Road Stream Crossing Data Sheet

v2011.06_a (June 6,2011)

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 13 CC

Stream Name: Cold Creek | Road Name: Comfort Road

Observer Name(s): Conway, Witt, Norris, Ackerman, Branson, Kelderhouse | Date: 7/8/2011

GPS Waypoint: | GPS Lat: 44.91942 | GPS Long: -85.20031

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 7

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Undersized, dead trees upstream

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 1

Structure Shape: Round

Inlet Type: Projecting

Outlet Type: Cascade over Riprap

Structure Material: Metal

Substrate in Structure: Sand

General Conditions: Good

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 1% to 25%

Percentage Crushed: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Rusted Through? ☐ | Structure Interior: corrugated

Structure Length (ft): 78.5 | Structure Width (ft): 5 | Structure Height (ft): 4

Structure Water Depth (ft): Inlet 1.53 | Outlet 2.17 | Perch Height (ft): 2.5

Embedded Depth of Structure(ft): Inlet 0 | Outlet 0

Structure Water Velocity(ft/sec): Inlet 3.57 | Outlet 3.57

Structure Water Velocity Measured: 0 ft Below Surface (0 = at surface) | Measured With: Float Test

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): 25 | Width (ft): 20 | Depth (ft):

Upstream Pond (if present) Length(ft): 100 | Width (ft): 50 | Depth (ft):

Riffle Information

(measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: County | Other: | Seasonal Road? ☐

Road Surface: Paved | Road Condition: Good

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path: Ditch

Embankment:	Upstream	Fill Depth (ft):		Slope:	1:1.5			Approach Erosion (tons/year)
	Downstream	Fill Depth (ft):		Slope:	1:1.5			
Left Approach:	Length (ft):		Slope:	Less Than 1%	Ditch Vegetation:	Partial	LS:	
Right Approach:	Length (ft):		Slope:	Less Than 1%	Ditch Vegetation:	Heavy	LS:	

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	cccr1
Outlet	cccr2
Upstream Conditions	cccr3
Downstream Cpnditions	cccr4
Road Approach - Left	cccr5
Road Approach - Right	cccr6

Summary Information

Would you consider this a priority site? Fish Passage

Why? Perched outlet is a barrier to upstream passage of fish.

Would you recommend a future visit to this site? ☑ (if yes then check the box)

Why? Culvert is too small and has contributed to tree drowning and die-off upstream. Fish barrier due to perched culvert.

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 14 CCT

Stream Name: Cold Creek | Road Name: Tyler Road

Observer Name(s): Youmans, Norris, Witt, Branson, Narwold, Ackerman | Date: 7/1/2011

GPS Waypoint: | GPS Lat: 44.9174 | GPS Long: -85.20148

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 18

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Large culvert, macroinvertebrate site

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 1

Structure Shape: Round

Inlet Type: Projecting

Outlet Type: At Stream Grade

Structure Material: Metal

Substrate in Structure: Sand

General Conditions: Good

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Percentage Crushed: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Rusted Through? ☐ | Structure Interior: corrugated

Structure Length (ft): 42.8 | Structure Width (ft): 9.25 | Structure Height (ft): 6.4

Structure Water Depth (ft): Inlet 1.9 | Outlet 2.17 | Perch Height (ft): 0

Embedded Depth of Structure(ft): Inlet 0 | Outlet 0

Structure Water Velocity(ft/sec): Inlet 0.4 | Outlet 0.59

Structure Water Velocity Measured: 1 ft Below Surface (0 = at surface) | Measured With: Meter

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): 15 | Width (ft): 14 | Depth (ft): 3.5

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: Town | Other: | Seasonal Road? ☐

Road Surface: Gravel | Road Condition: Good

Road Width at Culvert(ft): 28 | Location of Low Point: At Stream | Runoff Path: Ditch

Embankment: Upstream Fill Depth (ft): | Slope: 1:1.5

Downstream Fill Depth (ft): | Slope: 1:1.5

								Approach Erosion (tons/year)
Left Approach:	Length (ft): 300	Slope: 1% to 5%	Ditch Vegetation: Heavy	LS: 0.46	1.0645
Right Approach:	Length (ft): 300	Slope: 1% to 5%	Ditch Vegetation: Heavy	LS: 0.46	1.0645

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr): 2.1289

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion: Moderate

Erosion Notes: Erosion is centered over culvert inlet and outlet. Sand and road gravel are eroding into stream.

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	cctr1
Outlet	cctr2
Upstream Conditions	cctr3
Downstream Cpnditions	cctr4
Road Approach - Left	cctr5
Road Approach - Right	cctr6

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes Site_ID: 15 CCF

Stream Name: Cold Creek Road Name: Fish-farm Road

Observer Name(s): Narwold, Branson, Knapp, Kelderhouse, Norris, Sittel, Witt, Youmans, Conw Date:

GPS Waypoint: GPS Lat: 44.9096 GPS Long: -85.1987

County: Antrim Township: Custer Twp Tier: 29N Range: 7W Section: 18

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments:

Crossing Information

Crossing Type: No. of Culverts:

Structure Shape:

Inlet Type:

Outlet Type:

Structure Material:

Substrate in Structure:

General Conditions:

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet ☑ Outlet ☑ In Pipe

Percentage Crushed: ☑ Inlet ☑ Outlet ☑ In Pipe

Rusted Through? ☐ Structure Interior:

Structure Length (ft): Structure Width (ft): Structure Height (ft):

Structure Water Depth (ft): Inlet Outlet Perch Height (ft):

Embedded Depth of Structure(ft): Inlet Outlet

Structure Water Velocity(ft/sec): Inlet Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) Measured With:

Stream Information

Stream Flow:

Scour Pool (if present) Length (ft): Width (ft): Depth (ft):

Upstream Pond (if present) Length(ft): Width (ft): Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): Bankfull Width (ft): Wetted Width (ft): Water Velocity (ft/sec):

Dominant_Substrate: Measured with:

Road Information

Road_Type: Private Other: Seasonal Road? ☐

Road Surface: Gravel Road Condition: Fair

Road Width at Culvert(ft): Location of Low Point: Runoff Path:

Embankment: Upstream Fill Depth (ft): Slope:

Downstream Fill Depth (ft): Slope:

Left Approach: Length (ft): Slope: Ditch Vegetation: LS:

Right Approach: Length (ft): Slope: Ditch Vegetation: LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes: Site is near an old earthen dam that washed out many years ago.

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Outlet	ccffr2

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 16 CC

Stream Name: Cold Creek | Road Name: Alden Highway

Observer Name(s): Youmans, Norris, Branson, Witt, Narwold, Ackerman | Date: 7/1/2011

GPS Waypoint: | GPS Lat: 44.90279 | GPS Long: -85.20282

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 18

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments:

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 1

Structure Shape: Round

Inlet Type: Projecting

Outlet Type: Cascade over Riprap

Structure Material: Metal

Substrate in Structure: Sand

General Conditions: Good

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Percentage Crushed: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Rusted Through? ☐ | Structure Interior: corrugated

Structure Length (ft): 91.5 | Structure Width (ft): 3.8 | Structure Height (ft): 3.8

Structure Water Depth (ft): Inlet 1.4 | Outlet 1.2 | Perch Height (ft): 2

Embedded Depth of Structure(ft): Inlet 0 | Outlet 0

Structure Water Velocity(ft/sec): Inlet 1.34 | Outlet 1.98

Structure Water Velocity Measured: 1 ft Below Surface (0 = at surface) | Measured With: Meter

Stream Information

Stream Flow: Less than Bankfull

Scour Pool (if present) Length (ft): 15 | Width (ft): 8 | Depth (ft): 3

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: County | Other: | Seasonal Road? ☐

Road Surface: Paved | Road Condition: Good

Road Width at Culvert(ft): 35 | Location of Low Point: At Stream | Runoff Path: Ditch

Embankment: Upstream Fill Depth (ft): 28 | Slope: Vertical

Downstream Fill Depth (ft): 21 | Slope: Vertical

								Approach Erosion (tons/year)
Left Approach:	Length (ft): 90	Slope: Less Than 1%	Ditch Vegetation: Heavy	LS: 0.05	0.0052
Right Approach:	Length (ft): 84	Slope: Less Than 1%	Ditch Vegetation: Heavy	LS: 0.05	0.0049

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
Right Downstream				☐ Yes	Sand	
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion: Minor

Erosion Notes: Sand and gravel being washed from road shoulders into ditches on upstream and downstream sides of highway.

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	ccah1
Outlet	ccah2
Upstream Conditions	ccah3
Downstream Cpnditions	ccah4
Road Approach - Left	ccah5
Road Approach - Right	ccah6

Summary Information

Would you consider this a priority site? Fish Passage

Why? Perched culvert likely prevents upstream passage of fish.

Would you recommend a future visit to this site? ☑ (if yes then check the box)

Why? Consider for culvert replacement and reworking roadside drainage.

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 17 FCR

Stream Name: Finch Creek | Road Name: Railroad Crossing

Observer Name(s): Sittel, Barber, Youmans | Date: 7/8/2011

GPS Waypoint: | GPS Lat: 44.90806 | GPS Long: -85.21583

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 8W | Section: 13

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Bridge

Crossing Information

Crossing Type: Bridge | No. of Culverts:

Structure Shape: Open Bottom Square/Rectangle

Inlet Type: Other

Outlet Type: At Stream Grade

Structure Material: Wood

Substrate in Structure: None

General Conditions: Poor

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior:

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Less than Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: Other | Other: railroad right-o | Seasonal Road? ☐

Road Surface: Native Surface | Road Condition:

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: Heavy | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: Heavy | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 18 FCA

Stream Name: Finch Creek | Road Name: Alden Highway

Observer Name(s): Conway, Witt, Kelderhouse, Branson, Ackerman, Norris | Date: 7/8/2011

GPS Waypoint: | GPS Lat: 44.9024 | GPS Long: -85.21126

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 8W | Section: 24

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Upstream pond

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 2

Structure Shape: Round

Inlet Type: Projecting

Outlet Type: Cascade over Riprap

Structure Material: Metal

Substrate in Structure: Sand

General Conditions: Fair

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material
1	3.75	74	3.75	Metal
2	4	74	4	Metal

Percentage Plugged: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Percentage Crushed: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Rusted Through? ☐ | Structure Interior: corrugated

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet 1.43 | Outlet 1.79 | Perch Height (ft): 2

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet 2.55 | Outlet 2.55

Structure Water Velocity Measured: 0 ft Below Surface (0 = at surface) | Measured With: Float Test

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: County | Other: | Seasonal Road? ☐

Road Surface: Paved | Road Condition: Good

Road Width at Culvert(ft): | Location of Low Point: Other | Runoff Path: Ditch

Embankment: Upstream Fill Depth (ft): | Slope: Vertical

Downstream Fill Depth (ft): | Slope: Vertical

Left Approach: Length (ft): | Slope: Less Than 1% | Ditch Vegetation: Heavy | LS:

Right Approach: Length (ft): | Slope: Less Than 1% | Ditch Vegetation: Heavy | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
Left Downstream				☑ Yes	Sand	
Right Downstream				☐ Yes	Sand	
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion: Severe

Erosion Notes: Extensive erosion on downstream side. Moderate erosion around guardrail mounts on upstream side.

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	fcah1
Outlet	fcah2
Upstream Conditions	fcah3
Downstream Cpnditions	fcah4
Road Approach - Left	fcah5
Road Approach - Right	fcah6

Summary Information

Would you consider this a priority site? Fish Passage

Why? At outlet culverts are too high for fish to go upstream. Extensive erosion is putting sand into creek.

Would you recommend a future visit to this site? ☑ (if yes then check the box)

Why? This site should be a candidate for culvert replacement (needs larger culverts) and erosion control measures.

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 19 FC9

Stream Name: Finch Creek | Road Name: 9310 Finch Creek Road

Observer Name(s): Narwold, Richards, Ackerman, Norris, Youmans, Witt | Date: 7/22/2011

GPS Waypoint: | GPS Lat: 44.89839 | GPS Long: -85.21082

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 19

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Bridge, macroinvertebrate site

Crossing Information

Crossing Type: Bridge | No. of Culverts:

Structure Shape: Open Bottom Square/Rectangle

Inlet Type: Other

Outlet Type: At Stream Grade

Structure Material: Wood

Substrate in Structure: Gravel

General Conditions: Fair

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior:

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Less than Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: Private | Other: | Seasonal Road? ☐

Road Surface: Native Surface | Road Condition: Poor

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion: Minor

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Downstream Cpnditions	fc9310fcr4

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 20 FCF

Stream Name: Finch Creek | Road Name: Finch Creek Road

Observer Name(s): Branson, Kelderhouse, Barber, Conway | Date: 7/22/2011

GPS Waypoint: | GPS Lat: 44.9586 | GPS Long: -85.1972

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 30

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments:

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 2

Structure Shape: Round

Inlet Type: Projecting

Outlet Type: Cascade over Riprap

Structure Material: Metal

Substrate in Structure:

General Conditions:

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material
1				Metal
2				Metal

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior:

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft): 2.5

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): 50 | Width (ft): 20 | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: County | Other: | Seasonal Road? ☐

Road Surface: Paved | Road Condition: Good

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path: Ditch

Embankment: Upstream Fill Depth (ft): 2 | Slope: More than 1:2

Downstream Fill Depth (ft): 2 | Slope: More than 1:2

Left Approach: Length (ft): | Slope: | Ditch Vegetation: Partial | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: Partial | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	fcfcr1
Outlet	fcfcr2
Downstream Cpnditions	fcfcr4

Summary Information

Would you consider this a priority site? Fish Passage

Why? Perch height creates fish passage barrier to upstream travel.

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 21 FCE

Stream Name: Finch Creek | Road Name: Elder Road, East

Observer Name(s): Richards, Narwold, Ackerman, Norris, Witt, Conway | Date: 7/22/2011

GPS Waypoint: | GPS Lat: 44.88843 | GPS Long: -85.20766

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 19

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments:

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 1

Structure Shape: Round

Inlet Type: Projecting

Outlet Type: Freefall into Pool

Structure Material: Metal

Substrate in Structure: None

General Conditions: Good

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Percentage Crushed: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Rusted Through? ☐ | Structure Interior: corrugated

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: | ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): 30 | Width (ft): 20 | Depth (ft): 4

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: County | Other: | Seasonal Road? ☐

Road Surface: Gravel | Road Condition: Poor

Road Width at Culvert(ft): | Location of Low Point: At Stream | Runoff Path: Ditch

Embankment: Upstream Fill Depth (ft): 1 | Slope: More than 1:2

Downstream Fill Depth (ft): 1 | Slope: More than 1:2

Left Approach: Length (ft): 200 | Slope: 1% to 5% | Ditch Vegetation: Partial | LS:

Right Approach: Length (ft): 200 | Slope: 6% to 10% | Ditch Vegetation: Partial | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion: Severe

Erosion Notes: Stream has eroded around culvert such that water flows downstream outside the confines of the culvert. Road is steep, made of sand and gravel and is severely eroded.

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	fcere1
Outlet	fcere2
Upstream Conditions	fcere3
Downstream Cpnditions	fcere4
Road Approach - Left	fcere5
Road Approach - Right	fcere6

Summary Information

Would you consider this a priority site? Erosion

Why? Road is at risk of collapse due to erosion around culvert.

Would you recommend a future visit to this site? ☑ (if yes then check the box)

Why? Replace culvert, repair roadway

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 22 FCE

Stream Name: Finch Creek | Road Name: Elder Road, West

Observer Name(s): Richards, Narwold, Ackerman, Norris, Witt, conway | Date: 7/22/2011

GPS Waypoint: | GPS Lat: 44.88842 | GPS Long: -85.20894

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 19

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments:

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 1

Structure Shape: Round

Inlet Type: Projecting

Outlet Type: At Stream Grade

Structure Material: Metal

Substrate in Structure: Sand

General Conditions: Good

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior: corrugated

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: | ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Less than Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: County | Other: | Seasonal Road? ☐

Road Surface: Gravel | Road Condition: Poor

Road Width at Culvert(ft): | Location of Low Point: At Stream | Runoff Path: Roadway

Embankment: Upstream Fill Depth (ft): 1 | Slope: 1:2

Downstream Fill Depth (ft): 1 | Slope: 1:2

Left Approach: Length (ft): 50 | Slope: 1% to 5% | Ditch Vegetation: Partial | LS:

Right Approach: Length (ft): 100 | Slope: Less Than 1% | Ditch Vegetation: Partial | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Outlet	fcerw2
Upstream Conditions	fcerw3

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 23 FCB

Stream Name: Finch Creek | Road Name: Bebb Road

Observer Name(s): Kelderhouse, Barber, Conway, Branson | Date: 7/22/2011

GPS Waypoint: | GPS Lat: 44.8739 | GPS Long: -85.1923

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 30

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments:

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 1

Structure Shape: Round

Inlet Type:

Outlet Type:

Structure Material: Metal

Substrate in Structure:

General Conditions:

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior: corrugated

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: | ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Less than Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): 100 | Width (ft): 50 | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: County | Other: | Seasonal Road? ☐

Road Surface: | Road Condition:

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: Heavy | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: Heavy | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Upstream Conditions	fcbr3
Downstream Cpnditions	fcbr4

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☑ (if yes then check the box)

Why? Upstream pond suggests culvert is undersied. Dead trees upstream.

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 24 FC

Stream Name: Finch Creek | Road Name: Way Road

Observer Name(s): Branson, Kelderhouse, Witt, Conway | Date: 7/22/2011

GPS Waypoint: | GPS Lat: 44.8647 | GPS Long: -85.1832

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 32

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Undersized, large upstream pond

Crossing Information

Crossing Type: culvert(s) | No. of Culverts:

Structure Shape: Round

Inlet Type: Projecting

Outlet Type: At Stream Grade

Structure Material: Metal

Substrate in Structure:

General Conditions:

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior: corrugated

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow:

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: | Other: | Seasonal Road? ☐

Road Surface: | Road Condition:

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes Site_ID: 01 SCR

Stream Name: Shanty Creek Road Name: Road to nowhere

Observer Name(s): Jim Kelderhouse Date:

GPS Waypoint: GPS Lat: GPS Long:

County: Antrim Township: Custer Twp Tier: 29N Range: 7W Section: 4

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments:

Crossing Information

Crossing Type: culvert(s) No. of Culverts: 1

Structure Shape: Round

Inlet Type:

Outlet Type:

Structure Material:

Substrate in Structure:

General Conditions:

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet ☑ Outlet ☑ In Pipe

Percentage Crushed: ☑ Inlet ☑ Outlet ☑ In Pipe

Rusted Through? ☐ Structure Interior:

Structure Length (ft): Structure Width (ft): Structure Height (ft):

Structure Water Depth (ft): Inlet Outlet Perch Height (ft):

Embedded Depth of Structure(ft): Inlet Outlet

Structure Water Velocity(ft/sec): Inlet Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) Measured With:

Stream Information

Stream Flow:

Scour Pool (if present) Length (ft): Width (ft): Depth (ft):

Upstream Pond (if present) Length(ft): Width (ft): Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): Bankfull Width (ft): Wetted Width (ft): Water Velocity (ft/sec):

Dominant_Substrate: Measured with:

Road Information

Road_Type: Other: Seasonal Road? ☐

Road Surface: Road Condition:

Road Width at Culvert(ft): Location of Low Point: Runoff Path:

Embankment: Upstream Fill Depth (ft): Slope:

Downstream Fill Depth (ft): Slope:

Left Approach: Length (ft): Slope: Ditch Vegetation: LS:

Right Approach: Length (ft): Slope: Ditch Vegetation: LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 02 SCR

Stream Name: Shanty Creek | Road Name: Railroad Crossing

Observer Name(s): Richards, Kelderhouse, Narwold, Branson, Ackerman, Norris, Witt, Youmans | Date: 7/22/2011

GPS Waypoint: | GPS Lat: 44.92972 | GPS Long: -85.20278

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 7

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Bridge

Crossing Information

Crossing Type: Bridge | No. of Culverts:

Structure Shape: Open Bottom Square/Rectangle

Inlet Type: Other

Outlet Type: At Stream Grade

Structure Material: Concrete

Substrate in Structure: Sand

General Conditions: Fair

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior:

Structure Length (ft): | Structure Width (ft): 12 | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: 0.8 ft Below Surface (0 = at surface) | Measured With: Meter

Stream Information

Stream Flow: Less than Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: Other | Other: railroad right-o | Seasonal Road? ☐

Road Surface: Native Surface | Road Condition: Fair

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path: Ditch

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: Partial | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: Partial | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	scrr1
Upstream Conditions	scrr3
Road Approach - Right	scrr6

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: ElkRiver Chain ofLakes | Site_ID: 03 SC

Stream Name: Shanty Creek | Road Name: Old hydropower site

Observer Name(s): Sittel, Branson, Witt | Date: 7/15/2011

GPS Waypoint: | GPS Lat: 44.93 | GPS Long: -85.2001

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 7

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments:

Crossing Information

Crossing Type: Dam | No. of Culverts:

Structure Shape: Square/Rectangle

Inlet Type: Other

Outlet Type: Cascade over Riprap

Structure Material: Concrete

Substrate in Structure: Sand

General Conditions: Fair

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Percentage Crushed: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Rusted Through? ☐ | Structure Interior: smooth

Structure Length (ft): 12 | Structure Width (ft): 12 | Structure Height (ft): 5

Structure Water Depth (ft): Inlet 0.75 | Outlet 0.75 | Perch Height (ft): 6

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): 20 | Width (ft): 30 | Depth (ft): 3.5

Upstream Pond (if present) Length(ft): 1200 | Width (ft): 200 | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: Private | Other: | Seasonal Road? ☐

Road Surface: Gravel | Road Condition: Good

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): 0 | Slope:

Downstream Fill Depth (ft): 0 | Slope:

Approach Erosion (tons/year)

Left Approach: Length (ft): 100 | Slope: Less Than 1% | Ditch Vegetation: Partial | LS:

Right Approach: Length (ft): 100 | Slope: Less Than 1% | Ditch Vegetation: Partial | LS:

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes: No observable erosion

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Outlet	schp2

Summary Information

Would you consider this a priority site? Fish Passage

Why? Candidate for dam removal.

Would you recommend a future visit to this site? ☑ (if yes then check the box)

Why? Possible private property concerns.

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk RiverChainofLakes | Site_ID: 04 SC

Stream Name: Shanty Creek | Road Name: Grass River Road

Observer Name(s): Branson, Barber, Youmans, Conway, Witt | Date: 6/24/2011

GPS Waypoint: | GPS Lat: 44.9317 | GPS Long: -85.1988

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 7

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Macroinvertebrate site

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 1

Structure Shape: Round

Inlet Type: Projecting

Outlet Type: At Stream Grade

Structure Material: Metal

Substrate in Structure: Sand

General Conditions: Good

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior: corrugated

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: | ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Less than Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: County | Other: | Seasonal Road? ☐

Road Surface: Gravel | Road Condition: Fair

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Outlet	scgrr2

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain ofLakes | Site_ID: 05 SC

Stream Name: Shanty Creek | Road Name: M-88

Observer Name(s): Narwold, Kelderhouse, Ackerman, Witt | Date: 6/24/2011

GPS Waypoint: | GPS Lat: 44.93238 | GPS Long: -85.19836

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7w | Section: 7

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Bridge

Crossing Information

Crossing Type: Bridge | No. of Culverts:

Structure Shape: Square/Rectangle

Inlet Type: Wingwall 10-30 Degree

Outlet Type: Outlet Apron

Structure Material: Concrete

Substrate in Structure: Sand

General Conditions: Good

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Percentage Crushed: ☑ Inlet 0% | ☑ Outlet 0% | ☑ In Pipe 0%

Rusted Through? ☐ | Structure Interior: smooth

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow:

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: | Other: | Seasonal Road? ☐

Road Surface: | Road Condition:

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes: No observable erosion

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	scm881

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 06 SCP

Stream Name: Shanty Creek | Road Name: Pine Brook

Observer Name(s): Witt, Barber, Sittel | Date: 7/15/2011

GPS Waypoint: | GPS Lat: 44.9351 | GPS Long: -85.1953

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 5

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Walking Bridge - fish passage concern

Crossing Information

Crossing Type: Dam | No. of Culverts:

Structure Shape: Square/Rectangle

Inlet Type:

Outlet Type: Freefall into Pool

Structure Material: Metal

Substrate in Structure: Sand

General Conditions: Poor

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior:

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow:

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: | Other: | Seasonal Road? ☐

Road Surface: | Road Condition:

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Approach Erosion (tons/year)

Left Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Outlet	scpbd2

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes Site_ID: 07 SC

Stream Name: Shanty Creek Road Name:

Observer Name(s): Date:

GPS Waypoint: GPS Lat: 44.9348 GPS Long: -85.1928

County: Antrim Township: Custer Twp Tier: Range: Section:

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Creek-side drive bridge

Crossing Information

Crossing Type: No. of Culverts:

Structure Shape:

Inlet Type:

Outlet Type:

Structure Material:

Substrate in Structure:

General Conditions:

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet ☑ Outlet ☑ In Pipe

Percentage Crushed: ☑ Inlet ☑ Outlet ☑ In Pipe

Rusted Through? ☐ Structure Interior:

Structure Length (ft): Structure Width (ft): Structure Height (ft):

Structure Water Depth (ft): Inlet Outlet Perch Height (ft):

Embedded Depth of Structure(ft): Inlet Outlet

Structure Water Velocity(ft/sec): Inlet Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) Measured With:

Stream Information

Stream Flow:

Scour Pool (if present) Length (ft): Width (ft): Depth (ft):

Upstream Pond (if present) Length(ft): Width (ft): Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): Bankfull Width (ft): Wetted Width (ft): Water Velocity (ft/sec):

Dominant_Substrate: Measured with:

Road Information

Road_Type: Other: Seasonal Road? ☐

Road Surface: Road Condition:

Road Width at Culvert(ft): Location of Low Point: Runoff Path:

Embankment: Upstream Fill Depth (ft): Slope:

Downstream Fill Depth (ft): Slope:

Left Approach: Length (ft): Slope: Ditch Vegetation: LS:

Right Approach: Length (ft): Slope: Ditch Vegetation: LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes Site_ID: 08 SC

Stream Name: Shanty Creek Road Name:

Observer Name(s): Date:

GPS Waypoint: GPS Lat: 44.93472 GPS Long: -85.185

County: Antrim Township: Custer Twp Tier: T29N Range: R7W Section: 4

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Gravel roadabove Legend Golf Course

Crossing Information

Crossing Type: culvert(s) No. of Culverts: 1

Structure Shape: Round

Inlet Type:

Outlet Type:

Structure Material: Metal

Substrate in Structure:

General Conditions:

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet ☑ Outlet ☑ In Pipe

Percentage Crushed: ☑ Inlet ☑ Outlet ☑ In Pipe

Rusted Through? ☐ Structure Interior: corrugated

Structure Length (ft): Structure Width (ft): Structure Height (ft):

Structure Water Depth (ft): Inlet Outlet Perch Height (ft):

Embedded Depth of Structure(ft): Inlet Outlet

Structure Water Velocity(ft/sec): Inlet Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) Measured With:

Stream Information

Stream Flow:

Scour Pool (if present) Length (ft): Width (ft): Depth (ft):

Upstream Pond (if present) Length(ft): Width (ft): Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): Bankfull Width (ft): Wetted Width (ft): Water Velocity (ft/sec):

Dominant_Substrate: Measured with:

Road Information

Road_Type: Other: Seasonal Road? ☐

Road Surface: Road Condition:

Road Width at Culvert(ft): Location of Low Point: Runoff Path:

Embankment: Upstream Fill Depth (ft): Slope:

Downstream Fill Depth (ft): Slope:

Left Approach: Length (ft): Slope: Ditch Vegetation: LS:

Right Approach: Length (ft): Slope: Ditch Vegetation: LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 09 SCC

Stream Name: Shanty Creek | Road Name: Creekside Drive

Observer Name(s): Branson, Norris | Date: 6/24/2011

GPS Waypoint: | GPS Lat: 44.9346 | GPS Long: -85.1864

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 5

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Between Pinebrook and Pond

Crossing Information

Crossing Type: Bridge | No. of Culverts:

Structure Shape: Open Bottom Square/Rectangle

Inlet Type: Other

Outlet Type: Other

Structure Material: Concrete

Substrate in Structure: Sand

General Conditions: Poor

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior: smooth

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: Private | Other: | Seasonal Road? ☐

Road Surface: Gravel | Road Condition: Poor

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: Partial | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: Partial | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion: Severe

Erosion Notes: Extensive erosion of roadside ditches into creek.

Photos -enter photo number in blank corresponding to location

Summary Information

Would you consider this a priority site? Erosion

Why? Extensive erosion of road and roadside ditches into creek.

Would you recommend a future visit to this site? ☑ (if yes then check the box)

Why? Corrective measures for control of erosion.

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 10 SCC

Stream Name: Shanty Creek | Road Name: Creekside Drive

Observer Name(s): Branson,Norris | Date: 6/24/2011

GPS Waypoint: | GPS Lat: 44.9348 | GPS Long: -85.1819

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 5

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Between PineBrook and pond

Crossing Information

Crossing Type: Bridge | No. of Culverts:

Structure Shape: Open Bottom Square/Rectangle

Inlet Type: Other

Outlet Type: At Stream Grade

Structure Material: Concrete

Substrate in Structure: Sand

General Conditions: Poor

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior:

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: Private | Other: | Seasonal Road? ☐

Road Surface: Gravel | Road Condition: Poor

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: Partial | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: Partial | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
Left Ditch				☑ Yes	Sand	
Right Ditch				☑ Yes	Sand	
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion: Severe

Erosion Notes: Roadway rutted and excavated by water passage, sand and gravel eroding down bank into stream.

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Outlet	sccsd2
Road Approach - Left	sccsd5

Summary Information

Would you consider this a priority site? Erosion

Why? Severe erosion putting sand and gravel into creek.

Would you recommend a future visit to this site? ☑ (if yes then check the box)

Why? Fix erosion.

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 11 CC

Stream Name: Cold Creek | Road Name: Railroad Crossing

Observer Name(s): Sittel, Barber, Witt | Date:

GPS Waypoint: | GPS Lat: 44.926 | GPS Long: -85.203

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 7

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Bridge

Crossing Information

Crossing Type: Bridge | No. of Culverts:

Structure Shape: Open Bottom Square/Rectangle

Inlet Type: Other

Outlet Type: At Stream Grade

Structure Material: Wood

Substrate in Structure: Sand

General Conditions: Fair

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior:

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: Other | Other: railroad right-o | Seasonal Road? ☐

Road Surface: | Road Condition:

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): | Slope:

Downstream Fill Depth (ft): | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	ccrr1
Downstream Cpnditions	ccrr4

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate

General Information

Watershed_Name: Elk River Chain of Lakes | Site_ID: 12 CCP

Stream Name: Cold Creek | Road Name: No name

Observer Name(s): Conway, Barber, Sittel | Date: 7/1/2011

GPS Waypoint: | GPS Lat: 44.92194 | GPS Long: -85.18861

County: Antrim | Township: Custer Twp | Tier: 29N | Range: 7W | Section: 7

Adjacent Landowner: ☐ Private ☐ Local Gov't ☐ State ☐ Federal ☐ Other

Additional Comments: Private Road, old boiler used as culvert

Crossing Information

Crossing Type: culvert(s) | No. of Culverts: 1

Structure Shape: Round

Inlet Type: Projecting

Outlet Type:

Structure Material: Metal

Substrate in Structure:

General Conditions: Fair

Multiple Culverts/Spans

Number the culverts/spans left to right, facing downstream. Include #s in site sketch

Culvert/ Span #	Width(ft)	Length(ft)	Height(ft)	Material

Percentage Plugged: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Percentage Crushed: ☑ Inlet | ☑ Outlet | ☑ In Pipe

Rusted Through? ☐ | Structure Interior: smooth

Structure Length (ft): | Structure Width (ft): | Structure Height (ft):

Structure Water Depth (ft): Inlet | Outlet | Perch Height (ft):

Embedded Depth of Structure(ft): Inlet | Outlet

Structure Water Velocity(ft/sec): Inlet | Outlet

Structure Water Velocity Measured: ft Below Surface (0 = at surface) | Measured With:

Stream Information

Stream Flow: Bankfull

Scour Pool (if present) Length (ft): | Width (ft): | Depth (ft):

Upstream Pond (if present) Length(ft): | Width (ft): | Depth (ft):

Riffle Information (measured in a riffle outside of zone of influence of crossing)

Water Depth (ft): | Bankfull Width (ft): | Wetted Width (ft): | Water Velocity (ft/sec):

Dominant_Substrate: | Measured with:

Road Information

Road_Type: Private | Other: | Seasonal Road? ☐

Road Surface: Gravel | Road Condition: Fair

Road Width at Culvert(ft): | Location of Low Point: | Runoff Path:

Embankment: Upstream Fill Depth (ft): 0 | Slope:

Downstream Fill Depth (ft): 0 | Slope:

Left Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Right Approach: Length (ft): | Slope: | Ditch Vegetation: | LS:

Approach Erosion (tons/year)

Erosion Information

Use a new row for each distinct gully/erosion location. Note prominent streambank erosion within 50 feet of crossing

Location of Erosion facing downstream	Erosion Dimensions (ft)			Eroded Material Reaching Steam?	Material Eroded Sand,Silt,Clay,Gravel,Loam,Sandy Loam,Gravelly Loam	Total Erosion (tons/year)
	Length	Width	Depth			
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		
				☐ Yes		

Calculate Total Erosion at Crossing (tons/yr):

Check here If there is erosion occuring and corrective actions, such as road drainage measures can be installed to address the problem. ☐

Extent of Erosion:

Erosion Notes:

Photos -enter photo number in blank corresponding to location

Photo Type	Photo Number
Inlet	ccpr1
Upstream Conditions	ccpr3

Summary Information

Would you consider this a priority site?

Why?

Would you recommend a future visit to this site? ☐ (if yes then check the box)

Why?

Were any non-native species observed at this site? ☐ (if yes then check the box)

If yes, what species were observed?

Fish Passage Determination

Passability = Calculate