae		1		2		4		12
Bivalva	Corbiculidae							12	1
Coleoptera	Dytiscidae	*Hydroporus*					1		
Coleoptera	Dytiscidae	*Oreodytes*					1		
Coleoptera	Gyrinidae	*Dineutus*	1						
Coleoptera	Hydrophilidae		1						
Coleoptera	Elmidae	*Stenelmis*						3	
Coleoptera							1		
Decapoda							1		
Decapoda	Cambaridae		3	1	10	2	1		3
Decapoda	Palaemonidae	*Macrobrachium*		31	54	2			4
Diptera	Ceratopogonidae						1		
Diptera	Chironomidae		3		3	5	2	1	2
Diptera	Culicidae						1		
Diptera	Pelecorhynchidae	*Glutops*				1			
Diptera	Tabanidae				1	1		1	
Diptera	Tipulidae	*Limnophilia*					1		
Diptera	Tipulidae	*Tipula*						4	
Ephemeroptera	Ephemeridae	*Hexagenia*							3
Rynchobdellida	Glossiphoniidae				1				
Gastropoda	Physidae	*Physella*							1
Gastropoda	Viviparidae	*Viviparus*							12
Gastropoda	Planorbidae				1		1		
Gastropoda					1				
Hemiptera	Corixidae	*Trichocorixa*	1				1		1
Isoptera	Assellidae	*Lirceus*							1
Odonata	Aeshnidae		1						
Odonata	Coenagrionidae	*Argia*			1			1	
Odonata	Gomphidae	*Dromogomphus*	1						
Odonata	Gomphidae	*Gomphus*							3
Odonata	Gomphidae	*Progomphus*						1	
Odonata	Libellulidae	*Sympetrum*					1		
Odonata	Libellulidae	*Simetrum*	1						
Oligochaeta			2		17	13	5	49	
Trichoptera	Hydropsychidae	*Cheumatopsyche*	1				1	4	1
Hirudinea								1	
		TOTAL TAXA	12	2	11	6	16	10	13

ATTACHMENT "B"

Table 4.14. Results of benthic invertebrate collections made during field survey conducted during July 17-19, 2006

ORDER	FAMILY	GENUS	Location							
			BC-0	BC-1	BC-2	BC-1-3	BC-3	CC-1	FC-1	TC-1
Amphipoda	Gammaridae	*Gammarus*	4		3					3
Bivalva	Unionidea									
Bivalva	Sphaeriidae					9		1	19	65
Bivalva	Corbiculida	*Corbicula*					1		42	1
Coleoptera	Dytiscidae	*Laccophilus*					1			
Coleoptera	Dytiscidae							1		
Coleoptera	Gyrinidae	*Dineutus*	1							
Coleoptera	Haliplidae	*Peltodytes*			1					
Coleoptera	Elmidae	*Stenelmis*							4	8
Coleoptera	Hydrophilidae	*Berosus*				1				
Decapoda	Cambaridae		8			7	6	2	1	7
Decapoda	Palaemonidae	*Macrobrachium*			56	5	2			
Diptera	Ceratopogonidae	*Bezzia*								1
Diptera	Chironomidae		5		7	10	8	7	3	5
Diptera	Culicidae									
Diptera	Tabanidae							1		3
Diptera	Tabanidae	*Tabanus*					2			
Diptera								1		
Ephemeroptera	Caenidae	*Caenis*								1
Ephemeroptera	Ephemeride	*Hexagenia*								2
Ephemeroptera	Heptageniidae					1				
Gastropoda	Physidae								1	
Gastropoda	Physidae	*Physella*			1			7		1
Gastropoda	Viviparidae	*Viviparus*								20
Gastropoda	Planorbidae	*Planorbella*			2	2				
Hemiptera	Corixidae	*Trichocorixa*						4		
Hemiptera	Notonectidae	*Notonecta*						1		
Isoptera	Assellidae	*Lirceus*								1
Megaloptera	Sialidae	*Sialis*						2		7
Odonata	Aeshnidae									
Odonata	Cordulidae	*Epitheca*			1					
Odonata	Gomphidae	*Dromogomphus*								
Odonata	Gomphidae	*Gomphus*	1							2
Odonata	Gomphidae	*Progomphus*							2	
Odonata	Libellulidae	*Plathemis*				1				
Odonata	Libellulidae	*Pachydiplax*						1		
Odonata	Libellulidae						1			
Oligochaeta							1	1	1	1
Trichoptera	Hydropsychidae	*Cheumatopsyche*				1				2
		TOTAL TAXA	5	0	7	9	8	12	8	17