Impairment Verification Monitoring
Biological and Habitat Components
Segments 1803A and 1803B, Elm and Sandies Creeks, Texas
June 2005



Ecological Communications Corporation Austin, TX



# Impairment Verification Monitoring-Volume 2: Biological and Habitat Components Segments 1803A and 1803B, Elm and Sandies Creeks

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#### **ABSTRACT**

Ecological Communications Corporation (EComm) conducted biological data collection and analysis as part of an impairment verification monitoring project for Elm and Sandies Creeks (Segments 1803A and 1803B). Segments 1803A and 1803B appear on the State of Texas' 303(d) list as impaired for high aquatic life based on low dissolved oxygen concentrations previously reported by or to the Texas Commission on Environmental Quality (TCEQ) or its predecessor agencies. It also appears on the list as impaired for contact recreation due to elevated bacteria concentrations. Due to an insufficient amount of data to support a reassessment, the water bodies remained on the draft 2002 303(d) list. The objective of EComm's data assessment was to assemble enough information on the water bodies to support a use attainability analysis if it was determined that the designated aquatic life use was incorrect.

A separate but related assessment was simultaneously conducted by the Texas Engineering Experiment Station (TEES) and the Conrad Blucher Institute for Surveying and Science (CBI) to facilitate the objective. The TEES/CBI effort included physical and chemical data collection and analysis in an attempt to provide a comprehensive assessment of the water quality within the stream segments. As part of the overriding TMDL project, the combined biological, physical, and chemical data collection and analytical activities will result in one of four outcomes:

- 1. Removal of the water bodies from the 303(d) list,
- 2. An evaluation of applicable water quality standards (aquatic life use impairments only),
- 3. Development of a TMDL, or
- 4. Additional monitoring to better characterize the impairment.

Based on data collected by EComm and TEES from 2002 to 2004, these water bodies appear to indicate a lower aquatic life use than the "High" use presumed due to perennial flow in the Texas Water Quality Standards (TCEQ 2000).

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#### 1.0 Introduction

In 2000 the Texas Commission on Environmental Quality (TCEQ) initiated a study to investigate water quality impairments in 11 water bodies in Basin Groups D & E identified through the 1999 305(b) Water Quality Inventory as part of a total daily maximum load (TMDL) program. The



Figure 1. Station 17901

segments were included on the 1999 State of Texas Clean Water Act 303(d) list as impaired due to concentrations of dissolved oxygen or bacteria or both which exceed established criteria. Two of these water bodies were Elm and Sandies Creeks (Segments 1803A and 1803B). The impairments to Segments 1803A and 1803B were caused by an exceedance of the established dissolved oxygen criteria and an exceedance in the bacteria criteria as indicated by data collected through the statewide monitoring program. Because an insufficient number of 24-hour dissolved oxygen values were available in 2002 to determine if the aquatic life use criterion is supported, Segments 1803A and 1803B remained on the impaired waters list. As an initial phase in TMDL

development, the aquatic life use impairments to Segments 1803A and 1803B were verified using the latest sampling techniques. The initial assessment was performed so that resources within the program can be efficiently utilized for truly impaired water bodies, preventing TMDL development for a water body that may be delisted or subject to a water quality standards revision at a later date. Chemical, physical, and biological data were collected at six sites within the segments in an effort to determine what course of action, if any, needed to be taken to address impairments. Data collection activities would result in one of four outcomes: 1) Removal of the water bodies from the 303(d) list, 2) An evaluation of applicable water quality standards (aquatic life use impairments only), 3) TMDL, or 4) Additional monitoring to better characterize the impairment.

Segment 1803A begins in the upstream perennial portion of the stream southwest of Smiley in Gonzales County. It flows approximately 24 miles prior to the confluence with Sandies Creek in Gonzales County. Site 17893 is located on the Patillo Ranch in Gonzales County. Site 17894 is located on the Lazy F Ranch in Gonzales County. Segment 1803B begins in the upstream perennial portion of the stream northwest of Smiley in Gonzales County. It flows for approximately 65 miles before the confluence of the Guadalupe River West of Cuero in DeWitt County. Site 17901 is located on the Martin Ranch in Gonzales County. Site 17895 is located on the Lazy F Ranch. Site 13657 is located 2.0 miles Northeast of Westhoff, and 1.9 miles upstream from Birds Creek in DeWitt County. Site 14935 is located at CR 953 in DeWitt County. A location map of the segment is provided in Figure 2.

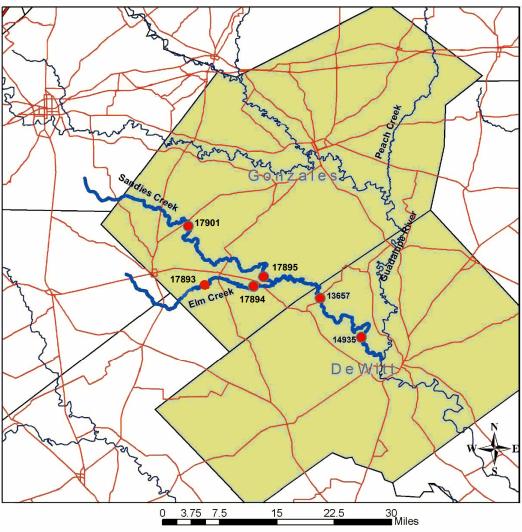




Figure 2. Segment 1803A and 1803B Location Map

#### 2.0 BIOLOGICAL AND HABITAT METHODOLOGY

Biological data (including fish, benthic macroinvertebrates, and habitat) were collected under strict interpretation of the Biological Component and Stream Physical Habitat Component sections of the Receiving Water Assessment (RWA) Procedures Manual (Texas Natural Resource Conservation Commission [TNRCC] 1999b). As specified in the RWA manual,

EComm evaluated fish sampled in accordance with statewide criteria of Indices of Biotic Integrity (IBIs). Additionally, EComm generated IBIs for all stations using regional criteria developed by Texas Parks and Wildlife Department (2002). The regional criteria consider differences in landforms, soil types, vegetation, climatic conditions, and zoogeographic factors among the ecoregions and thus "provide a better representation of the integrity of fish assemblage" as compared to statewide criteria.

In addition to data collection via RWA guidelines and TCEQ Surface Water Quality Monitoring (SWQM)



Figure 3. Station 17895

Procedures Manual (TNRCC 1999a), EComm captured data for approximately 14 previously uncoded biological and habitat parameters. These parameters include: the various metrics used in determining regional IBI scores; the final scores for aquatic life use values for both statewide and regional IBI criteria; the final scores for Rapid Bioassessment Protocol (RBP) for benthic macroinvertebrates; and the final scores for Habitat Quality Indices (HQIs). All 14 parameters



Figure 4. Station 13657

were assigned unique STORET codes in an effort to create maximum efficiency for data management. The new STORET codes and descriptions, along with other STORET codes captured for this segment, are provided in Table 1.

Segments 1803A and 1803B, both unclassified water bodies, had not previously been designated as segments requiring a standards change to reflect site specific conditions. Studies which examine site specific conditions and recommend changes to established or presumed uses are referred to as Use Attainability Analyses (UAA) and Aquatic Life Assessment (ALA),

respectively. Although the main purpose of the physical/chemical component of the study was to verify the aquatic life impairment based upon exceedences of the dissolved oxygen and bacteria criteria, a biological sampling regime satisfying the minimum ALA data requirements for biological data was conducted. Biological ALA requirements include at least four complete sampling events over two consecutive index periods. Nekton, benthos, and habitat data are collected and analyzed for each sampling event. Two events must be conducted during Year 1 and two events must be conducted during Year 2. Each year, one event must be from the Critical

Period (July 1 – September 30), and one from outside the Critical Period, but during the Index Period (March 15 – October 15). Biological sampling for Segment 1803A was conducted in August 2002, September 2002, April 2003, and July 2003. Biological sampling for Segment 1803B was conducted in August 2002, September 2002, April 2003, and September 2003. Therefore, if it is determined that the aquatic life uses and criteria should be evaluated within a UAA, more data would be required to make the determination.

Table 1. STORET Codes (New STORET codes captured are temporarily assigned to the "00800" series (*in italics*)

STORET Code	Description	STORET Code	Description
89832	Number of lateral transects	90008	EPT index
89847	Average bank slope	98009	Total number of sucker species
89846	Average bank erosion potential	98010	Total number of intolerant species
89845	Percent of substrate that is gravel or larger	98016	Percent individuals as tolerants (fish)
800	Channel flow status	98017	Percent individuals as omnivores
89844	Dominant substrate	98021	Percent individuals as insectivores
89843	Total number of riffles	98022	Percent individuals as piscivores
89842	Number of poorly defined stream bends	98023	Total number of individuals in fish sample
89841	Number of moderately defined stream bends	98024	Percent individuals as hybrid
89840	Number of well defined stream bends	98030	Percent with disease
812	Statewide IBI	98003	Number of fish species
833	Habitat Quality Index	89905	Number of minutes debris was sampled
84161	Stream order	89851	Percent grass
84159	Percent instream cover	89854	Percentage tree canopy
813	Number of cyprinidae species	89859	Drainage area
814	Number of benthic invertebrates	89860	Length of reach
72052	Streambed slope	89861	Average stream width
816	Percent that are tolerant species, excluding G.affinis	89862	Average stream depth
817	Number of individuals per seine haul	89864	Maximum pool width
818	Number of individuals per minute electroshocking	89865	Maximum pool depth
819	Percentage of individuals as non-native	89866	Average width of riparian vegetation
820	Regional IBI	90010	Dominant functional feeding group percenta
832	Total RBP score	89899	Biological rpt unit
89853	Percent other as riparian vegetation	90009	Number of functional feeding groups
89839	Total number of stream bends	89906	Number of individuals in RBA sample
98008	Total number of sunfish species	89941	Seine length
90025	Percentage benthic gatherers	89943	Electrofishing method
90030	Percentage benthic filterers	89944	Electrofishing duration
90035	Percentage benthic shredders	89946	Average mesh size
90036	Percentage benthic predators	89948	Number of seine hauls
834	Percentage benthic scrapers	89950	Benthic sampling code
90042	Percentage benthic inverts individuals in dominant taxon	89961	Texas ecoregion
90050	Ratio of intolerant to tolerant taxa	89976	Area seined
90052	Number of non-insects	90007	Hilsenhoff biotic index
90054	Percentage of Elmidae	89849	Percent trees
92266	Percentage of Trichoptera that are Hydropsychidae	89867	Aesthetics

STORET Code	Description	STORET Code	Description
92491	Percent Chironomidae	835	Benthic invertebrate taxa richness
89850	Percent as shrubs	836	Number instream cover types
98004	Total number of darter species	89904	Minutes spent kicknetting

<sup>\*</sup> STORET Codes beginning with 8 have yet to be formally established

#### **Benthic Macroinvertebrate Collections**

Biological sampling included fish and benthic macroinvertebrate data collection at each site within the segment. A location map of the segment, as well as the six site locations within the segment, is provided in Figure 2. Collection of benthic macroinvertebrates in the field was



Figure 5. Station 14935

conducted using a 12-inch D-frame kicknet in riffle areas traveling a zigzag pattern across the bed in five-minute intervals. In the event that no riffles were present, snags, leaf packs, and other debris were picked for macroinvertebrates. Intervals were repeated until the minimum sample size of 100 specimens was approached, met, or exceeded. All individuals collected within the net or through picking were transferred and stored in 70% ethanol for lab analysis and identification. The collection of all individuals within a sample assured that no biases were present for larger, more active, or otherwise more obvious species captured in the net. Most individuals were identified to genus, or as otherwise

suggested by the RWA manual. Collections from sites were analyzed using the 12 metrics defined in the Rapid Bioassessment Protocol in Appendix B of the RWA manual. These metrics include parameters such as species diversity and composition, trophic structure, and species tolerance to adverse environmental conditions.

#### **Nekton Collections**

Collection of fish in the field was conducted using both electrofishing and seine methods to ensure a representative sample was collected at each site. Electrofishing was conducted using LR-24 backpack Smith-Root electrofishers powered by either 7 amp-hour or 12 am-hour 24 volt deep-cycle batteries. Each sampling team consisted of three field personnel, including a field director and two technicians. One team member served as the backpack operator while the other two flanked the operator with dip nets. Collected fish were temporarily placed in a fivegallon bucket partially filled with water for later identification. Sampling teams moved in an upstream direction, focusing pulses on snags, along vegetated banks,



Figure 6. Station 17893

within large boulders or gravel-based riffles, and any other location most likely to contain fish.

Active sampling (instances when current was applied to the water) was conducted for a minimum of 900 seconds. Field teams used best judgment to gauge if enough active sampling had been conducted to collect an accurate representation of present species; therefore, the minimum sampling time was exceeded at some sites. Maximum active sampling time for any site was approximately 1,000 seconds. Upon completion of electrofishing, fish were immediately identified, recorded, and returned to the water in order to minimize mortality. Any fish that could not be identified in the field was preserved in either formalin solution or ethanol.



Figure 7. Station 17894

If more than one fish exhibiting the same characteristics could not be field identified, then only one representative specimen was preserved for later lab identification. Additionally, one individual from each field-identified species was retained as a youcher.

Electrofishing was complemented by seining at all sites where seining was possible. A straight seine measuring 30' x 4' with 1/8" mesh was used. Six seine hauls, each approximately 10 meters long, were taken during each sampling event. Only successful seine hauls were counted. Those that encountered obstacles that could have resulted in the escape of fish (heavy snags or

rocks that prevented or otherwise significantly impaired the lead line from traveling across the bottom substrate) were not included. After each successful haul, collected specimens were identified, recorded, and immediately returned to the stream in an effort to minimize mortality. Species which could not be field-identified were handled in the manner described in the electrofishing section.

Collections were analyzed using metrics defined by TNRCC 1999 to generate Statewide IBI. Regional IBI were also calculated using the TPWD 2002 criteria. Both calculations use metrics that capture parameters such as species diversity and composition, community trophic structure, and fish abundance and condition.

#### **Habitat Assessment**

Various habitat data were collected at each site, including primary attributes (instream channel measurements), secondary attributes (stream morphology), and tertiary attributes (riparian environment) of each site. Data were used to generate a Habitat Quality Index (HQI), which serves the same function as the RBP for macroinvertebrates and IBIs for fish.

Descriptions of the various data collected are provided in Table 1.

Several other subjective habitat parameters were used as required by RWA Procedures Manual (TNRCC 1999). These include bank erosion potential, aesthetics, dominant types of riparian vegetation, and to a lesser degree, percent instream cover and percent gravel or larger. For the purpose of this project, EComm attempted to standardize such measurements by using the same

crews for each segment during as many sampling events as possible. Because this was not always possible, and because individuals within a crew may have different duties for any given sampling event, a training session was conducted prior to fieldwork to help assure that all crewmembers were given identical background and similar interpretation of the subjective measurements.

#### 3.0 RESULTS

Aquatic life use determinations were based upon scores for each of the three ecosystem components (fish, benthic macroinvertebrates, and habitat) analyzed for Segments 1803A and 1803B. The fish component resulted in Statewide and Regional IBI scores, the macroinvertebrate component resulted in a RBP score, and the habitat resulted in a HQI score. The scores from each of these calculations in turn relates to a specific Aquatic Life Use designation: limited, intermediate, high, or exceptional (Table 2). The Aquatic Life Use designation is used to assess existing uses according to the health of the sampled biological communities as compared to established water quality standards. It should be noted that the calculated scores of the Statewide IBI may fall in between two range subcategories (see ranges in Table 2). In these cases, subcategories were assigned as an intermediary between the two subcategories. For example, if a site received a Statewide IBI score of 38, it would fall between the "Limited" and "Intermediate" subcategories, and would be considered to have a "Limited-Intermediate" Aquatic Life Use subcategory.

Table 2. Ranges and Subcategories for each component

Subcategory	Statewide IBI	Regional IBI (Region 32)	Regional IBI (Region 33)	RBP	HQI
Limited	<34	<35	<36	<22	<14
Intermediate	40-44	35-40	36-41	22-28	14-19
High	48-52	41-48	42-51	29-36	20-25
Exceptional	58-60	>48	>51	>36	26-31

Results of the biological and habitat analyses for the six sites over four sampling events are provided in Table 3. Raw data are provided in Appendix A.

For each component, an average score was calculated using scores from every sampling event. Scores for sampling events for each component that scored within the subcategory "High" agreed with the presumed aquatic life use value for the segment. A subcategory of "Limited", "Limited-Intermediate", "Intermediate", or "Intermediate-High" was considered substandard, as it reflects a poorer level of water quality than that for which the segment is presumed. A subcategory of "Exceptional" would be considered exceeding presumed standards for Segments 1803A and 1803B. Statewide IBI scores averaged approximately 39.75 (Intermediate) across all sites over all sampling events, and indicated a poor agreement with the designated aquatic life use (0%), which was determined as "High" according the Texas Surface Water Quality Standards (TCEQ 2000). Regional IBI scores averaged 38.25 for stations in ecoregion 33 (Intermediate), and 36.75 for stations in ecoregion 32 (Intermediate), representing a higher agreement (16.7%; 0% above standard). RBP scores averaged 26.9 (Intermediate), a 45.8%

agreement (54.2% below standard), while HQI averaged approximately 16.1 (Intermediate) in 0% agreement with the aquatic life use (100% below standard).

Table 3. Results of Biological and Habitat Sampling for Segments 1803A and 1803B-Elm and Sandies Creeks

San	ales Creeks					
FY02	Creek	Statewide IBI	<b>Ecoregion</b>	Regional IBI	RBP	HQI
17901	Sandies	40 – Intermediate	33	40 – Intermediate	30 – High	16 – Intermediate
17895	Sandies	38 – Limited-Intermediate	32	31 – Limited	32 – High	17 – Intermediate
13657	Sandies	38 – Limited-Intermediate	32	35 – Intermediate	27 – Intermediate	16 – Intermediate
14935	Sandies	36 – Limited-Intermediate	32	29 – Limited	29 – High	15 – Intermediate
17893	Elm	42 – Intermediate	33	45 – High	24 – Intermediate	16 – Intermediate
17894	Elm	42 – Intermediate	32	39 – Intermediate	29 – High	18 – Intermediate
17901	Sandies	44 – Intermediate	33	34 – Limited	25 – Intermediate	15 – Intermediate
17895	Sandies	36 – Limited-Intermediate	32	33 – Limited	33 – High	17 – Intermediate
13657	Sandies	40 – Intermediate	32	39 – Intermediate	31 – High	16 – Intermediate
14935	Sandies	40 – Intermediate	32	41 – High	24 – Intermediate	16 – Intermediate
17893	Elm	36 – Limited-Intermediate	33	34 – Limited	22 – Intermediate	14 – Intermediate
17894	Elm	44 – Intermediate	32	44 - High	30 - High	16 - Intermediate
FY03						
17901	Sandies	44 – Intermediate	33	40 – Intermediate	28 – Intermediate	18 – Intermediate
17895	Sandies	40 – Intermediate	32	35 – Intermediate	20 – Limited	17 – Intermediate
13657	Sandies	38 – Limited-Intermediate	32	35 – Intermediate	27 – Intermediate	18 – Intermediate
14935	Sandies	38 – Limited-Intermediate	32	43 - High	22 – Intermediate	15 – Intermediate
17893	Elm	40 – Intermediate	33	36 – Intermediate	22 -Intermediate	15 – Intermediate
17894	Elm	40 – Intermediate	32	39 – Intermediate	30 – High	17 – Intermediate
17893	Elm	44 – Intermediate	33	38 – Intermediate	23 – Intermediate	15 – Intermediate
17894	Elm	40 – Intermediate	32	40 – Intermediate	26 – Intermediate	16 – Intermediate
FY04						
17901	Sandies	40 – Intermediate	33	39 – Intermediate	28 – High	15 – Intermediate
17895	Sandies	38 – Limited-Intermediate	32	37 – Intermediate	24 – Intermediate	17 – Intermediate
13657	Sandies	36 – Limited-Intermediate	32	35 – Intermediate	31 – High	15 – Intermediate
14935	Sandies	40 – Intermediate	32	33 - Limited	29 - High	16 – Intermediate

#### 4.0 DISCUSSION

Average scores of all biological components generally reflected lower values than the high aquatic life use designation for Segments 1803A and 1803B. The general trend in Statewide IBI scores is to underestimate the aquatic life use when compared to other assessment methods (TPWD 2002). Therefore, the lower Statewide IBI scores generated from data collected for this study are most likely not indicative of the true aquatic life use of this segment. Low Regional IBI scores may be attributed to various biological parameters analyzed for each particular sampling event, including low species diversity, low abundance, unbalanced trophic structure, and limited presence of certain indicative species. Dissolved oxygen and bacteria concentrations throughout the study frequently exceeded the established criteria.

#### 5.0 CONCLUSION

Based on the Regional IBI, RBP, and HQI scores, the biological and habitat data appear to indicate a lower aquatic life use than the "High" use standard presumed based upon a perennial flow regime.

#### REFERENCES

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Appendix A
Complete Raw Data Set
Biological and Habitat Components
Segments 1803A and 1803B
Elm and Sandies Creeks, Texas
Augst 2002
September 2002
April 2003
July 2003
September 2003



Ecological Communications Corporation Austin, TX

### BIOTIC ASSESSMENT – FISH

Species Lists and Preliminary Data Manipulation



Stream	Date	ID	Species	N=	Type	Method	Tolerance	Trophic Gp
Sandies	8/27/02	17901	Bluegill	21	SF	Е	Т	IF
			Bluegill	23	SF	S	Т	IF
			<b>Bullhead Minnow</b>	1		S	-	IF
			Gambusia affinis	25		Е	Т	IF
			Gambusia affinis	40		S	Т	IF
			Green Sunfish	1	SF	S	Т	Р
			Golden topminnow	3		S	-	IF
			Largemouth Bass	1		S	-	Р
			Longear Sunfish	8	SF	Е	-	IF
			Longear Sunfish	6	SF	S	-	IF
			Pugnose Minnow	1		Е	-	IF
			Pugnose Minnow	5		S	-	IF
			Red Shiner	1		S	Т	IF
			Red Shiner	2		Е	Т	IF
			Sailfin Molly	10		Е	Т	0
			Sailfin Molly	5		S	Т	0
			Spotted Bass	1		Е	-	Р
			Warmouth	4	SF	Е	T	Р
			Warmouth	1	SF	S	T	Р
			Yellow Bullhead	2		Е	-	0
			Total	161				
Stream	Date	ID	Species	N=	Type	Method	Tolerance	Trophic Gp
Sandies	8/31/02	17895	Bluegill	11	SF	Ε	Т	IF
			Gizzard Shad	2		Ε	Т	0
			Green Sunfish	6	SF	Е	Т	Р
			Longear Sunfish	12	SF	Е	-	IF
			Redbreast Sunfish	2	SF	Е	-	IF
			Smallmouth Bass	1		E	I	Р
			Texas Shiner	2		E	-	IF
			Warmouth	7	SF	E	T	P
		•	Total	43				

SF	Sunfish
D	Darter
SU	Sucker
SU E S V	Electroshock
S	Seine
V	Visually Observed
I	Intolerant
Γ	Tolerant
-	Intermediate
O	Omnivore
IF	Invertivore
P	Piscivore
Н	Herbivore

Stream	Date	ID	Species	N=	Type	Method	Tolerance	Trophic Gp
Sandies	8/26/02	13657	Bluegill	1	SF	S	T	IF
			Bullhead Minnow	2		Ε	-	IF
			Bullhead Minnow	4		S	-	IF
			Channel Catfish	1		Ε	Т	0
			Gambusia affinis	8		E	T	IF
			Gambusia affinis	83		S	T	IF
			Green Sunfish	1	SF	Е	T	Р
			Longear Sunfish	3	SF	Е	-	IF
			Longear Sunfish	5	SF	S	-	IF
			Sailfin Molly	9		S	Т	0
			Texas Shiner	5		S	-	IF
			Total	122				
Stream	Date	ID	Species	N=	Туре	Method	Tolerance	Trophic Gp
Stream Sandies	<b>Date</b> 8/31/02	I <b>D</b> 14935			<b>Type</b> SF	Method E	Tolerance T	Trophic Gp
			Species	N=	• •			
Sandies	8/31/02		<b>Species</b> Bluegill	<b>N=</b> 9	• •	E		IF
Sandies  **Abnormal	8/31/02 lities:	14935	<b>Species</b> Bluegill Bass (unknown)	<b>N=</b> 9	• •	E V	Т	IF P
Sandies  **Abnormal	8/31/02	14935	<b>Species</b> Bluegill Bass (unknown) Gar	<b>N=</b> 9 1	• •	E V V	T T	IF P P
**Abnormal 1 Longear w	8/31/02 lities:	14935	<b>Species</b> Bluegill Bass (unknown) Gar Gizzard Shad	<b>N=</b> 9 1 - 3	SF	E V V E	T T T	IF P P O
**Abnormal 1 Longear w	8/31/02 lities:	14935	Species Bluegill Bass (unknown) Gar Gizzard Shad Green Sunfish	N= 9 1 - 3 1	SF	E V V E E	T T T	IF P P O P
**Abnormal 1 Longear w	8/31/02 lities:	14935	Species Bluegill Bass (unknown) Gar Gizzard Shad Green Sunfish Largemouth Bass	N= 9 1 - 3 1 4	SF SF	E V V E E	T T T	P P O P
**Abnormal 1 Longear w	8/31/02 lities:	14935	Species Bluegill Bass (unknown) Gar Gizzard Shad Green Sunfish Largemouth Bass Longear Sunfish	N= 9 1 - 3 1 4 9	SF SF	E V V E E E	T T T	IF P O P P IF
**Abnormal 1 Longear w	8/31/02 lities:	14935	Species Bluegill Bass (unknown) Gar Gizzard Shad Green Sunfish Largemouth Bass Longear Sunfish Redbreast Sunfish	N= 9 1 - 3 1 4 9 6	SF SF	E V V E E E	T T T	IF P O P IF IF

KEY:	
SF	Sunfish
D	Darter
SU	Sucker
E	Electroshock
S	Seine
SU E S V	Visually Observed
I	Intolerant
T	Tolerant
-	Intermediate
О	Omnivore
IF P	Invertivore
P	Piscivore
H	Herbivore
ı	

Stream	Date	ID	Species	N=	Type	Method	Tolerance	Trophic Gp
Elm	8/28/02	17893	Black Bullhead	2		E	Т	0
			Bluegill	9	SF	E	T	IF
			Bluegill	4	SF	S	Т	IF
			Bluntnose Darter	2	D	E	-	IF
			Channel Catfish	1		S	<u>T</u>	0
			Gambusia affinis	7		E S	T T	IF IF
			Gambusia affinis Golden Shiner	46 1		S E	T T	IF IF
			Green Sunfish	13	SF	Ē	T	" P
			Green Sunfish	2	SF	S	Ť	Р
			Largemouth Bass	1		E	-	Р
			Longear Sunfish	3	SF	S	-	IF
			Orangespotted Sunfish	1	SF	S	-	IF
			Red shiner	1		S	<u>T</u>	IF.
			Sailfin Molly	1	0.5	S	T T	0
			Warmouth Warmouth	1 3	SF SF	S E	T T	P P
			Total	98	<u> </u>		<u> </u>	· · · · · · · · · · · · · · · · · · ·
Stream	Date	ID	Species	N=	Туре	Method	Tolerance	Trophic Gp
Elm	8/29/02	17894	Blacktail shiner	1	-	S	-	IF
			Bluegill	13	SF	Е	Т	IF
			Bullhead minnow	1		S	-	IF
			Bullhead minnow	1		Е	-	IF
			Channel Catfish	15		E	T	0
			Common Carp	1		S	Т	0
			Gambusia affinis	95		E	T	IF
			Gambusia affinis	90		S	T	IF
			Green Sunfish	6	SF	E	Т	Р
			Green Sunfish	5	SF	S	T	Р
			Guadalupe Bass	1		S	1	Р
			Longear Sunfish	8	SF	Е	-	IF
			Red Shiner	5		Е	T	IF
			Red Shiner	6		S	Т	IF
			Redbreast Sunfish	11	SF	S	-	IF
			Redbreast Sunfish	3	SF	Е	-	IF
			Sailfin Molly	28		Е	Т	0
			Sailfin Molly	4		S	Т	0
			Spotted Bass	2		Е	-	IF
			Spotted Sunfish	1	SF	S	-	IF
			Tadpole madtom	1		Е	1	IF
			Texas Shiner	4		S	-	IF
			Warmouth	1	SF	Е	Т	Р
			Yellow Bullhead	2		Е	-	0
			Total	305				

KEY:	
SF	Sunfish
D	Darter
SU	Sucker
E	Electroshock
S	Seine
E S V I	Visually Observed
I	Intolerant
Т	Tolerant
-	Intermediate
О	Omnivore
IF	Invertivore
P	Piscivore
Н	Herbivore

Stream	Date	ID	Species	N=	Type	Method	Tolerance	Trophic Gp		
Sandies 2	9/26/02	17901	Bluegill	9	SF	E	Т	IF		
			Bluegill	16	SF	S	Т	IF		
			Gambusia affinis	59		Е	Т	IF		
			Gambusia affinis	39		S	Т	IF		
			Greenthroat Darter	1	D	E	I	IF	KEY:	
			Greenthroat Darter	3	D	S	I	IF	SF	Sunfish
			Largemouth Bass	1		Е	-	Р	D	Darter
			Largemouth Bass	1		S	-	Р	SU E	Sucker Electroshock
			Longear Sunfish	4	SF	Е	-	IF	S	Seine
			Longear Sunfish	10	SF	S	-	IF	V	Visually Observed Intolerant
			Orange-spotted Sunfish	2	SF	Е	-	IF	T	Tolerant
			Redear Sunfish	2	SF	Е	-	IF	-	Intermediate
			Sailfin Molly	13		Е	Т	0	O IF	Omnivore Invertivore
			Sailfin Molly	12		S	Т	0	P	Piscivore
			Spotted Gar	1		Е	Т	Р	Н	Herbivore
			Texas Shiner	6		Е	-	IF		
			Texas Shiner	15		S	-	IF		
			Total	194						
									•	
Stream	Date	ID	Species	N=	Type	Method	Tolerance	Trophic Gp		
Sandies 2	9/24/02	17895	Longear Sunfish	11	SF	Е	-	IF		
			Texas Shiner	2		E	-	IF		
			Bluegill	4	SF	E	Т	IF		
		_	Warmouth	1	SF	E	Т	Р		
			Total	18					-	

Stream	Date	ID	Species	N=	Type	Method	Tolerance	Trophic Gp
Sandies 2	9/25/02	13657	Bluegill	5	SF	Е	Т	IF
			Bluegill	7	SF	S	T	IF
			<b>Bullhead Minnow</b>	2		Е	-	IF
			Gambusia affinis	73		S	T	IF
			Largemouth Bass	1		Е	-	Р
			Longear Sunfish	6	SF	Е	-	IF
			Longear Sunfish	3	SF	S	-	IF
			Red Shiner	1		S	T	IF
			Sailfin Molly	1		Е	T	0
			Sailfin Molly	6		S	Т	0
			Shortnose Gar	1		S	Т	Р
			Texas Shiner	12		Е	-	IF
			Texas Shiner	17		S	-	IF
			Warmouth	1	SF	Е	Т	Р
			White Crappie	1	SF	S	-	Р
			Yellow Bullhead	1		E	-	0
			Total	138				
Stream	Date	ID	Species	N=	Type	Method	Tolerance	Trophic Gp
Sandies 2	9/24/02	14935	Bluegill	24	SF	Е	Т	IF
			Bullhead Minnow	2		Е	-	IF
			Green Sunfish	2	SF	E	Т	Р
			Largemouth Bass	15		E	-	Р
			Longear Sunfish	13	SF	E	-	IF
			Longnose Gar	1		E	Т	Р
			Orange Spotted Sunfish	4	SF	Е	-	IF
			Redbreast Sunfish	2	SF	Е	-	IF
			Rio Grande Cichlid	2		Е	-	IF
			Spotted Sunfish	14	SF	Е	-	IF
			Texas Shiner	1		E	-	IF
			Warmouth	4	SF	Е	Т	Р
			Total	84			<del></del>	

Stream	Date	ID	Species	N=	Type	Method	Tolerance	Trophic Gp
Elm 2	9/26/02	17893	Black Bullhead	2		Е	Т	0
			Bluegill	5	SF	Е	Т	IF
			Gambusia (affinis?)	19		Е	Т	IF
			Green Sunfish	6	SF	Е	Т	Р
			Longear Sunfish	6	SF	E	-	IF
			Orange-spotted Sunfish	1	SF	E	-	IF
			Sailfin Molly	3		Е	Т	0
			Spotted Gar	1		E	Т	Р
			Yellow Bullhead	1		Е	-	0
			Total	44				
Elm 2	9/25/02	17894	Bluegill	16	SF	E	Т	IF
			<b>Bullhead Minnow</b>	1		E	-	IF
			Channel Catfish	1		Е	Т	0
			Gambusia affinis	6		Е	Т	IF
			Gambusia affinis	19		S	Т	IF
			Green Sunfish	5	SF	E	Т	Р
			Largemouth Bass	2		E	-	Р
			Longear Sunfish	9	SF	E	-	IF
			Red Shiner	4		E	Т	IF
			Tadpole Madtom	2		S	1	IF
			Sailfin Molly	1		Е	Т	0
			Sailfin Molly	1		S	Т	0
			Texas Shiner	10		Е	-	IF
			Texas Shiner	4		S	-	IF
			Warmouth	1	SF	E	Т	Р
			Total	82				

KEY:	
SF	Sunfish
D	Darter
SU	Sucker
D SU E S V I	Electroshock
S	Seine
V	Visually Observed
I	Intolerant
Т	Tolerant
-	Intermediate
0	Omnivore
IF P	Invertivore
P	Piscivore
H	Herbivore

Stream: Sandies	Species	N=	Туре	Method	Tolerance	Trophic Gp.
Date: 4/15/03	Bluegill	2	SF	E	T	IF
Location: 13657	Bluegill	1	SF	S	T T	IF
Location. 13037	Bullhead minnow	1	CY	S	~	IF
			Ci		~ T	IF
	Gambusia affinis	3		E		
	Gambusia affinis	49	0.5	S	T	IF
	Green sunfish	2	SF	E	Т	P
	Longear sunfish	2	SF	E	~	IF
	Longear sunfish	3	SF	S	~	IF
	Texas shiner	22	CY	S	~	IF
	Notropis sp.	4	CY	Е		IF
	Notropis sp.	13	CY	S		IF
		102				
Stream: Sandies	Species	N=	Туре	Method	Tolerance	Trophic Gp.
Date: 4/16/03	Amazon molly	2		S	~	IF
Location: 17901	Bluegill	10	SF	Е	Т	IF
	Bluegill	5	SF	S	Т	IF
	Common Carp	1	CY	V	Т	0
	Gambusia affinis	3		Ε	Т	IF
	Gambusia affinis	29		S	Т	IF
	Gar	1		V	Т	Р
	Green sunfish	1	SF	Ε	Т	Р
	Grey redhorse	1	SK	S	~	IF
	Largemouth bass	1	0.1	S	~	.: Р
	Lepomis hybrid	1	SF	S	~	IF
	Longear sunfish	6	SF	Ē	~	 IF
	Longear sunfish	21	SF	S	~	 IF
	Notropis sp.	2	CY	S		 IF
	Red shiner	8	CY	S	Т	 IF
	Redbreast sunfish	1	SF	E	~	 IF
	Redbreast sunfish	2	SF	S	_	iF
	Redear sunfish	2	SF	S	~	IF
		4	SF	S	~	IF
	Lepomis sp. Warmouth		SF		T	IF P
		10		E		
	Warmouth	2	SF	S	T	P
Stream: Sandies	On salas	113	T	Method	T-1	Tarabia Ca
	Species	N=	Туре		Tolerance	Trophic Gp.
Date: 4/17/03	Bluegill	1	SF	E	T	IF IF
Location: 14935	Bluegill	1	SF	S	T	IF IF
	Gambusia affinis	2	0.5	S	Т	IF IF
	Longear sunfish	2	SF	E	~	IF
	Longear sunfish	7	SF	S	~	IF
	Notropis sp.	5	CY	S		IF .
	Spotted bass	2		E	~	Р
	Lepomis sp.	1	SF	Е	~	IF
	Texas shiner	2	CY	S	~	IF
	Warmouth	1	SF	E	Т	P
		24				
Stream: Sandies	Species	N=	Type	Method	Tolerance	Trophic Gp.
Date: 4/17/03	Bluegill	1	SF	E	Т	IF
Location: 17895	Common carp	1	CY	E	Т	Ο
	Gambusia affinis	3		S	Т	IF
	Guadalupe bass	2		E	I	Р
	Longear sunfish	4	SF	E	~	IF
	Texas shiner	12	CY	S	~	IF
	Warmouth	1	SF	Е	Т	Р
		24				

Stream	n: E	lm
Date:	4/1	6/03
Locati	on:	17893

Species	N=	Type	Method	Tolerance	Trophic Gp.
Black bullhead	1		Ε	Т	0
Bluegill	26	SF	Ε	Т	IF
Bluegill	3	SF	S	Т	IF
Gambusia affinis	1		Ε	Т	IF
Gambusia affinis	1		S	Т	IF
Green sunfish	4	SF	Ε	Т	Р
Longear sunfish	12	SF	Ε	~	IF
Longear sunfish	2	SF	S	~	IF
Slough darter	1	D	S	~	IF
Warmouth	7	SF	Ε	Т	Р
Warmouth	1	SF	S	Т	Р
White crappie	1	SF	Ε	~	Р
White crappie	1	SF	S	~	Р

61

Stream	n: E	lm
Date:	4/1	7/03
Locati	on:	17894

Species	N=	Type	Method	Tolerance	Trophic Gp.
Bluegill	5	SF	Ε	Т	IF
Bluegill	3	SF	S	Т	IF
Bullhead minnow	2	CY	Ε	~	IF
Bullhead minnow	1	CY	S	~	IF
Channel catfish	2		Ε	Т	0
Gambusia affinins	1		Ε	Т	IF
Gambusia affinins	45		S	Т	IF
Green sunfish	2	SF	Ε	Т	Р
Green sunfish	1	SF	S	Т	Р
Longear sunfish	18	SF	Ε	~	IF
Longear sunfish	2	SF	S	~	IF
Red shiner	1	CY	Ε	Т	IF
Red shiner	16	CY	S	Т	IF
Redbreast sunfish	1	SF	S	~	IF
Spotted gar	1		Ε	Т	Р
Lepomis sp.	1	SF	Ε	~	IF
Texas shiner	1	CY	Ε	~	IF
Texas shiner	10	CY	S	~	IF
Warmouth	1	SF	Е	T	P

Stream: Sandies	Species	N=	Туре	Method	Tolerance	Trophic Gp.
Date: 9/28/03	Bluegill	1	SF	Е	Т	IF
Location: 13657	Bullhead Minnow	1	CY	S		IF
	Guadalupe Bass	1		S	I	Р
	Longear Sunfish	2	SF	E		IF
	Sailfin Molly	7		S	Т	0
* 1 Sailfin with abnormal	Spotted Bass	2		E		Р
growth	Texas Shiner	2	CY	S		IF
	Western Mosquitofish	6		E	T	IF
	Western Mosquitofish	21		S	Т	<u>IF</u>
		43			35	33
Stream: Sandies	Species	N=	Туре	Method	Tolerance	Trophic Gp.
Date: 9/28/03	Amazon Molly	15		S		0
Location: 17901	Bluegill	31	SF	E	Т	IF
	Bluegill	7	SF	S	Т	IF
	Bullhead Minnow	7	CY	S		IF
	Green Sunfish	2	SF	E	Т	Р
	Longear Sunfish	17	SF	E		IF
	Longear/Bluegill hybrid	1	SF	Е		
	Redbreast/Bluegill hybrid	1	SF	S		
	Redear Sunfish	2	SF	E		IF
	Sailfin Molly	13		Е	Т	0
	Sailfin Molly	51		S	Т	0
	Spotted Bass	2		S		Р
	Texas Shiner	1	CY	S		IF
	Warmouth	1	SF	Ε	Т	Р
	Western Mosquitofish	24		E	Т	IF
	Western Mosquitofish	284		S	Т	IF
	White Crappie	2	SF	E		Р
	White Crappie	1	SF	S		Р
		462		369	105	79
				93		373
Stream: Sandies	Species	N=	Туре	Method	Tolerance	Trophic Gp.
Date: 9/29/03	Bullhead Minnow	1	CY	E		IF
Location: 14935	Bullhead Minnow	18	CY	S		IF
	Guadalupe Bass	1		E	1	Р
	Lepomis sp	3	SF	E		
	Longear Sunfish	8	SF	E		IF
	Longear Sunfish	1	SF	S		IF
	Sailfin Molly	1		E	Т	Ο
	Sailfin Molly	1		S	Т	Ο
	Spotted Bass	1		E		Р
	Western Mosquitofish	25		S	Т	IF
		60				53
Stream: Sandies	Species	N=	Type	Method	Tolerance	Trophic Gp.
Date: 9/29/03	Longear Sunfish	13	SF	E		IF -
Location: 17895	Sailfin Molly	2		Е	Т	0
	Spotted Bass	3		E		Р
	Texas Shiner	1	CY	Е		IF
	Texas Shiner	5	CY	S		IF
	147	1	CE	E	Т	Р
	Warmouth		SF			
	Western Mosquitofish	1	SF	E	Т	IF
			5F			

Stream	: E	lm
Date:	7/2	9/03
Locatio	n:	17893

Species	N=	Type	Method	Tolerance	Trophic Gp.
Black bullhead	2		Ε	Т	0
Bluegill	19	SF	Ε	~	IF
Bluegill	4	SF	S	~	IF
Bullhead minnow	1	CY	Ε	~	IF
Gambusia	1		Ε	Т	IF
Gambusia	17		S	Т	IF
Green sunfish	2	SF	Е	T	Р
Green sunfish	1	SF	S	Т	Р
Longear sunfish	12	SF	Ε	~	IF
Slough darter	1	D	S	~	IF
Tadpole madtom	1		Е	I	IF
Tadpole madtom	3		S	I	IF
Warmouth	5	SF	Е	Т	Р
	69				

Stream: Elm Date: 7/29/03 Location: 17894

Species	N=	Type	Method	Tolerance	Trophic Gp.
Bluegill	5	SF	Ε	~	IF
Bluegill	1	SF	S	~	IF
Bullhead minnow	12	CY	Ε	~	IF
Bullhead minnow	5	CY	S	~	IF
Gambusia	3		Ε	T	IF
Gambusia	12		S	Т	IF
Largemouth bass	2		Ε	~	Р
Longear sunfish	34	SF	Ε	~	IF
Red shiner	2	CY	Ε	Т	IF
Red shiner	5	CY	S	Т	IF
Spotted bass	2		Ε	~	Р
Warmouth	3	SF	Ε	T	Р
Yellow bullhead	2		Ε	~	0
	88				

### ${\bf BIOTIC\ ASSESSMENT-FISH}$

Indices of Biotic Integrity – Statewide Criteria



Stream: Sandies	Date: 8/27/02 Location: 17901	County: Gonz	zales
Category	Metric	Value	Score
Species Richness and Composition	1. Total number of fish species	13	5
	2. Number of darter species	0	1
	3. Number of sunfish species (exc. bass)	4	5
	4. Number of sucker speices	0	1
	5. Number of intolerant species	0	1
	6. Percentage of individuals as tolerants	83	1
	7. Percentage of individuals as omnivores	11	5
Trophic Composition	8. Percentage of individuals as insectivores	85	5
	9. Percentage of individuals as piscivores	5	3
	10. Number of individuals in sample	161	3
Fish Abundance and Condition	11. Percentage of individuals as hybrids	0	5
	12. Percentage of individuals with disease/anomalies	0	5
	Aquatic Life Use: INTERMEDIATE	Total Points:	40

Stream:Sandies	Date: 8/31/02	Location: 17895	County: Gonzales	
	Metric		Value	Score
1. Total number of fish	n species		8	3
2. Number of native cy	prinid species		1	1
3. Number of benthic i	nvertivore species		0	1
4. Number of sunfish s	species		5	5
5. % of ind as tolerant	species (exc. G. affinis)		60	1
6. Percentage of indiv	iduals as omnivores		5	5
7. Percentage of indiv	iduals as insectivores		63	3
8. Percentage of indiv	iduals as piscivores		32	5
9. Number of individua	als in sample		43	-
a. number of ind/sei	ine haul		no seine	1
b. number of ind/mi	n electrofishing		2.9	1
10. % of individuals as	non-native species		7	1
12. Percentage of indi	viduals with disease/and	malies	0	5
Aquatic Life Use: LIM	ITED		Total Points:	31

<sup>1\*</sup> 

Drainage area above 17895 ~ 549.84 sq. km.

<sup>\*</sup>Average of 9a and 9b

Stream: Sandies	Date: 8/26/02	Location: 13657	County: Dew	itt
Category		Metric	Value	Score
Species Richness and Composition	1. Total number o	f fish species	8	3
	2. Number of darte	er species	0	1
	3. Number of sunf	īsh species (exc. bass)	3	5
	4. Number of suck	ker speices	0	1
	5. Number of intol	erant species	0	1
	6. Percentage of i	ndividuals as tolerants	84	1
	7. Percentage of i	ndividuals as omnivores	8	5
Trophic Composition	8. Percentage of i	ndividuals as insectivores	91	5
	9. Percentage of i	ndividuals as piscivores	1	3
	10. Number of ind	ividuals in sample	122	3
Fish Abundance and Condition	11. Percentage of	individuals as hybrids	0	5
	12. Percentage of	individuals with disease/anomalies	0	5
	Aquatic Life Use:	LIMITED-INTERMEDIATE	Total Points:	38

Stream: Sandies	Date: 8/31/02	Location: 14935	County: Dew	itt
Category		Metric	Value	Score
Species Richness and Composition	1. Total number o	f fish species	9	3
	2. Number of dart	er species	0	1
	3. Number of sun	fish species (exc. bass)	5	5
	4. Number of sucl	ker speices	0	1
	5. Number of into	lerant species	1	3
	6. Percentage of i	ndividuals as tolerants	48	1
	7. Percentage of i	ndividuals as omnivores	8	5
Trophic Composition	8. Percentage of i	ndividuals as insectivores	60	3
	9. Percentage of i	ndividuals as piscivores	33	5
	10. Number of inc	lividuals in sample	40	1
Fish Abundance and Condition	11. Percentage of	findividuals as hybrids	0	5
	12. Percentage of	findividuals with disease/anomalies	3	3
	Aquatic Life Use:	LIMITED-INTERMEDIATE	Total Points:	36

Stream: Elm	Date: 8/28/02 Location: 17893	County: Gonz	zales
Category	Metric	Value	Score
Species Richness and Composition	1. Total number of fish species	13	5
	2. Number of darter species	1	3
	3. Number of sunfish species (exc. bass)	5	5
	4. Number of sucker speices	0	1
	5. Number of intolerant species	0	1
	Percentage of individuals as tolerants	93	1
	7. Percentage of individuals as omnivores	4	5
Trophic Composition	Percentage of individuals as insectivores	76	3
	Percentage of individuals as piscivores	20	5
	10. Number of individuals in sample	98	3
Fish Abundance and Condition	11. Percentage of individuals as hybrids	0	5
	12. Percentage of individuals with disease/anomalies	0	5
	Aquatic Life Use: INTERMEDIATE	Total Points:	42

Stream: Elm	Date: 8/29/02 Location: 10004	County: Gonz	zales
Category	Metric	Value	Score
Species Richness and Composition	1. Total number of fish species	18	5
	2. Number of darter species	0	1
	3. Number of sunfish species (exc. bass)	6	5
	4. Number of sucker speices	0	1
	5. Number of intolerant species	2	3
	6. Percentage of individuals as tolerants	88	1
	7. Percentage of individuals as omnivores	16	5
Trophic Composition	8. Percentage of individuals as insectivores	79	3
	9. Percentage of individuals as piscivores	4	3
	10. Number of individuals in sample	305	5
Fish Abundance and Condition	11. Percentage of individuals as hybrids	0	5
	12. Percentage of individuals with disease/anomalies	0	5
	Aquatic Life Use: INTERMEDIATE	Total Points:	42

Stream: Sandies	Date: 9/26/02 Location: 17901	County: Gon:	zales
Category	Metric	Value	Score
Species Richness and Composition	1. Total number of fish species	10	5
	2. Number of darter species	1	3
	3. Number of sunfish species (exc. bass)	4	5
	4. Number of sucker speices	0	1
	5. Number of intolerant species	1	3
	6. Percentage of individuals as tolerants	77	1
	7. Percentage of individuals as omnivores	13	5
Trophic Composition	8. Percentage of individuals as insectivores	85	5
	9. Percentage of individuals as piscivores	2	3
	10. Number of individuals in sample	194	3
Fish Abundance and Condition	11. Percentage of individuals as hybrids	0	5
	12. Percentage of individuals with disease/anomalies	0	5
	Aquatic Life Use: INTERMEDIATE	Total Points:	44

Stream: Sandies2	Date: 9/24/02	Location: 17895	County: Gon:	zales
Category		Metric	Value	Score
Species Richness and Composition	1. Total number of	fish species	4	1
	2. Number of darte	r species	0	1
	3. Number of sunfi	sh species (exc. bass)	3	5
	4. Number of sucke	er speices	0	1
	5. Number of intole	rant species	0	1
	6. Percentage of in	dividuals as tolerants	27.8	1
	7. Percentage of in	dividuals as omnivores	0	5
Trophic Composition	8. Percentage of in	dividuals as insectivores	94.4	5
	9. Percentage of in	dividuals as piscivores	5.6	5
	10. Number of indiv	viduals in sample	18	1
Fish Abundance and Condition	11. Percentage of i	ndividuals as hybrids	0	5
	12. Percentage of i	ndividuals with disease/anomalies	0	5
	Aquatic Life Use: I	IMITED-INTERMEDIATE	Total Points:	36

Stream: Sandies	Date: 9/25/02 Location: 13657	County: Dewi	tt
Category	Metric	Value	Score
Species Richness and Composition	1. Total number of fish species	12	5
	2. Number of darter species	0	1
	3. Number of sunfish species (exc. bass)	4	5
	4. Number of sucker speices	0	1
	5. Number of intolerant species	0	1
	6. Percentage of individuals as tolerants	69	1
	7. Percentage of individuals as omnivores	6	5
Trophic Composition	8. Percentage of individuals as insectivores	91	5
	9. Percentage of individuals as piscivores	3	3
	10. Number of individuals in sample	138	3
Fish Abundance and Condition	11. Percentage of individuals as hybrids	0	5
	12. Percentage of individuals with disease/anomali	es 0	5
	Aquatic Life Use: INTERMEDIATE	Total Points:	40

Stream: Sandies	Date: 9/25/02 Location: 14935	County: Dewi	itt
Category	Metric	Value	Score
Species Richness and Composition	1. Total number of fish species	12	5
	2. Number of darter species	0	1
	3. Number of sunfish species (exc. bass)	7	5
	4. Number of sucker speices	0	1
	5. Number of intolerant species	0	1
	6. Percentage of individuals as tolerants	37	1
	7. Percentage of individuals as omnivores	0	5
Trophic Composition	8. Percentage of individuals as insectivores	74	3
	9. Percentage of individuals as piscivores	26	5
	10. Number of individuals in sample	84	3
Fish Abundance and Condition	11. Percentage of individuals as hybrids	0	5
	12. Percentage of individuals with disease/anom	nalies 0	5
	Aquatic Life Use: INTERMEDIATE	Total Points:	40

Stream: Elm2	Date: 9/26/02 Location: 17893	County: Gonz	zales
Category	Metric	Value	Score
Species Richness and Composition	Total number of fish species	9	3
	2. Number of darter species	0	1
	3. Number of sunfish species (exc. bass)	4	5
	4. Number of sucker speices	0	1
	5. Number of intolerant species	0	1
	6. Percentage of individuals as tolerants	82	1
	7. Percentage of individuals as omnivores	14	5
Trophic Composition	Percentage of individuals as insectivores	70	3
	Percentage of individuals as piscivores	16	5
	10. Number of individuals in sample	44	1
Fish Abundance and Condition	11. Percentage of individuals as hybrids	0	5
	12. Percentage of individuals with disease/anomalies	0	5
	Aquatic Life Use: LIMITED-INTERMEDIATE	Total Points:	36

Stream: Elm 2	Date: 9/25/02 Location: 17894	County: Gonz	zales
Category	Metric	Value	Score
Species Richness and Composition	1. Total number of fish species	12	5
	2. Number of darter species	0	1
	3. Number of sunfish species (exc. bass)	4	5
	4. Number of sucker speices	0	1
	5. Number of intolerant species	1	3
	6. Percentage of individuals as tolerants	66	1
	7. Percentage of individuals as omnivores	3.7	5
Trophic Composition	8. Percentage of individuals as insectivores	86	5
	9. Percentage of individuals as piscivores	10	5
	10. Number of individuals in sample	82	3
Fish Abundance and Condition	11. Percentage of individuals as hybrids	0	5
	12. Percentage of individuals with disease/anomalies	0	5
	Aquatic Life Use: INTERMEDIATE	Total Points:	44

Stream: Sandies	Date: 4/15/03	Location: 13657	County: Dewit	t
Category		Metric	Value	Score
Species Richness and Composition	1. Total # of fish spec	cies	7	3
	2. Number of darter s	species	0	1
	3. Number of sunfish	species (exc. bass)	3	5
	4. Number of sucker	species	0	1
	5. Number of intolera	5. Number of intolerant species		1
	6. Percentage of indi	viduals as tolerants	56	1
	7. Percentage of indi	viduals as omnivores	0	5
Trophic Composition	osition 8. Percentage of individuals		98	5
	9. Percentage of indi	9. Percentage of individuals as piscivores		3
	10. Number of individ	duals in sample	102	3
Fish Abundance and Condition	11. Percentage of inc	dividuals as hybrids	0	5
	12. Percentage of inc	12. Percentage of individuals with disease/anomolies		5
	Aquatic Life Use: LIM	IITED-INTERMEDIATE	Total Points:	38

Stream: Sandies	Date: 4/16/03 L	ocation: 17901	County: Gonza	les
Category	Metri	С	Value	Score
Species Richness and Composition	1. Total # of fish species		15	5
	2. Number of darter species		0	1
	3. Number of sunfish species (e	xc. bass)	8	5
	4. Number of sucker species		1	3
	5. Number of intolerant species	5. Number of intolerant species		1
	6. Percentage of individuals as	tolerants	62	1
	7. Percentage of individuals as	7. Percentage of individuals as omnivores		5
Trophic Composition	8. Percentage of individuals as insectivores		86	5
	9. Percentage of individuals as piscivores		13	5
	10. Number of individuals in sar	nple	113	3
Fish Abundance and Condition	11. Percentage of individuals as	hybrids	0	5
	12. Percentage of individuals wi	12. Percentage of individuals with disease/anomolies		5
	Aquatic Life Use: INTERMEDIA	TE	Total Points:	44

Stream: Sandies	Date: 4/17/03 Location: 14935	County: Dewitt	
Category	Metric	Value	Score
Species Richness and Composition	1. Total # of fish species	8	3
	2. Number of darter species	0	1
	3. Number of sunfish species (exc. bass)	4	5
	4. Number of sucker species	0	1
	5. Number of intolerant species	0	1
	6. Percentage of individuals as tolerants	21	1
	7. Percentage of individuals as omnivores	0	5
Trophic Composition	8. Percentage of individuals as insectivores	88	5
	9. Percentage of individuals as piscivores	12	5
	10. Number of individuals in sample	24	1
Fish Abundance and Condition	11. Percentage of individuals as hybrids	0	5
	12. Percentage of individuals with disease/anomolies	0	5
	Aquatic Life Use: LIMITED-INTERMEDIATE	Total Points:	38

Stream: Sandies	Date: 4/17/03	Location: 17895	County: Gonzal	es
Category		Metric	Value	Score
Species Richness and Composition	1. Total # of fish species		7	3
	2. Number of darter speci	es	0	1
	3. Number of sunfish spec	cies (exc. bass)	3	5
	4. Number of sucker spec	ies	0	1
	5. Number of intolerant sp	5. Number of intolerant species		3
	6. Percentage of individua	ils as tolerants	25	1
	7. Percentage of individua	lls as omnivores	4	5
Trophic Composition	8. Percentage of individua	lls as insectivores	83	5
	9. Percentage of individuals as piscivores		13	5
	10. Number of individuals	in sample	24	1
Fish Abundance and Condition	11. Percentage of individu	als as hybrids	0	5
	12. Percentage of individuals with disease/anomolies		0	5
	Aquatic Life Use: INTERN	MEDIATE	Total Points:	40

Stream: Elm	Date: 4/16/03	Location: 17893	County: Gonza	iles
Category	Me	etric	Value	Score
Species Richness and Composition	1. Total # of fish species		8	3
	2. Number of darter species		1	3
	3. Number of sunfish species (ex	c. bass)	5	5
	4. Number of sucker species		0	1
	5. Number of intolerant species	5. Number of intolerant species		1
	6. Percentage of individuals as to	plerants	72	1
	7. Percentage of individuals as o	mnivores	2	5
Trophic Composition	8. Percentage of individuals as ir	sectivores	75	3
	9. Percentage of individuals as piscivores		23	5
	10. Number of individuals in sam	ple	61	3
Fish Abundance and Condition	11. Percentage of individuals as	hybrids	0	5
	12. Percentage of individuals with	n disease/anomolies	0	5
	Aquatic Life Use: INTERMEDIAT		Total Points:	40

Stream: Elm	Date: 4/16/03	Location: 17894	County: Gonza	les
Category		Metric	Value	Score
Species Richness and Composition	1. Total # of fish species		12	5
	2. Number of darter species	. Number of darter species		1
	3. Number of sunfish species	(exc. bass)	6	5
	4. Number of sucker species		0	1
	5. Number of intolerant speci	5. Number of intolerant species 6. Percentage of individuals as tolerants		1
	6. Percentage of individuals a			1
	7. Percentage of individuals a	as omnivores	2	5
Trophic Composition	8. Percentage of individuals a	as insectivores	94	5
	9. Percentage of individuals as piscivores		4	3
	10. Number of individuals in	sample	114	3
Fish Abundance and Condition	11. Percentage of individuals	as hybrids	0	5
	12. Percentage of individuals	12. Percentage of individuals with disease/anomolies		5
	Aquatic Life Use: INTERMED	DIATE	Total Points:	40

Stream: Elm	Date: 7/29/03	Location: 17893	County: Gonza	ales
Category		Metric		Score
Species Richness and Composition	1. Total # of fish spe	ecies	9	3
	2. Number of darter	species	1	3
	3. Number of sunfish	n species (exc. bass)	4	5
	4. Number of sucker	rspecies	0	1
	5. Number of intoler	5. Number of intolerant species		3
	6. Percentage of inc	6. Percentage of individuals as tolerants		1
	7. Percentage of inc	7. Percentage of individuals as omnivores		5
Trophic Composition	8. Percentage of inc	8. Percentage of individuals as insectivores		5
	9. Percentage of inc	9. Percentage of individuals as piscivores		5
	10. Number of indivi	duals in sample	69	3
Fish Abundance and Condition	11. Percentage of in	11. Percentage of individuals as hybrids		5
	12. Percentage of in	12. Percentage of individuals with disease/anomolies		5
	Aquatic Life Use: IN	TERMEDIATE	Total Points:	44

Stream: Elm	Date: 7/29/03	Date: 7/29/03 Location: 17894 County: Gonzales			
Category		Metric	Value	Score	
Species Richness and Composition	1. Total # of fish spe	1. Total # of fish species		3	
	2. Number of darter	Number of darter species		1	
	3. Number of sunfish	n species (exc. bass)	3	5	
	4. Number of sucker	species	0	1	
	5. Number of intolera	5. Number of intolerant species		1	
	6. Percentage of ind	ividuals as tolerants	28.4	1	
	7. Percentage of ind	ividuals as omnivores	2.27	5	
Trophic Composition	8. Percentage of ind	8. Percentage of individuals as insectivores		5	
	9. Percentage of ind	9. Percentage of individuals as piscivores		5	
	10. Number of indivi	duals in sample	88	3	
Fish Abundance and Condition	11. Percentage of in	dividuals as hybrids	0	5	
	12. Percentage of in	12. Percentage of individuals with disease/anomolies		5	
	Aquatic Life Use: IN	TERMEDIATE	Total Points:	40	

Stream: Sandies	Date: 9/28/03	Location: 13657	County: Dewitt	
Category	Metr	ic	Value	Score
Species Richness and Composition	1. Total # of fish species		8	3
	2. Number of darter species		0	1
	3. Number of sunfish species (exc	c. bass)	1	3
	4. Number of sucker species		0	1
	5. Number of intolerant species	. Number of intolerant species		3
	6. Percentage of individuals as to	. Percentage of individuals as tolerants		1
	7. Percentage of individuals as or	nnivores	16.27906977	5
Trophic Composition	8. Percentage of individuals as in:	sectivores	76.74418605	3
	9. Percentage of individuals as pis	scivores	6.976744186	5
	10. Number of individuals in samp	ole	43	1
Fish Abundance and Condition	11. Percentage of individuals as h	ybrids	0	5
	12. Percentage of individuals with	disease/anomolies	0	5
	Aquatic Life Use: LIMITED-INTER	RMEDIATE	Total Points:	36

Stream: Sandies	Date: 9/28/03	Location: 17901	County: Gonzal	es
Category	Metric		Value	Score
Species Richness and Composition	1. Total # of fish species		15	5
	2. Number of darter species	Number of darter species		1
	3. Number of sunfish species (exc.	Number of sunfish species (exc. bass)  Number of sucker species		5
	4. Number of sucker species			1
	5. Number of intolerant species	. Number of intolerant species		1
	6. Percentage of individuals as tole	. Percentage of individuals as tolerants		1
	7. Percentage of individuals as omi	nivores	17.17391304	5
Trophic Composition	8. Percentage of individuals as inse	ectivores	81.08695652	5
	9. Percentage of individuals as piscivores		1.739130435	3
	10. Number of individuals in sample	•	462	5
Fish Abundance and Condition	11. Percentage of individuals as hy	brids	0.432900433	3
	12. Percentage of individuals with o	lisease/anomolies	0	5
	Aquatic Life Use: INTERMEDIATE		Total Points:	40

Stream: Sandies	Date: 9/29/03	Location:	14935	County: Dewitt	
Category	Metric			Value	Score
Species Richness and Composition	1. Total # of fish species			7	3
	2. Number of darter species			0	1
	3. Number of sunfish species (exc. b	oass)		2	5
	4. Number of sucker species			0	1
	5. Number of intolerant species	5. Number of intolerant species			3
	6. Percentage of individuals as toler	ants		47.36842105	1
	7. Percentage of individuals as omn	ivores		3.50877193	5
Trophic Composition	8. Percentage of individuals as insec	ctivores		92.98245614	5
	9. Percentage of individuals as piscivores			3.50877193	3
	10. Number of individuals in sample			60	3
Fish Abundance and Condition	11. Percentage of individuals as hyb	orids		0	5
	12. Percentage of individuals with disease/anomolies		0	5	
	Aquatic Life Use: INTERMEDIATE			Total Points:	40

Stream: Sandies	Date: 9/29/03	Location: 17895	County: Gonzal	les
Category	Metric	;	Value	Score
Species Richness and Composition	1. Total # of fish species		6	3
	2. Number of darter species		0	1
	3. Number of sunfish species (exc.	bass)	2	5
	4. Number of sucker species		0	1
	5. Number of intolerant species	5. Number of intolerant species		1
	6. Percentage of individuals as tole	rants	18.51851852	3
	7. Percentage of individuals as omi	nivores	7.407407407	5
Trophic Composition	8. Percentage of individuals as inse	ectivores	77.7777778	3
	9. Percentage of individuals as piso	civores	14.81481481	5
	10. Number of individuals in sample	e	27	1
Fish Abundance and Condition	11. Percentage of individuals as hy	brids	0	5
	12. Percentage of individuals with disease/anomolies		0	5
	Aquatic Life Use: LIMITED-INTERN	MEDIATE	Total Points:	38

#### BIOTIC ASSESSMENT – FISH

Indices of Biotic Integrity – Regional Criteria



Stream: Sandies Date: 8/27/02 Locat	ion: 10013	County: Gonzales		
Metric		Value	Score	
1. Total number of fish species		13	3	
2. Number of native cyprinid species		3	3	
3. Number of benthic invertevore species		0	1	
4. Number of sunfish species		4	3	
5. Number of intolerant species		0	1	
6. Percentage of individuals as tolerants (exc. G.affinis	42.2	3		
7. Percentage of individuals as omnivores	11	5		
8. Percentage of individuals as invertivores		85	5	
9. Percentage of individuals as piscivores		5	3	
10. Number of individuals in sample		161	-	
a. number of ind/seine haul		14.3	3	
b. number of ind/min electrofishing	4.9	3		
11. % of individuals as non-native species	0	5		
12. % of individuals with disease or other anomaly	0	5		
Aquatic Life Use: INTERMEDIATE		Total Points:	40	

<sup>\*</sup>Average of 10a and 10b

Drainage area above 17901 ~ 150.90 sq. km.

Stream:Sandies	Date: 8/31/02	Location: 17895	County: Gonzales	
	Metric		Value	Score
1. Total number of fish	n species		8	3
2. Number of native cy	prinid species		1	1
3. Number of benthic i	nvertivore species		0	1
4. Number of sunfish s	species		5	5
5. % of ind as tolerant	species (exc. G. affinis)		60	1
6. Percentage of indiv	iduals as omnivores		5	5
7. Percentage of indiv	iduals as insectivores		63	3
8. Percentage of indiv	iduals as piscivores		32	5
9. Number of individua	als in sample		43	-
a. number of ind/sei	ine haul		no seine	1
b. number of ind/mi	n electrofishing		2.9	1
10. % of individuals as non-native species			7	1
12. Percentage of individuals with disease/anomalies			0	5
Aquatic Life Use: LIM	ITED		Total Points:	31

<sup>1\*</sup> 

Drainage area above 17895 ~ 549.84 sq. km.

<sup>\*</sup>Average of 9a and 9b

1\*

Stream:Sandies	Date: 8/26/02	Location: 13657		County: Dewitt	
	Metric			Value	Score
1. Total number of fisl	h species			8	1
2. Number of native c	yprinid species			2	3
3. Number of benthic	invertevore species			0	1
4. Number of sunfish	species			3	3
5. Percentage of indiv	viduals as tolerant spec	cies (exc. G. affinis)		9.8	5
6. Percentage of individuals as omnivores				8	5
7. Percentage of indiv	viduals as invertivores			91	5
8. Percentage of indiv	viduals as piscivores			1	1
9. Number of individu	als in sample			122	-
a. number of ind/se	eine haul			17.8	1
b. number of ind/mi	in electrofishing			1	1
10. Percentage of individuals as non-native species			0	5	
12. Percentage of individuals with disease/anomalies			0	5	
Aquatic Life Use: IN	ITERMEDIATE			Total Points:	35

<sup>\*</sup>Average 9a and 9b

Drainage area above 13657 ~ 1417.38 sq. km.

1\*

Stream:Sandies	Sandies Date: 8/31/02 Location: 14935		County: Dew	itt
	Metric		Value	Score
1. Total number of fi	sh species		9	3
2. Number of native	cyprinid species		0	1
3. Number of benthio	c invertevore species		0	1
4. Number of sunfish	n species		5	5
5. Percentage of ind	ividuals as tolerant s	pecies (exc. G. affinis)	47.5	3
6. Percentage of ind	ividuals as omnivore	S	8	5
7. Percentage of ind	ividuals as invertivor	es	60	3
8. Percentage of ind	ividuals as piscivores	3	33	5
9. Number of individe	uals in sample		40	-
a. number of ind/s	eine haul		no seine	1
b. number of ind/n	b. number of ind/min electrofishing			1
10. Percentage of individuals as non-native species			17.5	1
11. Percentage of in-	11. Percentage of individuals with disease/anomalies			1
Aquatic Life Use: LI	MITED		Total Points:	29

<sup>\*</sup>Average of 9a and 9b

Drainage area above 14935 ~ 1752.62 sq. km.

1\*

1\*

Stream: Elm	Date: 8/28/02	Location: 17893		County: Gonzales	
<b>REGION 33*****</b>	Metric			Value	Score
1. Total number of	fish species			13	3
2. Number of native	e cyprinid species			2	3
3. Number of benth	ic invertivore species			1	1
4. Number of sunfis	sh species			5	5
5. Number of intole	rant species			0	1
6. Percentage of individuals as tolerants (exc. G. affinis)				39	3
7. Percentage of individuals as omnivores				4	5
8. Percentage of in	dividuals as insectivore	S		76	5
9. Percentage of in	dividuals as piscivores			20	5
10. Number of indiv	viduals in sample			98	-
a. number of inc	d/seine haul			10	1
b. number of inc	b. number of ind/min electrofishing			2.5	1
11. Percentage of i	ndividuals as non-nativ	e species		0	5
12. Percentage of individuals with disease/anomalies 0					5
Aquatic Life Use:	HIGH			Total Points:	45

\*Average of 10a and 10b

Drainage area above 17893 ~ 228.47 sq. km.

Stream: Elm Date: 8/28/02 Location: 17893 County: Gonzales				zales	
<b>REGION 32******</b>	***** Metric			Value	Score
1. Total number of	fish species			13	5
2. Number of native	e cyprinid species			2	3
3. Number of benth	nic invertivore species			1	3
4. Number of sunfi	sh species			5	5
5. Percentage of individuals as tolerants (exc. G. affinis)					3
6. Percentage of individuals as omnivores				4	5
7. Percentage of in	dividuals as insectivore	s		76	5
8. Percentage of in	dividuals as piscivores			20	5
9. Number of indivi	duals in sample			98	
a. number of in	d/seine haul			10	1
b. number of in	d/min electrofishing			2.5	1
10. Percentage of i	individuals as non-nativ	e species		0	5
11. Percentage of individuals with disease/anomalies 0 5					5
Aquatic Life Use:	HIGH			Total Points:	45

\*Average of 10a and 10b

Drainage area above 17893 ~ 228.47 sq. km.

Stream:Elm	Date: 8/29/02	Location: 17894		County: Gonzales		
	Metr	ic		Value	Score	
1. Total number o	f fish species			18	5	
2. Number of nati	ve cyprinid species			5	5	
3. Number of ben	thic invertivore species			1	3	
4. Number of sun	fish species			6	5	
5. Percentage of i	ndividuals as tolerants (	exc. G. affinis)		27.5	3	
6. Percentage of i	6. Percentage of individuals as omnivores				3	
7. Percentage of i	ndividuals as insectivore	es		79	5	
8. Percentage of i	ndividuals as piscivores			4	1	
9. Number of indiv	viduals in sample			305	-	
a. number of i	nd/seine haul			20.8	1	
b. number of i	b. number of ind/min electrofishing				5	
10. Percentage of	10. Percentage of ind. as non-native species			4.9	1	
12. Percentage of individuals with disease/anomalies				0	5	
Aquatic Life Use:	INTERMEDIATE			Total Points:	39	

<sup>\*</sup>Average of 9a and 9b

Drainage area above 17894 ~ 349.68 sq. km.

3\*

Stream: Sandies2	Date: 9/26/02	Location: 17901	County: Gon	zales
	Metric		Value	Score
1. Total number of fish	species		10	3
2. Number of native cyp	orinid species		1	1
3. Number of benthic in	vertivore species		1	1
4. Number of sunfish sp	pecies		4	3
5. Number of intolerant	species		1	1
6. Percentage of individuals as tolerants (exc. G. affinis)				3
7. Percentage of individuals as omnivores				3
8. Percentage of individ	luals as insectivores		85	5
9. Percentage of individ	luals as piscivores		2	1
10. Number of individua	als in sample		194	-
a. number of ind/sei	ne haul		16	3
b. number of ind/mir	b. number of ind/min electrofishing			3
11. % of individuals as non-native species			0	5
12. % of individuals with	0	5		
Aquatic Life Use: LIf	MITED		Total Points:	34

<sup>\*</sup>Average of 10a and 10b

Drainage area above 17901 ~ 150.90 sq. km.

Stream:Sandies2	Date: 9/24/02	Location: 17895	County: Gonzales	
	Metric		Value	Score
1. Total number of fish	species		4	1
2. Number of native cyp	orinid species		1	1
3. Number of benthic in	vertivore species		0	1
4. Number of sunfish sp	pecies		3	3
5. % of ind as tolerant s	species (exc. G. affinis)		27.8	3
6. Percentage of individ	luals as omnivores		0	5
7. Percentage of individ	luals as invertivores		94	5
8. Percentage of individ	luals as piscivores		6	3
9. Number of individual	s in sample		18	-
a. number of ind/seir	ne haul		no seine	1
b. number of ind/min	b. number of ind/min electrofishing			1
10. % of individuals as	10. % of individuals as non-native species			5
11. Percentage of individuals with disease/anomalies			0	5
Aquatic Life Use:	LIMITED		Total Points:	33

1\*

Drainage area above 17895

<sup>\*</sup>Average of 9a and 9b

Stream:Sandies2	Date: 9/25/02	Location: 13657	County: Dew	itt
	Metric		Value	Score
1. Total number of fish	species		12	3
2. Number of native cyp	orinid species		3	3
3. Number of benthic in	vertivore species		0	1
4. Number of sunfish sp	ecies		4	5
5. Percentage of individ	uals as tolerant specie	es (exc. G. affinis)	15.9	5
6. Percentage of individuals as omnivores			6	5
7. Percentage of individ	uals as insectivores		91	5
8. Percentage of individ	uals as piscivores		3	1
9. Number of individuals	s in sample		138	-
a. number of ind/sein	e haul		18.1	1
b. number of ind/min	b. number of ind/min electrofishing			1
10. Percentage of individuals as non-native species			0	5
11. Percentage of individuals with disease/anomalies			0	5
Aquatic Life Use: INT	ERMEDIATE		Total Points:	39

<sup>\*</sup>Average of 9a and 9b

Drainage area above 13657 ~ 1417.38 sq. km.

Stream:Sandies2	Date: 9/24/02	Location: 14935	County: Dew	itt	
	Metric		Value	Score	
1. Total number of fis	. Total number of fish species				
2. Number of native c	yprinid species		2	3	
3. Number of benthic	invertivore species		0	1	
4. Number of sunfish	species		7	5	
5. Percentage of indiv	riduals as tolerant sp	ecies (exc. G. affinis)	36.9	3	
6. Percentage of indiv	6. Percentage of individuals as omnivores			5	
7. Percentage of indiv	riduals as insectivore	s	74	5	
8. Percentage of indiv	viduals as piscivores		26	5	
9. Number of individu	als in sample		84	-	
a. number of ind/se	ine haul		no seine	3	
b. number of ind/m	in electrofishing		5.6	3	
10. Percentage of individuals as non-native species			2.4	3	
11. Percentage of ind	11. Percentage of individuals with disease/anomalies				
Aquatic Life Use: H	IIGH		Total Points:	41	

3\*

Drainage area above 14935 ~ 1752.62 sq. km.

<sup>\*</sup>Average 9a and 9b

Stream: Elm2 Date: 9/26/02 Location: 10002	County: Gonz	zales				
REGION 33******* Metric	Value	Score				
1. Total number of fish species 9						
2. Number of native cyprinid species	0	1				
3. Number of benthic invertevore species	0	1				
4. Number of sunfish species	4	3				
5. Number of intolerant species	0	1				
6. Percentage of individuals as tolerants (exc. G. affinis)	38.6	3				
7. Percentage of individuals as omnivores	14	3				
8. Percentage of individuals as invertivores	70	5				
9. Percentage of individuals as piscivores	16	5				
10. Number of individuals in sample	44	-				
a. number of ind/seine haul	no seine	1				
b. number of ind/min electrofishing	2.9	1				
11. Percentage of individuals as non-native species	0	5				
12. Percentage of individuals with disease/anomalies 0						
Aquatic Life Use: LIMITED	Total Points:	34				

1\*

1\*

\*Average 10a and 10b

Drainage area above 17893 ~ 228.47 sq. km.

Stream: Elm2 Date	: 9/26/02	Location: 10002		County: Gonz	zales	
REGION 32********	Metric			Value	Score	
1. Total number of fish specie	Total number of fish species					
2. Number of native cyprinid s	species			0	1	
3. Number of benthic invertev	ore species			0	1	
4. Number of sunfish species				4	5	
5. Percentage of individuals a	5. Percentage of individuals as tolerants (exc. G. affinis)					
6. Percentage of individuals as omnivores				14	3	
7. Percentage of individuals a	s invertivore	s		70	5	
8. Percentage of individuals a	s piscivores			16	5	
9. Number of individuals in sa	mple			44	-	
a. number of ind/seine ha	ul			no seine	1	
b. number of ind/min elect	trofishing			2.9	1	
10. Percentage of individuals as non-native species 0				0	5	
11. Percentage of individuals with disease/anomalies 0 5					5	
Aquatic Life Use: INTERM	EDIATE		·	Total Points:	37	

\*Average 10a and 10b

Drainage area above 17893 ~ 228.47 sq. km.

Stream:Elm2	Date: 9/25/02	Location: 17984		County: Gonzales		
	Metri	С		Value	Score	
1. Total number of	12	3				
2. Number of native	e cyprinid species			3	3	
3. Number of benth	ic invertevore species			1	3	
4. Number of sunfis	sh species			4	5	
5. Percentage of in	dividuals as tolerants (e	exc. G. affinis)		35.4	3	
6. Percentage of in	6. Percentage of individuals as omnivores			3.7	5	
7. Percentage of in	dividuals as invertivores	3		86	5	
8. Percentage of in	dividuals as piscivores			10	5	
9. Number of individual	duals in sample			82	-	
a. number of inc	d/seine haul			4.3	1	
b. number of inc	b. number of ind/min electrofishing			3.7	3	
10. Percentage of ind. as non-native species			0	5		
12. Percentage of i	12. Percentage of individuals with disease/anomalies					
Aquatic Life Use:	HIGH			Total Points:	44	

<sup>2\*</sup> 

Drainage area above 17894 ~ 349.68 sq. km.

<sup>\*</sup>Average of 9a and 9b

Stream:	Sandies (33)	Date: 4/16/03	Location: 17901	County: Gonzal	es
		Metric		Value	Score
1. Total #	of fish species			14	5
2.Total N	umber of cyprinid	species		3	3
3. Numbe	er of benthic invert	ivore species		1	1
4. Numbe	er of sunfish speci	es (exc. bass)		6	5
5. Numbe	er of intolerant spe	cies		0	1
6. Percer	6. Percentage of individuals as tolerants (exc. G.affinis)				3
7. Percer	7. Percentage of individuals as omnivores			0.9	5
8. Percer	ntage of individuals	s as insectivores		86	5
9. Percer	ntage of individuals	s as piscivores		13	5
10. Numl	oer of individuals i	n sample		~	~
a. Nu	mber of individual	s/seine hual		13.3	1
b. Nu	b. Number of individuals/min. electroshocking			2.1	1
11. Percentage of individuals as non-native species			3.5	1	
12. Perce	entage of individua	nolies	0	5	
Aquatic L	ife Use: INTERM	EDIATE		Total Points:	40

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Drainage area above 17901 ~ 150.90 sq. km.

Stream:	Sandies (32)	Date: 4/17/03	Location: 17895	County: Gonz	ales
		Metric		Value	Score
1. Total #	f of fish species			7	1
2.Total N	lumber of cyprinid	species		2	3
3. Numb	er of benthic inver	tivore species		0	1
4. Numb	er of sunfish speci	es (exc. bass)		3	3
5. Percei	ntage of individual	s as tolerants (exc. 0	G.affinis)	12.5	5
6. Percentage of individuals as omnivores			4.1	5	
7. Percei	ntage of individual	s as insectivores		83	5
8. Percei	ntage of individual	s as piscivores		12.5	5
9 Numb	er of individuals in	n sample		~	~
a. Nu	ımber of individual	s/seine hual		2.5	1
b. Number of individuals/min. electroshocking			0.6	1	
10. Percentage of individuals as non-native species			4.1	1	
11. Perc	entage of individua	als with disease/anor	nolies	0	5
Aquatic I	_ife Use: INTERM	IEDIATE		Total Points:	35

1\*

Drainage area above 17895 ~ 549.84 sq. km.

<sup>\*</sup>Average of 10a and 10b

<sup>\*</sup>Average of 9a and 9b

Stream: Sandies (32)	Date: 4/15/03	Location: 13657	County: Dewitt	
	Metric		Value	Score
1. Total # of fish species	7	1		
2.Total Number of cyprin	id species		3	3
3. Number of benthic inv	ertivore species		0	1
4. Number of sunfish spe	ecies (exc. bass)		3	3
5. Percentage of individu	als as tolerants (exc. G.a	affinis)	4.9	5
6. Percentage of individu	6. Percentage of individuals as omnivores			5
7. Percentage of individu	als as insectivores		98	5
8. Percentage of individu	als as piscivores		2	1
9 Number of individuals	in sample		~	~
a. Number of individu	als/seine hual		14.8	1
b. Number of individu	b. Number of individuals/min. electroshocking			1
10. Percentage of individuals as non-native species			0	5
11. Percentage of individ	11. Percentage of individuals with disease/anomolies			
Aquatic Life Use: INTER	RMEDIATE		Total Points:	35

<sup>\*</sup>Average of 9a and 9b

Drainage area above 13657 ~ 1417.38 sq. km.

Stream: Sandies (32)	Date: 4/17/03	Location 14935	County: Dewitt	
	Metric		Value	Score
1. Total # of fish species			8	3
2.Total Number of cyprinid s	pecies		2	3
3. Number of benthic invertive	ore species		0	1
4. Number of sunfish species	s (exc. bass)		4	5
5. Percentage of individuals	as tolerants (exc. G.a	affinis)	12.5	5
6. Percentage of individuals	as omnivores		0	5
7. Percentage of individuals as insectivores			87.5	5
8. Percentage of individuals	as piscivores		12.5	5
9 Number of individuals in s	sample		~	~
a. Number of individuals/	seine hual		2.8	1
b. Number of individuals/	min. electroshocking		0.47	1
10. Percentage of individuals as non-native species			0	5
11. Percentage of individuals	s with disease/anomo	olies	0	5
Aquatic Life Use: HIGH			Total Points:	43

\*Average of 9a and 9b

Drainage area above 14935 ~ 1752.62 sq. km.

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Stream: Elm (32) Date: 4/16/03 Location: 17893 County: Gonzales				
	Metric		Value	Score
1. Total # of fish speci	es		8	3
2.Total Number of cyp	rinid species		0	1
3. Number of benthic i	nvertivore species		1	3
4. Number of sunfish s	species (exc. bass)		5	5
<ol><li>Percentage of indivine</li></ol>	duals as tolerants (exc.	G.affinis)	68.9	1
6. Percentage of indivi	duals as omnivores		1.6	5
7. Percentage of indivi	duals as insectivores		75.4	5
8. Percentage of indivi	duals as piscivores		23	5
9 Number of individu	als in sample		~	~
a. Number of indiv	iduals/seine hual		1.5	1
b. Number of individuals/min. electroshocking			3.47	3
10. Percentage of indi	viduals as non-native sp	ecies	0	5
11. Percentage of indi	viduals with disease/and	omolies	0	5
Aquatic Life Use: INT	ERMEDIATE		Total Points:	40

2\*

Drainage area above 17893 ~ 228.47 sq. km.

Stream: Elm (33) Date: 4/16/03 Location: 17893	County: Gonzal	es
Metric	Value	Score
1. Total # of fish species	8	1
2.Total Number of cyprinid species	0	1
3. Number of benthic invertivore species	1	1
4. Number of sunfish species (exc. bass)	5	5
5. Number of intolerant species	0	1
6. Percentage of individuals as tolerants (exc. G.affinis)	68.9	1
7. Percentage of individuals as omnivores	1.6	5
8. Percentage of individuals as insectivores	75.4	5
9. Percentage of individuals as piscivores	23	5
10. Number of individuals in sample	~	~
a. Number of individuals/seine hual	1.5	1
b. Number of individuals/min. electroshocking	3.47	1
11. Percentage of individuals as non-native species	0	5
12. Percentage of individuals with disease/anomolies	0	5
Aquatic Life Use: INTERMEDIATE	Total Points:	36

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Drainagea area above 17893 ~ 228.47 sq. km

<sup>\*</sup>Average of 9a and 9b

<sup>\*</sup>Average of 9a and 9b

Stream: Elm	(32) Date: 4/17/03	Location: 17894	County: Gonzal	es
	Metric		Value	Score
1. Total # of fish	Total # of fish species			5
2.Total Number	of cyprinid species		3	3
3. Number of be	enthic invertivore species		0	1
4. Number of su	unfish species (exc. bass)		6	5
5. Percentage o	of individuals as tolerants (ex	cc. G.affinis)	28	3
6. Percentage o	of individuals as omnivores		1.8	5
7. Percentage o	of individuals as insectivores		93.9	5
8. Percentage o	of individuals as piscivores		4.4	1
9 Number of ir	ndividuals in sample		~	~
a. Number o	of individuals/seine hual		13.2	1
b. Number o	of individuals/min. electrosho	ocking	2.3	1
10. Percentage	of individuals as non-native	species	0.9	5
11. Percentage	of individuals with disease/a	anomolies	0	5
Aquatic Life Us	e: INTERMEDIATE		Total Points:	39
*Average of 9a	and 9b			

Drainage area above 17894 ~ 349.68 sq. km.

Stream: Elm (32)	eam: Elm (32) Date: 7/29/03 Location: 17893 County: Gonzales			
	Metric		Value	Score
1. Total # of fish species	9	3		
2.Total Number of cyprir	nid species		1	1
3. Number of benthic inv	vertivore species		2	5
4. Number of sunfish sp	ecies (exc. bass)		4	5
5. Percentage of individu	5. Percentage of individuals as tolerants (exc. <i>G.affinis</i> )			
6. Percentage of individu	2.9	5		
7. Percentage of individu	85.6	5		
8. Percentage of individu	11.6	5		
9 Number of individuals	9 Number of individuals in sample			
a. Number of individ	uals/seine hual		4.3	1
b. Number of individ	2.87	1		
10. Percentage of individ	0	5		
11. Percentage of individ	0	5		
Aquatic Life Use: HIGH			Total Points:	45

1\*

Drainage area above 17893 ~ 228.47 sq. km.

Stream: Elm (33)	Date: 7/29/03	Location: 17893	County: Gonz	ales
	Metric		Value	Score
1. Total # of fish spec	cies		9	1
2.Total Number of cy	prinid species		1	1
3. Number of benthic	invertivore species		2	1
4. Number of sunfish	species (exc. bass)		4	3
5. Number of intolera	nt species		1	1
6. Percentage of indiv	viduals as tolerants (ex	c. <i>G.affinis</i> )	14.5	5
7. Percentage of indiv	viduals as omnivores		2.9	5
8. Percentage of indiv	viduals as insectivores		85.6	5
9. Percentage of indiv	viduals as piscivores		11.6	5
10. Number of individ	luals in sample			~
a. Number of indi	viduals/seine hual		4.3	1
b. Number of indi	viduals/min. electrosho	cking	2.87	1
11. Percentage of ind	lividuals as non-native	species	0	5
12. Percentage of ind	lividuals with disease/a	nomolies	0	5
Aquatic Life Use: IN	TERMEDIATE		Total Points:	38

1\*

Average of 10a and 10b

Drainage area above 17893 ~ 228.47 sq. km.

<sup>\*</sup>Average of 9a and 9b

Stream:	Elm (32)	Date:7/29/03	Location: 17894	County: Gonz	ales
		Metric		Value	Score
1. Total #	of fish specie	S		9	3
2.Total N	umber of cypri	inid species		2	3
3. Numbe	er of benthic in	vertivore species		0	1
4. Numbe	er of sunfish sp	pecies (exc. bass)		3	3
5. Percer	ntage of individ	luals as tolerants (exc	c. G.affinis)	11.4	5
6. Percer	ntage of individ	luals as omnivores		2.27	5
7. Percer	ntage of individ	luals as insectivores		89.8	5
8. Percer	ntage of individ	luals as piscivores		8	3
9 Numb	er of individua	ls in sample			~
a. Nu	mber of individ	luals/seine hual		3.8	1
b. Nu	mber of individ	luals/min. electroshoo	cking	4.3	3
10. Perce	entage of indivi	iduals as non-native s	species	0	5
11. Perce	entage of indiv	iduals with disease/ar	nomolies	0	5
Aquatic L	ife Use: INTE	RMEDIATE	_	Total Points:	40
		•	•	1	•

2\*

\*Average of 9a and 9b

Drainage area above 17894 ~ 349.68 sq. km.

Stream:	Sandies (33)	Date: 9/28/03	Location: 17901	County: Gonzal	es
		Metric		Value	Score
1. Total #	of fish species			14	3
2.Total N	umber of cyprinid	species		2	3
3. Numbe	er of benthic inver	ivore species		0	1
4. Numbe	er of sunfish speci	es (exc. bass)		8	5
5. Numbe	er of intolerant spe	cies		0	1
6. Percer	ntage of individual	s as tolerants (exc. <i>G</i>	.affinis)	22.82608696	5
7. Percer	ntage of individual	s as omnivores		17.17391304	1
8. Percer	ntage of individual	s as insectivores		81.08695652	5
9. Percer	ntage of individual	s as piscivores		1.739130435	1
10. Numl	oer of individuals i	n sample			~
a. Nu	mber of individual	s/seine hual		61.5	5
b. Nu	mber of individual	s/min. electroshockin	g	6.2	3
11. Perce	entage of individua	als as non-native spec	cies	0.216450216	5
12. Perce	entage of individua	ls with disease/anom	olies	0	5
Aquatic L	ife Use: INTERM	EDIATE		Total Points:	39

4

Drainage area above 17901 ~ 150.90 sq. km

Stream: Sandies (32)	Date: 9/29/03	Location: 178	95	County: Gonzal	es
	Metric			Value	Score
1. Total # of fish species				6	1
2.Total Number of cyprinid	species			1	1
3. Number of benthic inver	tivore species			0	1
4. Number of sunfish spec	ies (exc. bass)			2	3
5. Percentage of individual	ls as tolerants (exc. 6	G.affinis)		11.11111111	5
6. Percentage of individual	ls as omnivores			7.407407407	5
7. Percentage of individual	ls as insectivores			77.7777778	5
8. Percentage of individual	ls as piscivores			14.81481481	5
9 Number of individuals in	n sample				~
a. Number of individua	ls/seine hual			1	1
b. Number of individua	ls/min. electroshockir	ng		1.4	1
10. Percentage of individua	als as non-native spe	ecies		0	5
11. Percentage of individua	als with disease/anon	nolies		0	5
Aquatic Life Use: INTERM	MEDIATE	_		Total Points:	37

1\*

Drainage area above 17895 ~ 549.84 sq. km.

<sup>\*</sup>Average of 10a and 10b

<sup>\*</sup>Average of 9a and 9b

Stream: Sandi	es (32) Date:	9/28/03	Location: 13657	County: Dewitt	
	Met	tric		Value	Score
1. Total # of fish	species			8	3
2.Total Number o	of cyprinid species			2	3
3. Number of ber	nthic invertivore specie	s		0	1
4. Number of sur	ifish species (exc. bas	s)		2	3
5. Percentage of	individuals as tolerants	s (exc. <i>G.a</i>	ffinis )	18.60465116	5
6. Percentage of	individuals as omnivor	res		16.27906977	1
7. Percentage of	individuals as insective	ores		76.74418605	5
8. Percentage of	individuals as piscivor	es		6.976744186	3
9 Number of inc	lividuals in sample				~
a. Number of	individuals/seine hual			5.333333333	1
b. Number of	individuals/min. electro	oshocking		0.733333333	1
10. Percentage o	f individuals as non-na	ative specie	es	0	5
11. Percentage o	f individuals with disea	ase/anomo	ies	0	5
Aquatic Life Use	INTERMEDIATE			Total Points:	35

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Drainage area above 13657 ~ 1417.38 sq. km.

Stream: Sandies (32)	Date:9/29/03	Location 14935	County: Dewitt	
	Metric		Value	Score
Total # of fish species			7	1
2.Total Number of cyprinid s	species		1	1
3. Number of benthic inverti	vore species		0	1
4. Number of sunfish specie	es (exc. bass)		2	3
<ol><li>Percentage of individuals</li></ol>	as tolerants (exc. G.	affinis)	3.50877193	5
6. Percentage of individuals	as omnivores		3.50877193	5
7. Percentage of individuals	as insectivores		92.98245614	5
8. Percentage of individuals	as piscivores		3.50877193	1
9 Number of individuals in	sample			~
a. Number of individuals	/seine hual		7.5	1
b. Number of individuals	/min. electroshocking		1	1
10. Percentage of individual	s as non-native speci	es	0	5
11. Percentage of individual	s with disease/anomo	olies	0	5
Aquatic Life Use: LIMITED			Total Points:	33

1\*

\*Average of 9a and 9b

Drainage area above 14935 ~ 1752.62 sq. km.

<sup>\*</sup>Average of 9a and 9b

#### BIOTIC ASSESSMENT – BENTHIC MACROINVERTEBRATES

Species Lists and Preliminary Data Manipulation



Stream	Date	ID	Taxa	N=	Func.Gp.	Tolerance	HBI
Sandies	8/27/02	17901	Odonata-Coenagrionidae-Argia	2	Р	6	0.15
			Odonata-Lestidae-Lestes	5	-	-	-
			Ephemeroptera-Tricorythidae-Tricorythodes	5	CG	5	0.3125
Func.Gp	%		Ephemeroptera-Heptageniidae-Stenacron	2	SCR/CG	4	0.1
Р	19.7917		Ephemeroptera-Baetidae-Centroptilum	17	SCR/CG	2	0.425
SCR	25.3472		Ephemeroptera-Baetidae-Apobaetis	1	-	-	-
CG	50.3472		Hemiptera-Belostomatidae-Belostoma	2	Р	10	0.25
FC	2.08333		Megaloptera-Corydalidae-Corydalus	1	Р	6	0.075
SHR	2.43056		Trichoptera-Hydropsychidae-Cheumatopsyche	1	FC	6	0.075
	100		Coleoptera-Gyrinidae-Dineutus (A)	3	Р	5	0.1875
			Coleoptera-Hydrophilidae-Berosus (A)	3	Р	9	0.3375
			Coleoptera-Hydrophilidae-Tropisternus (L) (Berosus)	1	Р	9	0.1125
			Coleoptera-Elmidae-Stenelmis (A)	6	CG/SCR	7	0.525
			Coleoptera-Scirtidae-Cyphon (L)	7	CR/CG/SH	-	-
			Coleoptera-Hydrochidae (Hyrdophilidae)-Hydrochus (A)	7	CG	-	-
			Coleoptera-Dytiscidae-Laccodytes (A)	2	Р	-	-
			Coleoptera-Dryopidae-Helichus (A)	1	SCR/CG	4	0.05
			Coleoptera-Noteridae-Hydrocanthus (L)	1	-	-	-
			Diptera-Chironomidae	3	P/CG/FC	6	0.225
			Hirudinea	3	Р	8	0.3
			Hydracarina	1	Р	6	0.075
			Gastropoda (Limniophila)-Physidae-Physella	9	SCR	9	1.0125
			Amphipoda-Hyallelidae-Hyallela (CG-8)	16	CG	8	1.6
			Decapoda-Palemonidae-Paleomonetes	4	CG	4	0.2
		_	Total	96	80		6.0125
			Intolerant/Tolerant	0.67			
Stream	Date	ID	Таха	N=		Tolerance	НВІ
Stream Sandies	<b>Date</b> 8/27/02	ID 17895	<b>Taxa</b> Odonata-Coenagrionidae- <i>Argia</i>	<b>N=</b> 3	Р	6	0.1956522
			<b>Taxa</b> Odonata-Coenagrionidae- <i>Argia</i> Odonata-Macromiidae- <i>Macromia</i>	<b>N=</b> 3 1	P P	6 3	0.1956522 0.0326087
Sandies	8/27/02		<b>Taxa</b> Odonata-Coenagrionidae- <i>Argia</i> Odonata-Macromiidae- <i>Macromia</i> Odonata-Gomphidae- <i>Erpetogomphus</i>	<b>N=</b> 3 1 2	P P P	6 3 1	0.1956522 0.0326087 0.0217391
Sandies Func.Gp	8/27/02		<b>Taxa</b> Odonata-Coenagrionidae- <i>Argia</i> Odonata-Macromiidae- <i>Macromia</i> Odonata-Gomphidae- <i>Erpetogomphus</i> Ephemeroptera-Tricorythidae-Tricorythodes	N= 3 1 2	P P P CG	6 3 1 5	0.1956522 0.0326087 0.0217391 0.0543478
Sandies Func.Gp	% 14.8148		Taxa  Odonata-Coenagrionidae- <i>Argia</i> Odonata-Macromiidae- <i>Macromia</i> Odonata-Gomphidae- <i>Erpetogomphus</i> Ephemeroptera-Tricorythidae-Tricorythodes  Ephemeroptera-Isonychidae (Oligoneuriidae)- <i>Isonychia</i>	N= 3 1 2 1	P P P CG FC	6 3 1 5 3	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087
Sandies Func.Gp P SCR	% 14.8148 19.5988		Taxa  Odonata-Coenagrionidae-Argia  Odonata-Macromiidae-Macromia  Odonata-Gomphidae-Erpetogomphus  Ephemeroptera-Tricorythidae-Tricorythodes  Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia  Ephemeroptera-Heptageniidae-Stenacron	N= 3 1 2 1 1 6	P P P CG FC SCR/CG	6 3 1 5 3 4	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696
Func.Gp P SCR CG	% 14.8148 19.5988 23.3025		Taxa  Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis	N= 3 1 2 1 1 6 12	P P CG FC SCR/CG	6 3 1 5 3	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia	N= 3 1 2 1 1 6 12 4	P P CG FC SCR/CG SCR/CG P	6 3 1 5 3 4 4	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391
Func.Gp P SCR CG	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus	N= 3 1 2 1 1 6 12 4 3	P P CG FC SCR/CG SCR/CG P P	6 3 1 5 3 4 4 -	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche	N= 3 1 2 1 1 6 12 4 3 29	P P CG FC SCR/CG SCR/CG P P	6 3 1 5 3 4 4 - 6 6	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydrophilidae (Hydropsychidae)-Hydropsyche	N= 3 1 2 1 1 6 12 4 3 29 2	P P CG FC SCR/CG SCR/CG P P FC	6 3 1 5 3 4 4 - 6 6 5	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae)-Hydropsyche Trichoptera-Hydropsychidae-Smicridea	N= 3 1 2 1 1 6 12 4 3 29 2 10	P P CG FC SCR/CG SCR/CG P FC FC	6 3 1 5 3 4 4 - 6 6 5 4	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae (Hydropsychidae)-Hydropsyche Trichoptera-Hydropsychidae-Smicridea Coleoptera-Gyrinidae-Dineutus (L)	N= 3 1 2 1 1 6 12 4 3 29 2 10 3	P P CG FC SCR/CG SCR/CG P FC FC FC	6 3 1 5 3 4 4 - 6 6 5 4 5	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826 0.1630435
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae-Smicridea Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Elmidae-Hexacylloepus (A)	N= 3 1 2 1 1 6 12 4 3 29 2 10 3 3	P P CG FC SCR/CG SCR/CG P FC FC FC FC P CG/SCR	6 3 1 5 3 4 4 - 6 6 5 4 5 2	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826 0.1630435 0.0652174
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae-Smicridea Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Elmidae-Hexacylloepus (A)	N= 3 1 2 1 1 6 12 4 3 29 2 10 3 3 2	P P CG FC SCR/CG SCR/CG P P FC FC FC CG/SCR CG/SCR	6 3 1 5 3 4 4 - 6 6 5 4 5 2 2	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826 0.1630435 0.0652174 0.0434783
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae-Gheumatopsyche Trichoptera-Hydropsychidae-Smicridea Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Elmidae-Hexacylloepus (A) Coleoptera-Elmidae-Microcylloepus (A)	N= 3 1 2 1 1 6 12 4 3 29 2 10 3 3 2 12	P P CG FC SCR/CG SCR/CG P FC FC FC CG/SCR CG/SCR CG/SCR	6 3 1 5 3 4 4 - 6 6 5 4 5 2 2 2	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826 0.1630435 0.0652174
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae-Smicridea Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Elmidae-Hexacylloepus (A) Coleoptera-Elmidae-Microcylloepus (A) Coleoptera-Elmidae-Neoelmis (A) Coleoptera-Scirtidae-Cyphon (L)	N= 3 1 2 1 1 6 12 4 3 29 2 10 3 3 2 12 11	P P CG FC SCR/CG P FC FC FC CG/SCR CG/SCR CG/SCR CR/CG/SCH	6 3 1 5 3 4 4 - 6 6 5 4 5 2 2 2	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826 0.1630435 0.0652174 0.0434783
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae-Smicridea Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Elmidae-Hexacylloepus (A) Coleoptera-Elmidae-Neoelmis (A) Coleoptera-Scirtidae-Cyphon (L) Coleoptera-Hydrochidae (Hydrophilidae)-Hydrochus (A)	N= 3 1 2 1 1 6 12 4 3 29 2 10 3 3 2 11 1	P P CG FC SCR/CG P FC FC FC CG/SCR CG/SCR CG/SCR CG/SCR	6 3 1 5 3 4 4 - 6 6 5 4 5 2 2 2	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826 0.1630435 0.0652174 0.0434783 0.2608696 - -
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae-Smicridea Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Elmidae-Hexacylloepus (A) Coleoptera-Elmidae-Neoelmis (A) Coleoptera-Scirtidae-Cyphon (L) Coleoptera-Hydrochidae (Hydrophilidae)-Hydrochus (A) Amphipoda-Hyallelidae-Hyallela (CG-8)	N= 3 1 2 1 1 6 12 4 3 29 2 10 3 3 2 11 1 1 1	P P CG FC SCR/CG P FC FC FC CG/SCR CG/SCR CG/SCR CG/SCR CG/CG/SH CG	6 3 1 5 3 4 4 - 6 6 5 4 5 2 2 2 - 8	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826 0.1630435 0.0652174 0.0434783 0.2608696 - - 0.0869565
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae-Smicridea Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Elmidae-Hexacylloepus (A) Coleoptera-Elmidae-Microcylloepus (A) Coleoptera-Elmidae-Neoelmis (A) Coleoptera-Scirtidae-Cyphon (L) Coleoptera-Hydrochidae (Hydrophilidae)-Hydrochus (A) Amphipoda-Hyallelidae-Hyallela (CG-8) Decapoda-Cambaridae	N= 3 1 2 1 1 6 12 4 3 29 2 10 3 3 2 11 1 1 1 1	P P CG FC SCR/CG P FC FC FC CG/SCR CG/SCR CG/SCR CG/SCR CG/SCR CG CG CG	6 3 1 5 3 4 4 - 6 6 5 4 5 2 2 2	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826 0.1630435 0.0652174 0.0434783 0.2608696 - - 0.0869565 0.0543478
Func.Gp P SCR CG FC	% 14.8148 19.5988 23.3025 38.8889 3.39506		Taxa Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Erpetogomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Isonychidae (Oligoneuriidae)-Isonychia Ephemeroptera-Heptageniidae-Stenacron Ephemeroptera-Baetidae-Baetis Hemiptera-Veliidae-Rhagovelia Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Hydropsychidae-Smicridea Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Elmidae-Hexacylloepus (A) Coleoptera-Elmidae-Neoelmis (A) Coleoptera-Scirtidae-Cyphon (L) Coleoptera-Hydrochidae (Hydrophilidae)-Hydrochus (A) Amphipoda-Hyallelidae-Hyallela (CG-8)	N= 3 1 2 1 1 6 12 4 3 29 2 10 3 3 2 11 1 1 1	P P CG FC SCR/CG P P FC FC FC CG/SCR CG/SCR CG/SCR CG/SCR CG CG CG 92	6 3 1 5 3 4 4 - 6 6 5 4 5 2 2 2 - 8	0.1956522 0.0326087 0.0217391 0.0543478 0.0326087 0.2608696 0.5217391 - 0.1956522 1.8913043 0.1086957 0.4347826 0.1630435 0.0652174 0.0434783 0.2608696 - - 0.0869565

Stream	Date	ID	Taxa	N=	Func.Gp.	Tolerance	нві
Sandies	8/26/02	13657	Odonata-Coenagrionidae-Argia	8	Р	6	0.4948454
			Ephemeroptera-Tricorythidae-Tricorythodes	1	CG	5	0.0515464
			Ephemeroptera-Leptophlebiidae-Thraulodes	1	CG/SCR	2	0.0206186
Func.Gp	%		Ephemeroptera-Heptageniidae-Stenacron	66	SCR/CG	4	2.7216495
Р	16.8285		Hemiptera-Hydrometridae-Hydrometra	2	-	-	-
SCR	38.9968		Megaloptera-Corydalidae-Corydalus	1	Р	6	0.0618557
CG	42.233		Coleoptera-Gyrinidae-Dineutus (A)	5	Р	5	0.257732
FC	0.32362		Coleoptera-Hydrophilidae-Tropisternus (L) (Berosus)	3	Р	9	0.2783505
SHR	1.61812		Coleoptera-Hydrophilidae-Helobata (A)	1	-	-	-
	100		Coleoptera-Elmidae-Stenelmis (A)	7	CG/SCR	7	0.5051546
			Coleoptera-Elmidae-Stenelmis (L)	1	CG/SCR	7	0.0721649
			Coleoptera-Scirtidae-Cyphon (L)	5	CR/CG/SH	-	-
			Coleoptera-Hydrochidae (Hydrophilidae)-Hydrochus (A)	1	CG	-	-
			Diptera-Chironomidae	1	P/CG/FC	6	0.0618557
			Gastropoda (Limnophila)-Physidae-Physella	1	SCR	9	0.0927835
			Amphipoda-Hyallelidae-Hyallela (CG-8)	2	CG	8	0.1649485
		_	Total	103	97		4.7835052
			Intolerant/Tolerant	3.04			
Stream	Date	ID	Taxa	N=	Func.Gp.	Tolerance	HBI
Sandies	8/28/02	14935	Odonata-Coenagrionidae-Argia	1	Р	6	0.0618557
			Ephemeroptera-Tricorythidae-Tricorythodes	3	CG	5	0.1546392
			Ephemeroptera-Leptophlebiidae-Thraulodes	1	CG/SCR	2	0.0206186
Func.Gp	%		Ephemeroptera-Heptageniidae-Stenacron	10	SCR/CG	4	0.4123711
Р	20.1031		Ephemeroptera-Baetidae-Centroptilum	26	SCR/CG	2	0.5360825
SCR	33.8488		Ephemeroptera-Baetidae-Procleon (Cleon)	1	-	-	-
CG	42.0962		Hemiptera-Belostomatidae-Belostoma	8	Р	10	0.8247423
FC	1.03093		Hemiptera-Hydrometridae-Hydrometra	1	-	-	-
SHR	2.92096		Hemiptera-Gerridae-Limnoporus	1	-	-	-
	100		Coleoptera-Hydrophilidae-Berosus (A)	8	Р	9	0.742268
			Coleoptera-Scirtidae-Cyphon (L)	7	CR/CG/SH	-	-
			Coleoptera-Hydrochidae (Hydrophiladae)-Hydrochus (A)	4	CG	-	-
			Coleoptera-Dytiscidae-Laccodytes (A)	2	-	-	-
			Coleoptera-Dryopidae-Helichus (A)	14	SCR/CG	4	0.5773196
			Coleoptera-Haliplidae-Peltodytes	1	SHR/P	8	0.0824742
			Diptera-Chironomidae	3	P/CG/FC	6	0.185567
			Hirudinea	1	Р	8	0.0824742
			Gastropoda (Limnophila)-Physidae-Physella	5	SCR	9	0.4639175
			Amphipoda-Hyallelidae-Hyallela (CG-8)	2	CG	8	0.1649485
			Decapoda-Palemonidae-Paleomonetes	3	CG	4	0.1237113
		_		3 97			

Stream	Date	ID	Таха	N=	Func.Gp.	Tolerance	нві
Elm	8/28/02	17893	Odonata-Coenagrionidae-Argia	7	Р	6	0.4468085
			Ephemeroptera-Tricorythidae-Tricorythodes	16	CG	5	0.8510638
			Ephemeroptera-Heptageniidae-Stenacron	43	SCR/CG	4	1.8297872
Func.Gp	%		Ephemeroptera-Baetidae-Centroptilum	6	SCR/CG	2	0.1276596
Р	12.28956		Ephemeroptera-Baetidae-Baetis	1	SCR/CG	4	0.0425532
SCR	28.45118		Ephemeroptera-Ephemeridae-Hexagenia	1	CG	6	0.0638298
CG	55.38721		Hemiptera-Belostomatidae-Belostoma	1	Р	10	0.106383
FC	1.683502		Hemiptera-Nepidae-Nepa (Ranatra)	1	-	-	-
SHR	2.188552		Coleoptera-Gyrinidae-Dineutus (L)	1	Р	5	0.0531915
	100		Coleoptera-Scirtidae-Cyphon (L)	5	CR/CG/SH	-	-
			Coleoptera-Dryopidae-Helichus (A)	1	SCR/CG	4	0.0425532
			Coleoptera-Haliplidae-Peltodytes	1	SHR/P	8	0.0851064
			Diptera-Chironomidae	5	P/CG/FC	6	0.3191489
			Hirudinea	1	Р	8	0.0851064
			Gastropoda (Limnophila)-Physidae-Physella	1	SCR	9	0.0957447
			Gastropoda (Limnophila)-Planorbidae-Biomphalaria	2	-	-	-
			Amphipoda-Hyallelidae-Hyallela (CG-8)	9	CG	8	0.7659574
			Total	99	94		4.9148936
			Intolerant/Tolerant	2.62			
				102			
Stream	Date	ID	Таха	N=	Func.Gp.	Tolerance	HBI
Elm	8/29/02	17894	Odonata-Macromiidae-Macromia	1	Р	3	0.0285714
			Ephemeroptera-Tricorythidae-Tricorythodes	2	CG	5	0.0952381
			Ephemeroptera-Heptageniidae-Stenacron	28	SCR/CG	4	1.0666667
Func.Gp	%		Ephemeroptera-Baetidae-Baetis	16	SCR/CG	4	0.6095238
Р	31.13208		Hemiptera-Corixidae-Trichocorixa	1	P/CG	-	-
SCR	21.22642		Trichoptera-Hydropsychidae-Cheumatopsyche	17	FC	6	0.0571429
CG	35.37736		Trichoptera-Hydrophilidae (Hydropsychidae)-Hydropsyche	1	FC	5	0.3333333
FC	12.26415		Trichoptera-Hydropsychidae-Smicridea	7	FC	4	0.1904762
SHR	0		Coleoptera-Gyrinidae-Dineutus (A)	5	Р	5	0.0952381
	100		Coleoptera-Gyrinidae-Dineutus (L)	2	Р	5	0.047619
			Coleoptera-Hydrophilidae-Berosus (A)	1	Р	9	1.5428571
			Coleoptera-Dryopidae-Helichus (A)	18	SCR/CG	4	0.0380952
			Diptera-Chironomidae	1	P/CG/FC	6	0.1142857
			Hirudinea	2	Р	8	0.152381
			Decapoda-Palemonidae-Paleomonetes	4	CG	4	0.152381
			Total	106	105		4.5238095
			Intolerant/Tolerant	4			

Stream	Date	ID	Таха	N=	Func.Gp.	Tolerance	нві
Sandies 2	9/26/02	17901	Odonata-Coenagrionidae-Argia	1	Р	6	0.075
			Odonata-Macromiidae-Macromia	8	Р	3	0.3
Func.Gp	%		Odonata-Gomphidae-Progomphus	2	Р	5	0.125
Р	26.3374		Odonata-Gomphidae-Erpetogomphus	1	Р	1	0.0125
SCR	7.81893		Odonata-Cordiuliidae-Epitheca	1	-	-	-
CG	27.9835		Odonata-Libellulidae-Perithemis	1	Р	4	0.05
FC	26.3374		Ephemeroptera-Tricorythidae-Tricorythodes	2	CG	5	0.125
SHR	11.5226		Ephemeroptera-Heptageniidae-Stenacron	2	SCR/CG	4	0.1
	100		Ephemeroptera-Baetidae-Baetis	8	SCR/CG	4	0.4
			Hemiptera-Hydrometridae-Hydrometra	1	-	-	-
			Trichoptera-Hydropsychidae-Cheumatopsyche	7	FC	6	0.525
			Coleoptera-Hydrophilidae-Berosus	4	Р	9	0.45
			Coleoptera-Scirtidae-Cyphon (L)	1	SCR/CG/SHR	-	-
			Diptera-Chironomidae	13	P/CG/FC	6	0.975
			Diptera-Simulidea-Simulium	2	FC	4	0.1
			Oligochaeta	1	CG	8	0.1
			Gastropoda-Physidae- <i>Physella</i>	1	SCR	9	0.1125
			Bivalvia (Heterodonta)-Corbiculidae-Corbiclua	8	FC	6	0.6
			Amphipoda-Hyallelidae-Hyallela	18	CG/SHR	8	1.8
			Decapoda-Palaemonidae-Paleomonetes	1	CG	4	0.05
		_	Total	81	80		5.9
			Intolerant/Tolerant	0.50943			
Stream	Date	ID	Taxa	N=	Func.Gp.	Tolerance	HBI
Sandies 2	9/24/02	17895	Odonata-Calopterygidae-Hetaerina	1	Р	6	0.0571428
			Ephemeroptera-Leptophlebiidae-Farrodes	1	CG/SCR	2	0.0190476
			Ephemeroptera-Heptageniidae-Stenacron	10	SCR/CG	4	0.3809523
Func.Gp	%		Ephemeroptera-Baetidae-Baetis	9	SCR/CG	4	0.3428571
Р	5.71429		Ephemeroptera-Baetidae-Fallceon	14	SCR/CG	4	0.5333333
SCR	20		Megaloptera-Corydalidae-Corydalus	2	Р	6	0.1142857
CG	21.9048		Trichoptera-Hydropsychidae-Cheumatopsyche	6	FC	6	0.3428571
FC	52.381		Trichoptera-Hydropsychidae-Hydropsyche	1	FC	5	0.0476190
SHR	0		Trichoptera-Hydropsychidae-Smicridea	30	FC	4	1.1428571
	100		Coleoptera-Gyrinidae-Dineutus (L)	1	Р	5	0.0476190
			Coleoptera-Elmidae-Microcylloepus (A)	1	CG/SCR	2	0.0190476
			Coleoptera-Elmidae-Microcylloepus (L)	1	CG/SCR	2	0.0190476
			Coleoptera-Elmidae-Neoelmis	6	CG/SCR	2	0.1142857
			Diptera-Chironomidae	6	P/CG/FC	6	0.3428571
			Diptera-Simulidae-Simulium	16	FC	4	0.6095238
		-	Diptera-Simulidae-Simulium  Total	16 105	FC	4	- 0.6095238° 4.13333333

Stream	Date	ID	Taxa	N=	Func.Gp.	Tolerance	HBI
Sandies 2	9/25/02	13657	Odonata-Coenagrionidae-Argia	1	P	6	0.26086957
			Odonata-Calopterygidae-Hetaerina	2	Р	6	0.52173913
			Odonata-Macromiidae-Macromia	1	Р	3	0.13043478
			Odonata-Gomphidae-Progomphus	1	Р	5	0.2173913
			Ephemeroptera-Tricorythidae-Tricorythodes	2	CG	5	0.43478261
Func.Gp	%		Ephemeroptera-Heptageniidae-Stenacron	6	SCR/CG	4	1.04347826
Р	27.5362		Ephemeroptera-Baetidae-Baetis	4	SCR/CG	4	0.69565217
SCR	36.9565		Trichoptera-Polycentropidae-Cyrnellus	1	-	-	-
CG	34.058		Coleoptera-Elmidae-Microcylloepus (L)	1	CG/SCR	2	0.08695652
FC	1.44928		Diptera-Chironomidae	1	P/CG/FC	4	0.17391304
SHR	0		Hirudinea	1	Р	8	0.34782609
	100		Gastropoda-Physidae-Physella	3	SCR	9	1.17391304
			Total	23			5.08695652
			Intolerant/Tolerant	2.28571			
Stream	Date	ID	Таха	N=	Func.Gp.	Tolerance	НВІ
	<b>Date</b> 9/25/02	ID 14935	<b>Taxa</b> Odonata-Coenagrionidae- <i>Argia</i>	<b>N=</b> 8	Func.Gp.	Tolerance 6	<b>HBI</b> 0.96
					•		
			Odonata-Coenagrionidae- <i>Argia</i>	8	P	6	0.96
			Odonata-Coenagrionidae- <i>Argia</i> Odonata-Macromiidae- <i>Macromia</i>	8 1	P	6	0.96 0.06
Sandies 2	9/25/02		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus	8 1 4	Р Р	6 3	0.96 0.06 -
Sandies 2 Func.Gp	9/25/02		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes	8 1 4 9	P P - CG	6 3 - 5	0.96 0.06 - 0.9
Sandies 2 Func.Gp	9/25/02 % 29.3333		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron	8 1 4 9 4	P P - CG SCR/CG	6 3 - 5 4	0.96 0.06 - 0.9 0.32
Sandies 2 Func.Gp P SCR	9/25/02 % 29.3333 20		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron Coleoptera-Gyrinidae-Dineutus (L)	8 1 4 9 4 1	P P CG SCR/CG	6 3 - 5 4 5	0.96 0.06 - 0.9 0.32 0.1
Func.Gp P SCR CG	9/25/02 % 29.3333 20 43.3333		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Hydrophilidae-Berosus (A)	8 1 4 9 4 1	P P CG SCR/CG P	6 3 5 4 5 9	0.96 0.06 - 0.9 0.32 0.1 0.18
Func.Gp P SCR CG FC	% 29.3333 20 43.3333 7.33333		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Hydrophilidae-Berosus (A) Coleoptera-Hydrophilidae-Berosus (L)	8 1 4 9 4 1 1	P P CG SCR/CG P P	6 3 5 4 5 9	0.96 0.06 - 0.9 0.32 0.1 0.18
Func.Gp P SCR CG FC	% 29.3333 20 43.3333 7.33333 0		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Hydrophilidae-Berosus (A) Coleoptera-Hydrophilidae-Berosus (L) Coeloptera-Elmidae-Stenelmus (A)	8 1 4 9 4 1 1 1	P P CG SCR/CG P P P CG/SCR	6 3 5 4 5 9	0.96 0.06 - 0.9 0.32 0.1 0.18 0.18
Func.Gp P SCR CG FC	% 29.3333 20 43.3333 7.33333 0		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Hydrophilidae-Berosus (A) Coleoptera-Hydrophilidae-Berosus (L) Coeloptera-Elmidae-Stenelmus (A) Coleoptera-Elmidae-Dubiraphia (L)	8 1 4 9 4 1 1 1 9	P P CG SCR/CG P P CG/SCR CG/SCR	6 3 5 4 5 9 9	0.96 0.06 - 0.9 0.32 0.1 0.18 0.18 1.26 0.1
Func.Gp P SCR CG FC	% 29.3333 20 43.3333 7.33333 0		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Hydrophilidae-Berosus (A) Coleoptera-Hydrophilidae-Berosus (L) Coeloptera-Elmidae-Stenelmus (A) Coleoptera-Elmidae-Dubiraphia (L) Diptera-Chironomidae	8 1 4 9 4 1 1 1 9	P P CG SCR/CG P P CG/SCR CG/SCR P/CG/FC	6 3 5 4 5 9 9 7 5 6	0.96 0.06 - 0.9 0.32 0.1 0.18 0.18 1.26 0.1
Func.Gp P SCR CG FC	% 29.3333 20 43.3333 7.33333 0		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Hydrophilidae-Berosus (A) Coleoptera-Hydrophilidae-Berosus (L) Coeloptera-Elmidae-Stenelmus (A) Coleoptera-Elmidae-Dubiraphia (L) Diptera-Chironomidae Hirudinea	8 1 4 9 4 1 1 1 9 1 5	P P CG SCR/CG P P CG/SCR CG/SCR CG/SCR P/CG/FC P	6 3 5 4 5 9 9 7 5 6 8	0.96 0.06 - 0.9 0.32 0.1 0.18 0.18 1.26 0.1 0.6 0.16
Func.Gp P SCR CG FC	% 29.3333 20 43.3333 7.33333 0		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Hydrophilidae-Berosus (A) Coleoptera-Hydrophilidae-Berosus (L) Coeloptera-Elmidae-Stenelmus (A) Coleoptera-Elmidae-Dubiraphia (L) Diptera-Chironomidae Hirudinea Oligochaeta	8 1 4 9 4 1 1 1 9 1 5 1	P P CG SCR/CG P P CG/SCR CG/SCR CG/SCR P/CG/FC P CG	6 3 5 4 5 9 9 7 5 6 8 8	0.96 0.06 - 0.9 0.32 0.1 0.18 1.26 0.1 0.6 0.16 0.64
Func.Gp P SCR CG FC	% 29.3333 20 43.3333 7.33333 0		Odonata-Coenagrionidae-Argia Odonata-Macromiidae-Macromia Odonata-Gomphidae-Arigomphus Ephemeroptera-Tricorythidae-Tricorythodes Ephemeroptera-Heptageniidae-Stenacron Coleoptera-Gyrinidae-Dineutus (L) Coleoptera-Hydrophilidae-Berosus (A) Coleoptera-Hydrophilidae-Berosus (L) Coeloptera-Elmidae-Stenelmus (A) Coleoptera-Elmidae-Dubiraphia (L) Diptera-Chironomidae Hirudinea Oligochaeta Gastropoda-Physidae-Physella	8 1 4 9 4 1 1 1 9 1 5 1 4 3	P P CG SCR/CG P P CG/SCR CG/SCR P/CG/FC P CG SCR	6 3 5 4 5 9 9 7 5 6 8 8	0.96 0.06 - 0.9 0.32 0.1 0.18 1.26 0.1 0.6 0.16 0.64 0.54

Stream	Date	ID	Таха	N=	Func.Gp.	Tolerance	нві
Elm 2	9/26/02	17893	Odonata-Coenagrionidae-Argia	9	Р	6	0.6835443
			Odonata-Macromiidae-Macromia	1	Р	3	0.03797468
			Ephemeroptera-Tricorythidae-Tricorythodes	2	CG	5	0.12658228
Func.Gp	%		Ephemeroptera-Heptageniidae-Stenacron	16	SCR/CG	4	0.81012658
Р	22.91667		Ephemeroptera-Baetidae-Baetis	1	SCR/CG	4	0.05063291
SCR	13.54167		Megaloptera-Sialidae-Sialis	2	Р	4	0.10126582
CG	16.45833		Trichoptera-Hydropsychidae-Cheumatopsyche	34	FC	6	2.58227848
FC	46.66667		Coleoptera-Scirtidae-Cyphon	1	SCR/CG/SHR	-	-
SHR	0.416667		Coleoptera-Dytiscidae-Uvarus	2	-	-	-
	100		Diptera-Chironomidae	7	P/CG/FC	6	0.53164557
			Hirudinea	4	Р	8	0.40506329
			Gastropoda (Limnophila)-Physidae-Physella	2	SCR	9	0.2278481
			Bivalvia (Heterodonta)-Corbiculidae-Corbiclua	1	FC	6	0.07594937
			Total	80	79		5.63291139
			Intolerant/Tolerant	0.38596			
Stream	Date	ID	Taxa	N=	Func.Gp.	Tolerance	HBI
Elm 2	9/25/02	17894	Odonata-Coenagrionidae-Argia	7	Р	6	0.56756757
Elm 2	9/25/02		Odonata-Coenagrionidae- <i>Argia</i> Odonata-Macromiidae- <i>Macromia</i>	3	•	6 3	0.56756757 0.12162162
Elm 2	9/25/02		· ·		Р		
Elm 2	9/25/02		Odonata-Macromiidae- <i>Macromia</i>	3	P P	3	0.12162162
			Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i>	3 36	P P SCR/CG	3 4	0.12162162 1.94594595
Func.Gp	%		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i>	3 36 1	P P SCR/CG P	3 4 10	0.12162162 1.94594595 0.13513514
Func.Gp P	% 21.62162		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus	3 36 1 1	P P SCR/CG P P	3 4 10 6	0.12162162 1.94594595 0.13513514 0.08108108
Func.Gp P SCR	% 21.62162 31.75676		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae- <i>Cheumatopsyche</i>	3 36 1 1	P P SCR/CG P P	3 4 10 6 6	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108
Func.Gp P SCR CG	% 21.62162 31.75676 37.83784		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae- <i>Cheumatopsyche</i> Trichoptera-Polycentropidae- <i>Cyrnellus</i>	3 36 1 1 1 2	P P SCR/CG P P FC	3 4 10 6 6	0.12162162 1.94594595 0.13513514 0.08108108 -
Func.Gp P SCR CG FC	% 21.62162 31.75676 37.83784 5.405405		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae- <i>Cheumatopsyche</i> Trichoptera-Polycentropidae- <i>Cyrnellus</i> Coleoptera-Hydrophilidae- <i>Berosus</i> (L)	3 36 1 1 1 2	P P SCR/CG P P FC	3 4 10 6 6	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108 - 0.12162162
Func.Gp P SCR CG FC	% 21.62162 31.75676 37.83784 5.405405 3.378378		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae- <i>Cheumatopsyche</i> Trichoptera-Polycentropidae- <i>Cyrnellus</i> Coleoptera-Hydrophilidae- <i>Berosus</i> (L) Coleoptera-Elmidae- <i>Stenelmis</i> (L)	3 36 1 1 1 2 1 3	P P SCR/CG P FC FC CG/SCR	3 4 10 6 6 - 9 7	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108 - 0.12162162 0.28378378
Func.Gp P SCR CG FC	% 21.62162 31.75676 37.83784 5.405405 3.378378		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae- <i>Cheumatopsyche</i> Trichoptera-Polycentropidae- <i>Cyrnellus</i> Coleoptera-Hydrophilidae- <i>Berosus</i> (L) Coleoptera-Elmidae- <i>Stenelmis</i> (L) Coleoptera-Dryopidae-Helichus	3 36 1 1 1 2 1 3 2	P P SCR/CG P FC - P CG/SCR SCR/CG	3 4 10 6 6 - 9 7 4	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108 - 0.12162162 0.28378378 0.10810811
Func.Gp P SCR CG FC	% 21.62162 31.75676 37.83784 5.405405 3.378378		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae- <i>Cheumatopsyche</i> Trichoptera-Polycentropidae- <i>Cyrnellus</i> Coleoptera-Hydrophilidae- <i>Berosus</i> (L) Coleoptera-Elmidae- <i>Stenelmis</i> (L) Coleoptera-Dryopidae-Helichus Diptera-Chironomidae Hirudinea Oligochaeta	3 36 1 1 1 2 1 3 2 6 1 1	P P SCR/CG P P FC - P CG/SCR SCR/CG P/CG/FC	3 4 10 6 6 7 4 6	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108 - 0.12162162 0.28378378 0.10810811 0.48648649
Func.Gp P SCR CG FC	% 21.62162 31.75676 37.83784 5.405405 3.378378		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae- <i>Cheumatopsyche</i> Trichoptera-Polycentropidae- <i>Cyrnellus</i> Coleoptera-Hydrophilidae- <i>Berosus</i> (L) Coleoptera-Elmidae- <i>Stenelmis</i> (L) Coleoptera-Dryopidae-Helichus Diptera-Chironomidae Hirudinea Oligochaeta Gastropoda (Limnophila)-Physidae- <i>Physella</i>	3 36 1 1 1 2 1 3 2 6 1	P P SCR/CG P FC P CG/SCR SCR/CG P/CG/FC P	3 4 10 6 6 7 4 6 8	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108 - 0.12162162 0.28378378 0.10810811 0.48648649 0.10810811
Func.Gp P SCR CG FC	% 21.62162 31.75676 37.83784 5.405405 3.378378		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae- <i>Cheumatopsyche</i> Trichoptera-Polycentropidae- <i>Cyrnellus</i> Coleoptera-Hydrophilidae- <i>Berosus</i> (L) Coleoptera-Elmidae- <i>Stenelmis</i> (L) Coleoptera-Dryopidae-Helichus Diptera-Chironomidae Hirudinea Oligochaeta	3 36 1 1 1 2 1 3 2 6 1 1	P P SCR/CG P FC P CG/SCR SCR/CG P/CG/FC P CG	3 4 10 6 6 9 7 4 6 8 8	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108 - 0.12162162 0.28378378 0.10810811 0.48648649 0.10810811 0.10810811
Func.Gp P SCR CG FC	% 21.62162 31.75676 37.83784 5.405405 3.378378		Odonata-Macromiidae- <i>Macromia</i> Ephemeroptera-Heptageniidae- <i>Stenacron</i> Hemiptera-Belostomatidae- <i>Belostoma</i> Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae- <i>Cheumatopsyche</i> Trichoptera-Polycentropidae- <i>Cyrnellus</i> Coleoptera-Hydrophilidae- <i>Berosus</i> (L) Coleoptera-Elmidae- <i>Stenelmis</i> (L) Coleoptera-Dryopidae-Helichus Diptera-Chironomidae Hirudinea Oligochaeta Gastropoda (Limnophila)-Physidae- <i>Physella</i>	3 36 1 1 1 2 1 3 2 6 1 1 3	P P SCR/CG P FC - P CG/SCR SCR/CG P/CG/FC P CG SCR	3 4 10 6 6 9 7 4 6 8 8	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108 - 0.12162162 0.28378378 0.10810811 0.48648649 0.10810811 0.10810811 0.36486486
Func.Gp P SCR CG FC	% 21.62162 31.75676 37.83784 5.405405 3.378378		Odonata-Macromiidae-Macromia Ephemeroptera-Heptageniidae-Stenacron Hemiptera-Belostomatidae-Belostoma Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Polycentropidae-Cyrnellus Coleoptera-Hydrophilidae-Berosus (L) Coleoptera-Elmidae-Stenelmis (L) Coleoptera-Dryopidae-Helichus Diptera-Chironomidae Hirudinea Oligochaeta Gastropoda (Limnophila)-Physidae-Physella Bivalvia (Heterodonta)-Corbiculidae-Corbiclua	3 36 1 1 1 2 1 3 2 6 1 1 3 1	P P SCR/CG P FC - P CG/SCR SCR/CG P/CG/FC P CG SCR FC	3 4 10 6 6 7 4 6 8 8 9	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108 - 0.12162162 0.28378378 0.10810811 0.48648649 0.10810811 0.36486486 0.08108108
Func.Gp P SCR CG FC	% 21.62162 31.75676 37.83784 5.405405 3.378378		Odonata-Macromiidae-Macromia Ephemeroptera-Heptageniidae-Stenacron Hemiptera-Belostomatidae-Belostoma Megaloptera-Corydalidae-Corydalus Trichoptera-Hydropsychidae-Cheumatopsyche Trichoptera-Polycentropidae-Cyrnellus Coleoptera-Hydrophilidae-Berosus (L) Coleoptera-Elmidae-Stenelmis (L) Coleoptera-Dryopidae-Helichus Diptera-Chironomidae Hirudinea Oligochaeta Gastropoda (Limnophila)-Physidae-Physella Bivalvia (Heterodonta)-Corbiculidae-Corbiclua Amphipoda-Hyallelidae-Hyallela	3 36 1 1 1 2 1 3 2 6 1 1 3 1 5	P P SCR/CG P FC P CG/SCR SCR/CG P/CG/FC P CG SCR FC CG/SHR	3 4 10 6 6 7 4 6 8 8 9 6 8	0.12162162 1.94594595 0.13513514 0.08108108 0.08108108 - 0.12162162 0.28378378 0.10810811 0.48648649 0.10810811 0.10810811 0.36486486 0.08108108 0.54054054

Stream: Sandies			Species	N=	Tolerance	FFG	HBI
Date: 4/16/03			Argia sp.	4	6	Р	0.179104478
Location: 17901			Archlestes	1		_	0
10013			Macromia	1	3	Р	0.02238806
			Stenacron	3	4	CG/SCR	0.089552239
			Isonychia	2	3	FC	0.044776119
			Callibaetis	13	4	CG	0.388059701
			Baetis	1	4	SCR/CG SCR/CG	0.029850746
			Caenis Perlesta	2 1	7	P SCR/CG	0.104477612
	FFG	%	Chimarra	27	3	FC	0 0.604477612
	Р	70 18.421	Hydrometra	1	5	PC	0.004477012
	SCR	4.386	Centrocorixa	2	_	P/CG	-
	CG	37.093	Dineutus (A)	4	- 5	P P	0.149253731
	FC	29.323	Dineutus (L)	3	5	P	0.111940299
	SHR	10.777	Tropisternus (A)	1	9	P	0.067164179
	Ornix	100	Stenelmis (A)	1	7	CG/SCR	0.052238806
		100	Cyphon (L)	1	-	SCR/CG/SHR	-
0.370902256			Laccophilus (L)	1	_	P	_
0.043857143			Laccophilus (A)	1	_	Р	_
0.010001110			Peltodytes (A)	1	8	SHR/P	0.059701493
			Chironomidae	21	6	P/CG/FC	0.940298507
			Physella	2	9	SCR	0.134328358
			Tricladida	1	7.5	P	0.055970149
			Corbicula	3	6	FC	0.134328358
			Hyalella	27	8	CG/SHR	1.611940299
			Paleomontes	11	4	CG	0.328358209
		_		134	1.04761905		5.108208955
Stream: Sandies			Species	N=	Tolerance	FFG	нві
Stream: Sandies Date: 4/17/03			<b>Species</b> Erpetogomphus			<b>FFG</b> P	
				N=	Tolerance		нві
Date: 4/17/03			Erpetogomphus	<b>N=</b> 1 1 5	Tolerance 1 4 4	P CG/SCR SCR/CG	<b>HBI</b> 0.013888889
Date: 4/17/03 Location: 17895	FFG	% <mark>_</mark>	Erpetogomphus Stenacron Fallceon Brachycercus	<b>N=</b> 1 1	Tolerance 1 4 4 7	P CG/SCR SCR/CG CG/SCR	HBI 0.013888889 0.055555556 0.277777778
Date: 4/17/03 Location: 17895	Р	26.389	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta	<b>N=</b> 1 1 5	Tolerance 1 4 4	P CG/SCR SCR/CG CG/SCR P	HBI 0.013888889 0.055555556 0.27777778 0.77777778
Date: 4/17/03 Location: 17895		26.389 11.806	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche	N= 1 1 5 8 1 1	Tolerance	P CG/SCR SCR/CG CG/SCR P FC	HBI 0.013888889 0.055555556 0.277777778
Date: 4/17/03 Location: 17895	P SCR CG	26.389 11.806 35.417	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L)	N= 1 1 5 8 1 1 1	Tolerance	P CG/SCR SCR/CG CG/SCR P FC P	HBI 0.013888889 0.055555556 0.277777778 0.777777778 0 0.0833333333 0.069444444
Date: 4/17/03 Location: 17895	P SCR CG FC	26.389 11.806 35.417 23.611	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A)	N= 1 1 5 8 1 1 1 1	Tolerance	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG	HBI 0.013888889 0.055555556 0.277777778 0.777777778 0 0.0833333333 0.069444444 0.055555556
Date: 4/17/03 Location: 17895	P SCR CG	26.389 11.806 35.417 23.611 2.7778	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae	N= 1 1 5 8 1 1 1 1 48	Tolerance	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC	HBI 0.013888889 0.05555556 0.277777778 0.777777778 0 0.083333333 0.069444444 0.055555556 4
Date: 4/17/03 Location: 17895	P SCR CG FC	26.389 11.806 35.417 23.611	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella	N= 1 1 5 8 1 1 1 48 1	Tolerance	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR	HBI 0.013888889 0.05555556 0.277777778 0.777777778 0 0.083333333 0.069444444 0.055555556 4 0.125
Date: 4/17/03 Location: 17895	P SCR CG FC	26.389 11.806 35.417 23.611 2.7778	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae	N= 1 1 5 8 1 1 1 48 1 48	Tolerance	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC	HBI 0.013888889 0.055555556 0.277777778 0.777777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.4444444444
Date: 4/17/03 Location: 17895	P SCR CG FC	26.389 11.806 35.417 23.611 2.7778	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella	N= 1 1 5 8 1 1 1 48 1	Tolerance	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR	HBI 0.013888889 0.05555556 0.277777778 0.777777778 0 0.083333333 0.069444444 0.055555556 4 0.125
Date: 4/17/03 Location: 17895 10005	P SCR CG FC	26.389 11.806 35.417 23.611 2.7778	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella	N= 1 1 5 8 1 1 1 48 1 4 72	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR CG/SHR	HBI 0.013888889 0.055555556 0.27777778 0.77777778 0 0.083333333 0.069444444 0.05555556 4 0.125 0.444444444 5.902777778
Date: 4/17/03 Location: 17895 10005  Stream: Sandies	P SCR CG FC	26.389 11.806 35.417 23.611 2.7778	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species	N= 1 1 5 8 1 1 1 48 1 4 72	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR CG/SHR	HBI 0.013888889 0.055555556 0.27777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC	26.389 11.806 35.417 23.611 2.7778	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia	N= 1 1 5 8 1 1 1 1 48 1 4 72 N= 4	Tolerance	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR CG/SHR	HBI 0.013888889 0.055555556 0.27777778 0.77777778 0 0.0833333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222
Date: 4/17/03 Location: 17895 10005  Stream: Sandies	P SCR CG FC	26.389 11.806 35.417 23.611 2.7778	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron	N= 1 1 5 8 1 1 1 1 48 1 4 72  N= 4 444	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032  Tolerance 6 4	P CG/SCR SCR/CG P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR	HBI 0.013888889 0.055555556 0.27777778 0.77777778 0 0.0833333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC	26.389 11.806 35.417 23.611 2.7778	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron Fallceon	N= 1 1 5 8 1 1 1 48 1 4 72  N= 4 44 13	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032  Tolerance 6 4 4	P CG/SCR SCR/CG P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR SCR/CG	HBI 0.013888889 0.05555556 0.277777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963 0.481481481
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC SHR	26.389 11.806 35.417 23.611 2.7778 100	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron Fallceon Brachycercus	N= 1 1 5 8 1 1 1 48 1 4 72  N= 4 44 13 4	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032  Tolerance 6 4 4 7	P CG/SCR SCR/CG P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR SCR/CG CG/SCR	HBI 0.013888889 0.05555556 0.277777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963 0.481481481 0.259259259
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC SHR	26.389 11.806 35.417 23.611 2.7778 100	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron Fallceon Brachycercus Perlesta	N= 1 1 5 8 1 1 1 48 1 4 72  N= 4 44 13 4 18	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032  Tolerance 6 4 7 0	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR SCR/CG CG/SCR P	HBI 0.013888889 0.05555556 0.277777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963 0.481481481 0.259259259 0
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC SHR	26.389 11.806 35.417 23.611 2.7778 100	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche	N= 1 1 5 8 1 1 1 48 1 4 72  N= 4 44 13 4 18 2	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032  Tolerance 6 4 4 7 0 6	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR SCR/CG CG/SCR P FC	HBI 0.013888889 0.05555556 0.277777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963 0.481481481 0.259259259 0 0.111111111
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC SHR	26.389 11.806 35.417 23.611 2.7778 100 - % 37.963 29.167	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Berosus (L)	N= 1 1 5 8 1 1 1 48 1 4 72  N= 4 44 13 4 18 2 1	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032  Tolerance 6 4 4 7 0 6 9	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR SCR/CG CG/SCR P FC P	HBI 0.013888889 0.05555556 0.277777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963 0.481481481 0.259259259 0 0.111111111 0.083333333
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC SHR	26.389 11.806 35.417 23.611 2.7778 100 - 37.963 29.167 29.167	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Berosus (L) Stenelmis (A)	N= 1 1 5 8 1 1 1 48 1 4 72  N= 4 44 13 4 18 2 1 1	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032  Tolerance 6 4 7 0 6 9 7	P CG/SCR SCR/CG P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR SCR/CG P/CG/SCR P CG/SCR	HBI 0.013888889 0.05555556 0.277777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963 0.481481481 0.259259259 0 0.111111111 0.083333333 0.064814815
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC SHR	26.389 11.806 35.417 23.611 2.7778 100 - % 37.963 29.167	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Berosus (L) Stenelmis (A) Stenelmis (L)	N= 1 1 5 8 1 1 1 48 1 4 72  N= 4 44 13 4 18 2 1 1 1	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032  Tolerance 6 4 4 7 0 6 9	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR SCR/CG CG/SCR P FC P	HBI 0.013888889 0.05555556 0.277777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963 0.481481481 0.259259259 0 0.111111111 0.083333333
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC SHR	26.389 11.806 35.417 23.611 2.7778 100 	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Berosus (L) Stenelmis (A)	N= 1 1 5 8 1 1 1 48 1 4 72  N= 4 44 13 4 18 2 1 1 1 18	Tolerance	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR SCR/CG CG/SCR P CG/SCR CG/SCR CG/SCR	HBI 0.013888889 0.05555556 0.277777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963 0.481481481 0.259259259 0 0.111111111 0.083333333 0.064814815 -
Date: 4/17/03 Location: 17895 10005 Stream: Sandies Date: 4/15/03	P SCR CG FC SHR	26.389 11.806 35.417 23.611 2.7778 100 	Erpetogomphus Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Dineutus (L) Helicus (A) Chironomidae Physella Hyalella  Species Argia Stenacron Fallceon Brachycercus Perlesta Cheumatopsyche Berosus (L) Stenelmis (A) Stenelmis (L) Stenus	N= 1 1 5 8 1 1 1 48 1 4 72  N= 4 44 13 4 18 2 1 1 1	Tolerance  1 4 4 7 0 6 5 4 6 9 8 0.16129032  Tolerance 6 4 4 7 0 6 9 7 7 -	P CG/SCR SCR/CG CG/SCR P FC P SCR/CG P/CG/FC SCR CG/SHR  FFG P CG/SCR SCR/CG CG/SCR P CG/SCR P CG/SCR P	HBI 0.013888889 0.05555556 0.277777778 0.77777778 0 0.083333333 0.069444444 0.055555556 4 0.125 0.444444444 5.902777778  HBI 0.222222222 1.62962963 0.481481481 0.259259259 0 0.111111111 0.083333333 0.064814815 0.064814815

#### Benthic Macroinvertebrates - Kick Sample (Qualitative)

Stream: Sandies		Species	N=	Tolerance	FFG	HBI
Date: 4/17/03		Argia	2	6	Р	0.117647059
Location: 14935		Stenacron	11	4	CG/SCR	0.431372549
		Callibaetis	3	4	CG	0.117647059
FFG	%	Stenelmis (A)	4	7	CG/SCR	0.274509804
Р	27.941	Peltodytes (A)	1	8	SHR/P	0.078431373
SCR	9.3137	Chironomidae	78	6	P/CG/FC	4.588235294
CG	36.275	Physella	2	9	SCR	0.176470588
FC	25.49	Hyalella	1	8	CG/SHR	0.078431373
SHR	0.9804		102	0.15909091		5.862745098
	100					

N=

Tolerance

**Species** 

FFG

нві

Stream: Elm	
Date: 4/16/03	
Location: 17893	

		Argia sp.	14	6	Р	8.0
		Nasiaeschna	1	2	Р	0.019047619
		Stenacron	51	4	CG/SCR	1.942857143
FFG	%	Brachycercus	24	7	CG/SCR	1.6
Р	20.952	Perlesta	1	0	Р	0
SCR	37.937	Curicta	1	-		
CG	38.889	Dineutus (A)	3	5	Р	0.142857143
FC	1.9048	Dineutus (L)	1	5	Р	0.047619048
SHR	0.3175	Cyphon (L)	1	-	SCR/CG/SHR	-
	100	Chironomidae	6	6	P/CG/FC	0.342857143
		Physella	2	9	SCR	0.171428571
		Paleomontes	1	4	CG	0.038095238
			105	1.26086957		5.104761905

Stream: Elm Date: 4/16/03 Location: 17894

		Species	N=	Tolerance	FFG	НВІ
		Argia sp.	6	6	Р	0.313043478
		Stenacron	30	4	CG/SCR	1.043478261
		Fallceon	3	4	SCR/CG	0.104347826
	%	Brachycercus	1	7	SCR/CG	0.060869565
Р	29.275	Perlesta	18	0	Р	0
SCR	21.739	Corydalus	1	6	Р	0.052173913
CG	22.319	Cheumatopsyche	29	6	FC	1.513043478
FC	26.667	Smicridea	1	4	FC	0.034782609
SHR	0	Dineutus (A)	1	5	Р	0.043478261
	100	Dineutus (L)	7	5	Р	0.304347826
		Stenelmis (A)	13	7	CG/SCR	0.791304348
		Helicus (A)	1	4	SCR/CG	0.034782609
		Chironomidae	2	6	P/CG/FC	0.104347826
		Physella	1	9	SCR	0.07826087
		Paleomontes	1	4	CG	0.034782609
	•		115	1.16981132		4.513043478

103 0.83928571

5.281553398

Stream: Elm			Species	N=	Tolerance	FFG	нві
Date: 7/29/03			Argia	66	6	Р	3.735849057
Location: 17893			Stenacron	15	4	SCR/CG	0.566037736
			Brachycercus	7	7	CG/SHR	0.462264151
	FFG	%	Hydrometra	1	-	-	-
	Р	65.723	Sialis	1	4	Р	0.037735849
	SCR	12.893	Cyrnellus	1	-	-	-
	CG	15.881	Dineutus (L)	1	5	Р	0.047169811
	FC	0.6289	Cyphon	8	-	SCR/CG/SHR	-
	SHR	4.8742	Uvarus (A)	1	-	-	-
		100	Chironomidae	2	6	P/CG/FC	0.113207547
			Hirudinea	1	8	Р	0.075471698
			Hyallela	5	8	CG/SHR	0.377358491
		_		106	0.20987654		5.41509434
Stream: Elm			Species	N=	Tolerance	FFG	нві
Date: 7/29/03			Argia	7	6	Р	0.40776699
Location: 17894			Baetis	12	4	SCR/CG	0.466019417
			Stenacron	29	4	SCR/CG	1.126213592
		%	Corydalus	4	6	Р	0.233009709
	Р	12.945	Cheumatopsyche	18	6	FC	1.048543689
	SCR	34.466	Dineutus (L)	2	5	Р	0.097087379
	CG	34.79	Stenelmis (A)	26	7	CG/SCR	1.766990291
	FC	17.799	Neoelmis (A)	4	2	CG/SCR	0.077669903

100

Stream: Sandies Date: 9/28/03 Location: 17901 County: Gonzales						
	Value	Score				
1. Taxa Richness			19	3		
2. EPT Taxa Abunda	ince		2	1		
3. Biotic Index (HBI)			6.59	1		
4. % Chironomidae			5.882352941	3		
5. % Dominant Taxor	n		25.49019608	3		
6. % Dominant FFG			39.33	3		
7. % Predators			22	3		
8. Ratio of Intolerant:	Tolerant Taxa		0.48	1		
9. % of Total Trichop	tera as Hydropsych	idae	NoTrichoptera	1		
10. # of Non-insect T	axa		4	3		
11. % Collector-Gath	39.33	2				
12. % of Total Number	0.980392157	4				
Aqautic Life Use: HI	GH		Total Score:	28		

Stream: Sandies	County: Gonza	les					
	Metric						
1. Taxa Richness			12	2			
2. EPT Taxa Abunda	ince		6	2			
3. Biotic Index (HBI)			4.41	3			
4. % Chironomidae			0	1			
5. % Dominant Taxor	n		61.44578313	1			
6. % Dominant FFG			45.78313253	2			
7. % Predators			7.228915663	4			
8. Ratio of Intolerant:	Tolerant Taxa		5.67	4			
9. % of Total Trichop	tera as Hydropsych	idae	100	1			
10. # of Non-insect T	axa		2	2			
11. % Collector-Gath	45.78313253	1					
12. % of Total Number	0	1					
Aqautic Life Use: IN	TERMEDIATE		Total Score:	24			

Stream: Sandies Date: 9/28/03 Location: 13657 County: Dewitt						
	Me	tric	Value	Score		
1. Taxa Richness			17	3		
2. EPT Taxa Abundar	nce		7	3		
3. Biotic Index (HBI)			3.82	3		
4. % Chironomidae			2.608695652	4		
5. % Dominant Taxon	1		29.56521739	3		
6. % Dominant FFG			40.72173913	3		
7. % Predators			13.04347826	4		
8. Ratio of Intolerant:	Tolerant Taxa		4.7	3		
9. % of Total Trichopt	era as Hydrop	sychidae	100	1		
10. # of Non-insect Ta	axa		0	1		
11. % Collector-Gathe	40.72173913	2				
12. % of Total Number	er as Elmidae		30.43478261	1		
Aqautic Life Use: HIC	GH		Total Score:	31		

Stream: Sandies Date: 9/28/03 Location: 14935 County: Dewitt							
Metric	Value	Score					
1. Taxa Richness	23	4					
2. EPT Taxa Abundance	3	1					
3. Biotic Index (HBI)	5.25	2					
4. % Chironomidae	0.909090909	4					
5. % Dominant Taxon	20.90909091	4					
6. % Dominant FFG	52.15740741	2					
7. % Predators	30.86111111	2					
8. Ratio of Intolerant:Tolerant Taxa	2.03	2					
9. % of Total Trichoptera as Hydropsychidae	NoTrichoptera	1					
10. # of Non-insect Taxa	3	2					
11. % Collector-Gatherers	52.15740741	1					
12. % of Total Number as Elmidae	0.909090909	4					
Aqautic Life Use: HIGH	Total Score:	29					

## BIOTIC ASSESSMENT – BENTHIC MACROINVERTEBRATES

Rapid Bioassessment Protocol



Stream: Sandies Date: 8/27/02 Location: 17901	County: Gonzal	es
Metric	Value	Score
1. Taxa Richness	24	4
2. EPT Taxa Abundance	4	2
3. Biotic Index (HBI)	6.01	1
4. % Chironomidae	3.125	4
5. % Dominant Taxon	17.70833333	4
6. % Dominant FFG	50.34721875	2
7. % Predators	19.79166667	3
8. Ratio of Intolerant:Tolerant Taxa	0.666667	1
9. % of Total Trichoptera as Hydropsychidae	100	1
10. # of Non-insect Taxa	5	3
11. % Collector-Gatherers	50.34721875	1
12. % of Total Number as Elmidae	6.25	4
Aqautic Life Use: HIGH	Total Score:	30

Stream: Sandies		County: Gonzal	es		
	Me	etric		Value	Score
1. Taxa Richness				20	3
2. EPT Taxa Abundar	nce			7	3
3. Biotic Index (HBI)				4.42	3
4. % Chironomidae				0	1
5. % Dominant Taxon	26.85185185	3			
6. % Dominant FFG	38.8888889	3			
7. % Predators				14.81481481	4
8. Ratio of Intolerant:1	Tolerant Taxa			1.56	1
9. % of Total Trichopte	era as Hydropsych	nidae		29.26829268	3
10. # of Non-insect Ta	аха			2	2
11. % Collector-Gathe	23.30246852	3			
12. % of Total Numbe		15.74074074	3		
Aqautic Life Use: HIC	SH			Total Score:	32

Stream: Sandies Date: 8/2	26/02	Location: 13657		County: Dewitt	
	Ме	etric		Value	Score
1. Taxa Richness				15	3
2. EPT Taxa Abundance				3	1
3. Biotic Index (HBI)				4.78	2
4. % Chironomidae				0.970873786	4
5. % Dominant Taxon				64.0776699	1
6. % Dominant FFG				38.99676408	3
7. % Predators				16.82847573	3
8. Ratio of Intolerant:Tolerant Ta	axa			3.04	2
9. % of Total Trichoptera as Hyd	dropsych	nidae		No Trichoptera	1
10. # of Non-insect Taxa				2	2
11. % Collector-Gatherers				42.23300971	1
12. % of Total Number as Elmid	lae			7.766990291	4
Aqautic Life Use: INTERMEDIA	ATE		•	Total Score:	27

Stream: Sandies Date: 8/28/02 Location: 14935	County: Dewitt	
Metric	Value	Score
1. Taxa Richness	20	3
2. EPT Taxa Abundance	4	2
3. Biotic Index (HBI)	4.43	3
4. % Chironomidae	3.092783505	4
5. % Dominant Taxon	26.80412371	3
6. % Dominant FFG	42.09621649	3
7. % Predators	20.10309278	3
8. Ratio of Intolerant:Tolerant Taxa	1.97	2
9. % of Total Trichoptera as Hydropsychidae	No Trichoptera	1
10. # of Non-insect Taxa	4	3
11. % Collector-Gatherers	42.09621649	1
12. % of Total Number as Elmidae	0	1
Aqautic Life Use: HIGH	Total Score:	29

tream: Elm Date: 8/28/02 Location: 17893 County: Gonzales			es
Metric		Value	Score
1. Taxa Richness		17	3
2. EPT Taxa Abundance		5	2
3. Biotic Index (HBI)		4.91	2
4. % Chironomidae		5.050505051	3
5. % Dominant Taxon		43.43434343	1
6. % Dominant FFG		55.38717172	1
7. % Predators		12.28955556	4
8. Ratio of Intolerant:Tolerant Taxa		2.62	2
9. % of Total Trichoptera as Hydropsychidae	е	No Trichoptera	1
10. # of Non-insect Taxa		4	3
11. % Collector-Gatherers		55.38717172	1
12. % of Total Number as Elmidae		0	1
Aqautic Life Use: INTERMEDIATE		Total Score:	24

Stream: Elm Date: 8/29/02 Location: 17894	County: Gonzal	es
Metric	Value	Score
1. Taxa Richness	14	2
2. EPT Taxa Abundance	6	2
3. Biotic Index (HBI)	4.52	3
4. % Chironomidae	0.943396226	4
5. % Dominant Taxon	26.41509434	3
6. % Dominant FFG	35.37735849	4
7. % Predators	31.13207547	2
8. Ratio of Intolerant:Tolerant Taxa	4	3
9. % of Total Trichoptera as Hydropsychidae	100	1
10. # of Non-insect Taxa	2	2
11. % Collector-Gatherers	35.37735849	2
12. % of Total Number as Elmidae	0	1
Aqautic Life Use: HIGH	Total Score:	29

Stream: Sandies 2 Date: 9/26/02 Location: 17901	s 2 Date: 9/26/02 Location: 17901 County: Gonzales	
Metric	Value	Score
1. Taxa Richness	20	3
2. EPT Taxa Abundance	4	2
3. Biotic Index (HBI)	5.9	1
4. % Chironomidae	16.04938272	2
5. % Dominant Taxon	22.2222222	3
6. % Dominant FFG	27.98354321	4
7. % Predators	26.33740741	2
8. Ratio of Intolerant:Tolerant Taxa	0.51	1
9. % of Total Trichoptera as Hydropsychidae	100	1
10. # of Non-insect Taxa	5	3
11. % Collector-Gatherers	27.98354321	2
12. % of Total Number as Elmidae	0	1
Aqautic Life Use: INTERMEDIATE	Total Score:	25

Stream: Sandies 2 Date: 9/24/02 Location: 17895	County: Gonzales	
Metric	Value	Score
1. Taxa Richness	14	2
2. EPT Taxa Abundance	7	3
3. Biotic Index (HBI)	4.13	3
4. % Chironomidae	5.714285714	3
5. % Dominant Taxon	28.57142857	3
6. % Dominant FFG	52.38095238	2
7. % Predators	5.714285714	4
8. Ratio of Intolerant:Tolerant Taxa	6	4
9. % of Total Trichoptera as Hydropsychidae	100	1
10. # of Non-insect Taxa	0	1
11. % Collector-Gatherers	21.9047619	3
12. % of Total Number as Elmidae	7.619	4
Aqautic Life Use: HIGH	Total Score:	33

Stream: Sandies 2 Date: 9/25/02 Location: 13657	County: Dewitt	
Metric	Value	Score
1. Taxa Richness	12	2
2. EPT Taxa Abundance	4	2
3. Biotic Index (HBI)	5.09	2
4. % Chironomidae	4.347826087	3
5. % Dominant Taxon	26.08695652	3
6. % Dominant FFG	36.95652174	3
7. % Predators	27.53621739	2
8. Ratio of Intolerant:Tolerant Taxa	2.29	2
9. % of Total Trichoptera as Hydropsychidae	0	4
10. # of Non-insect Taxa	2	2
11. % Collector-Gatherers	34.05796957	2
12. % of Total Number as Elmidae	4.347826087	4
Aqautic Life Use: HIGH ***(Total Sample Size = 24)***	Total Score:	31

Stream: Sandies 2 Date: 9/25/02 Location: 14935	County: Dewitt	
Metric	Value	Score
1. Taxa Richness	14	2
2. EPT Taxa Abundance	2	1
3. Biotic Index (HBI)	6.24	1
4. % Chironomidae	10	2
5. % Dominant Taxon	18	4
6. % Dominant FFG	43.33334	3
7. % Predators	29.333334	2
8. Ratio of Intolerant:Tolerant Taxa	0.47	1
9. % of Total Trichoptera as Hydropsychidae	No Trichoptera	1
10. # of Non-insect Taxa	4	3
11. % Collector-Gatherers	43.33334	1
12. % of Total Number as Elmidae	20	3
Aqautic Life Use: INTERMEDIATE ***(Total Sample Size = 54)***	Total Score:	24

Stream: Elm 2 Date: 9/26/02 Location: 17893	County: Gonzale	es
Metric	Value	Score
1. Taxa Richness	13	2
2. EPT Taxa Abundance	4	2
3. Biotic Index (HBI)	5.63	1
4. % Chironomidae	8.75	3
5. % Dominant Taxon	42.5	1
6. % Dominant FFG	46.666625	2
7. % Predators	22.916625	3
8. Ratio of Intolerant:Tolerant Taxa	0.386	1
9. % of Total Trichoptera as Hydropsychidae	100	1
10. # of Non-insect Taxa	3	2
11. % Collector-Gatherers	16.45875	3
12. % of Total Number as Elmidae	0	1
Aqautic Life Use: INTERMEDIATE	Total Score:	22

Stream: Elm 2 Date: 9/25/02 Location: 17894 County: Gonzales			es
Metric		Value	Score
1. Taxa Richness		17	3
2. EPT Taxa Abundance		3	1
3. Biotic Index (HBI)		5.24	2
4. % Chironomidae		8.108108108	3
5. % Dominant Taxon		48.64864865	1
6. % Dominant FFG		37.83783784	3
7. % Predators		21.62162162	3
8. Ratio of Intolerant:Tolerant Taxa		1.39	1
9. % of Total Trichoptera as Hydropsychida	e	33.33333333	3
10. # of Non-insect Taxa		6	4
11. % Collector-Gatherers		37.83783784	2
12. % of Total Number as Elmidae		4.054054054	4
Aqautic Life Use: HIGH		Total Score:	30

Stream: Sandies Date: 4/16/03 Location: 17901	County: Gonzales	
Metric	Value	Score
1. Taxa Richness	24	4
2. EPT Taxa Abundance	5	2
3. Biotic Index (HBI)	5.1	2
4. % Chironomidae	15.67164179	2
5. % Dominant Taxon	20.14925373	4
6. % Dominant FFG	37.09022556	3
7. % Predators	18.42105263	3
8. Ratio of Intolerant:Tolerant Taxa	1.05	1
9. % of Total Trichoptera as Hydropsychidae	No Trichoptera	1
10. # of Non-insect Taxa	5	3
11. % Collector-Gatherers	37.09022556	2
12. % of Total Number as Elmidae	0.746268657	1
Aqautic Life Use: INTERMEDIATE	Total Score:	28

Stream: Sandies Date: 4/17/03 Location: 17895	County: Gonzales	i
Metric	Value	Score
1. Taxa Richness	11	2
2. EPT Taxa Abundance	5	2
3. Biotic Index (HBI)	5.9	1
4. % Chironomidae	66.6666667	1
5. % Dominant Taxon	66.6666667	1
6. % Dominant FFG	35.41666667	4
7. % Predators	26.38888889	2
8. Ratio of Intolerant:Tolerant Taxa	0.16	1
9. % of Total Trichoptera as Hydropsychidae	100	1
10. # of Non-insect Taxa	2	2
11. % Collector-Gatherers	35.41666667	2
12. % of Total Number as Elmidae	0	1
Aqautic Life Use: LIMITED	Total Score:	20

Stream: Sandies Date: 4/15/03 Location: 13657	County: Dewitt	
Metric	Value	Score
1. Taxa Richness	10	2
2. EPT Taxa Abundance	5	2
3. Biotic Index (HBI)	3.03	4
4. % Chironomidae	No Chironomidae	1
5. % Dominant Taxon	40.74074074	1
6. % Dominant FFG	37.96296296	3
7. % Predators	37.96296296	1
8. Ratio of Intolerant:Tolerant Taxa	5	4
9. % of Total Trichoptera as Hydropsychidae	100%	1
10. # of Non-insect Taxa	1	1
11. % Collector-Gatherers	29.16666667	3
12. % of Total Number as Elmidae	1.851851852	4
Aqautic Life Use: INTERMEDIATE	Total Score:	27

Stream: Sandies Date: 4/17/03 Location: 14935	County: Dewitt	
Metric	Value	Score
1. Taxa Richness	8	2
2. EPT Taxa Abundance	2	1
3. Biotic Index (HBI)	5.86	1
4. % Chironomidae	76.47058824	1
5. % Dominant Taxon	76.47058824	1
6. % Dominant FFG	36.2745098	4
7. % Predators	27.94117647	2
8. Ratio of Intolerant:Tolerant Taxa	0.16	1
9. % of Total Trichoptera as Hydropsychidae	No Trichoptera	1
10. # of Non-insect Taxa	2	2
11. % Collector-Gatherers	36.2745098	2
12. % of Total Number as Elmidae	3.921568627	4
Aqautic Life Use: INTERMEDIATE	Total Score:	22

Stream: Elm Date: 4/16/03 Location: 17893 County: Gonzales		es
Metric	Value	Score
1. Taxa Richness	11	2
2. EPT Taxa Abundance	3	1
3. Biotic Index (HBI)	5.1	2
4. % Chironomidae	5.714285714	3
5. % Dominant Taxon	48.57142857	1
6. % Dominant FFG	38.88571429	3
7. % Predators	20.95238095	3
8. Ratio of Intolerant:Tolerant Taxa	1.26	1
9. % of Total Trichoptera as Hydropsychidae	No Trichoptera	1
10. # of Non-insect Taxa	2	2
11. % Collector-Gatherers	38.88571429	2
12. % of Total Number as Elmidae	0	1
Aqautic Life Use: INTERMEDIATE	Total Score:	22

Stream: Elm Date: 4/16/03 Location: 17894	County: Gonzal	es
Metric	Value	Score
1. Taxa Richness	14	2
2. EPT Taxa Abundance	6	2
3. Biotic Index (HBI)	4.51	3
4. % Chironomidae	1.739130435	4
5. % Dominant Taxon	26.08695652	3
6. % Dominant FFG	29.27826087	4
7. % Predators	29.27826087	2
8. Ratio of Intolerant:Tolerant Taxa	1.17	1
9. % of Total Trichoptera as Hydropsychidae	100	1
10. # of Non-insect Taxa	2	2
11. % Collector-Gatherers	22.32173913	3
12. % of Total Number as Elmidae	11.30434783	3
Aqautic Life Use: HIGH	Total Score:	30

Stream: Elm 2 Date: 7/29/03 Location: 17893	County: Gonzale	es
Metric	Value	Score
1. Taxa Richness	12	2
2. EPT Taxa Abundance	3	1
3. Biotic Index (HBI)	5.42	1
4. % Chironomidae	1.886792453	4
5. % Dominant Taxon	62.26415094	1
6. % Dominant FFG	65.72641509	1
7. % Predators	65.72641509	1
8. Ratio of Intolerant:Tolerant Taxa	0.21	1
9. % of Total Trichoptera as Hydropsychidae	0	4
10. # of Non-insect Taxa	2	2
11. % Collector-Gatherers	15.87735849	4
12. % of Total Number as Elmidae	0	1
Aqautic Life Use: INTERMEDIATE	Total Score:	23

Stream: Elm 2 Date: 7/29/03 Location: 17894	County: Gonzale	es
Metric	Value	Score
1. Taxa Richness	9	2
2. EPT Taxa Abundance	3	1
3. Biotic Index (HBI)	5.28	1
4. % Chironomidae	0.970873786	4
5. % Dominant Taxon	28.15533981	3
6. % Dominant FFG	34.78640777	4
7. % Predators	12.94174757	4
8. Ratio of Intolerant:Tolerant Taxa	0.84	1
9. % of Total Trichoptera as Hydropsychidae	100	1
10. # of Non-insect Taxa	1	1
11. % Collector-Gatherers	34.78640777	2
12. % of Total Number as Elmidae	29.12621359	2
Aqautic Life Use: INTERMEDIATE	Total Score:	26

Stream: Sandies Date: 9/28/03 Location: 179	01 County: Gonzales	
Metric	Value Scor	e
1. Taxa Richness	19 3	
2. EPT Taxa Abundance	2 1	
3. Biotic Index (HBI)	6.59 1	
4. % Chironomidae	5.882352941 3	
5. % Dominant Taxon	25.49019608 3	
6. % Dominant FFG	39.33 3	
7. % Predators	22 3	
8. Ratio of Intolerant:Tolerant Taxa	0.48 1	
9. % of Total Trichoptera as Hydropsychidae	NoTrichoptera 1	
10. # of Non-insect Taxa	4 3	
11. % Collector-Gatherers	39.33 2	
12. % of Total Number as Elmidae	0.980392157 4	
Aqautic Life Use: HIGH	Total Score: 28	

Stream: Sandies	Date: 9/28/03	Location: 17895	County: Gonzal	es
	Metric		Value	Score
1. Taxa Richness			12	2
2. EPT Taxa Abunda	nce		6	2
3. Biotic Index (HBI)			4.41	3
4. % Chironomidae			0	1
5. % Dominant Taxor	า		61.44578313	1
6. % Dominant FFG			45.78313253	2
7. % Predators			7.228915663	4
8. Ratio of Intolerant:	Tolerant Taxa		5.67	4
9. % of Total Trichopt	tera as Hydropsych	idae	100	1
10. # of Non-insect T	axa		2	2
11. % Collector-Gath	erers		45.78313253	1
12. % of Total Number	er as Elmidae		0	1
Aqautic Life Use: IN	TERMEDIATE		Total Score:	24

Stream: Sandies Date: 9/28/03 Location: 13657	County: Dewitt	:
Metric	Value	Score
1. Taxa Richness	17	3
2. EPT Taxa Abundance	7	3
3. Biotic Index (HBI)	3.82	3
4. % Chironomidae	2.608695652	4
5. % Dominant Taxon	29.56521739	3
6. % Dominant FFG	40.72173913	3
7. % Predators	13.04347826	4
8. Ratio of Intolerant:Tolerant Taxa	4.7	3
9. % of Total Trichoptera as Hydropsychidae	100	1
10. # of Non-insect Taxa	0	1
11. % Collector-Gatherers	40.72173913	2
12. % of Total Number as Elmidae	30.43478261	1
Aqautic Life Use: HIGH	Total Score:	31

Stream: Sandies Date: 9/28/03 Location: 14935	County: Dewitt	
Metric	Value	Score
1. Taxa Richness	23	4
2. EPT Taxa Abundance	3	1
3. Biotic Index (HBI)	5.25	2
4. % Chironomidae	0.909090909	4
5. % Dominant Taxon	20.90909091	4
6. % Dominant FFG	52.15740741	2
7. % Predators	30.86111111	2
8. Ratio of Intolerant:Tolerant Taxa	2.03	2
9. % of Total Trichoptera as Hydropsychidae	NoTrichoptera	1
10. # of Non-insect Taxa	3	2
11. % Collector-Gatherers	52.15740741	1
12. % of Total Number as Elmidae	0.909090909	4
Aqautic Life Use: HIGH	Total Score:	29

## HABITAT ASSESSMENT

# Part I – Stream Physical Characteristics Worksheet $See\ Appendix\ B$



# HABITAT ASSESSMENT



Stream name	Sandies 17901
Date of assessment	8/27/2002
Stream bed slope over evaluated reach	0.0061
Approximate drainage area above transect furthest downstream	151 km²
Stream order	4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	3.72m
Average stream depth	0.33m
Instantaneous flow	0.062 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	4m
Maximum pool depth	0.5- 1m
Total number of stream bends	2
Number of well defined bends  Number of moderately defined bends	1 0
Number of poorly defined bends	1
Total number of riffles	1
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	1%
Average percent instream cover	10.40%
Number of stream cover types	4
Average percent stream bank erosion potential	23%
Average stream bank slope	45°
Average width of vegetative buffer	8.6m
Average riparian vegetation percent composition by:	
Trees Shrubs	
Grasses/Forbes	60%
Cultivated Fields	-
Other	36%
Average percent tree canopy coverage	8%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies 17895
Date of assessment	8/29/2002
Stream bed slope over evaluated reach	0.0018
Approximate drainage area above transect furthest downstream	550 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	8.9m
Average stream depth	0.95m
Instantaneous flow	1.82 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	9m
Maximum pool depth	>1m
Total number of stream bends	2
Number of well defined bends	1
Number of moderately defined bends  Number of poorly defined bends	0
Total number of riffles	1
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	0.00%
	27%
Average percent instream cover	
Number of stream cover types	3
Average percent stream bank erosion potential	69%
Average stream bank slope	65°
Average width of vegetative buffer	18m
Average riparian vegetation percent composition by:  Trees	20%
Shrubs	15%
Grasses/Forbes	30%
Cultivated Fields	
Other	35%
Average percent tree canopy coverage	73%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies 13657
Date of assessment	8/26/2002
Stream bed slope over evaluated reach	0.003
Approximate drainage area above transect furthest downstream	1,417 km²
Stream order	4
Length of stream evaluated	300m
Number of lateral transects made	5
Average stream width	7.8m
Average stream depth	0.52m
Instantaneous flow	3.01 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	5m
Maximum pool depth	>1m
Total number of stream bends	3
Number of well defined bends  Number of moderately defined bends  Number of poorly defined bends	1 2 0
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	0%
Average percent instream cover	9%
Number of stream cover types	3
Average percent stream bank erosion potential	58%
Average stream bank slope	39°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:  Trees	7%
Shrubs Grasses/Forbes Cultivated Fields	3.50%
Other	89.50%
Average percent tree canopy coverage	68%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies 14935
Date of assessment	8/28/2002
Stream bed slope over evaluated reach	0.0018
Approximate drainage area above transect furthest downstream	1,753 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	17.0m
Average stream depth	0.81m
Instantaneous flow	2.67 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	14m
Maximum pool depth	>1m
Total number of stream bends	2
Number of well defined bends	0
Number of moderately defined bends  Number of poorly defined bends	2 0
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	12%
Average percent instream cover	26%
Number of stream cover types	5
Average percent stream bank erosion potential	66%
Average stream bank slope	53°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:	
Trees	20%
Shrubs Grasses/Forbes	15% 10%
Cultivated Fields	-
Other	55%
Average percent tree canopy coverage	53%
Overall aesthetic appraisal of stream	Common

Stream name	Elm 17893
Date of assessment	8/28/2002
Stream bed slope over evaluated reach	0.0012
Approximate drainage area above transect furthest downstream	228km²
Stream order	4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	2.97m
Average stream depth	0.18m
Instantaneous flow	0.15 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	2.5m
Maximum pool depth	0.5 - 1m
Total number of stream bends	2
Number of well defined bends Number of moderately defined bends	1 1
Number of poorly defined bends	0
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	1%
Average percent instream cover	30%
Number of stream cover types	4
Average percent stream bank erosion potential	66%
Average stream bank slope	38°
Average width of vegetative buffer	15m
Average riparian vegetation percent composition by: Trees Shrubs Grasses/Forbes Cultivated Fields Other	12.50% 12.50% 20%
Average percent tree canopy coverage	43%
Overall aesthetic appraisal of stream	Natural

Stream name	Elm 17894
Date of assessment	8/29/2002
Stream bed slope over evaluated reach	0.002
Approximate drainage area above transect furthest downstream	350km²
Stream order	4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	4.99m
Average stream depth	0.28m
Instantaneous flow	0.1728 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	5m
Maximum pool depth	0.5 - 1m
Total number of stream bends	2
Number of well defined bends	0
Number of moderately defined bends  Number of poorly defined bends	2 0
Total number of riffles	1
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	21%
Average percent instream cover	31%
Number of stream cover types	4
Average percent stream bank erosion potential	66%
Average stream bank slope	41°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:	
Trees Shrubs	<u>12.50%</u> 5%
Grasses/Forbes	10%
Cultivated Fields	
Other	72.50%
Average percent tree canopy coverage	46%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies2 17901
Date of assessment	9/26/2002
Stream bed slope over evaluated reach	0.0061
Approximate drainage area above transect furthest downstream	151 km²
Stream order	4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	3.09m
Average stream depth	0.26m
Instantaneous flow	0.062 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	4m
Maximum pool depth	0.5 - 1m
Total number of stream bends	2
Number of well defined bends	1
Number of moderately defined bends  Number of poorly defined bends	10
Total number of riffles	1
Dominant substrate type	Sand
Average percent of substrate gravel sized or larger	0%
Average percent instream cover	18%
Number of stream cover types	4
Average percent stream bank erosion potential	61%
Average stream bank slope	65°
Average width of vegetative buffer	9m
Average riparian vegetation percent composition by:	
Trees	<u>5%</u> 5%
Shrubs Grasses/Forbes	85%
Cultivated Fields	
Other	5%
Average percent tree canopy coverage	25%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies2 17895
Date of assessment	9/24/2002
Stream bed slope over evaluated reach	0.0018
Approximate drainage area above transect furthest downstream	550 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	9.0m
Average stream depth	1.08m
Instantaneous flow	3.645 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	8m
Maximum pool depth	>1m
Total number of stream bends	2
Number of well defined bends	0
Number of moderately defined bends  Number of poorly defined bends	2 0
Total number of riffles	1
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	0%
Average percent instream cover	32%
Number of stream cover types	6
Average percent stream bank erosion potential	70%
Average stream bank slope	83°
Average width of vegetative buffer	20m
Average riparian vegetation percent composition by:	000/
Trees Shrubs	20% 15%
Grasses/Forbes	30%
Cultivated Fields	
Other	35%
Average percent tree canopy coverage	82%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies2 13657
Date of assessment	9/25/2002
Stream bed slope over evaluated reach	0.003
Approximate drainage area above transect furthest downstream	1,417 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	9.7m
Average stream depth	0.58m
Instantaneous flow	17.826 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	10m
Maximum pool depth	>1m
Total number of stream bends	3
Number of well defined bends	1
Number of moderately defined bends  Number of poorly defined bends	2
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	0%
Average percent instream cover	28%
Number of stream cover types	4
Average percent stream bank erosion potential	70%
Average stream bank slope	54°
Average width of vegetative buffer	17m
Average riparian vegetation percent composition by:	
Trees Shrubs	30% 10%
Grasses/Forbes	7.50%
Cultivated Fields	
Other	52.50%
Average percent tree canopy coverage	50%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies2 14935
Date of assessment	9/24/2002
Stream bed slope over evaluated reach	0.0018
Approximate drainage area above transect furthest downstream	1,753 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	17.3m
Average stream depth	0.81m
Instantaneous flow	20.0 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	16m
Maximum pool depth	>1m
Total number of stream bends	2
Number of well defined bends	0
Number of moderately defined bends  Number of poorly defined bends	2 0
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	10%
Average percent instream cover	20%
Number of stream cover types	4
Average percent stream bank erosion potential	58%
Average stream bank slope	76°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by: Trees Shrubs Grasses/Forbes Cultivated Fields Other	20% 15% 10% 55%
Average percent tree canopy coverage	53%
Overall aesthetic appraisal of stream	Common

Stream name	Elm2 17893
Date of assessment	9/26/2002
Stream bed slope over evaluated reach	0.0061
Approximate drainage area above transect furthest downstream	228km²
Stream order	3 to 4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	3.48m
Average stream depth	0.18m
Instantaneous flow	0.315 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	4m
Maximum pool depth	<0.5m
Total number of stream bends	2
Number of well defined bends	1
Number of moderately defined bends  Number of poorly defined bends	0
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	1%
Average percent instream cover	29%
Number of stream cover types	6
Average percent stream bank erosion potential	75%
Average stream bank slope	39°
Average width of vegetative buffer	16m
Average riparian vegetation percent composition by:	
Trees Shrubs	20% 15%
Grasses/Forbes	5%
Cultivated Fields	<u> </u>
Other	60%
Average percent tree canopy coverage	72%
Overall aesthetic appraisal of stream	Natural

Stream name	Elm2 17894
Date of assessment	9/25/2002
Stream bed slope over evaluated reach	0.002
Approximate drainage area above transect furthest downstream	350km²
Stream order	3 to 4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	5.1m
Average stream depth	0.37m
Instantaneous flow	1.955 ft <sup>3</sup> /sec
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	6m
Maximum pool depth	>1m
Total number of stream bends	2
Number of well defined bends  Number of moderately defined bends	0 0
Number of poorly defined bends	2
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	3%
Average percent instream cover	20%
Number of stream cover types	6
Average percent stream bank erosion potential	59%
Average stream bank slope	38°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by: Trees	20%
Shrubs Grasses/Forbes	20% 10%
Cultivated Fields	
Other	50%
Average percent tree canopy coverage	60%
Overall aesthetic appraisal of stream	Natrual

Stream name	Sandies 17901
Date of assessment	4/16/2003
Stream bed slope over evaluated reach	0.0061
Approximate drainage area above transect furthest downstream	151 km²
Stream order	4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	3.51m
Average stream depth	0.31m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	4.6m
Maximum pool depth	0.5- 1m
Total number of stream bends	2
Number of well defined bends Number of moderately defined bends Number of poorly defined bends	1 0 1
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	1%
Average percent instream cover	33.00%
Number of stream cover types	6
Average percent stream bank erosion potential	83%
Average stream bank slope	58°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:  Trees Shrubs Grasses/Forbes Cultivated Fields	2% 3% 89% -
Other	6%
Average percent tree canopy coverage	28%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies 17895
Date of assessment	4/17/2003
Stream bed slope over evaluated reach	0.0018
Approximate drainage area above transect furthest downstream	550 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	10.2m
Average stream depth	1.13m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	14m
Maximum pool depth	>1m
Total number of stream bends	1
Number of well defined bends Number of moderately defined bends Number of poorly defined bends	1 0 0
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	1.00%
Average percent instream cover	14%
Number of stream cover types	7
Average percent stream bank erosion potential	87%
Average stream bank slope	64°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by: Trees	21%
Shrubs	0%
Grasses/Forbes	51%
Cultivated Fields	<u>-</u>
Other	28%
Average percent tree canopy coverage	86%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies 13657
Date of assessment	4/15/2003
Stream bed slope over evaluated reach	0.003
Approximate drainage area above transect furthest downstream	1,417 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	8.3m
Average stream depth	0.49m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	10m
Maximum pool depth	>1m
Total number of stream bends	2
Number of well defined bends	0
Number of moderately defined bends  Number of poorly defined bends	2
Total number of riffles	1
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	2%
Average percent instream cover	23%
Number of stream cover types	5
Average percent stream bank erosion potential	83%
Average stream bank slope	35°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:	
Trees	25%
Shrubs Grasses/Forbes	3% 47.00%
Cultivated Fields	-
Other	25.00%
Average percent tree canopy coverage	74%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies 14935
Date of assessment	4/17/2003
Stream bed slope over evaluated reach	0.0018
Approximate drainage area above transect furthest downstream	1,753 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	14m
Average stream depth	0.60m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	15m
Maximum pool depth	>1m
Total number of stream bends	1
Number of well defined bends Number of moderately defined bends Number of poorly defined bends	0 1 0
Total number of riffles	0
Dominant substrate type	Sand
Average percent of substrate gravel sized or larger	8%
Average percent instream cover	6%
Number of stream cover types	6
Average percent stream bank erosion potential	82%
Average stream bank slope	66°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:  Trees Shrubs Grasses/Forbes Cultivated Fields Other	15% 7% 24% - 54%
Average percent tree canopy coverage	45%
Overall aesthetic appraisal of stream	Natural

Stream name	Elm 17893
Date of assessment	4/16/2003
Stream bed slope over evaluated reach	0.0012
Approximate drainage area above transect furthest downstream	228km²
Stream order	4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	4.72m
Average stream depth	0.37m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	5m
Maximum pool depth	0.5 - 1m
Total number of stream bends	1
Number of well defined bends Number of moderately defined bends Number of poorly defined bends	0 0 1
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	0%
Average percent instream cover	22%
Number of stream cover types	2
Average percent stream bank erosion potential	90%
Average stream bank slope	51°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by: Trees Shrubs Grasses/Forbes Cultivated Fields Other	22.00% 7.00% 46% 25%
Average percent tree canopy coverage	97%
Overall aesthetic appraisal of stream	Natural

Stream name	Elm 17894
Date of assessment	4/16/2003
Stream bed slope over evaluated reach	0.002
Approximate drainage area above transect furthest downstream	350km²
Stream order	4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	4.48m
Average stream depth	.30m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	Moderate
Maximum pool width	6m
Maximum pool depth	0.5 - 1m
Total number of stream bends	1
Number of well defined bends Number of moderately defined bends Number of poorly defined bends	0 0 1
Total number of riffles	1
Dominant substrate type	Sand
Average percent of substrate gravel sized or larger	11%
Average percent instream cover	25%
Number of stream cover types	6
Average percent stream bank erosion potential	77%
Average stream bank slope	37°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by: Trees Shrubs Grasses/Forbes Cultivated Fields Other	19.00% 2% 68% 11.00%
Average percent tree canopy coverage	90%
Overall aesthetic appraisal of stream	Natural

Stream name	Elm2 17893
Date of assessment	7/29/2003
Stream bed slope over evaluated reach	0.0061
Approximate drainage area above transect furthest downstream	228km²
Stream order	3 to 4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	4.4m
Average stream depth	0.25m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	Moderate
Maximum pool width	6m
Maximum pool depth	0.5m - 1m
Total number of stream bends	1
Number of well defined bends	0
Number of moderately defined bends  Number of poorly defined bends	<u>0</u> 1
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	0%
Average percent instream cover	36%
Number of stream cover types	5
Average percent stream bank erosion potential	93%
Average stream bank slope	59°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by: Trees	30%
Shrubs	3%
Grasses/Forbes _ Cultivated Fields	37%
Other	30%
Average percent tree canopy coverage	87%
Overall aesthetic appraisal of stream	Natural

Stream name	Elm2 17894
Date of assessment	7/29/2003
Stream bed slope over evaluated reach	0.002
Approximate drainage area above transect furthest downstream	350km²
Stream order	3 to 4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	5.2m
Average stream depth	0.31m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	Moderate
Maximum pool width	7m
Maximum pool depth	0.5m - 1m
Total number of stream bends	1
Number of well defined bends	0
Number of moderately defined bends  Number of poorly defined bends	1
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	19%
Average percent instream cover	40%
Number of stream cover types	8
Average percent stream bank erosion potential	69%
Average stream bank slope	53°
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:	
Trees Shrubs	4%
Grasses/Forbes	34%
Cultivated Fields	400/
Other	42%
Average percent tree canopy coverage	68%
Overall aesthetic appraisal of stream	Natrual

Stream name	Sandies 17901
Date of assessment	9/28/2003
Stream bed slope over evaluated reach	0.0061
Approximate drainage area above transect furthest downstream	151 km²
Stream order	4
Length of stream evaluated	150m
Number of lateral transects made	5
Average stream width	3.03m
Average stream depth	0.25m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	Moderate
Maximum pool width	5m
Maximum pool depth	0.69m
Total number of stream bends	2
Number of well defined bends  Number of moderately defined bends  Number of poorly defined bends	1 0 1
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	0%
Average percent instream cover	21.00%
Number of stream cover types	5
Average percent stream bank erosion potential	80%
Average stream bank slope	45.8
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:  Trees Shrubs Grasses/Forbes Cultivated Fields Other	3% 0% 85% 12%
Average percent tree canopy coverage	11%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies 17895
Date of assessment	9/28/2003
Stream bed slope over evaluated reach	0.0018
Approximate drainage area above transect furthest downstream	550 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	7.07m
Average stream depth	0.71m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	Moderate
Maximum pool width	10m
Maximum pool depth	1.9m
Total number of stream bends	1
Number of well defined bends Number of moderately defined bends Number of poorly defined bends	1 0 0
Total number of riffles	1
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	0.30%
Average percent instream cover	23%
Number of stream cover types	7
Average percent stream bank erosion potential	83%
Average stream bank slope	75
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:  Trees Shrubs Grasses/Forbes Cultivated Fields Other	26% 2% 55%
Average percent tree canopy coverage	89%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies 13657
Date of assessment	9/28/2003
Stream bed slope over evaluated reach	0.003
Approximate drainage area above transect furthest downstream	1,417 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	8.19m
Average stream depth	0.46m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	Moderate
Maximum pool width	10m
Maximum pool depth	1.15m
Total number of stream bends	1
Number of well defined bends  Number of moderately defined bends	1 0 0
Number of poorly defined bends	
Total number of riffles	0
Dominant substrate type	Silt
Average percent of substrate gravel sized or larger	0%
Average percent instream cover	9%
Number of stream cover types	6
Average percent stream bank erosion potential	92%
Average stream bank slope	49
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by:  Trees Shrubs Grasses/Forbes Cultivated Fields Other	16% 3% 66.00%
Average percent tree canopy coverage	73%
Overall aesthetic appraisal of stream	Natural

Stream name	Sandies 14935
Date of assessment	9/28/2003
Stream bed slope over evaluated reach	0.0018
Approximate drainage area above transect furthest downstream	1,753 km²
Stream order	4
Length of stream evaluated	500m
Number of lateral transects made	6
Average stream width	12.7m
Average stream depth	0.8m
Instantaneous flow	
Indicate flow measurement method	Current Meter
Channel flow status	High
Maximum pool width	16.5m
Maximum pool depth	1.7m
Total number of stream bends	1
Number of well defined bends Number of moderately defined bends Number of poorly defined bends	0 0 1
Total number of riffles	0
Dominant substrate type	Sand
Average percent of substrate gravel sized or larger	6%
Average percent instream cover	13%
Number of stream cover types	7
Average percent stream bank erosion potential	90%
Average stream bank slope	82
Average width of vegetative buffer	>20m
Average riparian vegetation percent composition by: Trees Shrubs Grasses/Forbes Cultivated Fields	22% 8% 52%
Other	18%
Average percent tree canopy coverage	53%
Overall aesthetic appraisal of stream	Natural

# HABITAT ASSESSMENT



	T			
Habitat Dayamatay	Saaring Catagon:		Location, 17001	Data: 0/27/02
Habitat Parameter	Scoring Category	I C	Location: 17901	Date: 8/27/02
Available Instream Cover	Abundant >50% of substrate favorable for colonization and fish cover; good mix of several stable	Common 30-50% of substrate supports a stable habitat; adequate habitat for maintenance of	Rare 10-29.9% of substrate supports stable habitat; habitat availability less than	Absent <10% of substrate supports stable habitat; lack of habitat is obvious; substrate
	(not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes	populations; may be limited in the number of different habitat types	desirable; substrate frequently disturbed or removed	unstable or lacking
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
Doctorii Guburuto Gtability	>50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	<10% gravel or larger substrate; substrate is uniform sand, silt, clay, or
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 2	4	3	2	1
Dimensions of Largest Pool	Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 2	3	2	1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Moderate Water fills <75% of the channel; or <25% of channel substrate is exposed	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	Stable 3	2 Madarataly Stable	Mederately Unatable	Unatable
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average <60°
Score: 1	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 2	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is <20 meters	Wide Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 1 Aesthetics of Reach	Wildorness 3	2 Natural Area	Common Sotting	Offensive
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or discolored	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
Score: 2	3	2	1	0
Total Score: 16	INTERMEDIATE	<del>-</del>		• •

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l <u>-</u>				
Habitat Parameter	Scoring Category	-	Location: 17895	Date: 829/02
Available Instream Cover	Abundant	Common	Rare	Absent
	>50% of substrate favorable	30-50% of substrate supports	10-29.9% of substrate	<10% of substrate supports
	for colonization and fish cover;	a stable habitat; adequate	supports stable habitat;	stable habitat; lack of
	good mix of several stable	habitat for maintenance of	habitat availability less than	habitat is obvious; substrate
	(not new fall or transient)	populations; may be limited in	desirable; substrate	unstable or lacking
	cover types such as snags,	the number of different habitat	frequently disturbed or	Ī
	cobble, undercut banks,	types	removed	
	macrophytes	31		
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
_	>50% gravel or larger	30-50% gravel or larger	10-29.9% gravel or larger	<10% gravel or larger
	substrate, i.e., gravel, cobble,	substrate; dominant substrate	substrate; dominant	substrate; substrate is
		type is mix of gravel with some	substrate type is finer than	uniform sand, silt, clay, or
	type is gravel or larger	finer sediments	gravel, but may still be in mix	1
	type is graver or larger	inier sediments	of sizes	bedrock
Score: 1	4	3	2	1
Number of Riffles	Abundant	Common	Rare	Absent
To be counted, riffles must	≥5 riffles	2-4 riffles	1 riffle	No riffles
1	=5 miles	<del>- 4</del>	i iiiie	INO TITLES
extend >50% the width of the	1			
channel and be at least as long	!			
as the channel width	!			
Score: 2	4	3	2	1
Dimensions of Largest Pool	Large	Moderate	Small	Absent
	Pool covers more than 50% of	Pool covers approximately	Pool covers approximately	No existing pools; only
	the channel width; maximum	50% or slightly less than the	25% of the channel width;	shallow auxillary pockets
	depth is > 1m	channel width; maximum depth	maximum depth is <0.5	
	'	is 0.5-1 meter	meter	
Score: 3	3	2	1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of	Water fills <75% of the	Water fills 25-75% of the	Very little water in the
		channel; or <25% of channel	available channel and/or	channel and mostly present
	channel substrate is exposed	substrate is exposed	riffle substrates are mostly	in standing pools; or stream
	Charmer substrate is exposed	Substrate is exposed	exposed	is dry
Score: 3	3	2	1	0
Bank Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
Bank Stability		_	1	
	Little evidence (<10%) of	Some evidence (10-29.9%) of	Evidence of erosion bank	Large and frequent
	erosion bank failure; bank	erosion or bank failure; small	failure is common (30-50%);	evidence (>50%) of erosion
	angles average <30°	areas of erosion mostly healed	high potential of erosion	or bank failure; raw areas
	!	over; bank angles average 30-	during flooding; bank angles	frequent along steep banks;
	!	39.9°	average 40-60°	bank angles average <60°
Score: 0	3	2	1	0
Channel Sinuosity	High	Moderate	Low	None
	≥2 well-defined bends with	1 well-defined bend OR ≥3	<3 moderately-defined	Straight channel; may be
	deep outside areas (cut	moderately-defined bends	bends OR only poorly-	channelized
	' '	present	defined bends present	
I			l	l
i .				
	areas (point bars) are present			
Score: 2		2	1	0
Score: 2 Riparian Buffer Vegetation	areas (point bars) are present	2 Wide	1 Moderate	0 Narrow
	areas (point bars) are present  3 Extensive	Wide	Moderate	Narrow
	areas (point bars) are present  3  Extensive  Width of natural buffer is <20	<b>Wide</b> Width of natural buffer is 10.1-	<b>Moderate</b> Width of natural buffer is 5-	Narrow Width of natural buffer is <5
Riparian Buffer Vegetation	areas (point bars) are present  3  Extensive  Width of natural buffer is <20 meters	<b>Wide</b> Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Riparian Buffer Vegetation Score: 2	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters  3	Wide Width of natural buffer is 10.1- 20 meters 2	Moderate Width of natural buffer is 5- 10 meters 1	Narrow Width of natural buffer is <5 meters 0
Riparian Buffer Vegetation	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters 3  Wilderness	Wide Width of natural buffer is 10.1- 20 meters 2 Natural Area	Moderate Width of natural buffer is 5- 10 meters 1 Common Setting	Narrow Width of natural buffer is <5 meters 0 Offensive
Riparian Buffer Vegetation Score: 2	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters  3  Wilderness Outstanding natural beauty;	Wide Width of natural buffer is 10.1- 20 meters  2 Natural Area Tree and/or native vegetation	Moderate Width of natural buffer is 5- 10 meters 1 Common Setting Not offensive; area is	Narrow Width of natural buffer is <5 meters 0 Offensive Stream does not enhance
Riparian Buffer Vegetation Score: 2	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured	Wide Width of natural buffer is 10.1- 20 meters  2 Natural Area Tree and/or native vegetation common; some development	Moderate Width of natural buffer is 5- 10 meters 1 Common Setting Not offensive; area is developed, but uncluttered	Narrow Width of natural buffer is <5 meters 0 Offensive Stream does not enhance the aesthetics of the area;
Riparian Buffer Vegetation Score: 2	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually	Wide Width of natural buffer is 10.1- 20 meters  2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures,	Moderate Width of natural buffer is 5- 10 meters 1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park;	Narrow Width of natural buffer is <5 meters  0 Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed;
Riparian Buffer Vegetation Score: 2	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured	Wide Width of natural buffer is 10.1- 20 meters  2 Natural Area Tree and/or native vegetation common; some development	Moderate Width of natural buffer is 5- 10 meters 1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park;	Narrow Width of natural buffer is <5 meters  0 Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed;
Riparian Buffer Vegetation Score: 2	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually	Wide Width of natural buffer is 10.1- 20 meters  2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures,	Moderate Width of natural buffer is 5- 10 meters 1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park;	Narrow Width of natural buffer is <5 meters  0 Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area;
Riparian Buffer Vegetation Score: 2	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually	Wide Width of natural buffer is 10.1- 20 meters  2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be	Moderate Width of natural buffer is 5- 10 meters  1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or	Narrow Width of natural buffer is <5 meters  0 Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area;
Riparian Buffer Vegetation Score: 2	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually	Wide Width of natural buffer is 10.1- 20 meters  2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be	Moderate Width of natural buffer is 5- 10 meters  1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or	Narrow Width of natural buffer is <5 meters 0 Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid
Riparian Buffer Vegetation Score: 2	areas (point bars) are present  3  Extensive Width of natural buffer is <20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually	Wide Width of natural buffer is 10.1- 20 meters  2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be	Moderate Width of natural buffer is 5- 10 meters  1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or	Narrow Width of natural buffer is <5 meters 0 Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid

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Habitat Parameter	Scoring Category		Location: 13657	Date: 8/26/02
Available Instream Cover	Abundant	Common	Rare	Absent
Available instream cover	>50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient)	30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat	10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or	<10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
	cover types such as snags, cobble, undercut banks, macrophytes	types	removed	
Score: 1	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 3	3	is 0.5-1 meter <b>2</b>	1 1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Water fills <75% of the channel; or <25% of channel substrate is exposed	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average <60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 2	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is <20 meters	Wide Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3	Wilderness	Notural Area	Common Setting	Offensive
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or discolored	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
Score: 2	3	2	1	0
Total Score: 16	INTERMEDIATE	_		

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Habitat Parameter	Scoring Category		Location: 14935	Date: 8/28/02
Available Instream Cover	Abundant >50% of substrate favorable for colonization and fish cover; good mix of several stable	Common 30-50% of substrate supports a stable habitat; adequate habitat for maintenance of	Rare 10-29.9% of substrate supports stable habitat; habitat availability less than	Absent <10% of substrate supports stable habitat; lack of habitat is obvious; substrate
	(not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes	populations; may be limited in the number of different habitat types	desirable; substrate frequently disturbed or removed	unstable or lacking
Score: 2	4	3	2	1
Bottom Substrate Stability		Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	· ·	Absent No existing pools; only shallow auxillary pockets
Score: 3	3	2	meter 1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of	Water fills <75% of the channel; or <25% of channel substrate is exposed	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is <20 meters	Wide Width of natural buffer is 10.1- 20 meters 2	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters 0
Score: 3 Aesthetics of Reach	Wilderness	Natural Area	Common Setting	Offensive
Nesaliellos di Neddii	Outstanding natural beauty;	Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Not offensive; area is developed, but uncluttered such as in an urban park;	Stream does not enhance the aesthetics of the area; cluttered; highly developed;
Score: 1	3	2	1	0
Total Score: 15	INTERMEDIATE	<u>-</u>		

Contend fall or transient) cover types such as an angas, cobble, undercut banks, macrophytes					
Abundant  Abundant and fish cover, so described for colonization and fish cover, agond mix of several stable habitat, adequate (not new fail or transient), cover types such as an sangs, cobble, undercut banks, macrophytes  Score: 3  Score: 3  Score: 3  Abundant and be at least as locations and fish cover, and the cover approximately be boulders; dominant substrate type is gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel by its fine than gravel, but may still be in mix bedrock of sizes  Score: 1  Abundant Common Rare Absent No riffles  Abundant Scriffles  To be counted, riffles must extend >50% fine channel width; maximum depth is ~1m depth is ~	Habitat Parameter	Scoring Category		Location: 17893	Date: 8/28/02
Score: 3   Stable   Abstrate   Stable   Common   Stable   Score: 2   Stable   Score: 3   Stable   Score: 4   Stable   Score: 5   Score: 5   Stable   Score: 5   Stable   Score: 6   Stable   Score: 6   Score: 6   Stable   Score: 6   Stable   Score: 6   Stable   Score: 6   Score: 6   Stable   Score: 6   Stable   Score: 6   Stable   Score: 6   Score: 6   Stable   Stable   Score: 7   Stable   Score: 7   Stable   Stable   Stable   Score: 7   Stable   Stable   Stable   Score: 7   Stable			Common		
for colonization and fish cover, a stable habitat, adequate (not new fail or transient) cover types such as angas, cobble, undercrut banks, macrophytes  Score: 3  A	Available instream cover				
good mix of several stable (not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes   1		1	1 '''		
Contend fall or transient)   Cover types such as angas, cobble, undercut banks, macrophytes		1			1
Score: 3   Stable   Stable   Stable   Store: 2   Stable   Stable   Stable   Store: 2   Stable   Stable   Stable   Stable   Stable   Store: 2   Stable   Stable   Stable   Store: 2   Stable   Stable   Stable   Store: 2   Stable   Stable   Stable   Store: 2   Stable   Stable   Store: 2   Store: 3   Store: 2   Store: 3   Store: 2   Store: 3   Store:		good mix of several stable	habitat for maintenance of	habitat availability less than	habitat is obvious; substrate
Score: 3  Bottom Substrate Stability Score: 3  Score: 3  Score: 3  Score: 3  Score: 1  Dimensions of Largest Pool Dimensions of Largest Pool Covers amore than 50% of schannel And be the channel width: maximum depth is > 1 meth channel width: maximum depth is > 1 meth channel width: maximum depth is > 1 meth channel width so both the lower banks; <5% of channel Flow Status  High Water reaches the base of both the lower banks; <5% of channel substrate is exposed  Score: 3  Score: 4  High Water reaches the base of both the lower banks; <5% of channel explaine bank angles average <30°  Score: 4  High Stable  Utilite evidence (<10%) of cross hosh failure; bank angles average <30°  Score: 4  Stable  Utilite evidence (<10%) of cross hosh failure; bank angles average <30°  Score: 2  Score: 3  Score: 4  Stable  Utilite devidence (<10%) of cross hosh failure; bank angles average <30°  Score: 4  Riparian Buffer Vegetation  Score: 2  Score: 2  Score: 3  Score: 3  Stable  Utilite evidence (<10%) of cross hosh failure; bank angles average <30°  Score: 3  Score: 4  Rape Moderate  Water reaches the base of both the lower banks; <5% of channel substrate is exposed over; bank angles average <30°  Score: 4  Riparian Buffer Vegetation  Score: 2  Riparian Buffer Vegetation  Width of natural buffer is > 2  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate is exposed  Score: 2  Raparian Buffer Vegetation  Score: 2  Width of natural buffer is 5 - 1  Moderate is exposed  Score: 3  Score: 3  Score: 3  Score: 4  Riparian Buffer Vegetation  Score: 4  Rape Moderate in minute in the substrate is score and substrate in the substrate is substrate in failure; store and substrate is score and		(not new fall or transient)	populations; may be limited in	desirable; substrate	unstable or lacking
Score: 3  Bottom Substrate Stability Score: 3  Score: 3  Score: 3  Score: 3  Score: 1  Dimensions of Largest Pool Dimensions of Largest Pool Covers amore than 50% of schannel And be the channel width: maximum depth is > 1 meth channel width: maximum depth is > 1 meth channel width: maximum depth is > 1 meth channel width so both the lower banks; <5% of channel Flow Status  High Water reaches the base of both the lower banks; <5% of channel substrate is exposed  Score: 3  Score: 4  High Water reaches the base of both the lower banks; <5% of channel explaine bank angles average <30°  Score: 4  High Stable  Utilite evidence (<10%) of cross hosh failure; bank angles average <30°  Score: 4  Stable  Utilite evidence (<10%) of cross hosh failure; bank angles average <30°  Score: 2  Score: 3  Score: 4  Stable  Utilite devidence (<10%) of cross hosh failure; bank angles average <30°  Score: 4  Riparian Buffer Vegetation  Score: 2  Score: 2  Score: 3  Score: 3  Stable  Utilite evidence (<10%) of cross hosh failure; bank angles average <30°  Score: 3  Score: 4  Rape Moderate  Water reaches the base of both the lower banks; <5% of channel substrate is exposed over; bank angles average <30°  Score: 4  Riparian Buffer Vegetation  Score: 2  Riparian Buffer Vegetation  Width of natural buffer is > 2  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate  Width of natural buffer is 5 - 1  Moderate is exposed  Score: 2  Raparian Buffer Vegetation  Score: 2  Width of natural buffer is 5 - 1  Moderate is exposed  Score: 3  Score: 3  Score: 3  Score: 4  Riparian Buffer Vegetation  Score: 4  Rape Moderate in minute in the substrate is score and substrate in the substrate is substrate in failure; store and substrate is score and		cover types such as snags.	the number of different habitat	frequently disturbed or	1
Score: 3   A   3   2   1					
Score: 3 Bottom Substrate Stability Stable Score: 3 Bottom Substrate Stability Stable Score: 1 Score: 2 Score: 1 Score: 2 Score: 3 Score: 2 Score: 3 Score: 4 Score: 3 Score: 4 Score: 5 Score: 5 Score: 5 Score: 5 Score: 5 Score: 6 Score: 2 Score: 6 Score: 6 Score: 7 Score: 7 Score: 7 Score: 9 Score:			lypes	Temoved	
Stable   Sc0% gravel or larger substrate, l.e., gravel, cobble, boulders, dominant substrate boulders, dominant substrate boulders, dominant substrate finer sediments   10-29.9% gravel or larger substrate, dominant substrate finer sediments   10-29.9% gravel or larger substrate, dominant substrate gravel, but may still be in mix of sizes   1   1   1   1   1   1   1   1   1		macrophytes			
Stable   Sc0% gravel or larger substrate, l.e., gravel, cobble, boulders, dominant substrate boulders, dominant substrate boulders, dominant substrate finer sediments   10-29.9% gravel or larger substrate, dominant substrate finer sediments   10-29.9% gravel or larger substrate, dominant substrate gravel, but may still be in mix of sizes   1   1   1   1   1   1   1   1   1	0			•	
score: 1  Score: 1  Abundant 5 riffles  Abundant 5 ro be counted, riffles must extend > 50% gravel or larger substrate; be ubstrate; be ubstrate; be ubstrate; be ubstrate; be ubstrate; by eis finer than gravel, but may still be in mix of sizes  Abundant 5 riffles  Abundant 6 riffles  Abundant 6 riffles  Abundant 7 riffle  Abundant 8 rer 1 riffle Abundant 8 rer 1 riffle Abundant 8 rer 1 riffle Abundant 9 riffles  Abundant No riffles  Abundant No existing posic;			Madayataly Stable		
substrate, i.e., gravel, cobble, boulders; dominant substrate type is mix of gravel with some finer sediments of sizes.  Score: 1  Abundant 2	Bottom Substrate Stability	1		-	
Score: 1   Abundant   Score   Abundant   Abundant   Score   Abundant   A			, ,		
type is gravel or larger   finer sediments   gravel, but may still be in mix of sizes   2   1		substrate, i.e., gravel, cobble,	substrate; dominant substrate	substrate; dominant	substrate; substrate is
Score: 1   Abundant   25 riffles   Abundant   26 riffles   27 riffles   Abundant   28 riffles   Abundant   29 riffles   Abundant   20 riffles   25 riffle		boulders; dominant substrate	type is mix of gravel with some	substrate type is finer than	uniform sand, silt, clay, or
Score: 1   Aundant   25 riffles   Abundant   24 riffles   Abundant   25 riffles   Abundant   24 riffles   Abundant   25 riffles   Abundant   25 riffles   Abundant   26 riffles   Abundant   27 riffles   Abundant   28 riff		type is gravel or larger	finer sediments	gravel, but may still be in mix	bedrock
Abundant		,, ,		-	
To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width  Score: 1  Dimensions of Largest Pool  Large Pool covers more than 50% of the channel width; maximum depth is > 1m  Score: 2  Channel Flow Status  High Water reaches the base of both the lower banks; <5% of channel, substrate is exposed  Score: 3  Score: 3  Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°  Score: 0  Channel Sinuosity  High 22 well-defined bends with deep outside areas (out banks) and shallow inside areas (point bars) are present  Score: 2  Riparian Buffer Vegetation Score: 2  Aesthetics of Reach  Wilderness Outstanding natural beauty; usually wooded or unpastured  Variance of Pool covers approximately pool covers approximately box of shall was proximately and been the channel width; maximum depth is <0.5  Moderate Small Absent No existing pools; on shallow auxillary pool meter  Moderate  Varient exhancel or file substrates are mostly exposed  Water files 25-75% of the variable was adalated to channel; or <25% of channel and/or rifle substrates are mostly exposed  Score: 3  Score: 0  Aesthetics of Reach  Wilderness Outslanding natural beauty; usually wooded or unpastured  Wilderness Outslanding natural beauty; usually wooded or unpastured  Dimensions of Largest Pool  Adaptive the channel width; maximum depth is <0.5  Moderate  Water files 25-75% of the wailable because of consoin bank fall were, small arrives in the channel and/or rifle substrates are mostly exposed  Water files 25-75% of the wailable because of consoin bank fall were, small arrives from the savidance of erosion bank fall were, small arrives from the savidance of erosion bank fall were small arrives from the savidance of erosion bank fall were small arrives from the savidance of erosion bank fall were small arrives from the savidance of erosion bank fall were small arrives from the savidance of erosion bank fall were small arrives from the savidance of erosion bank fall were small arrives f	Score: 1	4	3		1
extend >50% the width of the channel and be at least as long as the channel width  Score: 1  Dimensions of Largest Pool  Large  Pool covers more than 50% of the channel width; maximum depth is > 1m  Score: 2  3  Channel Flow Status  High  Water reaches the base of both the lower banks; <5% of both the lower banks; <5% of both the lower banks; <5% of other channel; or <25% of the channel and/or riffle substrate is exposed  Score: 3  Stable  Little evidence (<10%) of erosion bank failure; bank angles average <30°  Score: 0  Score: 2  Absent  Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meter to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the channel width; maximum depth is <0.5 meters to the	Number of Riffles	Abundant	Common	Rare	Absent
extend>50% the width of the channel and be at least as long as the channel width  Score: 1  Dimensions of Largest Pool  Pool covers more than 50% of the channel width; maximum depth is > 1m  Score: 2  This pool covers more than 50% of the channel width; maximum depth is > 1m  Score: 2  This pool covers approximately 50% or slightly less than the channel width; maximum depth is <0.5  The tere the channel width; maximum depth is <0.5  The tere the channel width; maximum depth is <0.5  The tere the channel width; maximum depth is <0.5  The tere the channel middle; maximum depth is <0.5  The channel Flow Status  High Water reaches the base of both the lower banks; <5% of the channel; or <25% of the channel and/or iffle substrates are mostly with the channel substrate is exposed  Score: 3  This pool covers approximately 25% of the channel width; maximum depth is <0.5  The channel Flow Status  Moderate Low Water fills 25-75% of the valiable channel and/or iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and/or iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are mostly with the channel and for iffle substrates are most	To be counted, riffles must	≥5 riffles	2-4 riffles	1 riffle	No riffles
channel and be at least as long as the channel width  Score: 1  Dimensions of Largest Pool  Large Pool covers more than 50% of the channel width; maximum depth is > 1m  Score: 2  3  Channel Flow Status  High Water reaches the base of both the lower banks; <5% of channel substrate is exposed  Score: 3  Bank Stability  Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°  Score: 0  Channel Sinuosity  High  Channel Sinuosity  High  Channel Sinuosity  High  Score: 2  3  Moderate Water fills <275% of the water fills consultation and shallow inside areas (point bars) are present  Score: 3  Aesthetics of Reach  Widterness Outstanding natural beauty; usually wooded or unpastured  Water fills 25-75% of the variable stance of the channel and/or shallow auxillary poc development of the channel width; maximum depth is <0.5 meter  Moderate  Low Water fills 25-75% of the variable 25% of channel and/or shallow instance are so for some the pool of erosion bank failure; small areas of erosion most hallow inside areas (cut banks) and shallow inside areas (point bars) are present  Score: 2  3  Riparian Buffer Vegetation  Auter American Sinuosity  Auter fills 25-75% of the water fills 25-75% of the variable and over; bank angles average 30 or shalf kailure; and areas of erosion most hallow inside areas (cut banks) and shallow inside areas (point bars) are present  Score: 2  3  Riparian Buffer Vegetation  Score: 2  3  Aesthetics of Reach  Widterness Outstanding natural beauty; usually wooded or unpastured width; maximum depth is <0.5 meter  Moderate  Moderate  Moderate  Moderately Unstable  Moderately Unstable  Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter  1   Moderate  Moderatel  Moderately Unstable  Small New fills 25-75% of the channel and/or riffle substrates are mostly via shallow auxillary poor depth of the channel and/or riffle substrates are mostly via shallow auxillary poor depth of the channel and/ors of the channel and/ors of the channel and/ors of the c	I ·	1	l		1
Score: 1		1	l		1
Score: 1 Dimensions of Largest Pool Dool covers more than 50% of Pool covers approximately 50% or sightly less than the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the channel width; maximum depth is <0.5 meter Dool covers approximately 50% of the defined bends fertile 50% of					
Dimensions of Largest Pool   Large   Pool covers more than 50% of the channel width; maximum depth is > 1m   Pool covers approximately the channel width; maximum depth is > 1m   Score: 2   3   2   1   0	long as the channel width				
Dimensions of Largest Pool   Large   Pool covers more than 50% of the channel width; maximum depth is > 1m   Pool covers approximately the channel width; maximum depth is > 1m   Score: 2   3   2   1   0	Coore: 1		,	,	4
Pool covers more than 50% of the channel width; maximum depth is > 1m					
the channel width; maximum depth is > 1m	Dimensions of Largest Pool				
Channel Flow Status		Pool covers more than 50% of	Pool covers approximately	Pool covers approximately	
Score: 2   3   Moderate   Low   Water fills 25-75% of the orth the lower banks; <5% of channel substrate is exposed   Score: 3   Stable   Little evidence (<10%) of erosion bank faillure; bank angles average <30°   39.9°   Moderate   Low   Water fills 25-75% of the available channel and/or riffle substrates are mostly in standing pools; or is dry   O   Unstable   Evidence of erosion bank faillure; available areas of erosion mostly healed over; bank angles average 30-39.9°   Moderately Unstable   Evidence of erosion bank faillure; available over; bank angles average 30-39.9°   Moderately Unstable   Evidence of erosion bank faillure; available over; bank angles average 30-39.9°   Moderately Unstable   Evidence of erosion bank faillure; available over; bank angles average 30-39.9°   Unstable		the channel width; maximum	50% or slightly less than the	25% of the channel width;	shallow auxillary pockets
Score: 2   3   Moderate   Low   Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed   Moderate   Low   Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed   Score: 3   3   2   1   Moderately Unstable   Evidence of erosion bank failure; bank angles average <30°   Score: 0   3   2   1   Moderately Unstable   Evidence of erosion bank failure; small areas of erosion mostly healed over; bank angles average 30-39.9°   Moderately Unstable   Evidence of erosion bank failure; rawal areas of erosion mostly healed over; bank angles average 30-39.9°   Moderately Unstable   Evidence of erosion bank failure; rawal areas of erosion mostly healed over; bank angles average 30-39.9°   Moderately Unstable   Evidence of erosion bank failure; rawal erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30-39.9°   Moderate   Low   Stable   Evidence of erosion during flooding; bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor bank failure; rawal frequent along steep bank angles average 40-80°   vor ba		depth is > 1m	channel width; maximum depth	maximum depth is <0.5	
Score: 2		l .		· ·	
Water reaches the base of both the lower banks; <5% of channel; or <25% of channel and lower banks; <5% of channel; or <25% of channel substrate is exposed  Score: 3  Bank Stability  Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°  Score: 0  Score: 0  Score: 2  Riparian Buffer Vegetation  Water fills <75% of the davailable channel and/or or the both the lower banks; of the channel; or <25% of channel; or <25% of channel; or <25% of channel substrates are mostly in standing pools; or is dry  Water fills <75% of the davailable channel and/or fifle substrates are mostly in standing pools; or is dry  Moderately Stable  Some evidence (10-29.9%) of erosion mostly headed over; bank angles average 30-39.9°  Score: 0  3  2  1  0  Moderately Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw a vareage 40-60°  Score: 1  Moderately Unstable Large and frequent evidence (>50%) of erosion or bank failure; can and during filooding; bank angles average 40-60°  Moderate  Large and frequent evidence (>50%) of erosion mostly headed over; bank angles average 40-60°  Moderately Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw and areas of erosion mostly headed over; bank angles average 40-60°  Moderate  Low	Score: 2	3			0
Water reaches the base of both the lower banks; <5% of channel; or <25% of channel and lower banks; <5% of channel; or <25% of channel substrate is exposed   Score: 3   3   2   1   0	Channel Flow Status	High	Moderate	Low	No Flow
both the lower banks; <5% of channel; or <25% of channel substrate is exposed  Score: 3  Bank Stability  Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°  Score: 0  Channel Sinuosity  High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present  Score: 2  Riparian Buffer Vegetation  Score: 2  Aesthetics of Reach  Wilderness Outstanding natural beauty; usually wooded or unpastured  Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30-39.9°  Moderately Stable Evidence of erosion bank failure is common (30-50%); bigh potential of erosion or bank failure; bank angles average 40-60°  Moderately Stable Evidence of erosion bank failure is common (30-50%); bigh potential of erosion during flooding; bank angles average 40-60°  Bank Stability  Moderately Stable Evidence of erosion bank failure is common (30-50%); of erosion mostly healed over; bank angles average 30-39.9°  Score: 0  Tree and/or native vegetation common; some development  Abstrate is exposed  ### Moderate   Vidence of erosion bank failure; is 10   Unstable   Evidence of erosion bank failure is common (30-50%); of erosion mostly healed over; bank angles average 30-30-39.9°  ### Moderate   Volumina   V		_ ·	Water fills <75% of the	Water fills 25-75% of the	Very little water in the
Channel substrate is exposed   Fiffle substrates are mostly exposed   In standing pools; or is dry					1 '
Score: 3  Bank Stability  Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°  Score: 0  Channel Sinuosity  High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present  Score: 2  Riparian Buffer Vegetation  Score: 2  Aesthetics of Reach  Stable Little evidence (<10%) of erosion of bank failure; bank angles average 30°  Stable Little evidence (<10%) of erosion bank failure; small areas of erosion mostly healed over; bank angles average 30°  are of erosion mostly healed over; bank angles average 40-60°  39.9°  Moderatel Some evidence (10-29.9%) of erosion douring flooding; bank angles average 40-60°  are of erosion bank failure; scommon (30-50%); high potential of erosion or bank failure; swa a frequent evidence (>50%) of erosion mostly healed over; bank angles average 40-60°  Bombers  Absthetics of Reach  Moderatel Some evidence (10-29.9%) of erosion mostly healed over; bank angles average 30°  are of erosion mostly healed over; bank angles average 40-60°  Absthetics of Reach  Moderately Unstable Evidence of erosion bank failure; scommon (30-50%); high potential of erosion or bank failure; scommon (30-50%); hold potential of erosion douring flooding; bank angles average 40-60°  Absthetics of Reach  Moderate  Vinde  Vinde or bank failure; scommon (30-50%); high potential of erosion douring flooding; bank angles average 40-60°  Absthetics of Reach  Moderate  Low  None  Straight channel; ma channelized  Moderate  Width of natural buffer is 10.1- 20 meters  Wide  Width of natural buffer is 5- 10 meters  Width of natural buffer is 5- 10 meters  Offensive  Stream does not enh the aesthetics of the developed, but uncluttered		'	l '		1
Score: 3 Bank Stability  Stable Little evidence (<10%) of erosion bank failure; bank angles average <30° Score: 0  Score: 0  Ability  Ability Stable Little evidence (<10%) of erosion bank failure; bank angles average <30° Score: 0  Ability Score: 0  Ability Ability Score: 0  Ability A		channel substrate is exposed	substrate is exposed		
Stable   Little evidence (<10%) of erosion bank failure; bank angles average <30°   Score: 0   Score: 0   Score: 0   Score: 0   Score: 2   Score: 3   Score: 2   Score: 2   Score: 2   Score: 3   Score: 2   Score: 3   Score: 3   Score: 4   Score: 2   Score: 3   Score: 4   Score: 2   Score: 5   Score: 2   Score: 5   Score: 2   Score: 2   Score: 2   Score: 3   Score: 3   Score: 4   Score: 2   Score: 4   Score: 5   Score: 5   Score: 5   Score: 5   Score: 5   Score: 5   Score: 6   Score: 6   Score: 6   Score: 6   Score: 7   Score: 7   Score: 9   S					
Little evidence (<10%) of erosion bank failure; bank angles average <30°  Score: 0  Channel Sinuosity  High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present  Score: 2  Riparian Buffer Vegetation  Riparian Buffer Vegetation  Score: 2  Aesthetics of Reach  Wilderness Outstanding natural beauty; usually wooded or unpastured  Large and frequent evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed oversion or bank failure; scommon (30-50%); high potential of erosion during flooding; bank angles average average 40-60°  Whoderate 1 well-defined bend OR ≥3 moderately-defined bends or bank failure; scommon (30-50%); high potential of erosion during flooding; bank angles average average 40-60°  None 1 well-defined bend OR ≥3 moderately-defined bends or bank failure; scommon (30-50%); high potential of erosion during flooding; bank angles average average 40-60°  None 1 well-defined bend OR ≥3 moderately-defined bends or bank failure; raw affequent evidence (>50%) of erosion or bank failure; scommon (30-50%); high potential of erosion during flooding; bank angles average 40-60°  None 1 well-defined bend OR ≥3 moderately-defined bends or bank angles average 40-60°  None 1 well-defined bend or so moderately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  None 2 mederately-defined bends or bank angles average 40-60°  Non			_	•	
erosion bank failure; bank angles average <30°  Score: 0  3  Channel Sinuosity  High ≥2 well-defined bends with deep outside areas (point bars) are present  Score: 2  Riparian Buffer Vegetation  Score: 2  Aesthetics of Reach  Wilderness Outstanding natural beauty; usually wooded or unpastured  erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30-39.9°  Agesthetics of Reach  erosion or bank failure; small failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°  bank failure; scommon (30-50%); high potential of erosion during flooding; bank angles average 40-60°  bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°  bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°  bank angles average 30-39.9°  Amoderate  1 well-defined bend OR ≥3 moderately-defined bends or or bank failure; raw and frequent along steep bank angles average 40-60°  None  Straight channel; mand channelized  Wide  Wide  Width of natural buffer is 10.1-100 meters  Score: 2  Aesthetics of Reach  Wilderness  Outstanding natural beauty; usually wooded or unpastured  Providence (>50%) of erosion during flooding; bank angles average 40-60°  None  Straight channel; mand channelized  Narrow  Width of natural buffer is 5-10 meters  10 meters  Common Setting  Not offensive; area is developed, but uncluttered the aesthetics of the straight channel; mand channel; manderately-defined bends present  bank angles average 40-60°  None  Straight channel; manderately-defined bends present  Score: 2  1  0  Common Setting  Not offensive; area is developed, but uncluttered	Bank Stability			_	Unstable
angles average <30° areas of erosion mostly healed over; bank angles average 30-39.9° areas of erosion mostly healed over; bank angles average 30-39.9° average 40-60° ave		Little evidence (<10%) of	Some evidence (10-29.9%) of	Evidence of erosion bank	Large and frequent
angles average <30° areas of erosion mostly healed over; bank angles average 30-39.9° areas of erosion mostly healed over; bank angles average 30-39.9° average 40-60° ave		erosion bank failure; bank	erosion or bank failure; small	failure is common (30-50%);	evidence (>50%) of erosion
over; bank angles average 30- 39.9° during flooding; bank angles frequent along steep bank angles average 40-60° bank angles average 40-60°  3		angles average <30°	areas of erosion mostly healed	high potential of erosion	or bank failure; raw areas
Score: 0    Score: 0   3		angitt artingt		,	1
Score: 0    Score: 0   3			'		
Channel Sinuosity       High       None         ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present       1 well-defined bend on R ≥ 3 moderately-defined bends on R only poorly-defined bends present       Straight channel; matchannel; match			39.9	average 40-60	bank angles average >60
Channel Sinuosity       High       Moderate         ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present       1 well-defined bends on oderately-defined bends on oderately-defined bends on oderately-defined bends on only poorly-defined bends present       Straight channel; matchannel; mat	Score: 0	3	2	1	0
≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present   1 well-defined bends   2 moderately-defined bend		· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·
deep outside areas (cut banks) and shallow inside areas (point bars) are present  Score: 2  Riparian Buffer Vegetation  Score: 2  Aesthetics of Reach  Wide putting for the property of the part of th	C. C. III O. C. II GOSILY	•			
banks) and shallow inside areas (point bars) are present  Score: 2  Riparian Buffer Vegetation  Score: 2  Aesthetics of Reach  Wide  Width of natural buffer is >20  Aesthetics of Reach  Width of natural beauty; usually wooded or unpastured  Danks) and shallow inside areas (point bars) are present  Wide  Wide  Wide  Width of natural buffer is 10.1- 20 meters  Width of natural buffer is 10.1- 20 meters  Width of natural buffer is 5- 10 meters  Common Setting  Not offensive; area is developed, but uncluttered  Wide of natural buffer is 5- 20 meters  Common Setting  Not offensive; area is developed, but uncluttered  Wide of natural buffer is 5- 20 meters  Common Setting  Not offensive; area is developed, but uncluttered				-	
Aesthetics of Reach  Are and/or native vegetation outside the first outside the f				, , ,	channelized
Score: 2  Riparian Buffer Vegetation  Extensive Width of natural buffer is >20 Midth of natural buffer is 10.1- meters  Score: 2  Aesthetics of Reach Wilderness Outstanding natural beauty; usually wooded or unpastured		banks) and shallow inside	present	defined bends present	
Riparian Buffer Vegetation Width of natural buffer is >20 Width of natural buffer is 10.1- meters  Score: 2  Aesthetics of Reach Wildeness Outstanding natural beauty; usually wooded or unpastured  Wide Width of natural buffer is 10.1- 20 meters  Ywidth of natural buffer is 10.1- 20 meters  Ywidth of natural buffer is 5- 10 meters  10 meters  10 Common Setting Not offensive; area is developed, but uncluttered  Stream does not enh the aesthetics of the		areas (point bars) are present			1
Riparian Buffer Vegetation Width of natural buffer is >20 Width of natural buffer is 10.1- meters  Score: 2  Aesthetics of Reach Wildeness Outstanding natural beauty; usually wooded or unpastured  Wide Width of natural buffer is 10.1- 20 meters  Ywidth of natural buffer is 10.1- 20 meters  Ywidth of natural buffer is 5- 10 meters  10 meters  10 Common Setting Not offensive; area is developed, but uncluttered  Stream does not enh the aesthetics of the	l		_	_	
Width of natural buffer is >20 meters 20 meters 10.1- Width of natural buffer is 5- 20 meters 10 meters 20 meters 20 meters 10 meters 20 meters 20 meters 20 meters 10 meters 20					
Score: 2    Meters   20 meters   10 meters   meters	Riparian Buffer Vegetation	1	Wide		Narrow
Score: 2  Aesthetics of Reach  Wilderness Outstanding natural beauty; usually wooded or unpastured  Natural Area Tree and/or native vegetation common; some development common; some development developed, but uncluttered the aesthetics of the		Width of natural buffer is >20	Width of natural buffer is 10.1-	Width of natural buffer is 5-	Width of natural buffer is <5
Aesthetics of Reach  Wilderness Outstanding natural beauty; usually wooded or unpastured  Natural Area Tree and/or native vegetation common; some development  Common Setting Not offensive; area is developed, but uncluttered the aesthetics of the		meters	20 meters	10 meters	meters
Aesthetics of Reach  Wilderness Outstanding natural beauty; usually wooded or unpastured  Natural Area Tree and/or native vegetation common; some development  Common Setting Not offensive; area is developed, but uncluttered the aesthetics of the	Score: 2			1	0
Outstanding natural beauty; Tree and/or native vegetation usually wooded or unpastured common; some development developed, but uncluttered the aesthetics of the		Wilderness	Natural Area	Common Setting	Offensive
usually wooded or unpastured common; some development developed, but uncluttered the aesthetics of the		1			Stream does not enhance
			· · · · · · · · · · · · · · · · · · ·	*	
I Jarea: Water clarity is lightally - Tevident (trom fields inactures - Telich as in an urban hark: - Telichtered: biobly devic					1
			evident (from fields, pastures,	such as in an urban park;	cluttered; highly developed;
		exceptional	1		
slightly turbid discolored water clarity is usuall		1	slightly turbid	discolored	water clarity is usually turbid
or discolored		1	l		or discolored
Score: 2 3 2 1 0	Score: 2	3	2	1	0
Total Score: 16 INTERMEDIATE	Total Score: 16	INTERMEDIATE			

	1			
Habitat Parameter	Scoring Category		Location: 17894	Date: 8/29/02
	· · · · ·	Common		
Available Instream Cover	Abundant >50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes	Common 30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat types	Rare 10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed	Absent <10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
Score: 3	4	3	2	1
Bottom Substrate Stability	boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	
Score: 2	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 2	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 2	3	2	1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Moderate Water fills <75% of the channel; or <25% of channel substrate is exposed	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation Score: 3	Extensive Width of natural buffer is >20 meters 3	Wide Width of natural buffer is 10.1- 20 meters 2	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters 0
Aesthetics of Reach	Wilderness	Natural Area	Common Setting	Offensive
, location of regard	Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Tree and/or native vegetation	Not offensive; area is developed, but uncluttered such as in an urban park;	Stream does not enhance the aesthetics of the area; cluttered; highly developed;
Score: 2	3	2	1	0
Total Score: 18	INTERMEDIATE	-		

Habitat Parameter	Scoring Category		Location: 17901	Date: 9/26/02
Available Instream Cover	Abundant	Common	Rare	Absent
Available ilistream Cover				
	>50% of substrate favorable	30-50% of substrate supports	10-29.9% of substrate	<10% of substrate supports
	for colonization and fish cover;	a stable habitat; adequate	supports stable habitat;	stable habitat; lack of
	good mix of several stable	habitat for maintenance of	habitat availability less than	habitat is obvious: substrate
	(not new fall or transient)	populations; may be limited in	desirable; substrate	unstable or lacking
	1,		· ·	distable of lacking
	cover types such as snags,	the number of different habitat	frequently disturbed or	
	cobble, undercut banks,	types	removed	
	macrophytes			
Score: 2 Bottom Substrate Stability	Stable 4	3 Moderately Stable	Moderately Unstable	Unstable
Dottom Substrate Stability		_		
	>50% gravel or larger	30-50% gravel or larger	10-29.9% gravel or larger	<10% gravel or larger
	substrate, i.e., gravel, cobble,	substrate; dominant substrate	substrate; dominant	substrate; substrate is
	boulders; dominant substrate	type is mix of gravel with some	substrate type is finer than	uniform sand, silt, clay, or
	type is gravel or larger	finer sediments	gravel, but may still be in mix	-
	lype is graver or larger	inici scuments	of sizes	boarook
Score: 1	4	3	2	1
lumber of Riffles	Abundant	Common	Rare	Absent
Γο be counted, riffles must extend	≥5 riffles	2-4 riffles	1 riffle	No riffles
>50% the width of the channel				
and be at least as long as the				
channel width				
Score: 2	4	3	2	1
Dimensions of Largest Pool	Large	Moderate	Small	Absent
Differsions of Largest Poor	•			
	Pool covers more than 50% of	Pool covers approximately	Pool covers approximately	No existing pools; only
	the channel width; maximum	50% or slightly less than the	25% of the channel width;	shallow auxillary pockets
	depth is > 1m		maximum depth is <0.5	1
		is 0.5-1 meter	meter	
Score: 2	3	2	1	0
Channel Flow Status	High	Moderate	Low	No Flow
onamion i ioni otatao	Water reaches the base of	Water fills <75% of the	Water fills 25-75% of the	Very little water in the
				*
	both the lower banks; <5% of	channel; or <25% of channel	available channel and/or	channel and mostly present
	channel substrate is exposed	substrate is exposed	riffle substrates are mostly	in standing pools; or stream
			exposed	is dry
Score: 3	3	2	1	0
Bank Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
	Little evidence (<10%) of	Some evidence (10-29.9%) of	Evidence of erosion bank	Large and frequent
	erosion bank failure; bank	erosion or bank failure; small	failure is common (30-50%);	evidence (>50%) of erosion
	1			
	angles average <30°	areas of erosion mostly healed	high potential of erosion	or bank failure; raw areas
		over; bank angles average 30-	during flooding; bank angles	frequent along steep banks
		39.9°	average 40-60°	bank angles average >60°
	_			
Score: 0	3	2 Madazata	1	None
Channel Sinuosity	High	Moderate	Low	
	≥2 well-defined bends with	1 well-defined bend OR ≥3	<3 moderately-defined	Straight channel; may be
	deep outside areas (cut	moderately-defined bends	bends OR only poorly-	channelized
	banks) and shallow inside	present	defined bends present	
	areas (point bars) are present			
Score: 2	3	2	11	0
	Extensive	Wide	Moderate	Narrow
Riparian Butter Vegetation			Width of natural buffer is 5-	Width of natural buffer is <5
Riparian Buffer Vegetation	Width of natural buffer is >20	Width of natural buffer is 10.1-		
Riparian Buffer Vegetation	Width of natural buffer is >20		10 meters	meters
	Width of natural buffer is >20 meters	20 meters	10 meters	meters 0
Score: 1	Width of natural buffer is >20 meters	20 meters 2	1	0
Score: 1	Width of natural buffer is >20 meters  3 Wilderness	20 meters 2 Natural Area	1 Common Setting	0 Offensive
Score: 1	Width of natural buffer is >20 meters  3  Wilderness Outstanding natural beauty;	20 meters 2 Natural Area Tree and/or native vegetation	1 Common Setting Not offensive; area is	0 Offensive Stream does not enhance
Score: 1	Width of natural buffer is >20 meters  3 Wilderness	20 meters 2 Natural Area	1 Common Setting	0 Offensive
Score: 1	Width of natural buffer is >20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured	20 meters 2 Natural Area Tree and/or native vegetation common; some development	1 Common Setting Not offensive; area is developed, but uncluttered	Offensive Stream does not enhance the aesthetics of the area;
Score: 1	Width of natural buffer is >20 meters  3  Wilderness  Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually	20 meters 2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures,	1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park;	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed
Score: 1	Width of natural buffer is >20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured	20 meters 2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be	1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed may be a dumping area;
Score: 1	Width of natural buffer is >20 meters  3  Wilderness  Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually	20 meters 2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures,	1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park;	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed may be a dumping area; water clarity is usually turbi
Riparian Buffer Vegetation  Score: 1  Aesthetics of Reach	Width of natural buffer is >20 meters  3  Wilderness  Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually	20 meters 2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be	1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed may be a dumping area;
Score: 1 Aesthetics of Reach	Width of natural buffer is >20 meters  3  Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	20 meters  2  Natural Area  Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or discolored	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed may be a dumping area; water clarity is usually turbi or discolored
Score: 1	Width of natural buffer is >20 meters  3  Wilderness  Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually	20 meters 2 Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be	1 Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbic

Habitat Darameter	Spering Cotogony		Location: 17905	Data: 0/24/02
Habitat Parameter Available Instream Cover	Scoring Category Abundant	Common	Location: 17895	Date: 9/24/02 Absent
Available instream Cover	>50% of substrate favorable for colonization and fish cover; good mix of several stable	30-50% of substrate supports a stable habitat; adequate habitat for maintenance of	10-29.9% of substrate supports stable habitat; habitat availability less than	<10% of substrate supports stable habitat; lack of habitat is obvious; substrate
	(not new fall or transient) cover types such as snags, cobble, undercut banks,	populations; may be limited in the number of different habitat types	desirable; substrate frequently disturbed or removed	unstable or lacking
	macrophytes			
Score: 3	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 2	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 3	3	2	1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Moderate Water fills <75% of the channel; or <25% of channel substrate is exposed	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is >20 meters	<b>Wide</b> Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 2	3	2	1	0
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or discolored	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
	<b></b>			<u> </u>
Score: 2	1 3	2	1	0

Habitat Parameter	Scoring Category		Location: 13657	Date: 9/25/02
Available Instream Cover	Abundant	Common	Rare	Absent
Available Ilisticalii Covei	>50% of substrate favorable for colonization and fish cover; good mix of several stable	30-50% of substrate supports a stable habitat; adequate habitat for maintenance of	10-29.9% of substrate supports stable habitat; habitat availability less than	<10% of substrate supports stable habitat; lack of habitat is obvious; substrate
	(not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes	populations; may be limited in the number of different habitat types	desirable; substrate frequently disturbed or removed	unstable or lacking
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	of sizes 2	1
Number of Riffles	Abundant	Common	Rare	Absent
To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	≥5 riffles	2-4 riffles	1 riffle	No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	50% or slightly less than the	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 3	3	2	1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Moderate Water fills <75% of the channel; or <25% of channel substrate is exposed	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 2	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is >20 meters	Wide Width of natural buffer is 10.1- 20 meters	<b>Moderate</b> Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 2	3	2	1	0
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation	Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or discolored	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
Score: 2	3	2	1	0

Habitat Darameter	Spering Cotogony		Location: 14025	Data: 0/24/02
Habitat Parameter Available Instream Cover	Scoring Category	Common	Location: 14935	Date: 9/24/02 Absent
Available instream Cover	Abundant >50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient) cover types such as snags, cobble, undercut banks,	30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat types	Rare 10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed	<10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
	macrophytes			
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 2	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 3	3	2	1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Moderate Water fills <75% of the channel; or <25% of channel substrate is exposed	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is >20 meters	Wide Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3	Mildows and	Notional Area	Common Sotting	Offensive
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or discolored	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
Score: 1	3	2	1	0
Total Score: 16	INTERMEDIATE	<u> </u>	'	·

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Habitat Parameter	Scoring Category	0	Location: 17893	Date: 9/26/02
Available Instream Cover	Abundant >50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes	Common 30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat types	Rare 10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed	Absent <10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
	banks, macrophytes			
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	1	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 1	3	2	1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	· ·	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30-39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly-defined bends present	None Straight channel; may be channelized
Score: 2	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is >20 meters	Wide Width of natural buffer is 10.1-20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 2	3	2	1	0
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	developed, but uncluttered such as in an urban park;	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
Score: 2	3	2	1	0
Total Score: 14	INTERMEDIATE	<u> </u>		

Habitat Danamatan	Carada a Cata a a a a		L 17004	D-4 0/05/00
Habitat Parameter	Scoring Category	Common	Location: 17894	Date: 9/25/02 Absent
Available Instream Cover	Abundant >50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes	Common 30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat types	Rare 10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed	Absent <10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 3	3	2	. 1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	· ·	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30-39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are bresent	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly-defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is >20 meters	Wide Width of natural buffer is 10.1-20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3	3	2	1	0
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	developed, but uncluttered such as in an urban park;	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
Score: 2	3	2	1	0
Total Score: 16	INTERMEDIATE			

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l <u>-</u>				
Habitat Parameter	Scoring Category		Location: 17901	Date: 4/16/03
Available Instream Cover	Abundant	Common	Rare	Absent
	>50% of substrate favorable	30-50% of substrate supports	10-29.9% of substrate	<10% of substrate supports
	for colonization and fish cover;	a stable habitat; adequate	supports stable habitat;	stable habitat; lack of
	good mix of several stable	habitat for maintenance of	habitat availability less than	habitat is obvious; substrate
	(not new fall or transient)	populations; may be limited in	desirable; substrate	unstable or lacking
	cover types such as snags,	the number of different habitat	frequently disturbed or	anotable of lacking
			' '	
	cobble, undercut banks,	types	removed	
	macrophytes			
Coores 2			-	1
Score: 3	4	3	2	1
Bottom Substrate Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
	>50% gravel or larger	30-50% gravel or larger	10-29.9% gravel or larger	<10% gravel or larger
	substrate, i.e., gravel, cobble,	substrate; dominant substrate	substrate; dominant	substrate; substrate is
	boulders; dominant substrate	type is mix of gravel with some	substrate type is finer than	uniform sand, silt, clay, or
	type is gravel or larger	finer sediments	gravel, but may still be in mix	
	lypo io gravor or largor	intol codimente	of sizes	boarook
Score: 1	4	3	2	1
Number of Riffles	Abundant	Common	Rare	Absent
To be counted, riffles must	≥5 riffles	2-4 riffles	1 riffle	No riffles
extend >50% the width of the				
channel and be at least as long				
as the channel width				
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large	Moderate	Small	Absent
Difficultions of Eargest 1 col	Pool covers more than 50% of		Pool covers approximately	
				No existing pools; only
	the channel width; maximum	50% or slightly less than the	25% of the channel width;	shallow auxillary pockets
	depth is > 1m	channel width; maximum depth	maximum depth is <0.5	
		is 0.5-1 meter	meter	
Score: 2	3	2	1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of	Water fills <75% of the	Water fills 25-75% of the	Very little water in the
	both the lower banks; <5% of	channel; or <25% of channel	available channel and/or	channel and mostly present
	channel substrate is exposed	substrate is exposed	riffle substrates are mostly	in standing pools; or stream
	Charmer substrate is exposed	substrate is exposed	l '	
Coores 2	-	2	exposed	is dry 0
Score: 3	3		1	
Bank Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
	Little evidence (<10%) of	Some evidence (10-29.9%) of	Evidence of erosion bank	Large and frequent
	erosion bank failure; bank	erosion or bank failure; small	failure is common (30-50%);	evidence (>50%) of erosion
	angles average <30°	areas of erosion mostly healed	high potential of erosion	or bank failure; raw areas
		over; bank angles average 30-	during flooding; bank angles	frequent along steep banks;
		39.9°	average 40-60°	bank angles average <60°
		39.9	average 40-60	bank angles average <60
Coore: 1	3	2	1	0
Score: 1			•	
Channel Sinuosity	High	Moderate	Low	None
	≥2 well-defined bends with	1 well-defined bend OR ≥3	<3 moderately-defined	Straight channel; may be
	deep outside areas (cut	moderately-defined bends	bends OR only poorly-	channelized
	banks) and shallow inside	present	defined bends present	
	areas (point bars) are present	l'	'	
Score: 2	3	2	1	0
Riparian Buffer Vegetation	Extensive	Wide	Moderate	Narrow
Tapanan Banor Vegetation				Width of natural buffer is <5
	Width of natural buffer is <20	Width of natural buffer is 10.1-	Width of natural buffer is 5-	
l	meters	20 meters	10 meters	meters
Score: 3	3	2	11	0
Aesthetics of Reach	Wilderness	Natural Area	Common Setting	Offensive
	Outstanding natural beauty;	Tree and/or native vegetation	Not offensive; area is	Stream does not enhance
	usually wooded or unpastured	common; some development	developed, but uncluttered	the aesthetics of the area;
	area; water clarity is usually	evident (from fields, pastures,	such as in an urban park;	cluttered; highly developed;
				, , , ,
	exceptional	dwellings); water clarity may be	, , ,	
		slightly turbid	discolored	water clarity is usually turbid
				or discolored
Score: 2	3	2	1	0
	INTERMEDIATE			
Total Score: 18	INTERMEDIATE			

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l <u>-</u>				
Habitat Parameter	Scoring Category	-	Location: 17895	Date: 4/17/03
Available Instream Cover	Abundant	Common	Rare	Absent
	>50% of substrate favorable	30-50% of substrate supports	10-29.9% of substrate	<10% of substrate supports
	for colonization and fish cover;	a stable habitat; adequate	supports stable habitat;	stable habitat; lack of
	good mix of several stable	habitat for maintenance of	habitat availability less than	habitat is obvious; substrate
	(not new fall or transient)	populations; may be limited in	desirable; substrate	unstable or lacking
	cover types such as snags,	the number of different habitat	frequently disturbed or	_
	cobble, undercut banks,	types	removed	
	macrophytes	,		
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
-	>50% gravel or larger	30-50% gravel or larger	10-29.9% gravel or larger	<10% gravel or larger
	substrate, i.e., gravel, cobble,	substrate; dominant substrate	substrate; dominant	substrate; substrate is
		type is mix of gravel with some	substrate type is finer than	uniform sand, silt, clay, or
	type is gravel or larger	finer sediments	gravel, but may still be in mix	
	type is graver or larger	inici scaments	of sizes	bearook
Score: 1	4	3	2	1
Number of Riffles	Abundant	Common	Rare	Absent
To be counted, riffles must	≥5 riffles	2-4 riffles	1 riffle	No riffles
extend >50% the width of the				
channel and be at least as long	I			
1				
as the channel width				
Score: 1	4	3	2	1
	<b>↓</b>			
Dimensions of Largest Pool	Large	Moderate	Small	Absent
	Pool covers more than 50% of		Pool covers approximately	No existing pools; only
	the channel width; maximum	50% or slightly less than the	25% of the channel width;	shallow auxillary pockets
	depth is > 1m	channel width; maximum depth	maximum depth is <0.5	
		is 0.5-1 meter	meter	
Score: 3	3	2	1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of	Water fills <75% of the	Water fills 25-75% of the	Very little water in the
	both the lower banks; <5% of	channel; or <25% of channel	available channel and/or	channel and mostly present
	channel substrate is exposed	substrate is exposed	riffle substrates are mostly	in standing pools; or stream
			exposed	is dry
Score: 3	3	2	1	0
Bank Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
	Little evidence (<10%) of	Some evidence (10-29.9%) of	Evidence of erosion bank	Large and frequent
	erosion bank failure; bank	erosion or bank failure; small	failure is common (30-50%);	evidence (>50%) of erosion
	angles average <30°	areas of erosion mostly healed	high potential of erosion	or bank failure; raw areas
		over; bank angles average 30-	during flooding; bank angles	frequent along steep banks;
		39.9°	average 40-60°	bank angles average <60°
		00.0	average 40 00	Barik angles average 400
Score: 0	3	2	1	0
Channel Sinuosity	High	Moderate	Low	None
I	≥2 well-defined bends with	1 well-defined bend OR ≥3	<3 moderately-defined	Straight channel; may be
	deep outside areas (cut	moderately-defined bends	bends OR only poorly-	channelized
	. ,	1		Charmenzed
	,	present	defined bends present	
1	areas (point bars) are present			
Score: 2	3	2	1	0
Score: 2 Riparian Buffer Vegetation	_	Wide 2	Moderate	
Iniparian buller vegetation	Extensive			Narrow
1	Width of natural buffer is <20	Width of natural buffer is 10.1-	Width of natural buffer is 5-	Width of natural buffer is <5
	meters	20 meters	10 meters	meters
Score: 3	3	2	1	0
Aesthetics of Reach	Wilderness	Natural Area	Common Setting	Offensive
1	Outstanding natural beauty;	Tree and/or native vegetation	Not offensive; area is	Stream does not enhance
1	usually wooded or unpastured	common; some development	developed, but uncluttered	the aesthetics of the area;
1	area; water clarity is usually	evident (from fields, pastures,	such as in an urban park;	cluttered; highly developed;
1	exceptional	dwellings); water clarity may be	water clarity may be turbid or	may be a dumping area;
1	I .	slightly turbid	discolored	water clarity is usually turbid
1		] ~ ′		or discolored
1	1		l	
Score: 2	3	2	1	0
Total Score: 17	INTERMEDIATE	-		-

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Habitat Parameter	Scoring Category		Location: 13657	Date: 4/15/03
Available Instream Cover	Abundant	Common	Rare	Absent
Available instream cover	>50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient) cover types such as snags,	30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat	10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or	<10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
	cobble, undercut banks, macrophytes	types	removed	
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 2	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth	·	Absent No existing pools; only shallow auxillary pockets
Score: 3	3	is 0.5-1 meter <b>2</b>	meter 1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Water fills <75% of the channel; or <25% of channel substrate is exposed	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average <60°
Score: 1	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is <20 meters	Wide Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3 Aesthetics of Reach	Wilderness	2 Natural Area	1 Common Setting	0 Offensive
nesuleucs UI NedUII	Outstanding natural beauty;	Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Not offensive; area is developed, but uncluttered such as in an urban park;	Stream does not enhance the aesthetics of the area; cluttered; highly developed;
Score: 2	3	2	1	0
Total Score: 18	INTERMEDIATE	<u> </u>		

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l <u>-</u>				
Habitat Parameter	Scoring Category	-	Location: 14935	Date: 4/17/03
Available Instream Cover	Abundant	Common	Rare	Absent
	>50% of substrate favorable	30-50% of substrate supports	10-29.9% of substrate	<10% of substrate supports
	for colonization and fish cover;	a stable habitat; adequate	supports stable habitat;	stable habitat; lack of
	good mix of several stable	habitat for maintenance of	habitat availability less than	habitat is obvious; substrate
	(not new fall or transient)	populations; may be limited in	desirable; substrate	unstable or lacking
	cover types such as snags,	the number of different habitat	frequently disturbed or	_
	cobble, undercut banks,	types	removed	
	macrophytes	,		
Score: 1	4	3	2	1
Bottom Substrate Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
	>50% gravel or larger	30-50% gravel or larger	10-29.9% gravel or larger	<10% gravel or larger
	substrate, i.e., gravel, cobble,	substrate; dominant substrate	substrate; dominant	substrate; substrate is
		type is mix of gravel with some	substrate type is finer than	uniform sand, silt, clay, or
	type is gravel or larger	finer sediments	gravel, but may still be in mix	
	type is graver or larger	inici scaments	of sizes	bearook
Score: 1	4	3	2	1
Number of Riffles	Abundant	Common	Rare	Absent
To be counted, riffles must	≥5 riffles	2-4 riffles	1 riffle	No riffles
extend >50% the width of the				110 111103
channel and be at least as long	I		l	1
1				1
as the channel width				
Score: 1	4	3	2	1
	<b>↓</b>			
Dimensions of Largest Pool	Large	Moderate	Small	Absent
	Pool covers more than 50% of		Pool covers approximately	No existing pools; only
	the channel width; maximum	50% or slightly less than the	25% of the channel width;	shallow auxillary pockets
	depth is > 1m	channel width; maximum depth	maximum depth is <0.5	
		is 0.5-1 meter	meter	
Score: 3	3	2	1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of	Water fills <75% of the	Water fills 25-75% of the	Very little water in the
	both the lower banks; <5% of	channel; or <25% of channel	available channel and/or	channel and mostly present
	channel substrate is exposed	substrate is exposed	riffle substrates are mostly	in standing pools; or stream
			exposed	is dry
Score: 3	3	2	1	0
Bank Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
	Little evidence (<10%) of	Some evidence (10-29.9%) of	Evidence of erosion bank	Large and frequent
	erosion bank failure; bank	erosion or bank failure; small	failure is common (30-50%);	evidence (>50%) of erosion
	angles average <30°	areas of erosion mostly healed	high potential of erosion	or bank failure; raw areas
		over; bank angles average 30-	during flooding; bank angles	frequent along steep banks;
		39.9°	average 40-60°	bank angles average >60°
		00.0	average 40 00	bank angles average - 00
Score: 0	3	2	1	0
Channel Sinuosity	High	Moderate	Low	None
I	≥2 well-defined bends with	1 well-defined bend OR ≥3	<3 moderately-defined	Straight channel; may be
	deep outside areas (cut	moderately-defined bends	bends OR only poorly-	channelized
	. ,	1		Charmenzed
	,	present	defined bends present	
1	areas (point bars) are present		I	1
Sooro: 1			4	<del>                                     </del>
Score: 1	S S S S S S S S S S S S S S S S S S S	Wide 2	Moderate 1	Norrow
Riparian Buffer Vegetation	Extensive	Wide	Moderate	Narrow
	Width of natural buffer is <20	Width of natural buffer is 10.1-	Width of natural buffer is 5-	Width of natural buffer is <5
	meters	20 meters	10 meters	meters
Score: 3	3	2	1	0
Aesthetics of Reach	Wilderness	Natural Area	Common Setting	Offensive
1	Outstanding natural beauty;	Tree and/or native vegetation	Not offensive; area is	Stream does not enhance
1	usually wooded or unpastured	common; some development	developed, but uncluttered	the aesthetics of the area;
1	area; water clarity is usually	evident (from fields, pastures,	such as in an urban park;	cluttered; highly developed;
1	exceptional	dwellings); water clarity may be	water clarity may be turbid or	may be a dumping area;
	I .	slightly turbid	discolored	water clarity is usually turbid
		] ~ ′		or discolored
	1		l	
Score: 2	3	2	1	0
Total Score: 15	INTERMEDIATE			

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Habitat Parameter	Scoring Category		Location: 17893	Date: 4/16/03
	Abundant	Common	Rare	Absent
Available Instream Cover	>50% of substrate favorable	Common 30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat types	10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed	<10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 2	3	2	1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Water fills <75% of the channel; or <25% of channel substrate is exposed	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 3	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is >20 meters	Wide Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3 Aesthetics of Reach	Wilderness	Natural Area	Common Sotting	0 Offensive
Aesuleucs of Reach	Outstanding natural beauty;	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or discolored	Stream does not enhance the aesthetics of the area; cluttered; highly developed;
Score: 2	3	2	1	0
Total Score: 15	INTERMEDIATE			

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Habitat Parameter	Scoring Catagory		Location: 17804	Data: 4/16/02
Habitat Parameter	Scoring Category	0	Location: 17894	Date: 4/16/03
Available Instream Cover	Abundant >50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes	Common 30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat types	Rare 10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed	Absent <10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
Score: 2	4	3	2	1
Bottom Substrate Stability	boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	
Score: 2	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 2	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 2	3	2	1	0
Channel Flow Status		Moderate Water fills <75% of the channel; or <25% of channel substrate is exposed	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 2	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 1	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation Score: 3	Extensive Width of natural buffer is >20 meters 3	Wide Width of natural buffer is 10.1- 20 meters 2	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters 0
Aesthetics of Reach	Wilderness	Natural Area	Common Setting	Offensive
, todalous of Nedoli	Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Tree and/or native vegetation	Not offensive; area is developed, but uncluttered such as in an urban park;	Stream does not enhance the aesthetics of the area; cluttered; highly developed;
Score: 2	3	2	1	0
Total Score: 17	INTERMEDIATE		•	

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Habitat Parameter	Scoring Category	0	Location: 17893	Date: 7/29/03
Available Instream Cover	Abundant >50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient) cover types such as snags, cobble, undercut	Common 30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat types	Rare 10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed	Absent <10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
	banks, macrophytes			
Score: 3	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	1	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 2	3	2	1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	· ·	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 2	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30-39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly-defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is >20 meters	Wide Width of natural buffer is 10.1-20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3	3	2	1	0
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	developed, but uncluttered such as in an urban park;	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
Score: 2	3	2	1	0
Total Score: 15	INTERMEDIATE			

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Habitat Parameter	Scoring Category		Location: 17894	Date: 7/29/03
Available Instream Cover	Abundant >50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes	Common 30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat types	Rare 10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed	Absent <10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
Score: 3	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 2	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 2	3	2	. 1	0
Channel Flow Status	channel substrate is exposed		substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 2	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30-39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly-defined bends present	None Straight channel; may be channelized
Score: 1	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is >20 meters	Wide Width of natural buffer is 10.1-20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3	3	2	1	0
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	such as in an urban park;	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
Score: 2 Total Score: 16	3 INTERMEDIATE	2	1	0
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Habitat Parameter	Scoring Category		Location: 17901	Date: 9/28/03
Available Instream Cover	Abundant	Common	Rare	Absent
Available ilisticatii Govei	>50% of substrate favorable for colonization and fish cover; good mix of several stable	30-50% of substrate supports	10-29.9% of substrate supports stable habitat; habitat availability less than	<10% of substrate supports stable habitat; lack of habitat is obvious; substrate
	(not new fall or transient) cover types such as snags, cobble, undercut banks, macrophytes	populations; may be limited in the number of different habitat types	desirable; substrate frequently disturbed or removed	unstable or lacking
Score: 2 Bottom Substrate Stability	Stable	3 Moderately Stable	2 Moderately Unstable	Unstable
BOILOITI Substrate Stability	>50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix	<10% gravel or larger substrate; substrate is uniform sand, silt, clay, or
Score: 1	4	3	of sizes 2	1
Number of Riffles	Abundant	Common	Rare	Absent
To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	≥5 riffles	2-4 riffles	1 riffle	No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 2	3	2	1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Moderate Water fills <75% of the channel; or <25% of channel substrate is exposed	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 2	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average <60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 2	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is <20 meters	Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3	3	2	1	0
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or discolored	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
	3	2	1	0
Score: 2				

Habitat Parameter	Scoring Category		Location: 17895	Date: 9/28/03
Available Instream Cover	Abundant	Common	Rare	Absent
Available ilisticalii Gover	>50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient) cover types such as snags,	30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in the number of different habitat	10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate frequently disturbed or	*10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
	cobble, undercut banks, macrophytes	types	removed	
Score: 2	4	3	2	1
Bottom Substrate Stability		Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 2	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth is 0.5-1 meter	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 3	3	2	1	0
Channel Flow Status	High Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Moderate Water fills <75% of the channel; or <25% of channel substrate is exposed	Low Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	No Flow Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 2	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average <60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 2	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is <20 meters	<b>Wide</b> Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3	3	2	1	0
Aesthetics of Reach	Wilderness Outstanding natural beauty; usually wooded or unpastured area; water clarity is usually exceptional	Natural Area Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Common Setting Not offensive; area is developed, but uncluttered such as in an urban park; water clarity may be turbid or discolored	Offensive Stream does not enhance the aesthetics of the area; cluttered; highly developed; may be a dumping area; water clarity is usually turbid or discolored
Score: 2	3	2	1	0
Total Score: 17	INTERMEDIATE		•	·

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Habitat Parameter	Scoring Category		Location: 13657	Date: 9/28/03
Available Instream Cover	Abundant	Common	Rare	Absent
Available Ilisticalii Covel	>50% of substrate favorable for colonization and fish cover; good mix of several stable (not new fall or transient)	30-50% of substrate supports a stable habitat; adequate habitat for maintenance of populations; may be limited in	10-29.9% of substrate supports stable habitat; habitat availability less than desirable; substrate	<10% of substrate supports stable habitat; lack of habitat is obvious; substrate unstable or lacking
	cover types such as snags, cobble, undercut banks, macrophytes	the number of different habitat types	frequently disturbed or removed	
Score: 1	4	3	2	1
Bottom Substrate Stability	Stable >50% gravel or larger substrate, i.e., gravel, cobble, boulders; dominant substrate type is gravel or larger	Moderately Stable 30-50% gravel or larger substrate; dominant substrate type is mix of gravel with some finer sediments	Moderately Unstable 10-29.9% gravel or larger substrate; dominant substrate type is finer than gravel, but may still be in mix of sizes	Unstable <10% gravel or larger substrate; substrate is uniform sand, silt, clay, or bedrock
Score: 1	4	3	2	1
Number of Riffles To be counted, riffles must extend >50% the width of the channel and be at least as long as the channel width	Abundant ≥5 riffles	Common 2-4 riffles	Rare 1 riffle	Absent No riffles
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large Pool covers more than 50% of the channel width; maximum depth is > 1m	Moderate Pool covers approximately 50% or slightly less than the channel width; maximum depth	Small Pool covers approximately 25% of the channel width; maximum depth is <0.5 meter	Absent No existing pools; only shallow auxillary pockets
Score: 3	3	is 0.5-1 meter <b>2</b>	1 1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of both the lower banks; <5% of channel substrate is exposed	Water fills <75% of the channel; or <25% of channel substrate is exposed	Water fills 25-75% of the available channel and/or riffle substrates are mostly exposed	Very little water in the channel and mostly present in standing pools; or stream is dry
Score: 2	3	2	1	0
Bank Stability	Stable Little evidence (<10%) of erosion bank failure; bank angles average <30°	Moderately Stable Some evidence (10-29.9%) of erosion or bank failure; small areas of erosion mostly healed over; bank angles average 30- 39.9°	Moderately Unstable Evidence of erosion bank failure is common (30-50%); high potential of erosion during flooding; bank angles average 40-60°	Unstable Large and frequent evidence (>50%) of erosion or bank failure; raw areas frequent along steep banks; bank angles average <60°
Score: 0	3	2	1	0
Channel Sinuosity	High ≥2 well-defined bends with deep outside areas (cut banks) and shallow inside areas (point bars) are present	Moderate 1 well-defined bend OR ≥3 moderately-defined bends present	Low <3 moderately-defined bends OR only poorly- defined bends present	None Straight channel; may be channelized
Score: 2	3	2	1	0
Riparian Buffer Vegetation	Extensive Width of natural buffer is <20 meters	Wide Width of natural buffer is 10.1- 20 meters	Moderate Width of natural buffer is 5- 10 meters	Narrow Width of natural buffer is <5 meters
Score: 3 Aesthetics of Reach	3 Wilderness	2 Natural Area	1 Common Setting	0 Offensive
Aestrieucs of Reach	Outstanding natural beauty;	Tree and/or native vegetation common; some development evident (from fields, pastures, dwellings); water clarity may be slightly turbid	Not offensive; area is developed, but uncluttered such as in an urban park;	Stream does not enhance the aesthetics of the area; cluttered; highly developed;
Score: 2	3	2	1	0
Total Score: 15	INTERMEDIATE	<del>-</del>		

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Habitat Parameter	Scoring Category		Location: 14935	Date: 9/28/03
Available Instream Cover	Abundant	Common	Rare	Absent
	>50% of substrate favorable	30-50% of substrate supports	10-29.9% of substrate	<10% of substrate supports
	for colonization and fish cover;	a stable habitat; adequate	supports stable habitat;	stable habitat; lack of
	good mix of several stable	habitat for maintenance of	habitat availability less than	habitat is obvious; substrate
	(not new fall or transient)	populations; may be limited in	desirable; substrate	unstable or lacking
	cover types such as snags,	the number of different habitat	frequently disturbed or	3
	cobble, undercut banks,	types	removed	
		1,700	lionovou	
	macrophytes			
Score: 2	4	3	2	1
Bottom Substrate Stability	Stable	Moderately Stable	Moderately Unstable	Unstable
	>50% gravel or larger	30-50% gravel or larger	10-29.9% gravel or larger	<10% gravel or larger
		substrate; dominant substrate	substrate; dominant	substrate; substrate is
		type is mix of gravel with some	substrate type is finer than	uniform sand, silt, clay, or
	1	·		
	type is gravel or larger	finer sediments	gravel, but may still be in mix	реагоск
Score: 1		,	of sizes	1
Score: 1 Number of Riffles	Abundant	Common	Rare 2	Absent
		Common		
To be counted, riffles must	≥5 riffles	2-4 riffles	1 riffle	No riffles
extend >50% the width of the	1		l	1
channel and be at least as long				
as the channel width				
Score: 1	4	3	2	1
Dimensions of Largest Pool	Large	Moderate	Small	Absent
	Pool covers more than 50% of	Pool covers approximately	Pool covers approximately	No existing pools; only
	the channel width; maximum	50% or slightly less than the	25% of the channel width;	shallow auxillary pockets
	depth is > 1m	channel width; maximum depth	maximum depth is <0.5	1
		is 0.5-1 meter	meter	
Score: 3	3	2	1	0
Channel Flow Status	High	Moderate	Low	No Flow
	Water reaches the base of	Water fills <75% of the	Water fills 25-75% of the	Very little water in the
		channel; or <25% of channel	available channel and/or	channel and mostly present
		· '		
	channel substrate is exposed	substrate is exposed	riffle substrates are mostly	in standing pools; or stream
Score: 3	3	2	exposed 1	is dry 0
	Stable	Moderately Stable	Moderately Unstable	Unstable
Bank Stability			_	
	Little evidence (<10%) of	Some evidence (10-29.9%) of	Evidence of erosion bank	Large and frequent
	erosion bank failure; bank	erosion or bank failure; small	failure is common (30-50%);	evidence (>50%) of erosion
	angles average <30°	areas of erosion mostly healed	high potential of erosion	or bank failure; raw areas
		over; bank angles average 30-	during flooding; bank angles	frequent along steep banks;
		39.9°	average 40-60°	bank angles average >60°
Score: 0	3	2	1	0
Channel Sinuosity	High	Moderate	Low	None
	≥2 well-defined bends with	1 well-defined bend OR ≥3	<3 moderately-defined	Straight channel; may be
1	deep outside areas (cut	moderately-defined bends	bends OR only poorly-	channelized
	' '	present	defined bends present	
	areas (point bars) are present	l'		1
			l	
Score: 1	3	2	1	0
Riparian Buffer Vegetation	Extensive	Wide	Moderate	Narrow
Tarian Zanar Vogotation	Width of natural buffer is <20	Width of natural buffer is 10.1-	Width of natural buffer is 5-	Width of natural buffer is <5
		20 meters	10 meters	
Score: 3	meters 3	20 meters <b>2</b>	10 meters	meters 0
Aesthetics of Reach	Wilderness	Natural Area	Common Setting	Offensive
The striction of Iveacti			_	
	Outstanding natural beauty;	Tree and/or native vegetation	Not offensive; area is	Stream does not enhance
	1 '	common; some development	developed, but uncluttered	the aesthetics of the area;
	area; water clarity is usually	evident (from fields, pastures,	such as in an urban park;	cluttered; highly developed;
1	exceptional	dwellings); water clarity may be	water clarity may be turbid or	may be a dumping area;
	1	slightly turbid	discolored	water clarity is usually turbid
	1		l	or discolored
Score: 2	3	2	1	0
Total Score: 16	INTERMEDIATE	<del></del>		