

APPENDIX I
Macroinvertebrate Data

Refer all questions to:

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ADEQ Aquatic Macroinvertebrate Sample Collection and Processing

Sample collection - Samples are collected using a D-frame dip net (500 µm mesh) from mid-September through October and April through mid-June for fall and spring collections, respectively. The samples will be cleaned of larger debris in the field before preservation. The samples will be preserved in 70% ethanol and labeled with the appropriate identifying information.

Macroinvertebrates will be collected using the traveling kick method in mountain regions. The net will be placed downstream while the substrate is disturbed upstream. A five-minute kick sample will occur along diagonal transects enabling all microhabitats present to be sampled. Two riffles will be sampled per site.

In low gradient streams of the Arkansas River Valley, Gulf Coastal Plain and Delta ecoregions, macroinvertebrates will be sampled in bank margins, woody debris/snags and submerged macrophytes. These habitats generally have the highest taxa richness and balance of pollution-sensitive organisms in coastal plain streams. Prior to 2000, five-minute samples were collected by jabbing a 30.5 cm wide D-shaped dip net along selected stream banks and substrate in a 50-m reach in these streams. Since 2000, these habitats are sampled proportional to their abundance within a 50-m reach. Organisms are collected by aggressively disturbing the target habitat for a distance of 1-m followed by 3 to 4 cleaning sweeps to collect dislodged organisms. Twenty 1-m collections are composited in a bucket, picked of large debris, preserved and labeled. Each sweep covers 0.3 m² of substrate (net width = 0.3 m x 1 m length of pass); therefore the total composite sample is taken from approximately 6 m².

A subsample of approximately 100 organisms will be picked in the laboratory. A 4-inch diameter metal ring will be randomly tossed into the tray and organisms within the ring removed for the subsample. Subsampling will continue until a minimum of 95 organisms is removed. The sample may exceed 100 organisms, but should not be less than 95. Subsamples will be identified to the proposed minimum levels for taxonomic resolution.

TAXONOMIC LEVEL	GROUPS
Genus	Plecoptera, Ephemeroptera, Odonata, Trichoptera, Megaloptera, Neuroptera, Lepidoptera, Coleoptera, Hemiptera, Diptera (in part), Crustacea, Mollusca
Tribe	Chironominae
Family	Diptera (in part)
Order	Other non-insect groups

Physical Habitat Assessment - A two-tier approach will be employed for all streams. This approach employs more quantitative data collection, which allows for a higher level of precision when comparing sites. Physical habitat data will be used to calculate metrics on the following

attributes: wetted width and mean channel depth; bank characteristics; substrate mean diameter, embeddedness; slope and sinuosity; substrate stability; in-channel cover; channel habitat types; and riparian vegetation structure, complexity and disturbance. The close connectivity of various parameters should impact multiple metrics if habitat alteration is occurring.

Tier one is an observational (qualitative) approach to assessing various habitat parameters which assigns a numeric score (0-20) to each parameter. Scores are separated into four broad categories/conditions consisting of poor, 0-5; marginal, 6-10; sub-optimal, 11-15; and optimal, 16-20. Habitat parameters assessed in all streams are epifaunal substrate/available cover, sediment deposition, channel flow status, channel alteration, bank stability, vegetative protection and riparian vegetative zone width. Channel sinuosity, pool variability and pool substrate characterization is assessed in Gulf Coastal Plain, Arkansas River Valley and Delta streams. Frequency of riffles (or bends), velocity/depth regime and embeddedness is assessed in mountain streams.

Tier two combines both a qualitative (visual estimates) and quantitative (in-stream measurements) approach to developing a habitat profile for each sample reach based on eight broad categories. These categories include measurements/estimates of the in-channel cover, substrate, canopy cover, large woody debris within bankfull width, flow and visual riparian and human influence estimates.

- *Ozark Highlands, Boston and Ouachita mountain streams* - Physical habitat characterization will include conducting a pebble count in each of two riffles.
- *Arkansas River Valley, Gulf Coastal Plain and Delta* - Physical habitat characterization will include a 50-m reach of stream. Presence/absence and quantity of undercut banks, woody debris, substrate particle size and submerged macrophytes may be highly variable in these streams. Each of these habitat types will be estimated to reduce variation and increase precision in these regions.

A two-person team, when possible, will conduct all assessments. In instances where a two-person team is not available for field assessments, one ecologist will conduct the field activities and consult a second ecologist in the office to achieve a final habitat assessment. This method will reduce bias and subjectivity between assessors. No physical habitat activities will be conducted in the stream until all biological collection is completed. Any deviations from the previously mentioned methods will be noted in the project field notebook. All information will be recorded in the field on appropriate data forms.

Biological and Habitat Sampling Coffee Creek
06-21-05 to 06-22-05

06-21-05

We met with Allan Thomas at GP mill at 8:00am to get everyone safety trained, and then proceeded to the downstream Coffee Creek (CC DN) site.

The conductivity of the water was approximately 2500 μS , which is too high to use a backpack shocker. Seining of fish was ineffective due to woody debris in the channel so hoop nets were deployed around 11:00am. Six nets were deployed with the first three blocking the entire channel. The following three were placed in the thalweg upstream. DO at the site was 1.25 mg/L. pH was 7.8. Temperature was 26.5 C.

Benthic macroinvertebrates were collected along approximately 300 ft of the stream. Visual estimation of the community shows a high dominance by bloodworms and a type of water beetle.

In the afternoon we sampled the upstream Coffee Creek site (CC UP). Conductivity at this site was 380 μS , which allowed for us to sample with the backpack shocker. DO was read by the handheld meter as 10.3 mg/L, pH was 8.01, and temperature was 27.3 C. The stream was in divided standing pools only. Benthic organisms were sampled after backpack shocking had been completed and time had been allowed for the pools to settle. The habitat assessment was conducted after benthics were collected. A number of species of concern were collected in the fish shocking. From a visual estimation the benthic community was fairly diverse with sensitive individuals such as water scorpions present.

We retained possession of the benthic samples for picking before identification by Bill Layher.

06-22-05

The hoop nets which had been deployed the day before were retrieved from CC DN. The habitat assessment was conducted at this time. One interesting species was collected, a young alligator gar.

EVENT 1

JUNE 21-22 and AUGUST 10-11, 2005

Reference Site 06-22-05 Flow was Zero

Reference Site

Rapid Habitat Assessment Score		
Site ID	Date Scored	
Reference Site	6/21/2005	
Parameter		Score
Epifaunal Substrate		10
Pool Substrate		5
Pool Variability		3
Sediment Deposition		13
Channel Flow Status		1
Channel Alteration		12
Channel Sinuosity		16
Bank Stability	LB	3
	RB	3
Vegetative Protection	LB	5
	RB	5
Riparian Vegetation Zone Width	LB	9
	RB	9
Total Score		94

RAPID HABITAT ASSESSMENT FORM GLIDE/POOL STREAMS

SITE ID: Coffee Cr UP (Reference Site) DATE: 06.15.11.2005

HABITAT PARAMETER	CATEGORY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
1. Epifaunal Substrate/ Available Cover Score: <u>10</u>	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are NOT new fall and NOT transient.) 20 19 18 17 16	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). 15 14 13 12 11	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Pool Substrate Characterization Score: <u>5</u>	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. 20 19 18 17 16	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present. 15 14 13 12 11	All mud or clay or sand bottom; little or no root mat; no submerged vegetation. 10 9 8 7 6	Hard-pan clay or bedrock; no root mat or vegetation. 5 4 3 2 1 0
3. Pool Variability Score: <u>3</u>	Even mix of large-shallow, large-deep, small shallow, small-deep pools present. 20 19 18 17 16	Majority of pools large-deep; very few shallows. 15 14 13 12 11	Shallow pools much more prevalent than deep pools. 10 9 8 7 6	Majority of pools small-shallow or absent. 5 4 3 2 1 0
4. Sediment Deposition Score: <u>13</u>	Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition. 20 19 18 17 16	Some new increases in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools. 15 14 13 12 11	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. 10 9 8 7 6	Heavy deposits of fine material; increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. 5 4 3 2 1 0
5. Channel Flow Status Score: <u>1</u>	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 19 18 17 16	Water fills over 75% of the available channel; or less than 25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0
6. Channel Alteration Score: <u>12</u>	Channelization or dredging absent or minimal; stream with normal pattern. 20 19 18 17 16	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. 15 14 13 12 11	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. 10 9 8 7 6	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. 5 4 3 2 1 0



RIPARIAN HABITAT ASSESSMENT FORM (SLIDE/POOL (continued)) STREAMS

SITE ID: CC UP DATE: 06/21/2005

HABITAT PARAMETER	CATEGORY																				
	OPTIMAL					SUB-OPTIMAL					MARGINAL					POOR					
7. Channel Sinuosity The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) Score: <u>16</u>	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)					The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.					The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.					Channel straight; waterway has been channelized for a long distance.					
	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability (score each bank) Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected. NOTE: Determine left or right side by facing downstream. Left Bank Score: <u>3</u> Right Bank Score: <u>3</u>	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-50% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
	Left Bank: 10	9	8	7	6	5	4	3	2	1	0	Right Bank: 10	9	8	7	6	5	4	3	2	1
9. Vegetative Protection (score each bank) More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Left Bank Score: <u>5</u> Right Bank Score: <u>5</u>	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% if the streambank surfaces covered by native vegetation; but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruptions obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
	Left Bank: 10	9	8	7	6	5	4	3	2	1	0	Right Bank: 10	9	8	7	6	5	4	3	2	1
10. Riparian Vegetation Zone Width (score each bank) Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone. Left Bank Score: <u>9</u> Right Bank Score: <u>9</u>	Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone less than 6 meters; little or no riparian vegetation due to human activities.					
	Left Bank: 10	9	8	7	6	5	4	3	2	1	0	Right Bank: 10	9	8	7	6	5	4	3	2	1



Benthic Macroinvertebrates
Event 1

Site Reference Site	Date of Sample	Order	Genus	Species	Number	% of sample
	6/21/2005	1 Hemiptera	Nepidae	Ranatra	2	1.0
		2 Hemiptera	Belostomatidae	Belostoma	1	0.5
		3 Coleoptera	Gyrinidae	Gyrinus	81	40.5
		4 Hemiptera	Gelastocoridae	Nethra	2	1.0
		5 Hemiptera	Gerridae	Gerris	2	1.0
		6 Diptera	Chironomidae	Tanypodinae (tribe)	95	47.5
		7 Odonata (Anisoptera)	Aeshnidae	Aeshnia	2	1.0
		8 Odonata (Zygoptera)	Coenagrionidae	Argia	3	1.5
		9 Ephemeroptera	Caenidae	Caenis	7	3.5
		10 Diptera	Chaoboridae		1	0.5
		11 Decapoda			2	1.0
		12 Amphipoda			2	1.0
		13 Annelida (Phylum)	Oligochaeta (Class)		2	1.0
Total Number Identified					200	
Total Taxa					13	

Coffee Creek 08-11-05

dist (ft)	depth	velocity	flow
14	0	0	
13	0.55	0.02	0.011
12	1	0.68	0.68
11	1.75	0.98	1.715
10	2	0.8	1.6
9	1.9	1.1	2.09
8	1.75	1.25	2.1875
7	1.6	1.19	1.904
6	1.55	1.25	1.9375
5	1.45	1.2	1.74
4	1.35	0.99	1.3365
3	1.15	0.43	0.4945
2	0.8	-0.05	-0.04
1	0	0	
		Total	15.66 cfs

Coffee Creek

Rapid Habitat Assessment Score		
Site ID	Date Scored	
Coffee Creek	8/11/2005	
Parameter		Score
Epifaunal Substrate		16
Pool Substrate		10
Pool Variability		11
Sediment Deposition		5
Channel Flow Status		20
Channel Alteration		14
Channel Sinuosity		13
Bank Stability	LB	10
	RB	10
Vegetative Protection	LB	10
	RB	10
Riparian Vegetation Zone Width	LB	10
	RB	10
Total Score		149

RAPID HABITAT ASSESSMENT FORM GLIDE/POOL STREAMS

SITE ID: Coffee Cr DN DATE: 08/11/2005

HABITAT PARAMETER	CATEGORY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
1. Epifaunal Substrate/ Available Cover Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are NOT new fall and NOT transient.) Score: <u>16</u>	20 19 18 17 <u>16</u>	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. Score: <u>10</u>	20 19 18 17 16	15 14 13 12 11	<u>10</u> 9 8 7 6	5 4 3 2 1 0
3. Pool Variability Even mix of large-shallow, large-deep, small shallow, small-deep pools present. Score: <u>11</u>	20 19 18 17 16	15 14 13 12 <u>11</u>	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition. Score: <u>5</u>	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	<u>5</u> 4 3 2 1 0
5. Channel Flow Status Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. Score: <u>20</u>	<u>20</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration Channelization or dredging absent or minimal; stream with normal pattern. Score: <u>14</u>	20 19 18 17 16	15 <u>14</u> 13 12 11	10 9 8 7 6	5 4 3 2 1 0



RAPID HABITAT ASSESSMENT FORM: GLIDE/POOL (continued) - STREAMS

SITE ID: LoFsee Cr DN DATE: 08/11/2005

HABITAT PARAMETER	CATEGORY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
7. Channel Sinuosity The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) Score: <u>13</u>	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) 20 19 18 17 16	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line. 15 14 <u>13</u> 12 11	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line. 10 9 8 7 6	Channel straight; waterway has been channelized for a long distance. 5 4 3 2 1 0
8. Bank Stability (score each bank) NOTE: Determine left or right side by facing downstream. Left Bank Score: <u>10</u>	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected. Left Bank: <u>10</u> 9	Moderately stable; infrequent, small areas of erosion mostly healed over, 5-30% of bank in reach has areas of erosion. 8 7 6	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. 5 4 3	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. 2 1 0
Right Bank Score: <u>10</u>	Right Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Left Bank Score: <u>10</u>	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Left Bank: <u>10</u> 9	70-90% if the streambank surfaces covered by native vegetation; but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. 8 7 6	50-70% of the streambank surfaces covered by vegetation; disruptions obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. 5 4 3	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. 2 1 0
Right Bank Score: <u>10</u>	Right Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetation Zone Width (score each bank) Left Bank Score: <u>10</u>	Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone. Left Bank: <u>10</u> 9	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. 8 7 6	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. 5 4 3	Width of riparian zone less than 6 meters; little or no riparian vegetation due to human activities. 2 1 0
Right Bank Score: <u>10</u>	Right Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0



Benthic Macroinvertebrates
Event 1

Site	Date of Sample	Order	Genus	Species	Number	% of sample
Coffee Creek	8/11/2005	1 Hemiptera	Belostomatidae	Belostoma	3	2.2
		2 Coleoptera	Gyrinidae	Gyrinus	5	3.6
		3 Hemiptera	Gelastocoridae	Nethra	7	5.0
		4 Diptera	Chironomidae	Tanypodinae	116	83.5
		5 Diptera	Ptychopteridae	Ptychoptera	1	0.7
		6 Diptera	Tipulidae		1	0.7
		7 Lepidoptera			1	0.7
		8 Trichoptera			4	2.9
		9 Coleoptera	Philopotamidae		1	0.7
Total Number Identified					139	
Total Taxa					9	

Mossy Lake Event 1

Summary of Ranking	
Date: 08/11/05	
Category I = Score > 70 Category II = Score 51-69 Category III = Score 30-50 Category IV = Score < 30	Score for Water Quality Functions 22 Score for Hydrologic Functions 16 Score for Habitat Functions 17 Total Score 55
Wetland Type: Riverine	Final Category II

WETLAND RATING FORM – EASTERN WASHINGTON

Wetland Name: Mossy Lake Date: 08-15-05

Name of wetland (if known): _____

Location: SEC: ___ TWSHP: ___ RNGE: ___ (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: Eric Affiliation: UoFA Date of site visit: 08-11-05

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ___ II III ___ IV ___

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for "Water Quality" Functions
 Score for Hydrologic Functions
 Score for Habitat Functions
 TOTAL score for functions

22
16
17
55

Category based on SPECIAL CHARACTERISTICS of wetland

I ___ II ___ III ___ Does not Apply ___

Final Category (choose the "highest" category from above)

II

Check the appropriate type and class of wetland being rated.

Wetland Type	Wetland Class	
Vernal Pool	Depressional	
Alkali	Riverine	X
Natural Heritage Wetland	Lake-fringe	
Bog	Slope	
Forest		
None of the above		

Does the wetland being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
<p>A1. <i>Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.</p>		
<p>A2. <i>Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state database.</p>		
<p>A3. Does the wetland contain individuals of Priority species listed by the WDFW for the state?</p>		
<p>A4. Does the wetland have a local significance in addition to its functions. For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.</p>		

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. Classifying the wetland first simplifies the questions needed to answer how it functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 20 for more detailed instructions on classifying wetlands.

Classification of Vegetated Wetlands for Eastern Washington

Wetland Name: _____ Date: _____

1. Does the wetland meet both of the following criteria?

___ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);

___ At least 30% of the open water area is deeper than 3 m (10 ft)?

NO -- go to Step 2 **YES** -- The wetland class is **Lake-fringe (lacustrine fringe)**

2. Does the wetland meet all of the following criteria?

___ The wetland is on a slope (*slope can be very gradual*),

___ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

___ The water leaves the wetland **without being impounded?**

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than a foot deep).*

NO - go to Step 3 **YES** -- The wetland class is **Slope**

3. Is the wetland in a valley or stream channel where it gets inundated by overbank flooding from that stream or river? In general, the flooding should occur at least once every ten years to answer "yes." The wetland can contain depressions that are filled with water when the river is not flooding.

NO - go to Step 4 **YES** -- The wetland class is **Riverine**

4. Is the wetland in a topographic depression, outside areas that are inundated by overbank flooding, in which water ponds, or is saturated to the surface, at some time of the year. This means that any outlet, if present, is higher than the interior of the wetland.

NO -- go to Step 5 **YES** -- The wetland class is **Depressional**

5. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. If you have a wetland with several HGM classes present within its boundaries use the following table to identify the appropriate class to use for the rating system. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated.

HGM Classes Within One Delineated Wetland Boundary	Class to Use in Rating if area of this class = 10% total
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine (riverine is within boundary of depression)	Depressional
Depressional + Lake-fringe	Depressional

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

R Riverine Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that the wetland functions to improve water quality		
R	R 1.0 Does the wetland have the <u>potential</u> to improve water quality? (see p. 45)	
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover >1/3 area of wetland points = 6 Depressions cover > 1/10 area of wetland points = 3 Depressions present but cover < 1/10 area of wetland points = 1 No depressions present points = 0	6
R	R 1.2 Characteristics of the vegetation in the wetland: Forest or shrub > 2/3 the area of the wetland points = 10 Forest or shrub 1/3 - 2/3 area of the wetland points = 5 Ungrazed, emergent plants > 2/3 area of wetland points = 5 Ungrazed emergent plants 1/3 - 2/3 area of wetland points = 2 Forest, shrub, and ungrazed emergent < 1/3 area of wetland points = 0	5
R	Total for R1 <i>Add the points in the boxes above</i>	11
R	R 2.0 Does the wetland have the <u>opportunity</u> to improve water quality? (see p.46) Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. <i>Note which of the following conditions provide the sources of pollutants.</i> — Grazing in the wetland or within 150ft — Wetland intercepts groundwater within the Reclamation Area — Untreated stormwater flows into wetland — Tilled fields or orchards within 150 feet of wetland — Water flows into wetland from a stream or culvert that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential or urban areas are within 150 ft of wetland — The river or stream that floods the wetland has a contributing basin where human activities have raised the levels of sediment, toxic compounds or nutrients in the river water above water quality standards — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 2
R	TOTAL - Water Quality Functions Multiply the score from R1 by the multiplier in R2 <i>Record score on p. 1 of field form</i>	22

Comments

R	Riverine Wetlands	Points
HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation		
R	R 3.0 Does the wetland have the <u>potential</u> to reduce flooding and erosion? (see p. 47)	
R	R 3.1 Amount overbank storage the wetland provides: <i>Estimate the average width of the wetland perpendicular to the direction of the flow of water and the width of the stream or river channel (distance between banks). Calculate the ratio: width of wetland/ width of stream.</i> If the ratio is 2 or more points = 10 If the ratio is between 1 and < 2 points = 8 If the ratio is 1/2 to < 1 points = 4 If the ratio is 1/4 to < 1/2 points = 2 If the ratio is < 1/4 points = 1	10
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: <i>Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.</i> Forest or shrub for more than 2/3 the area of the wetland. points = 6 Forest or shrub for >1/3 area OR Emergent plants > 2/3 area points = 4 Forest or shrub for > 1/10 area OR Emergent plants > 1/3 area points = 2 Vegetation does not meet above criteria points = 0	6
R	Total for R3 <i>Add the points in the boxes above</i>	
R	R 4.0 Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? (see p. 50) <i>Answer NO if the major source of water is irrigation return flow or water levels are controlled by a reservoir.</i> <i>Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows.</i> <i>Note which of the following conditions apply.</i> <ul style="list-style-type: none"> — There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. — There are natural resources downstream (e.g. salmon redds) than can be damaged by flooding — Other _____ <div style="display: flex; justify-content: space-between; margin-top: 10px;"> YES multiplier is 2 NO multiplier is 1 </div>	multiplier <u>1</u>
R	TOTAL - Hydrologic Functions Multiply the score from R3 by the multiplier in R4 <i>Record score on p. 1 of field form</i>	

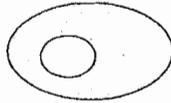
Comments

H 1.5. Interspersion of habitats (see p. 67)

Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.



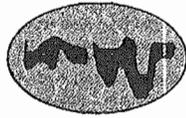
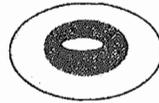
None = 0 points



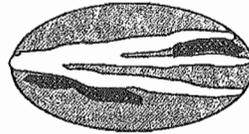
Low = 1 point



Moderate = 2 points



High = 3 points



[Riparian braided channel]

NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".

3

H 1.6. Special Habitat Features: (see p. 68)

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

- Loose rocks larger than 4" or large, downed, woody debris (>4in. diameter) within the area of surface ponding or in stream.
- Cattails or bulrushes are present within the wetland.
- Standing snags (diameter at the bottom > 4 inches) in the wetland or within 30 m (100 ft) of the edge.
- Emergent or shrub vegetation in areas that are permanently inundated/ponded. The presence of "yellow flag" Iris is a good indicator of vegetation in areas permanently ponded.
- Stable steep banks of fine material that might be used by beaver or muskrat for denning (>45 degree slope) OR signs of recent beaver activity
- Invasive species cover less than 20% in each stratum of vegetation

Maximum score possible = 6

3

TOTAL Potential to provide habitat
Add the scores in the column above

12

Comments

<p>H 2.0 Does the wetland have the opportunity to provide habitat for many species?</p>	
<p>H 2.1 <u>Buffers</u> (see p. 71) Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."</p> <p><input checked="" type="checkbox"/> 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) Points = 5</p> <p><input type="checkbox"/> 330 ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4</p> <p><input type="checkbox"/> 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4</p> <p><input type="checkbox"/> 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3</p> <p><input type="checkbox"/> 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3</p> <p>If buffer does not meet any of the criteria above</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 80ft (25 m) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> No paved areas or buildings within 170ft (50m) of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer. Points = 1</p> <p><input type="checkbox"/> Vegetated buffers are <6.6ft wide (2m) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland). Points = 0</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</p>	<p>5</p>
<p>H 2.2 <u>Wet Corridors</u> (see p. 72)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor at least ¼ mile long with surface water or flowing water throughout most of the year (> 9 months/yr)? (dams, heavily used gravel roads, paved roads, fields tilled to edge of stream, or pasture to edge of stream are considered breaks in the corridor). YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken, vegetated corridor, at least ¼ mile long with water flowing seasonally, OR a lake-fringe wetland without a "wet" corridor, OR a riverine wetland without a surface channel connecting to the stream? YES = 2 points (go to H 2.3) NO go to H 2.2.3</p> <p>H 2.2.3 Is the wetland within a 1/2 mile of any permanent stream, seasonal stream, or lake (do not include man-made ditches)? YES = 1 point NO = 0 points</p>	<p>1</p>

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 74)

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Aspen Stands:** Pure or mixed stands of aspen greater than 2 acres.
- Cliffs:** Greater than 25 ft high and occurring below 5000 ft.
- Old-growth forests:** (east of Cascade crest): In general, stands will be >150 years of age, with 10 trees/acre that are > 21 in dbh, and 1 - 3 snags/acre > 12-14 in diameter.
- Mature forests:** Stands with average diameters exceeding 21 in dbh; crown cover may be less than 100%; decay, 80 - 160 years old east of the Cascade crest.
- Prairies and Steppe:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.
- Shrub-steppe:** Tracts of land consisting of plant communities with one or more layers of perennial grasses and a conspicuous but discontinuous layer of shrubs.
- Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft, composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
- Urban Natural Open Space:** A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
- Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

If wetland has 2 or more Priority Habitats = 4 points
If wetland has 1 Priority Habitat = 2 points
No Priority habitats = 0 points

Comments

2

<p>H 2.4 <u>Landscape</u> (choose the <i>one</i> description of the landscape around the wetland that best fits) (see p. 76)</p> <p>— The wetland is in an area where annual rainfall is less than 12 inches, and its water regime is not influenced by irrigation practices, dams, or water control structures. (Generally, this means outside boundaries of reclamation areas, irrigation district, or reservoirs) points = 5</p> <p>— There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing in the connection or an open water connection along a lake shore without heavy boat traffic are OK, but connections should NOT be bisected by paved roads, fill, fields, heavy boat traffic or other development). points = 5</p> <p>⊗ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed? points = 2</p> <p>— There is at least 1 wetland within ½ mile. points = 1</p> <p>— Does not meet any of the four criteria above points = 0</p>	2
<p>H 2. TOTAL Score - opportunity for providing habitat <i>Add the scores in the column above</i></p>	10
<p>H 3.0 Does the wetland have indicators that its ability to provide habitat is reduced?</p>	
<p>H 3.1 <u>Indicator of reduced habitat functions</u> (see p. 75) Do the areas of open water in the wetland have a resident population of carp (see text for indicators of the presence of carp)? (NOTE: This question does not apply to reservoirs with water levels controlled by dams, such as the reservoirs on the Columbia and Snake Rivers)</p> <p style="text-align: center;">YES = - 5 points NO = 0 points</p>	<p>Points will be subtracted</p> <p>-5</p>
<p>Total Score for Habitat Functions – add the points for H 1, H 2, and H 3 and record the result on p. 1</p>	

Comments

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate Category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply.

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
<p>SC 1.0 Vernal pools (see p. 79)</p> <p>Is the wetland less than 4000 ft², and does it meet at least two of the following criteria?</p> <ul style="list-style-type: none"> — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. <i>NOTE: If you find perennial, "obligate", wetland plants the wetland is probably NOT a vernal pool</i> — The soil in the wetland are shallow (<1ft deep (30 cm)) and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the "wet" season. <p>YES = Go to SC 1.1 NO - <i>not a vernal pool</i></p> <p>SC 1.1 Is the vernal pool relatively undisturbed in February and March? YES = Go to SC 1.2 NO - <i>categorize based on functions</i></p>	
<p>SC 1.2 Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 miles (other wetlands, rivers, lakes etc.)? YES = Category II NO = Category III</p>	<p align="center">Cat. II Cat. III</p>
<p>SC 2.0 Alkali wetlands (see p. 81)</p> <p>Does the wetland meets one of the following two criteria?</p> <ul style="list-style-type: none"> — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 - 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 2 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. <p>OR does the wetland meets two of the following three sub-criteria?</p> <ul style="list-style-type: none"> — Salt encrustations around more than 80% of the edge of the wetland — More than ¾ of the plant cover consists of species listed on Table 2 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. <p align="center">YES = Category I NO - <i>categorize based on functions</i></p>	<p align="center">Cat. I</p>

<p>SC 5.0 Forested Wetlands (see p. 85)</p> <p>Does the wetland have an area of forest (you should have identified a forested class, if present, in question H 1.1) rooted within its boundary that meet at least one of the following three criteria?</p> <ul style="list-style-type: none"> — The wetland is within the “100 year” floodplain of a river or stream — aspen (<i>Populus tremuloides</i>) are a dominant or co-dominant of the “woody” vegetation. (Dominant means it represents at least 50% of the cover of woody species, co-dominant means it represents at least 20% of the total cover of woody species) — There is at least ¼ acre of trees (even in wetlands smaller than 2.5 acres) that are “mature” or “old-growth” according to the definitions for these priority habitats developed by WDFW (see p. 83) <p>YES = go to SC 5.1 NO - categorize based on functions</p>	
<p>SC 5.1 Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees</p> <p>Slow growing trees are: western red cedar (<i>Thuja plicata</i>), Alaska yellow cedar (<i>Chamaecyparis nootkatensis</i>), pine spp. mostly “white” pine (<i>Pinus monticola</i>), western hemlock (<i>Tsuga heterophylla</i>), Englemann spruce (<i>Picea engelmannii</i>).</p> <p>YES = Category I NO = go to SC 5.2</p>	<p>Cat. I</p>
<p>SC 5.2 Does the wetland have aspen (<i>Populus tremuloides</i>) as a dominant or co-dominant species in the category of woody species?</p> <p>YES = Category I NO = go to SC 5.3</p>	<p>Cat. I</p>
<p>SC 5.3 Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are fast growing species.</p> <p>Fast growing species are:</p> <p>Alders – red (<i>Alnus rubra</i>), thin-leaf (<i>A. tenuifolia</i>)</p> <p>Cottonwoods - narrow-leaf (<i>Populus angustifolia</i>), black (<i>P. balsamifera</i>)</p> <p>Willows- peach-leaf (<i>Salix amygdaloides</i>), Sitka (<i>S. sitchensis</i>), Pacific (<i>S. lasiandra</i>), Aspen - (<i>Populus tremuloides</i>), Water Birch (<i>Betula occidentalis</i>)</p> <p>YES = Category II NO = go to SC 5.5</p>	<p>Cat. II</p>
<p>SC 5.5 Is the forested component of the wetland within the “100 year floodplain” of a river or stream?</p> <p>YES = Category II NO - categorize based on functions</p>	<p>Cat. II</p>
<p>Category of wetland based on Special Characteristics</p> <p>Choose the “highest” rating if wetland falls into several categories.</p> <p>If you answered NO for all types enter “Not Applicable” on p.1</p>	

CC Below 06-22-05

dist (ft)	depth	velocity	flow
0	0	0	
1	0.4	0.2	0.12
3	0.6	1.8	2.16
5	1	2.5	5
7	1.8	2.8	10.08
9	2.1	2.3	9.66
11	1.9	2.2	8.36
13	1.8	1.6	5.76
15	1.5	0.2	0.6
17	0.8	-0.05	-0.06
18	0	0	
		Total	41.68 cfs

Coffee Creek Below Mossy Lake

Rapid Habitat Assessment Score		
Site ID	Date Scored	
Coffee Creek Below Mossy Lake	6/22/2005	
Parameter		Score
Epifaunal Substrate		16
Pool Substrate		6
Pool Variability		14
Sediment Deposition		8
Channel Flow Status		20
Channel Alteration		15
Channel Sinuosity		16
Bank Stability	LB	2
	RB	2
Vegetative Protection	LB	2
	RB	2
Riparian Vegetation Zone Width	LB	10
	RB	10
Total Score		123

Reviewed by (Initials): _____

RAPID HABITAT ASSESSMENT FORM: GLIDE/POOL - STREAMS

SITE ID: CC DN Coffee Creek below ML DATE: 06/22/2005

HABITAT PARAMETER	CATEGORY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
1. Epifaunal Substrate/ Available Cover Score: <u>16</u>	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are NOT new fall and NOT transient.)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	20 19 18 17 <u>16</u>	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization Score: <u>6</u>	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 <u>6</u>	5 4 3 2 1 0
3. Pool Variability Score: <u>14</u>	Even mix of large-shallow, large-deep, small shallow, small-deep pools present.	Majority of pools large-deep; very few shallows.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or absent.
	20 19 18 17 16	15 <u>14</u> 13 <u>12</u> 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition Score: <u>8</u>	Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition.	Some new increases in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material; increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 18 17 16	15 14 13 12 11	10 9 <u>8</u> 7 6	5 4 3 2 1 0
5. Channel Flow Status Score: <u>20</u>	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills over 75% of the available channel; or less than 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 channel and mostly present as standing pools.
	<u>20</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration Score: <u>15</u>	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gablon or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	20 19 18 17 16	<u>15</u> 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

RAPID HABITAT ASSESSMENT FORM: GLIDE/POOL (continued) - STREAMS

SITE ID: CC DN Coffee Creek below DATE: 06.12.2009

HABITAT PARAMETER	CATEGORY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
7. Channel Sinuosity The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) Score: <u>16</u>	20 19 18 17 <u>16</u>	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) NOTE: Determine left or right side by facing downstream. Left Bank Score: <u>2</u> Right Bank Score: <u>2</u>	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected. Left Bank: 10 9 Right Bank: 10 9	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. 8 7 6	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. 5 4 3	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. <u>2</u> 1 0 <u>2</u> 1 0
9. Vegetative Protection (score each bank) Left Bank Score: <u>2</u> Right Bank Score: <u>2</u>	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Left Bank: 10 9 Right Bank: 10 9	70-90% if the streambank surfaces covered by native vegetation; but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. 8 7 6	50-70% of the streambank surfaces covered by vegetation; disruptions obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. 5 4 3	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. <u>2</u> 1 0 <u>2</u> 1 0
10. Riparian Vegetation Zone Width (score each bank) Left Bank Score: <u>10</u> Right Bank Score: <u>10</u>	Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone. Left Bank: <u>10</u> 9 Right Bank: <u>10</u> 9	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. 8 7 6	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. 5 4 3	Width of riparian zone less than 6 meters; little or no riparian vegetation due to human activities. 2 1 0 2 1 0

Benthic Macroinvertebrates
Event 1

Site	Date of Sample	Order	Genus	Species	Number	% of sample
Coffee Creek below Mossy Lake	6/21/2005	1 Annelida (Phylum)	Hirudinea (Class)		2	1.0
		2 Coleoptera	Gyrinidae	Gyrinus	1	0.5
		3 Diptera	Chironomidae	Tanypodinae (tribe)	197	98.5
Total Number Identified					200	
Total Taxa					3	

EVENT 2

February 7, 2006

Reference Site 02-07-06

dist (m)	dist (ft)	depth	velocity	flow
0	0.00	0	0	
0.5	1.64	0.3	0	0
1	3.28	0.5	0	0
1.5	4.92	0.6	0	0
2	6.56	1.2	0	0
2.5	8.20	1.5	0	0
3	9.84	1.8	0.05	0.147645
3.5	11.48	1.7	0.1	0.278885
4	13.12	1.4	0.12	0.275604
4.5	14.76	1	0.1	0.16405
5	16.41	0.7	0.05	0.057418
5.5	18.05	0	0	
			Total	0.92 cfs

Reference Site

Rapid Habitat Assessment Score		
Site ID	Date Scored	
Reference Site	2/7/2006	
Parameter		Score
Epifaunal Substrate		17
Pool Substrate		15
Pool Variability		13
Sediment Deposition		13
Channel Flow Status		19
Channel Alteration		14
Channel Sinuosity		13
Bank Stability	LB	5
	RB	5
Vegetative Protection	LB	5
	RB	5
Riparian Vegetation Zone Width	LB	7
	RB	8
Total Score		139

RAPID HABITAT ASSESSMENT FORM: GLIDE/POOL STREAMS

SITE ID: Reference Site

DATE: 02/07/2006

HABITAT PARAMETER	QUALITY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
1. Epifaunal Substrate/ Available Cover Score: <u>17</u>	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are NOT new fall and NOT transient.)	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
	20 19 18 <u>17</u> 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization Score: <u>15</u>	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
	20 19 18 17 16	<u>15</u> 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability Score: <u>13</u>	Even mix of large-shallow, large-deep, small shallow, small-deep pools present.	Majority of pools large-deep; very few shallows.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or absent.
	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition Score: <u>13</u>	Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition.	Some new increases in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material; increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status Score: <u>19</u>	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills over 75% of the available channel; or less than 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 channel and mostly present as standing pools.
	20 <u>19</u> 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration Score: <u>14</u>	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
	20 19 18 17 16	15 <u>14</u> 13 12 11	10 9 8 7 6	5 4 3 2 1 0



RIPARIAN HABITAT ASSESSMENT FORM GLIDE POOL COUNTRY STREAMS

SITE ID: Reference Site DATE: 02/07/2006

		OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
7. Channel Sinuosity		The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
	Score: <u>13</u>	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) <small>NOTE: Determine left or right side by facing downstream.</small>	Left Bank Score: <u>5</u>	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
	Right Bank Score: <u>5</u>	Left Bank: 10 9	8 7 6	<u>5</u> 4 3	2 1 0
9. Vegetative Protection (score each bank)	Left Bank Score: <u>5</u>	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% if the streambank surfaces covered by native vegetation; but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruptions obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
	Right Bank Score: <u>5</u>	Left Bank: 10 9	8 7 6	<u>5</u> 4 3	2 1 0
10. Riparian Vegetation Zone Width (score each bank)	Left Bank Score: <u>7</u>	Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone less than 6 meters; little or no riparian vegetation due to human activities.
	Right Bank Score: <u>8</u>	Left Bank: 10 9	8 <u>7</u> 6	5 4 3	2 1 0

Benthic Macroinvertebrates
Event 2

Site Reference Site	Date of Sample	Order	Genus	Species	Number	% of sample
	2/7/2006	1 Crustacea	Decapoda		14	7.8
		2 Coleoptera	Dytiscidae		2	1.1
		3 Gastropoda	Pulmonata	Planorbidae	3	1.7
		4 Mollusca	Bivalvia	Sphaeriidae	3	1.7
		5 Odonata	Anisoptera	Libellulidae	1	0.6
		6 Diptera	Chironomidae	Tanypodinae	6	3.4
		7 Annelida	Oligochaeta		3	1.7
		8 Crustacea	Amphipoda		147	82.1

Total Number Identified

Total Taxa

179

8

Coffee Creek 02-07-06

dist (m)	dist (ft)	depth	velocity	flow
0.6	1.97	0	0	
1	3.28	0.5	0.4	0.29529
1.5	4.92	1.3	0.7	1.492855
2	6.56	1.5	1	2.46075
2.5	8.20	1.4	1.2	2.75604
3	9.84	1.6	1.1	2.88728
3.5	11.48	2	1.05	3.44505
4	13.12	1.4	0.7	1.60769
4.5	14.76	0.9	0.4	0.59058
5	16.41	0.1	0	
			Total	15.54 cfs

Coffee Creek

Rapid Habitat Assessment Score		
Site ID	Date Scored	
Coffee Creek	2/7/2006	
Parameter		Score
Epifaunal Substrate		17
Pool Substrate		13
Pool Variability		10
Sediment Deposition		10
Channel Flow Status		20
Channel Alteration		19
Channel Sinuosity		18
Bank Stability	LB	10
	RB	10
Vegetative Protection	LB	10
	RB	10
Riparian Vegetation Zone Width	LB	10
	RB	10
Total Score		167

RAP HABITAT ASSESSMENT FORM (SLIDE/POOL STREAMS)

SITE ID: Coffee Creek

DATE: 02/07/2006

HABITAT COMPONENT	QUALITY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
1. Epifaunal Substrate/ Available Cover Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are NOT new fall and NOT transient.) Score: <u>17</u>	20 19 18 <u>17</u> 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. Score: <u>13</u>	20 19 18 17 16	15 14 <u>13</u> 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability Even mix of large-shallow, large-deep, small shallow, small-deep pools present. Score: <u>10</u>	20 19 18 17 16	15 14 13 12 11	<u>10</u> 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition. Score: <u>10</u>	20 19 18 17 16	15 14 13 12 11	<u>10</u> 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. Score: <u>20</u>	<u>20</u> 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration Channelization or dredging absent or minimal; stream with normal pattern. Score: <u>19</u>	20 <u>19</u> 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0



RIPARIAN HABITAT ASSESSMENT FORM **GLIDE POOL** **CONTINUED** **STREAMS**

SITE ID: Coffee Creek DATE: 02/07/2006

PARAMETER	RATING			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
7. Channel Sinuosity The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) Score: <u>18</u>	20 19 <u>18</u> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected. NOTE: Determine left or right side by facing down stream.	Left Bank Score: <u>10</u> Left Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0
Right Bank Score: <u>10</u> Right Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0	
9. Vegetative Protection (score each bank) More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	Left Bank Score: <u>10</u> Left Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0
Right Bank Score: <u>10</u> Right Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0	
10. Riparian Vegetation Zone Width (score each bank) Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone.	Left Bank Score: <u>10</u> Left Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0
Right Bank Score: <u>10</u> Right Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0	

Benthic Macroinvertebrates
Event 2

Site	Date of Sample	Order	Genus	Species	Number	% of sample
Coffee Creek	2/7/2006	1 Diptera	Chironomidae	Tanypodinae	74	77.9
		2 Diptera	Culicidae		1	1.1
		3 Annelida	Oligochaeta		13	13.7
		4 Crustacea	Amphipoda		2	2.1
		5 Coleoptera	Dytiscidae		3	3.2
		6 Gastropoda	Pulmonata	Physidae	2	2.1
Total Number Identified					95	
Total Taxa					6	

Mossy Lake Event 2

Summary of Ranking									
Date: 02/07/06									
Category I = Score > 70 Category II = Score 51-69 Category III = Score 30-50 Category IV = Score < 30	<table border="1"> <tr> <td>Score for Water Quality Functions</td> <td>22</td> </tr> <tr> <td>Score for Hydrologic Functions</td> <td>14</td> </tr> <tr> <td>Score for Habitat Functions</td> <td>20</td> </tr> <tr> <td>Total Score</td> <td>56</td> </tr> </table>	Score for Water Quality Functions	22	Score for Hydrologic Functions	14	Score for Habitat Functions	20	Total Score	56
Score for Water Quality Functions	22								
Score for Hydrologic Functions	14								
Score for Habitat Functions	20								
Total Score	56								
Wetland Type: Riverine	Final Category: II								

WETLAND RATING FORM - EASTERN WASHINGTON

Wetland Name: Mossy Lake Date: 07th-09-06

Name of wetland (if known): _____

Location: SEC: ___ TOWNSHIP: ___ RANGE: ___ (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: Eric Affiliation: UoWA Date of site visit: 07-07, 07-08 ^{EC02 EC2}

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ___ II X III ___ IV ___

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for "Water Quality" Functions	22
Score for Hydrologic Functions	14
Score for Habitat Functions	20
TOTAL score for functions	56

Category based on SPECIAL CHARACTERISTICS of wetland

I ___ II ___ III ___ Does not Apply ___

Final Category (choose the "highest" category from above)

II

Check the appropriate type and class of wetland being rated.

Wetland Type	Wetland Class	
Vernal Pool	Depressional	
Alkali	Riverine	✓
Natural Heritage Wetland	Lake-fringe	
Bog	Slope	
Forest		
None of the above		

R Riverine Wetlands		Points
HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation		
R	R 3.0 Does the wetland have the <u>potential</u> to reduce flooding and erosion? (see p. 47)	
R	R 3.1 Amount overbank storage the wetland provides: <i>Estimate the average width of the wetland perpendicular to the direction of the flow of water and the width of the stream or river channel (distance between banks). Calculate the ratio: width of wetland/ width of stream.</i> If the ratio is 2 or more points = 10 If the ratio is between 1 and < 2 points = 8 If the ratio is 1/2 to < 1 points = 4 If the ratio is 1/4 to < 1/2 points = 2 If the ratio is < 1/4 points = 1	10
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: <i>Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.</i> Forest or shrub for more than 2/3 the area of the wetland. points = 6 Forest or shrub for >1/3 area OR Emergent plants > 2/3 area points = 4 Forest or shrub for > 1/10 area OR Emergent plants > 1/3 area points = 2 Vegetation does not meet above criteria points = 0	4
R	Total for R3 <i>Add the points in the boxes above</i>	14
R	R 4.0 Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? (see p. 50) <i>Answer NO if the major source of water is irrigation return flow or water levels are controlled by a reservoir.</i> <i>Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows.</i> <i>Note which of the following conditions apply.</i> — There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. — There are natural resources downstream (e.g. salmon redds) than can be damaged by flooding — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier 1
R	TOTAL - Hydrologic Functions Multiply the score from R3 by the multiplier in R4 <i>Record score on p. 1 of field form</i>	14

Comments

<i>These questions apply to wetlands of all HGM classes.</i>		Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat		
H 1. Does the wetland have the <u>potential</u> to provide habitat for many species?		
<p>H 1.1 <u>Vegetation structure</u> (<i>see p.62</i>) <i>Check the types of vegetation present if the type covers more than 10% of the area of the wetland or ¼ acre.</i></p> <p><input type="checkbox"/> Aquatic bed <input checked="" type="checkbox"/> Emergent plants 0-12 inches high (0 - 30 cm) <input type="checkbox"/> Emergent plants >12 - 40 inches high (>30 - 100cm) <input type="checkbox"/> Emergent plants > 40 inches high (> 100 cm) <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have >30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have >30% cover)</p> <p><i>Add the number of vegetation types that qualify. If you have:</i></p> <p>4-6 types record points = 3 3 types points = 2 2 types points = 1 1 type points = 0</p>		2
<p>H 1.2. Is one of the vegetation types "aquatic bed?" (<i>see p .64</i>) YES = 1 point NO = 0 points</p>		0
<p>H 1.3. <u>Surface Water</u> (<i>see p.65</i>) H 1.3.1 Does the wetland have areas of "open" water (without emergent or shrub plants) over at least ¼ acre or 10% of its area during the spring (March - early June) OR in early fall (August - end of September)? <i>Note: answer YES for Lake-fringe wetlands</i> YES = 3 points & go to H 1.4 NO = go to H 1.3.2 H 1.3.2 Does the wetland have an intermittent or permanent stream within its boundaries, or along one side, that has an unvegetated bottom (<i>answer yes only if H 1.3.1 is NO</i>)? YES = 3 points NO = 0 points</p>		3
<p>H 1.4. <u>Richness of Plant Species</u> (<i>see p. 66</i>) Count the number of plant species in the wetland that cover at least 10 ft². (<i>different patches of the same species can be combined to meet the size threshold</i>) <i>You do not have to name the species.</i> <i>Do not include Eurasean Milfoil, reed canarygrass, purple loosestrife, Russian Olive, Phragmites, Canadian Thistle, Yellow-flag Iris, and Salt Cedar (Tamarisk)</i></p> <p>If you counted: > 9 species points = 2 4-9 species points = 1 # of species < 4 species points = 0 points</p>		2

<p>H 1.5. <u>Interspersion of habitats</u> (see p. 67) Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <p>None = 0 points Low = 1 point Moderate = 2 points</p> <p>High = 3 points [Riparian braided channel]</p> <p>NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".</p>	3
<p>H 1.6. <u>Special Habitat Features</u>: (see p. 68) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Loose rocks larger than 4" <u>or</u> large, downed, woody debris (>4in. diameter) within the area of surface ponding or in stream. <input type="checkbox"/> Cattails or bulrushes are present within the wetland. <input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland or within 30 m (100 ft) of the edge. <input checked="" type="checkbox"/> Emergent or shrub vegetation in areas that are permanently inundated/ponded. The presence of "yellow flag" Iris is a good indicator of vegetation in areas permanently ponded. <input checked="" type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>45 degree slope) OR signs of recent beaver activity <input type="checkbox"/> Invasive species cover less than 20% in each stratum of vegetation <p style="text-align: right;">Maximum score possible = 6</p>	4
<p>TOTAL Potential to provide habitat Add the scores in the column above</p>	14

Comments

<p>H 2.0 Does the wetland have the opportunity to provide habitat for many species?</p>	
<p>H 2.1 <u>Buffers</u> (see p. 71) Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."</p> <ul style="list-style-type: none"> — 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) Points = 5 ✓ 330 ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4 — 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4 — 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3 — 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3 <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <ul style="list-style-type: none"> — No paved areas (except paved trails) or buildings within 80ft (25 m) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — No paved areas or buildings within 170ft (50m) of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — Heavy grazing in buffer. Points = 1 — Vegetated buffers are <6.6ft wide (2m) for more than 95% of the circumference (e.g . tilled fields, paving, basalt bedrock extend to edge of wetland). Points = 0 — Buffer does not meet any of the criteria above. Points = 1 	<p>4</p>
<p>H 2.2 <u>Wet Corridors</u> (see p. 72)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor at least ¼ mile long with surface water or flowing water throughout most of the year (> 9 months/yr)? (<i>dams, heavily used gravel roads, paved roads, fields tilled to edge of stream, or pasture to edge of stream are considered breaks in the corridor</i>).</p> <p style="padding-left: 40px;">YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken, vegetated corridor, at least ¼ mile long with water flowing seasonally, OR a lake-fringe wetland without a "wet" corridor, OR a riverine wetland without a surface channel connecting to the stream?</p> <p style="padding-left: 40px;">YES = 2 points (go to H 2.3) NO go to H 2.2.3</p> <p>H 2.2.3 Is the wetland within a 1/2 mile of any permanent stream, seasonal stream, or lake (<i>do not include man-made ditches</i>)?</p> <p style="padding-left: 40px;">YES = 1 point NO = 0 points</p>	

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 74)

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Aspen Stands:** Pure or mixed stands of aspen greater than 2 acres.
- Cliffs:** Greater than 25 ft high and occurring below 5000 ft.
- Old-growth forests:** (east of Cascade crest): In general, stands will be >150 years of age, with 10 trees/acre that are > 21 in dbh, and 1 - 3 snags/acre > 12-14 in diameter.
- Mature forests:** Stands with average diameters exceeding 21 in dbh; crown cover may be less than 100%; decay, 80 - 160 years old east of the Cascade crest.
- Prairies and Steppe:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.
- Shrub-steppe:** Tracts of land consisting of plant communities with one or more layers of perennial grasses and a conspicuous but discontinuous layer of shrubs.
- Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft, composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
- Urban Natural Open Space:** A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
- Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

4

If wetland has **2 or more** Priority Habitats = **4 points**
If wetland has **1** Priority Habitat = **2 points**
No Priority habitats = **0 points**

Comments

<p>H 2.4 <u>Landscape</u> (choose the <i>one</i> description of the landscape around the wetland that best fits) (see p. 76)</p> <ul style="list-style-type: none"> — The wetland is in an area where annual rainfall is less than 12 inches, and its water regime is not influenced by irrigation practices, dams, or water control structures. (Generally, this means outside boundaries of reclamation areas, irrigation district, or reservoirs) points = 5 — There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing in the connection or an open water connection along a lake shore without heavy boat traffic are OK, but connections should NOT be bisected by paved roads, fill, fields, heavy boat traffic or other development). points = 5 — There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed? points = 2 — There is at least 1 wetland within ½ mile. points = 1 — Does not meet any of the four criteria above points = 0 	
<p>H 2. TOTAL Score - opportunity for providing habitat <i>Add the scores in the column above</i></p>	<p>11</p>
<p>H 3.0 Does the wetland have indicators that its ability to provide habitat is reduced?</p>	
<p>H 3.1 <u>Indicator of reduced habitat functions</u> (see p. 75) Do the areas of open water in the wetland have a resident population of carp (see text for indicators of the presence of carp)? (NOTE: This question does not apply to reservoirs with water levels controlled by dams, such as the reservoirs on the Columbia and Snake Rivers)</p> <p style="text-align: center;">YES = - 5 points NO = 0 points</p>	<p>Points will be subtracted</p> <p>-5</p>
<p>Total Score for Habitat Functions – add the points for H 1, H 2, and H 3 and record the result on p. 1</p>	<p>20</p>

Comments

Benthic Macroinvertebrates
Event 2

Site	Date of Sample	Order	Genus	Species	Number	% of sample	
Mossy Lake	2/7/2006	1	Crustacea	Amphipoda	2	1.7	
		2	Crustacea	Isopoda	40	33.6	
		3	Odonata	Zygoptera	7	5.9	
		4	Diptera	Stratiomyidae	18	15.1	
		5	Coleoptera	Dytiscidae	20	16.8	
		6	Diptera	Chironomidae	15	12.6	
		7	Diptera	Culicidae	7	5.9	
		8	Diptera	Tabanidae	2	1.7	
		9	Gastropoda	Pulmonata	2	1.7	
		10	Crustacea	Decapoda	Physidae	4	3.4
		11	Mollusca	Bivalvia	Palaemonidae Sphaeniidae	2	1.7

Total Number Identified

119

Total Taxa

11

Coffee Creek Below Mossy Lake 02-07-06 Stage too high to record flow.

Coffee Creek below Mossy Lake

Rapid Habitat Assessment Score		
Site ID	Date Scored	
Coffee Creek Below Mossy Lake	2/7/2006	
Parameter		Score
Epifaunal Substrate		17
Pool Substrate		10
Pool Variability		13
Sediment Deposition		13
Channel Flow Status		19
Channel Alteration		19
Channel Sinuosity		15
Bank Stability	LB	2
	RB	2
Vegetative Protection	LB	2
	RB	2
Riparian Vegetation Zone Width	LB	10
	RB	8
Total Score		132

RAPID HABITAT ASSESSMENT FORM: GLIDE/POOL - STREAMS

SITE ID: Coffee Creek Below Mossy Lake

DATE: 02/07/2006

HABITAT CHARACTERISTIC	CATEGORY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
1. Epifaunal Substrate/ Available Cover Score: <u>17</u>	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are NOT new fall and NOT transient). 20 19 18 <u>17</u> 16	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). 15 14 13 12 11	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Pool Substrate Characterization Score: <u>10</u>	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. 20 19 18 17 16	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present. 15 14 13 12 11	All mud or clay or sand bottom; little or no root mat; no submerged vegetation. <u>10</u> 9 8 7 6	Hard-pan clay or bedrock; no root mat or vegetation. 5 4 3 2 1 0
3. Pool Variability Score: <u>13</u>	Even mix of large-shallow, large-deep, small shallow, small-deep pools present. 20 19 18 17 16	Majority of pools large-deep; very few shallows. 15 14 <u>13</u> 12 11	Shallow pools much more prevalent than deep pools. 10 9 8 7 6	Majority of pools small-shallow or absent. 5 4 3 2 1 0
4. Sediment Deposition Score: <u>13</u>	Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition. 20 19 18 17 16	Some new increases in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools. 15 14 <u>13</u> 12 11	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. 10 9 8 7 6	Heavy deposits of fine material; increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. 5 4 3 2 1 0
5. Channel Flow Status Score: <u>19</u>	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 <u>19</u> 18 17 16	Water fills over 75% of the available channel; or less than 25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0
6. Channel Alteration Score: <u>19</u>	Channelization or dredging absent or minimal; stream with normal pattern. 20 <u>19</u> 18 17 16	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. 15 14 13 12 11	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. 10 9 8 7 6	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. 5 4 3 2 1 0



RAPID RIPARIAN ASSESSMENT (RRAP) - GLIDE POOL MAINTENANCE STREAMS

SITE ID: Coffee Creek Below Molybdenite DATE: 02/07/2006

		OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
7. Channel Sinuosity The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) Score: <u>15</u>		20 19 18 17 16	<u>15</u> 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) NOTE: Determine left or right side by facing downstream. Left Bank Score: <u>2</u> Right Bank Score: <u>2</u>	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected.	Left Bank: 10 9	8 7 6	5 4 3	<u>2</u> 1 0
	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Right Bank: 10 9	8 7 6	5 4 3	<u>2</u> 1 0
9. Vegetative Protection (score each bank) Left Bank Score: <u>2</u> Right Bank Score: <u>2</u>	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	Left Bank: 10 9	8 7 6	5 4 3	<u>2</u> 1 0
	70-90% if the streambank surfaces covered by native vegetation; but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	Right Bank: 10 9	8 7 6	5 4 3	<u>2</u> 1 0
10. Riparian Vegetation Zone Width (score each bank) Left Bank Score: <u>10</u> Right Bank Score: <u>8</u>	Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone.	Left Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0
	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Right Bank: 10 9	<u>8</u> 7 6	5 4 3	2 1 0



Benthic Macroinvertebrates
Event 2

Site	Date of Sample	Order	Genus	Species	Number	% of sample
Coffee Creek below Mossy Lake	2/7/2006	1	Gastropoda	Pulmonata	2	4.7
		2	Coleoptera	Dytiscidae	19	44.2
		3	Diptera	Tabanidae	2	4.7
		4	Diptera	Chironomidae	9	20.9
		5	Annelida	Oligochaeta	2	4.7
		6	Mollusca	Bivalvia	1	2.3
		7	Diptera	Stratiomyidae	5	11.6
		8	Coleoptera	Halplidae	1	2.3
		9	Crustacea	Decapoda	2	4.7
Total Number Identified					43	
Total Taxa					9	

EVENT 3

June 6, 2006

Reference Site 06-06-2006 Flow was Zero

Reference

Rapid Habitat Assessment Score		
Site ID	Date Scored	
Reference Site	6/6/2006	
Parameter		Score
Epifaunal Substrate		16
Pool Substrate		6
Pool Variability		6
Sediment Deposition		16
Channel Flow Status		12
Channel Alteration		12
Channel Sinuosity		12
Bank Stability	LB	3
	RB	3
Vegetative Protection	LB	6
	RB	6
Riparian Vegetation Zone Width	LB	8
	RB	10
Total Score		116

RAPID HABITAT ASSESSMENT FORM: GLIDE/POOL STREAMS

SITE ID: Reference

DATE: 06/06/2006

HABITAT PARAMETER	SCORE																				
	OPTIMAL					SUB-OPTIMAL					MARGINAL					POOR					
1. Epifaunal Substrate/ Available Cover Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are NOT new fall and NOT transient.) Score: <u>16</u>	20	19	18	17	<u>16</u>	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
2. Pool Substrate Characterization Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. Score: <u>6</u>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	<u>6</u>	5	4	3	2	1	0
3. Pool Variability Even mix of large-shallow, large-deep, small shallow, small-deep pools present. Score: <u>6</u>	20	19	18	17	16	15	14	13	12	11	10	9	8	7	<u>6</u>	5	4	3	2	1	0
4. Sediment Deposition Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition. Score: <u>16</u>	20	19	18	17	<u>16</u>	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
5. Channel Flow Status Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. Score: <u>12</u>	20	19	18	17	16	15	14	13	<u>12</u>	11	10	9	8	7	6	5	4	3	2	1	0
6. Channel Alteration Channelization or dredging absent or minimal; stream with normal pattern. Score: <u>12</u>	20	19	18	17	16	15	14	13	<u>12</u>	11	10	9	8	7	6	5	4	3	2	1	0



WATER QUALITY ASSESSMENT FORM: SLIDE POOL (continued): STREAMS

SITE ID: Reference DATE: 06/06/2006

PARAMETER	DESCRIPTION	CATEGORY					
		OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR		
7. Channel Sinuosity The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) Score: <u>17</u>	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.	20 19 18 17 16	15 14 13 <u>12</u> 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected. NOTE: Determine left or right side by facing downstream.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.	Left Bank Score: <u>3</u> Left Bank: 10 9	8 7 6	5 4 <u>3</u>	2 1 0
Right Bank Score: <u>3</u> Right Bank: 10 9	8 7 6	5 4 <u>3</u>	2 1 0				
9. Vegetative Protection (score each bank) More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% if the streambank surfaces covered by native vegetation; but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruptions obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	Left Bank Score: <u>6</u> Left Bank: 10 9	8 7 <u>6</u>	5 4 3	2 1 0
Right Bank Score: <u>6</u> Right Bank: 10 9	8 7 <u>6</u>	5 4 3	2 1 0				
10. Riparian Vegetation Zone Width (score each bank) Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone less than 6 meters; little or no riparian vegetation due to human activities.	Left Bank Score: <u>8</u> Left Bank: 10 9	<u>8</u> 7 6	5 4 3	2 1 0
Right Bank Score: <u>10</u> Right Bank: <u>10</u> 9	8 7 6	5 4 3	2 1 0				



Benthic Macroinvertebrates
Event 3

Site Reference Site	Date of Sample	Order	Genus	Species	Number	% of sample
	6/6/2006	1 Crustacea	Decapoda		2	20.0
		2 Coleoptera	Dytiscidae		2	20.0
		3 Coleoptera	Hydrophilidae		2	20.0
		4 Odonata	Anisoptera	Libellulidae	2	20.0
		5 Diptera	Tabanidae		1	10.0
		6 Diptera	Chironomidae	Tanypodinae	1	10.0
Total Number Identified					10	
Total Taxa					6	

Flow in Coffee Creek on 6-6-2006 was approximately the same as 2-7-06.

Coffee Creek 02-07-06

dist (m)	dist (ft)	depth	velocity	flow
0.6	1.97	0	0	
1	3.28	0.5	0.4	0.29529
1.5	4.92	1.3	0.7	1.492855
2	6.56	1.5	1	2.46075
2.5	8.20	1.4	1.2	2.75604
3	9.84	1.6	1.1	2.88728
3.5	11.48	2	1.05	3.44505
4	13.12	1.4	0.7	1.60769
4.5	14.76	0.9	0.4	0.59058
5	16.41	0.1	0	
		Total		15.54 cfs

Coffee Creek

Rapid Habitat Assessment Score		
Site ID	Date Scored	
Coffee Creek	6/6/2006	
Parameter		Score
Epifaunal Substrate		14
Pool Substrate		6
Pool Variability		13
Sediment Deposition		13
Channel Flow Status		20
Channel Alteration		19
Channel Sinuosity		19
Bank Stability	LB	10
	RB	10
Vegetative Protection	LB	10
	RB	10
Riparian Vegetation Zone Width	LB	10
	RB	10
Total Score		164

RAPID HABITAT ASSESSMENT FORM: GLIDE/POOL STREAMS

SITE ID: Coffee Creek

DATE: 06/06/2006

HABITAT PARAMETER	CATEGORY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
1. Epifaunal Substrate/ Available Cover Score: <u>14</u>	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are NOT new fall and NOT transient.) 20 19 18 17 16	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). 15 <u>14</u> 13 12 11	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Pool Substrate Characterization Score: <u>6</u>	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common. 20 19 18 17 16	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present. 15 14 13 12 11	All mud or clay or sand bottom; little or no root mat; no submerged vegetation. 10 9 8 7 <u>6</u>	Hard-pan clay or bedrock; no root mat or vegetation. 5 4 3 2 1 0
3. Pool Variability Score: <u>13</u>	Even mix of large-shallow, large-deep, small shallow, small-deep pools present. 20 19 18 17 16	Majority of pools large-deep; very few shallows. 15 14 <u>13</u> 12 11	Shallow pools much more prevalent than deep pools. 10 9 8 7 6	Majority of pools small-shallow or absent. 5 4 3 2 1 0
4. Sediment Deposition Score: <u>13</u>	Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition. 20 19 18 17 16	Some new increases in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools. 15 14 <u>13</u> 12 11	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. 10 9 8 7 6	Heavy deposits of fine material; increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. 5 4 3 2 1 0
5. Channel Flow Status Score: <u>20</u>	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. <u>20</u> 19 18 17 16	Water fills over 75% of the available channel; or less than 25% of channel substrate is exposed. 15 14 13 12 11	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. 10 9 8 7 6	Very little water in channel and mostly present as standing pools. 5 4 3 2 1 0
6. Channel Alteration Score: <u>19</u>	Channelization or dredging absent or minimal; stream with normal pattern. 20 <u>19</u> 18 17 16	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. 15 14 13 12 11	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. 10 9 8 7 6	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. 5 4 3 2 1 0



RAPID HABITAT ASSESSMENT FORM, GLIDE POOL (continued), STREAMS

SITE ID: _____ DATE: ____/____/____

HABITAT PARAMETER	CATEGORY			
	OPTIMAL	SUB-OPTIMAL	MARGINAL	POOR
7. Channel Sinuosity Score: <u>19</u>	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) 20 <u>19</u> 18 17 16	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line. 15 14 13 12 11	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line. 10 9 8 7 6	Channel straight; waterway has been channelized for a long distance. 5 4 3 2 1 0
8. Bank Stability (score each bank) NOTE: Determine left or right side by facing downstream. Left Bank Score: <u>10</u> Right Bank Score: <u>10</u>	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected. Left Bank: <u>10</u> 9	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. 8 7 6	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. 5 4 3	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. 2 1 0
9. Vegetative Protection (score each bank) Left Bank Score: <u>10</u> Right Bank Score: <u>10</u>	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Left Bank: <u>10</u> 9	70-90% if the streambank surfaces covered by native vegetation; but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. 8 7 6	50-70% of the streambank surfaces covered by vegetation; disruptions obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. 5 4 3	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. 2 1 0
10. Riparian Vegetation Zone Width (score each bank) Left Bank Score: <u>16</u> Right Bank Score: <u>10</u>	Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone. Left Bank: <u>10</u> 9	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. 8 7 6	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. 5 4 3	Width of riparian zone less than 6 meters; little or no riparian vegetation due to human activities. 2 1 0

Benthic Macroinvertebrates
Event 3

Site	Date of Sample	Order	Genus	Species	Number	% of sample
Coffee Creek	6/6/2006	1 Diptera	Chironomidae	Tanypodinae	217	97.3
		2 Gastropoda	Pulmonata	Physidae	4	1.8
		3 Annelida	Oligochaeta		2	0.9
Total Number Identified					223	
Total Taxa					3	

Mossy Lake Event 3

Summary of Ranking									
Date: 06/07/06									
Category I = Score > 70 Category II = Score 51-69 Category III = Score 30-50 Category IV = Score < 30	<table border="1"> <tr> <td>Score for Water Quality Functions</td> <td>22</td> </tr> <tr> <td>Score for Hydrologic Functions</td> <td>14</td> </tr> <tr> <td>Score for Habitat Functions</td> <td>16</td> </tr> <tr> <td>Total Score</td> <td>52</td> </tr> </table>	Score for Water Quality Functions	22	Score for Hydrologic Functions	14	Score for Habitat Functions	16	Total Score	52
Score for Water Quality Functions	22								
Score for Hydrologic Functions	14								
Score for Habitat Functions	16								
Total Score	52								
Wetland Type: Riverine	Final Category: II								

WETLAND RATING FORM – EASTERN WASHINGTON

Wetland Name: Massy Lake Date: 06-14-06

Name of wetland (if known): _____

Location: SEC: ___ TOWNSHIP: ___ RANGE: ___ (attach map with outline of wetland to rating form)

Person(s) Rating Wetland: Eric Affiliation: _____ Date of site visit: 06-07-06

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ___ II X III ___ IV ___

Category I = Score >70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score <30

Score for "Water Quality" Functions
 Score for Hydrologic Functions
 Score for Habitat Functions
TOTAL score for functions

22
14
16
52

Category based on SPECIAL CHARACTERISTICS of wetland

I ___ II ___ III ___ Does not Apply ___

Final Category (choose the "highest" category from above)

II

Check the appropriate type and class of wetland being rated.

Wetland Type	Wetland Class	
Vernal Pool	Depressional	
Alkali	Riverine	✓
Natural Heritage Wetland	Lake-fringe	
Bog	Slope	
Forest		
None of the above		

Classification of Vegetated Wetlands for Eastern Washington

Wetland Name: _____ Date: _____

1. Does the wetland **meet both** of the following criteria?

___ The vegetated part of the wetland is on the shores of a body of open water (without any vegetation on the surface) where at least 20 acres (8 ha) are permanently inundated (ponded or flooded);

___ At least 30% of the open water area is deeper than 3 m (10 ft)?

NO -- go to Step 2 YES -- The wetland class is **Lake-fringe (lacustrine fringe)**

2. Does the wetland **meet all** of the following criteria?

___ The wetland is on a slope (*slope can be very gradual*),

___ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

___ The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks(depressions are usually <3ft diameter and less than a foot deep).*

NO - go to Step 3 YES -- The wetland class is **Slope**

3. Is the wetland in a valley or stream channel where it gets inundated by overbank flooding from that stream or river? In general, the flooding should occur at least once every ten years to answer "yes." *The wetland can contain depressions that are filled with water when the river is not flooding.*

NO - go to Step 4

YES -- The wetland class is **Riverine**

4. Is the wetland in a topographic depression, outside areas that are inundated by overbank flooding, in which water ponds, or is saturated to the surface, at some time of the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

NO -- go to Step 5

YES -- The wetland class is **Depressional**

5. Your wetland seems to be difficult to classify. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. Sometimes we find characteristics of several different hydrogeomorphic classes within one wetland boundary. If you have a wetland with several HGM classes present within its boundaries use the following table to identify the appropriate class to use for the rating system. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland being rated.

HGM Classes Within One Delineated Wetland Boundary	Class to Use in Rating if area of this class > 10% total
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine (riverine is within boundary of depression)	Depressional
Depressional + Lake-fringe	Depressional

If you are unable still to determine which of the above criteria apply to your wetland, or you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

R Riverine Wetlands		Points
HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream degradation		
R	R 3.0 Does the wetland have the <u>potential</u> to reduce flooding and erosion? (see p. 47)	
R	R 3.1 Amount overbank storage the wetland provides: <i>Estimate the average width of the wetland perpendicular to the direction of the flow of water and the width of the stream or river channel (distance between banks). Calculate the ratio: width of wetland/ width of stream.</i> If the ratio is 2 or more points = 10 If the ratio is between 1 and < 2 points = 8 If the ratio is 1/2 to < 1 points = 4 If the ratio is 1/4 to < 1/2 points = 2 If the ratio is < 1/4 points = 1	10
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: <i>Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.</i> Forest or shrub for more than 2/3 the area of the wetland. points = 6 Forest or shrub for >1/3 area OR Emergent plants > 2/3 area points = 4 Forest or shrub for > 1/10 area OR Emergent plants > 1/3 area points = 2 Vegetation does not meet above criteria points = 0	4
R	Total for R3 <i>Add the points in the boxes above</i>	
R	R 4.0 Does the wetland have the <u>opportunity</u> to reduce flooding and erosion? (see p. 50) <i>Answer NO if the major source of water is irrigation return flow or water levels are controlled by a reservoir.</i> <i>Answer YES if the wetland is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows.</i> <i>Note which of the following conditions apply.</i> — There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. — There are natural resources downstream (e.g. salmon redds) than can be damaged by flooding — Other _____ YES multiplier is 2 NO multiplier is 1	multiplier <u>1</u>
R	TOTAL. - Hydrologic Functions Multiply the score from R3 by the multiplier in R4 <i>Record score on p. 1 of field form</i>	14

Comments

<i>These questions apply to wetlands of all HGM classes.</i>		Points
HABITAT FUNCTIONS - Indicators that wetland functions to provide important habitat		
H 1. Does the wetland have the potential to provide habitat for many species?		
<p>H 1.1 <u>Vegetation structure</u> (see p.62) Check the types of vegetation present if the type covers more than 10% of the area of the wetland or ¼ acre.</p> <p><input type="checkbox"/> Aquatic bed <input checked="" type="checkbox"/> Emergent plants 0-12 inches high (0 – 30 cm) <input type="checkbox"/> Emergent plants >12 – 40 inches high (>30 – 100cm) <input type="checkbox"/> Emergent plants > 40 inches high (> 100 cm) <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have >30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have >30% cover)</p> <p>Add the number of vegetation types that qualify. If you have:</p> <p style="text-align: right;">4-6 types record points = 3 3 types points = 2 2 types points = 1 1 type points = 0</p>		2
<p>H 1.2. Is one of the vegetation types “aquatic bed?” (see p .64) YES = 1 point NO = 0 points</p>		0
<p>H 1.3. <u>Surface Water</u> (see p.65) H 1.3.1 Does the wetland have areas of “open” water (without emergent or shrub plants) over at least ¼ acre or 10% of its area during the spring (March -- early June) OR in early fall (August -- end of September)? Note: answer YES for Lake-fringe wetlands YES = 3 points & go to H 1.4 NO = go to H 1.3.2 H 1.3.2 Does the wetland have an intermittent or permanent stream within its boundaries, or along one side, that has an unvegetated bottom (answer yes only if H 1.3.1 is NO)? YES = 3 points NO = 0 points</p>		3
<p>H 1.4. <u>Richness of Plant Species</u> (see p. 66) Count the number of plant species in the wetland that cover at least 10 ft². (different patches of the same species can be combined to meet the size threshold) You do not have to name the species. Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Russian Olive, Phragmites ,Canadian Thistle, Yellow-flag Iris, and Salt Cedar (Tamarisk)</p> <p>If you counted: > 9 species points = 2 4-9 species points = 1 # of species < 4 species points = 0 points</p>		1

<p>H 1.5. <u>Interspersion of habitats</u> (see p. 67) Decided from the diagrams below whether interspersion between types of vegetation (described in H 1.1), or vegetation types and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <p>None = 0 points Low = 1 point Moderate = 2 points</p> <p>High = 3 points [Riparian braided channel]</p> <p>NOTE: If you have four or more vegetation types or three vegetation types and open water the rating is always "high".</p>	3
<p>H 1.6. <u>Special Habitat Features:</u> (see p. 68) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p><input type="checkbox"/> Loose rocks larger than 4" or large, downed, woody debris (>4in. diameter) within the area of surface ponding or in stream.</p> <p><input type="checkbox"/> Cattails or bulrushes are present within the wetland.</p> <p><input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland or within 30 m (100 ft) of the edge.</p> <p><input checked="" type="checkbox"/> Emergent or shrub vegetation in areas that are permanently inundated/ponded. The presence of "yellow flag" <i>Iris</i> is a good indicator of vegetation in areas permanently ponded.</p> <p><input checked="" type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>45 degree slope) OR signs of recent beaver activity</p> <p><input type="checkbox"/> Invasive species cover less than 20% in each stratum of vegetation</p> <p style="text-align: right;"><i>Maximum score possible = 6</i></p>	3
<p>TOTAL Potential to provide habitat Add the scores in the column above</p>	12

Comments

<p>H 2.0 Does the wetland have the opportunity to provide habitat for many species?</p>	
<p>H 2.1 <u>Buffers</u> (see p. 71) Choose the description that best represents condition of buffer of wetland. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."</p> <ul style="list-style-type: none"> ✓ 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No developed areas within undisturbed part of buffer. (relatively undisturbed also means no-grazing) Points = 5 — 330 ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4 — 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4 — 330ft (100 m) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . Points = 3 — 170ft (50 m) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3 <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <ul style="list-style-type: none"> — No paved areas (except paved trails) or buildings within 80ft (25 m) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — No paved areas or buildings within 170ft (50m) of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2 — Heavy grazing in buffer. Points = 1 — Vegetated buffers are <6.6ft wide (2m) for more than 95% of the circumference (e.g . tilled fields, paving, basalt bedrock extend to edge of wetland). Points = 0 — Buffer does not meet any of the criteria above. Points = 1 	<p>5</p>
<p>H 2.2 <u>Wet Corridors</u> (see p. 72)</p> <p>H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor at least ¼ mile long with surface water or flowing water throughout most of the year (> 9 months/yr)? (dams, heavily used gravel roads, paved roads, fields tilled to edge of stream, or pasture to edge of stream are considered breaks in the corridor).</p> <p style="text-align: center;">YES = 4 points (go to H 2.3) NO = go to H 2.2.2</p> <p>H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken, vegetated corridor, at least ¼ mile long with water flowing seasonally, OR a lake-fringe wetland without a "wet" corridor, OR a riverine wetland without a surface channel connecting to the stream?</p> <p style="text-align: center;">YES = 2 points (go to H 2.3) NO go to H 2.2.3</p> <p>H 2.2.3 Is the wetland within a 1/2 mile of any permanent stream, seasonal stream, or lake (do not include man-made ditches)?</p> <p style="text-align: center;">YES = 1 point NO = 0 points</p>	<p>1</p>

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see p. 74)

Which of the following priority habitats are within 330ft (100m) of the wetland?
(see text for a more detailed description of these priority habitats)

- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Aspen Stands:** Pure or mixed stands of aspen greater than 2 acres.
- Cliffs:** Greater than 25 ft high and occurring below 5000 ft.
- Old-growth forests:** (east of Cascade crest): In general, stands will be >150 years of age, with 10 trees/acre that are > 21 in dbh, and 1 - 3 snags/acre > 12-14 in diameter.
- Mature forests:** Stands with average diameters exceeding 21 in dbh; crown cover may be less than 100%; decay, 80 - 160 years old east of the Cascade crest.
- Prairies and Steppe:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.
- Shrub-steppe:** Tracts of land consisting of plant communities with one or more layers of perennial grasses and a conspicuous but discontinuous layer of shrubs.
- Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft, composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.
- Urban Natural Open Space:** A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.
- Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

If wetland has **2 or more** Priority Habitats = **4 points**

If wetland has **1** Priority Habitat = **2 points**

No Priority habitats = **0 points**

Comments

<p>H 2.4 <u>Landscape</u> (choose the <i>one</i> description of the landscape around the wetland that best fits) (see p. 76)</p> <ul style="list-style-type: none"> — The wetland is in an area where annual rainfall is less than 12 inches, and its water regime is not influenced by irrigation practices, dams, or water control structures. (Generally, this means outside boundaries of reclamation areas, irrigation district, or reservoirs) points = 5 — There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing in the connection or an open water connection along a lake shore without heavy boat traffic are OK, but connections should NOT be bisected by paved roads, fill, fields, heavy boat traffic or other development). points = 5 — There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed? points = 2 — There is at least 1 wetland within ½ mile. points = 1 — Does not meet any of the four criteria above points = 0 	2
<p>H 2. TOTAL Score - opportunity for providing habitat <i>Add the scores in the column above</i></p>	9
<p>H 3.0 Does the wetland have indicators that its ability to provide habitat is reduced?</p>	
<p>H 3.1 <u>Indicator of reduced habitat functions</u> (see p. 75) Do the areas of open water in the wetland have a resident population of carp (see text for indicators of the presence of carp)? (NOTE: This question does not apply to reservoirs with water levels controlled by dams, such as the reservoirs on the Columbia and Snake Rivers)</p> <p style="text-align: center;">YES = - 5 points NO = 0 points</p>	<p><i>Points will be subtracted</i></p> <p style="font-size: 2em;">-5</p>
<p>Total Score for Habitat Functions – add the points for H 1, H 2, and H 3 and record the result on p. 1</p>	16

Comments

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate Category. NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply.

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
<p>SC 1.0 Vernal pools (see p. 79)</p> <p>Is the wetland less than 4000 ft², and does it meet at least two of the following criteria?</p> <ul style="list-style-type: none"> — Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input — Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. NOTE: If you find perennial, "obligate", wetland plants the wetland is probably NOT a vernal pool — The soil in the wetland are shallow (<1ft deep (30 cm)) and is underlain by an impermeable layer such as basalt or clay. — Surface water is present for less than 120 days during the "wet" season. <p>YES = Go to SC 1.1 NO - not a vernal pool</p> <p>SC 1.1 Is the vernal pool relatively undisturbed in February and March?</p> <p>YES = Go to SC 1.2 NO - categorize based on functions</p>	
<p>SC 1.2 Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 miles (other wetlands, rivers, lakes etc.)?</p> <p>YES = Category II NO = Category III</p>	<p>Cat. II Cat. III</p>
<p>SC 2.0 Alkali wetlands (see p. 81)</p> <p>Does the wetland meets one of the following two criteria?</p> <ul style="list-style-type: none"> — The wetland has a conductivity > 3.0 mS/cm. — The wetland has a conductivity between 2.0 - 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as "alkali" species (see Table 2 for list of plants found in alkali systems). — If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt. <p>OR does the wetland meets two of the following three sub-criteria?</p> <ul style="list-style-type: none"> — Salt encrustations around more than 80% of the edge of the wetland — More than ¼ of the plant cover consists of species listed on Table 2 — A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands. <p>YES = Category I NO - categorize based on functions</p>	<p>Cat. I</p>

<p>SC 5.0 Forested Wetlands (see p. 85)</p> <p>Does the wetland have an area of forest (you should have identified a forested class, if present, in question H 1.1) rooted within its boundary that meet at least one of the following three criteria?</p> <ul style="list-style-type: none"> — The wetland is within the “100 year” floodplain of a river or stream — aspen (<i>Populus tremuloides</i>) are a dominant or co-dominant of the “woody” vegetation. (Dominants means it represents at least 50% of the cover of woody species, co-dominant means it represents at least 20% of the total cover of woody species) — There is at least ¼ acre of trees (even in wetlands smaller than 2.5 acres) that are “mature” or “old-growth” according to the definitions for these priority habitats developed by WDFW (see p. 83) <p>YES = go to SC 5.1 NO - categorize based on functions</p>	
<p>SC 5.1 Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees</p> <p>Slow growing trees are: western red cedar (<i>Thuja plicata</i>), Alaska yellow cedar (<i>Chamaecyparis nootkatensis</i>), pine spp. mostly “white” pine (<i>Pinus monticola</i>), western hemlock (<i>Tsuga heterophylla</i>), Englemann spruce (<i>Picea engelmannii</i>).</p> <p>YES = Category I NO = go to SC 5.2</p>	Cat. I
<p>SC 5.2 Does the wetland have aspen (<i>Populus tremuloides</i>) as a dominant or co-dominant species in the category of woody species?</p> <p>YES = Category I NO = go to SC 5.3</p>	Cat. I
<p>SC 5.3 Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are fast growing species.</p> <p>Fast growing species are:</p> <p>Alders – red (<i>Alnus rubra</i>), thin-leaf (<i>A. tenuifolia</i>)</p> <p>Cottonwoods – narrow-leaf (<i>Populus angustifolia</i>), black (<i>P. balsamifera</i>)</p> <p>Willows- peach-leaf (<i>Salix amygdaloides</i>), Sitka (<i>S. sitchensis</i>), Pacific (<i>S. lasiandra</i>), Aspen - (<i>Populus tremuloides</i>), Water Birch (<i>Betula occidentalis</i>)</p> <p>YES = Category II NO = go to SC 5.5</p>	Cat. II
<p>SC 5.5 Is the forested component of the wetland within the “100 year floodplain” of a river or stream?</p> <p>YES = Category II NO - categorize based on functions</p>	Cat. II
<p>Category of wetland based on Special Characteristics</p> <p>Choose the “highest” rating if wetland falls into several categories.</p> <p>If you answered NO for all types enter “Not Applicable” on p. 1</p>	

Benthic Macroinvertebrates
Event 3

Site	Date of Sample	Order	Genus	Species	Number	% of sample
Mossy Lake	6/8/2006	1 Diptera	Chironomidae	Tanypodinae	79	82.3
		2 Gastropoda	Pulmonata	Physidae	11	11.5
		3 Odonata	Zygoptera	Lestidae	1	1.0
		4 Diptera	Stratiomyidae		4	4.2
		5 Gelastocoridae	Nethra		1	1.0
Total Number Identified					96	
Total Taxa					5	

For Event 3 (June 6, 2006), Coffee Creek below Mossy Lake had an estimated flow rate of 40 cfs.

Coffee Creek Below Mossy Lake

Rapid Habitat Assessment Score		
Site ID	Date Scored	
Coffee Creek Below Mossy Lake	6/8/2006	
Parameter		Score
Epifaunal Substrate		16
Pool Substrate		6
Pool Variability		11
Sediment Deposition		13
Channel Flow Status		18
Channel Alteration		18
Channel Sinuosity		13
Bank Stability	LB	4
	RB	4
Vegetative Protection	LB	5
	RB	5
Riparian Vegetation Zone Width	LB	10
	RB	8
Total Score		131

RAPID HABITAT ASSESSMENT FORM: GLIDE POOL - STREAMS

SITE ID: CC Below ML

DATE: 06/08/2006

PARAMETER	SCALE																				
	OPTIMAL					SUB-OPTIMAL					MARGINAL					POOR					
1. Epifaunal Substrate/ Available Cover Score: <u>16</u>	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are NOT new fall and NOT transient)					30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).					10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.					Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.					
	20	19	18	17	<u>16</u>	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
2. Pool Substrate Characterization Score: <u>6</u>	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.					Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.					All mud or clay or sand bottom; little or no root mat; no submerged vegetation.					Hard-pan clay or bedrock; no root mat or vegetation.					
	20	19	18	17	16	15	14	13	12	11	10	9	8	7	<u>6</u>	5	4	3	2	1	0
3. Pool Variability Score: <u>11</u>	Even mix of large-shallow, large-deep, small shallow, small-deep pools present.					Majority of pools large-deep; very few shallows.					Shallow pools much more prevalent than deep pools.					Majority of pools small-shallow or absent.					
	20	19	18	17	16	15	14	13	12	<u>11</u>	10	9	8	7	6	5	4	3	2	1	0
4. Sediment Deposition Score: <u>13</u>	Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment deposition.					Some new increases in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.					Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.					Heavy deposits of fine material; increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.					
	20	19	18	17	16	15	14	<u>13</u>	12	11	10	9	8	7	6	5	4	3	2	1	0
5. Channel Flow Status Score: <u>18</u>	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.					Water fills over 75% of the available channel; or less than 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 channel and mostly present as standing pools.					
	20	19	<u>18</u>	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
6. Channel Alteration Score: <u>18</u>	Channelization or dredging absent or minimal; stream with normal pattern.					Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.					Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.					
	20	19	<u>18</u>	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0



WATER QUALITY ASSESSMENT FORM - GENERAL CHANNELS

SITE ID: _____ DATE: ____/____/____

PARAMETER	QUALITY																				
	OPTIMAL					SUB-OPTIMAL					MARGINAL					POOR					
7. Channel Sinuosity The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.) Score: 13	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note- channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)					The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.					The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.					Channel straight; waterway has been channelized for a long distance.					
	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
8. Bank Stability (score each bank) Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected. NOTE: Determine left or right side by facing downstream. Left Bank Score: 4	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. Less than 5% of bank affected.					Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.					Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.					Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.					
	Left Bank: 10	9	8	7	6	5	4	3	2	1	0	Right Bank: 10	9	8	7	6	5	4	3	2	1
9. Vegetative Protection (score each bank) More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Left Bank Score: 5	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.					70-90% if the streambank surfaces covered by native vegetation; but one class of plants is not well represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.					50-70% of the streambank surfaces covered by vegetation; disruptions obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.					Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
	Left Bank: 10	9	8	7	6	5	4	3	2	1	0	Right Bank: 10	9	8	7	6	5	4	3	2	1
10. Riparian Vegetation Zone Width (score each bank) Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone. Left Bank Score: 10	Width of riparian zone greater than 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted the zone.					Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.					Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.					Width of riparian zone less than 6 meters; little or no riparian vegetation due to human activities.					
	Left Bank: 10	9	8	7	6	5	4	3	2	1	0	Right Bank: 10	9	8	7	6	5	4	3	2	1



Benthic Macroinvertebrates
Event 3

Site	Date of Sample	Order	Genus	Species	Number	% of sample
Coffee Creek below Mossy Lake	6/8/2006	1 Diptera	Chironomidae	Tanypodinae	137	93.2
		2 Diptera	Stratiomyidae		9	6.1
		3 Diptera	Culicidae		1	0.7
Total Number Identified					147	
Total Taxa					3	