85

BEAR CREEK WATERSHED ASSOCIATION HABITAT INDICES (HI) FIELD SHEET BEAR CREEK WATERSHED

1	Habitat							Con	nditio	n Cate	gory				_					
1	Parameter	O	otimal			Sul	opti	mal			M	largin	al		Poor					
	6. Channel Alteration	dredging absent or minimal; stream with normal pattern.				ent, using a cince of nelizaging, (20 yr)	butm f past tion,	extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.					nts	Banks shored with gabion or cement; over 80% of th stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.				of the zed um		
	SCORE	20 19	18 1	7 16	15 14 (13) 12 11					10	9	8	7	6	5	4	3	2	1	0
	7. Frequency of Riffles (or bends)	relatively from of distance to distance to riffles divide of the stream (generally 5 variety of In streams ware continued placement of the large,	Occurrence of riffles infrequent; ratio between riffles divided by the width of the stream is a ratio between 7 to 15. Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is a ratio between 15 to 25. Occasional riffle or bend; bottom contours provide some habitat, distance between riffles divided by the width of the stream is a ratio between 15 to 25. Generally all flat shallow riffles; podistance between 10 to 25. Generally all flat shallow riffles; podistance between 15 to 25.						oor habitat; riffles dth of the											
	SCORE	20 19	18 1	7 (16)	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.	Banks stable erosion or b absent or m potential for problems. < affected.	ank fai inimal future	ilure ; little	infred erosid over.	on mo	y stab smal ostly h 0% of areas	l areas ealed bank	in	Moder 60% o areas o erosion floods.	f bar of ero	nk in re osion; l	each ha high	as	Unsta areas; along bends sloug bank	"ra stra ; ob hing	w" ar light : vious g, 60-	eas secti s bar 100	freq ons k	uent and f
l	SCORE(LB)	Left Bank	10	9	1	3	7	6		5		4	3	N.		2	1		0	
1	SCORE(RB)	Right Bank	10	9	Ĭ	3	7	(6)	5		4	3		100	2	1		0	
9	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				streambank surfaces and mediate riparian zone vered by native vegetation, including tes, understory shrubs, nonwoody acrophytes; vegetative sruption through azing or mowing inimal or not evident;					nban ed by otion es of y cro ation an o		tation; us; oil or non; lf of		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.				ank n;	
1	SCORE(LB)	Left Bank	10	9	(9	7	6	_	5		4	3	-		2	1		0	
1	SCORE(RB)	Right Bank	10	9	8	3	7	(6)	5		4	3		201	2	1		0	
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of rip ft; human ad parking lots clear-cuts, la have not im	tivitie , roadb awns, c	s (i.e., peds, or crops)	Widt 50-ft; have minir	hum impa	an ac	tivitie	S	25-ft;	hum	iparian nan act zone a	ivities	have	of ft: little or no riparian					
-	SCORE(LB)	Left Bank	10	9	8	3	7	6)	5		4	3			2	1		0	
	CORE(LB)		-	-		100	7		1000				100			- 10			No.	

Total Score	(Maximum	200)

STREAM NAME &CC	Bear Creek Watershed								
BCWA Site # 8B	Colorado Stream Segment Classification :								
LATLONG	South Platte River Basin								
Web Site: www.bearcreekwatershed.org	Bear Creek Watershed Association								
INVESTIGATORS:									
COMPLETED BY: Bear Creek Watershed Association	DATE TIME 9-22-15 AM PM Baseline Habitat Survey for BCWA Sampling Locations; Reference Conditions								

Habitat		Conditio	n Category					
Parameter	Optimal	Suboptimal	Marginal	Poor				
1. Epifaunal Substrate/ Available Cover	Greater than 70% 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). 40-70% mix of stable habitat (for full colonization potential; adequate habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.							
SCORE	20 19 18 17 16	15 14 13 12 (11)	10 9 8 7 6	5 4 3 2 1 0				
2. Embeddedness	Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sedimen				
SCORE	20 19 18 17 16	15 14 13 - 12 (11)	10 9 8 7 6	5 4 3 2 1 0				
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).				
SCORE	20 19 18 17 16	15 14 (13) 12 11	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 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends;	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.				
SCORE	20 19 18 17 16	15 14 13 12 (11)	10' 9 8 7 6	5 4 3 2 1 0				
5. Channel Flow Status SCORE	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	available channel, and/or	and mostly present as				
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0				

STREAM NAME	Bear Creek Watershed Colorado Stream Segment Classification :								
BCWA Site #									
LATLONG	South Platte River Basin								
Web Site: www.bearcreekwatershed.org	Bear Creek Watershed Association								
INVESTIGATORS:									
COMPLETED BY: Bear Creek Watershed Association	DATE TIME AM PM Baseline Habitat Survey for BCWA Sampling Locations; Reference Conditions								

	Habitat								Co	ndition	Categ	gory									
The state of the state of	rameter		Opti	imal	FOR		Sub	optin	nal		Marginal					Poor					
1. Epifa Substra Availat		subst Epifa fish c subm banks stable to all poten that a	ter than arate favor nunal colorover, mi erged loss, cobble e habitat ow full contial (i.e., are not no ransient)	orable for onization of sna gs, under or other and at scolonization, logs/srew fall at the orable for other and at scolonization of the orable for other and at scolonization or other at scol	for habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of at stage additional substrate in the form of newfall, but not snags yet prepared for							ss than 20% stable bitat; lack of habitat is vious; substrate unstable lacking.									
SCORE	E	20	19 1	8 17	16	15	14	13	12	11	10)9	8	7	6	5	4	3	2	1	0
2. Emb	eddedness	boulder particles are 0- 25% surrounded by fine				partic	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.			Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.					Gravel, cobble, and boulder particles are more than 75% surrounded by fine sedimen						
SCORI	SCORE	20	19 1	8 17	16	15	14 ((13)	12	11	10	9	8	7	6	5	4	3	2	1	0
Regime						Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).				Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/ depth regime (usually slow- deep).						
SCORI	£	20	19 1	8 17	16	15	14	13	12 (11)	10	9	8	7	6	5	4	3	2	1	0
Deposit	tion	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.				format gravel 5-30%	formation, mostly from gravel, sand or fine sediment;										Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.				
SCOR	E	20	19 1	8 17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
5. Char Status	nnel Flow	Water reaches base of both lower banks, and minimal amount of channel substrate is				availa of cha	Water fills >75% of the available channel; or <25% of channel substrate is exposed.			Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.				or a	and mostly present as						
SCOR	F	expos	ed.							0	1				- 1						

Habitat		Conditi	on Category						
Parameter	Optimal	Suboptimal	Marginal	Poor					
6. Channel Alteration	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 th stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.					
SCORE	20 19 18 17 16	15 14 (13) 12 11	10 9 8 7 6	5 4 3 2 1 0					
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent, ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is a ratio between 7 to 15.	requent, distance bottom contours provide shallow rights divided by width of the stream is between riffles divided by						
SCORE	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) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <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.					
SCORE(LB)	Left Bank 10 9	8 7 (6)	5 4 3	2 1 0					
SCORE(RB)	Right Bank 10 9	8 7 6	(5) 4 3	2 1 0					
9. Vegetative Protection (score	More than 90% of the streambank surfaces and immediate riparian zone	70-90% of the streambank surfaces covered by native	50-70% of the streambank surfaces covered by vegetation;	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.					
each bank)	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.	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.	disruption obvious; patches of bare soil or closely cropped vegetation common; less than one- half of the potential plant stubble height remaining.	vegetation is very high; vegetation has been removed to 5 centimeters or less in					
SCORE(LB)	vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed	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	patches of bare soil or closely cropped vegetation common; less than one- half of the potential plant stubble height	vegetation is very high; vegetation has been removed to 5 centimeters or less in					
	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.	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.	patches of bare soil or closely cropped vegetation common; less than one- half of the potential plant stubble height remaining.	vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.					
SCORE(LB)	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	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	patches of bare soil or closely cropped vegetation common; less than one- half of the potential plant stubble height remaining.	vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. 2 1 0 2 1 0					
SCORE(LB) SCORE(RB) 10. Riparian Vegetative Zone Width (score each	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 Width of riparian zone>50-ft; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops)	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 8 7 6 Width of riparian zone 25-50-ft; human activities have impacted zone only	patches of bare soil or closely cropped vegetation common; less than one- half of the potential plant stubble height remaining. 5 4 3 Width of riparian zone 10-25-ft; human activities have	vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. 2 1 0 2 1 0 Width of riparian zone <10 ft. little or no riparian vegetation due to human activities. Urban					

Total Score (Maximum 200)



STREAM NAME	Bear Creek Watershed									
BCWA Site # 14A	Colorado Stream Segment Classification :									
LATLONG	_ South Platte River Basin									
Web Site: www.bearcreekwatershed.org	Bear Creek Watershed Association									
INVESTIGATORS:										
COMPLETED BY: Bear Creek Watershed Association	DATE TIME AM PM Baseline Habitat Survey for BCWA Sampling Locations; Reference Conditions									

Habitat		Condition	Category					
Parameter	Optimal	Suboptimal	Marginal	Poor				
1. Epifaunal Substrate/ Available Cover	Greater than 70% 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).	40-70% 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).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.				
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0				
2. Embeddedness	Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulde particles are more than 75% surrounded by fine sedimen				
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0				
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow- deep, slow-shallow, fast- deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).				
SCORE	20 19 18 17 16	15 14 13 12 11	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 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% 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 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.				
SCORE	20 19 18 17 16	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.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	and mostly present as				
	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0				

	Habitat		_	18	- 01	Co	nditi	on Cate	gory	y				4	بالي		400
	Parameter 6. Channel Alteration	Optimal		S	ubopt	imal		1	M	largir	nal		Poor				
State of the state		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 th stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.				of the zed am
1	SCORE	20 19 18 17 1	6	15 (1	4) 13	12	11	10	9	8	7 6	5	4	3	2	1	0
	7. Frequency of Riffles (or bends)	relatively frequent; ratio of distance between riffles divided by width riffles divided by width of the stream is bottom contours provide some habitat; distance between riffles divided by divided by							betw by th	y all flat water or riffles; poor habitat between riffles by the width of the a ratio of >25.							
	SCORE	20 19 18 17 16	5	15 14	4 (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.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	i	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.			
	SCORE(LB)	Left Bank 10 9		8	7	(6)	5		4	3		2	1		0	
	SCORE(RB)	Right Bank 10 9		8	7	6		(3	-	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.	s c	70-90% of 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; disruption 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.				ank ı;
	SCORE(LB)	Left Bank 10 9	1	8	7	(6)	5		4	3		2	1		0	
	SCORE(RB)	Right Bank 10 9		8	7	6	-	(5)	4	3		2	1		0	
	10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone>5 ft; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crop have not impacted zone.	5 h)-ft; hu	friparia man ac pacted :	tivitie	s	25-ft;	hum	an act	n zone 10 tivities ha great dea	te ft: li l. vege activ	etatio	f ripa or no on du s. Url cture	ripa e to ban	rian	
		I -0 D1 10 0		8	7	6	F-1/4	(5)	4	3	1000	2	1		0	
	SCORE (LB)	Left Bank 10 9		0		U		1 3		4	3	1000	4				

Habitat		Condition	on Category					
Parameter	Optimal	Suboptimal	Marginal	Poor				
6. Channel Alteration	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.				
SCORE	20 19 18 17 16	15 14 (13) 12 11	10 9 8 7 6	5 4 3 2 1 0				
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is a ratio between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat, distance between riffles divided by the width of the stream is a ratio between 15 to 25.	Generally all flat water or shallow riffles; poor habitat distance between riffles divided by the width of the stream is a ratio of >25.				
SCORE	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) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <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 eareas; "raw" area along straight see bends; obvious bends; obvious bends; obvious bank has erosion.						
SCORE(LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0				
SCORE(RB)	Right Bank 10 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.	70-90% of 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; disruption 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.				
SCORE(LB)	Left Bank 10 9	8 7 6	(5) 4 3	2 1 0				
SCORE (RB)	Right Bank 10 9	8 7 6	5 (4) 3	2 1 0				
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone>50- ft; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 25- 50-ft; human activities have impacted zone only minimally.	25-ft; human activities hav impacted zone a great deal	of ft: little or no riparian				
	Left Bank 10 9	8 7 6	5 4 3	2 1 0				
SCORE(LB)	Dore Duine	The second secon		Company of the control of the contro				

STREAM NAME Tolodal	Bear Creek Watershed									
BCWA Site #	Colorado Stream Segment Classification :									
LATLONG_	South Platte River Basin									
Web Site: www.bearcreekwatershed.org	Bear Creek Watershed Association									
INVESTIGATORS:										
COMPLETED BY: Bear Creek Watershed Association	DATE TIME AM PM Baseline Habitat Survey for BCWA Sampling Locations; Reference Conditions									

Habitat	Condition Category				
Parameter	Optimal	Suboptimal	Marginal	Poor	
1. Epifaunal Substrate/ Available Cover	Greater than 70% 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).	40-70% 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).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
2. Embeddedness	Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulde particles are more than 75% surrounded by fine sedimen	
SCORE	20 19 18 17 16	15 14 13 (12) 11	10 9 8 7 6	5 4 3 2 1 0	
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow- deep, slow-shallow, fast- deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).	
SCORE	20 19 18 17 16	15 14 (13) 12 11	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 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends;	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
SCORE	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
5. Channel Flow Status SCORE	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	available channel, and/or	Very little water in channel and mostly present as standing pools.	
	20 19 18 17 16	15 (14) 13 12 11	10 9 8 7 6	5 4 3 2 1 0	

STREAM NAME OF OVER	Bear Creek Watershed Colorado Stream Segment Classification: South Platte River Basin		
BCWA Site #			
LATLONG			
Web Site: www.bearcreekwatershed.org	Bear Creek Watershed Association		
INVESTIGATORS:			
COMPLETED BY: Bear Creek Watershed Association	DATE TIME 9-22-15 AN PM Baseline Habitat Survey for BCWA Sampling Locations; Reference Conditions		

Habitat	Condition Category			
Parameter	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 70% 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).	40-70% 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).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulde particles are more than 75% surrounded by fine sedimen
SCORE	20 19 18 17 16	15 14 13 12 (11)	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast- shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow- deep).
SCORE	20 19 18 17 16	15 14 13 (12) 11	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 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% 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 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	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.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Part of the second	20 19 18 17 16	15 14 13 (12)11	10 9 8 7 6	5 4 3 2 1 0

Habitat		Condition	on Category	
Parameter	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	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.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is a ratio between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is a ratio between 15 to 25.	Generally all flat water or shallow riffles; poor habita distance between riffles divided by the width of the stream is a ratio of >25.
SCORE	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) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <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.
SCORE(LB)	Left Bank 10 9	8 7 6	(5) 4 3	2 1 0
SCORE(RB)	Right Bank 10 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.	70-90% of 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; disruption 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.
SCORE(LB)	Left Bank 10 9	8 7 6	(5) 4 3	2 1 0
SCORE(RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	ft; human activities (i.e., parking lots, roadbeds, have impacted zone only impacted		Width of riparian zone 10- 25-ft; human activities have impacted zone a great deal.	
	nave not impacted zone.			
SCORE(LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score	(Maximum 200)

STREAM NAME	Bear Creek Watershed Colorado Stream Segment Classification : South Platte River Basin		
BCWA Site #			
LAT LONG			
Web Site: www.bearcreekwatershed.org	Bear Creek Watershed Association		
INVESTIGATORS:			
COMPLETED BY: Bear Creek Watershed Association	DATE 9-22/5 _{AM PM}	Baseline Habitat Survey for BCWA Sampling Locations; Reference Conditions	

1	Habitat		Condition	Condition Category			
1	Parameter	Optimal	Suboptimal	Marginal	Poor		
1	1. Epifaunal Substrate/ Available Cover	Greater than 70% 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).	40-70% 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).	20-40% mix of stable habitat, habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.		
1	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
	2. Embeddedness	Gravel, cobble, and boulder particles are 0- 25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and bould particles are more than 75% surrounded by fine sedime		
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0		
	3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow deep).		
	SCORE	20 19 18 17 16	15 14 13 12 11	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 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.		Heavy deposits of fin material, increased ba development; more tha 50% of the bottor changing frequently; pool almost absent due t substantial sedimer deposition.		
1	SCORE	20 19 18 17 16	15 14 13 12 (11)	10 9 8 7 6	5 4 3 2 1 0		
	5. Channel Flow Status SCORE	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	available channel, and/or	Very little water in channel and mostly present as standing pools.		
- 1	SCORE		15 14 13 (12)11	10 9 8 7 6	5 4 3 2 1 0		

Habitat		Conditi	on Category	
Parameter	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	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.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is a ratio between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is a ratio between 15 to 25.	Generally all flat water or shallow riffles; poor habita distance between riffles divided by the width of the stream is a ratio of >25.
SCORE	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) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <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.
SCORE(LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE(RB)	Right Bank 10 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.	70-90% of 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; disruption 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.
SCORE(LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE(RB)	Right Bank 10 9	8 (7) 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone>50- ft; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 25- 50-ft; human activities have impacted zone only minimally.	Width of riparian zone 10- 25-ft; human activities have impacted zone a great deal.	Width of riparian zone <10 ft: little or no riparian vegetation due to human activities. Urban infrastructure.
SCORE(LB)	Left Bank 10 9	8 (7) 6	5 4 3	2 1 0

Total Score	(Maximum 200