Attachment 1

Rapid Assessment and Site Inspection Form for Placer Mines

Purpose

To assess the following Level 2 and 3 function-based parameters: floodplain connectivity, bed form diversity, streambank erosion (lateral stability), and riparian vegetation on reclaimed placer mined sites. This form is a screening tool for trained staff to use during site inspections to determine if more detailed measurements need to be taken by fisheries and hydrology staff. This form is not intended to be a standalone assessment of stream reclamation.

Inspection Form

I. Site Information

1. Site/Property Name: _____
2. Latitude/Longitude: _____
3. Inspectors: _____
4. Date Assessed: _____
5. Drainage Area (sq mi): _____

II. Identify and Verify Bankfull Stage

Note: If available, use baseline information provided in reclamation plan to determine the bankfull riffle width, mean depth, and cross sectional area. If not, look within, upstream, or downstream of the mine site for a stable riffle section with bankfull indicators. If that doesn't exist, a bankfull regional curve will need to be developed for the site.

Within, upstream, or downstream of the mine site:

1. Flag potential bankfull indicators.
2. Measure the difference in water surface and the bankfull stage in feet. _____
3. Measure the difference in the edge of channel and the bankfull feature in feet (mean depth). _____
4. Measure the bankfull riffle width in feet. _____
5. Multiply the bankfull width times the depth from number 3 to estimate cross sectional area. _____
6. Take photographs of the flagged bankfull indicators and attach to field form.
    a. Photograph number(s):

Perform steps 7 through 10 if bankfull regional curves are available for the site.

7. Determine bankfull cross sectional area from regional curve (sqft). _____
8. Determine bankfull width from regional curve (ft). _____
9. Determine bankfull mean depth from regional curve (ft). _____
10. Do the bankfull dimensions (area, width and depth) measured in the field fall within the range of scatter on the regional curve? _____

III. Classify Stream

1. Calculate the bankfull width/depth ratio (II4/II3). _____
2. Measure the bankfull max depth in feet. _____
3. Measure the floodprone width in feet at an elevation of 2 times the max riffle depth. _____
4. Calculate the Entrenchment Ratio (III3/II4) _____
5. Estimate the channel slope (circle one): Less than 2%, between 2 and 4%, greater than 4%

6. Estimate the channel material (circle one): sand, gravel, cobble, boulder
7. Is there bedrock control? _____
8. Repeat measurements to account for all stream types. Record below.
9. Stream Type(s): _____

IV. Floodplain Connectivity Assessment

1. Measure the difference from the thalweg to the top of the low bank for each riffle. If the reach is all riffle, take one measurement at every location where the ratio may vary by more than 0.2 units. Enter the data in the table below.

Riffle ID	**Low Bank Height (Feet)**	**Bankfull Max Depth (Feet)** Use the depth from III2 above.	**Bank Height Ratio** (Low bank height / bankfull max depth)	**Floodprone Width (Feet)**	**Bankfull Width (Feet)** Use width from II4 above.	**Entrenchment Ratio** (Floodprone Width / Bankfull Width	**Riffle Length (Feet)**
1							
2							
3							
4							
5							
6							
7							
				Average Entrenchment Ratio			

2. Use the formula below to determine the weighted bank height ratio (wBHR).

Weighted Bank Height Ratio, calculate as $\frac{\Sigma(Bank\ Height\ Ratio_i \times Riffle\ Length_i)}{\Sigma Riffle\ Length}$=_____

3. Measure the floodprone width at each place where the BHR is measured. Calculate the Entrenchment Ratio. Record both values on the table above.
4. Use the information below to determine if the average entrenchment ratio (ER) and wBHR is Functioning (F), Functioning-At-Risk (FAR), or Not Functioning (NF).

			Performance Standards		
	Field Value	Stream Type	Not Functioning	Functioning at Risk	Functioning
wBHR			>1.5	1.5 – 1.3	< 1.3
ER		A, B, Bc	< 1.2	1.2 – 1.3	>1.3
		C, E	< 2.0	2.0 – 1.3	>1.3

V. Bedform Diversity Inspection

1. Has a riffle-pool or riffle-step-pool sequence been created or developed naturally within the mined reach? (yes/no)
2. If pools are present, what type of structures (natural or created) are maintaining the pools[1]? _____
   _____
3. If pools are present, are they deeper than the riffles? (yes/no)
4. Take photographs of each pool, including the structure maintaining the pool, and attach to this report.
   a. Photograph number(s):

VI. Riparian Vegetation Inspection

1. Has herbaceous vegetation become established on the floodplain/floodprone area? (yes/no)
2. Is woody vegetation established along the streambanks (yes/no)
3. Take photographs of the streambanks and floodplain/floodprone area to show presence of vegetation.
   a. Photograph number(s):

VII. Lateral Stability Inspection

1. Is the channel more than 1.5 times wider than the representative riffle? (yes/no)
2. Are mid-channel bars present? (yes/no)
3. Measure the total length of eroding bank (_____feet) and divide it by the total bank length _____feet) to calculate the percent of bank erosion.

		Performance Standards		
	Field Value	Not Functioning	Functioning at Risk	Functioning
% Eroding Bank		> 25	25 - 10	< 10

1. Take photographs of mid-channel bars if present
   a. Photograph number(s):
2. Take photographs of eroding bank(s) if present
   a. Photograph number(s):

VII. Video and Channel Evolution

1. If possible, video the project reach walking from upstream to downstream. Capture the channel and floodplain/floodprone area.

[1] In alluvial valley streams, pools are only counted if they are located in the outside of the meander bend. Micro-pools within riffles should not be counted as separate pools. Compound pools that are not separated by a riffle and are located in the same bend are treated as one pool. Compound bends with two pools separated by a riffle are treated as two pools (Rosgen, 2015). In colluvial and v-shaped valley streams, pools should only be counted if they are downstream of a step or riffle/cascade. Pools within a riffle or cascade are not counted.

QA/QC Form

I. Site Information

1. Site/Property Name: _____
2. Latitude/Longitude: _____
3. Assessment Party: _____
4. Reviewer: _____
5. Date Assessed: _____
6. Drainage Area (sqmi): _____
7. Purpose of Assessment: _____

To be Completed By Reviewer:

1. Does the bankfull call match the regional curve data? _____
2. If there isn't a regional curve, does the bankfull call look reasonable based on the photographs? _____
3. Does the stream type call appear to be accurate? _____
4. Do the results for floodplain connectivity appear to be accurate? _____
5. Do the results for bed form diversity appear to be accurate? _____
6. Do the results for lateral stability appear to be accurate? _____
7. Do the results for riparian vegetation appear to be accurate? _____
8. Does the overall result appear to be accurate? _____

Corrective Action

To be completed by the assessment and review team (fisheries, riparian, hydrology, and vegetation resource staff).

Based on the assessment and review, does the site need corrective actions? If so, provide recommendations below for improving each function-based parameter.