**ATTACHMENT 1**

# Instructions to BLM Mining Compliance Specialists on Implementing Upland Area Revegetation Criteria

## Overview

The BLM Alaska guidance for upland revegetation has established measurable goals that identify when reclaimed placer mines have achieved successful revegetation and wildlife habitat rehabilitation, per IM AK-2017-011. Mining Compliance and Interdisciplinary Team (IDT) specialists are to ensure that reclamation plans, monitoring plans, and associated NEPA analyses sufficiently address this guidance.

While the IM AK-2017-011 provides policy guidance to BLM personnel for assessing the revegetation and wildlife rehabilitation components of mine site reclamation, it also provides clear, consistent, and measurable criteria for miners and BLM staff.

Adaptability is the common theme in the guidance as mining and reclamation conditions vary throughout Alaska. Compliance and IDT specialists are to work with miners to develop the most appropriate revegetation goals that meet the guidelines without requiring unnecessary logistical or financial burdens from mine operators.

## Objective

This attachment instructs mining compliance staff on implementing the criteria in IM AK-2017-011 applied to new and major-modified mine plans, existing plans, and post-2001 Notice sites. It also instructs IDT specialists (specifically staff overseeing botany and soil science functions) on Site-Specific Assessments (SSAs). By following these instructions, BLM staff will understand:

1) ways to advise miners on meeting the revegetation and habitat rehabilitation criteria;
2) the components of baseline data and how they appear in a complete reclamation plan;
3) steps in a completeness review that will ensure the submission of all required information;
4) ways to address revegetation and wildlife habitat in the NEPA document;
5) techniques for site monitoring during inspections; and
6) procedures to release reclaimed acres from bonding.

## Outline

**Section 1** – Applying Revegetation and Wildlife Habitat Rehabilitation Criteria
**Section 2** – Processing new Plans or Major Modifications
**Section 3** – Processing Existing Plans and Grandfathered-Notices (GFN)
**Section 4** – Processing Notice Operations (post 2001 – Exploration)
**Section 5** – Using Best Management Practices (BMPs)

## Section 1 – Applying Revegetation and Wildlife Habitat Rehabilitation Criteria

Conventional BLM Alaska field data indicate that reclaimed sites achieving 70% minimum plant cover generally exhibit adequate levels of plant diversity, composition, and presence[1] to ensure revegetation that promotes growth of wildlife habitat. However, sites that require commercial seed or plant products to meet the 70% minimum cover are at higher risk of insufficient levels. Therefore, if a miner intends to use commercial seed or plant materials, consult with the miner before planting to advise on an appropriate seed mix that will lead to habitat rehabilitation.

### Criteria for All Sites

Reclaimed mine sites are to meet the following criteria:

1. Approximately 70% or more native plant foliar cover (adjustable to 15-70% for disturbed baseline, extreme environment conditions, and limited sections of the flood prone areas).
2. Demonstrated minimum of two growing seasons,
3. Exhibited the absence of non-native invasive species above baseline.

### Site Baseline Conditions

Document baseline conditions before disturbance from any new mining operations. Classify the conditions as:

- **Natural baseline** – area characterized by intact soil and species-rich plant communities with natural levels of vegetative cover and structural diversity.
- **Disturbed baseline** – area with little to no soil, disturbed plant communities with limited species richness and/or extensive bare ground, and missing components of structural diversity**.**
- **Extreme environment –**area with naturally limited growth potential.
- **Flood prone** – area that encompasses a limited section between the 2x and 3x bankfull marks that include the transition zone from riverine riparian vegetation to uplands vegetation (see Figure 1). REM applies to Riparian vegetation from the stream bank to the 2x bankfull mark.

### Criteria Integration with Reclamation Effectiveness Monitoring (REM)

Within the flood prone area of a reclaimed or stabilized stream, the requirements outlined in AK

[1] The BLM measured revegetation success at various placer mine sites throughout the state during the 2016 mining season. Results from these measurements indicate that many placer mine sites can reasonably achieve 70% vegetative cover in 2-5 years with 4 years being the most common success. Additional desktop studies comparing reclamation photos to pre-mined photos indicate that using the suggested BMPs can result in accelerated revegetation.

IM 2017-009 always apply. Staff are to use two times the maximum depth at the bankfull stage to estimate the elevation and extent of the flood prone area (Rosgen 1996)[2]. This value is a function of the total width of the flood prone area available to the stream. Thus, staff should identify the boundary between riparian vegetation subject to REM and upland vegetation subject to this IM between two and three times maximum bankfull. Fisheries and hydrology staff are essential to delineating the flood prone area. Staff are also to coordinate with the miner on the boundary between the two zones when developing reclamation plans and evaluating reclamation.

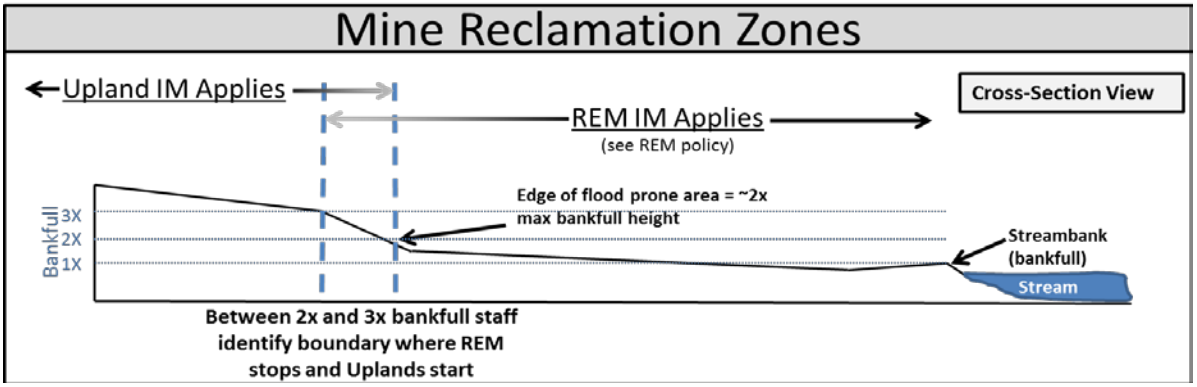


**Figure 1– Cross Section Illustrating Upland IM and REM IM Boundaries**

## Section 2 - Processing New Plans or Major Modifications

### A. Initial Communication with the Miner (cross-reference Surface *Management Handbook,* Section 4.3.1)

**Context:** Revegetation and habitat rehabilitation start with the conditions of the mine site before mining begins. The objectives of these requirements are just one component of the larger site reclamation plan and the miner needs to consider them early. When you first communicate with the miner help identify these objectives in terms of the site. Inform the miner that the reclamation plan must include vegetation baseline data, location maps, acres to be disturbed, and volumes of topsoil (see *BLM Instructions to Miners* brochure).

### B. Baseline Vegetation and Soil Data Collection of the Planned Disturbance Area (cross-reference *Surface Management Handbook,* Section 4.4.1.3.1).

**Context:** As your Authorized Officer (AO) directs, you may instruct, offer examples, or assist the miner in writing the site reclamation plan. However, your job is not to write the reclamation plan for the miner.

[2] Rosgen, D.L. and H.L. Silvey. 1996. Applied River Morphology. Wildland Hydrology Books, Fort Collins, CO.

If the miner contacts BLM with intent to submit a mining plan, you may assist in the collection of baseline vegetation and soil data of the area to be disturbed, or as your AO directs. If you assist the miner, follow the *Vegetation Photograph and Topsoil Inventory Datasheet* (Attachment 2, Appendix 1) or if appropriate, use the SSA criteria and form in Attachment 2, Appendix 2. Share any baseline data you collect with the miner.

**The miner needs the following:**

1. At least 8 photos for every 5 (or fewer) acres the miner will mine. These photos are to overlook the area: 4 photos in each cardinal direction (North, East, South, West) standing 4 feet inside the outer edge and facing the center; and 4 photos in each cardinal direction standing at the center and facing the outer edge. These photos are a record of the pre-mine condition and show the major vegetation groups on site. If the area has no vegetation, the miner is to state this in the reclamation plan and refer to the photos.
2. A photo looking straight down at the ground at each of the outer edge points where the miner took the 4 outer edge photos. He/she will also take a single photo of the ground at the center of the area. These 5 photos will be shot from approximately 4 feet above the ground. Before the shoot, the miner will lay a 3-foot long reference measure or 3 foot-square box on the ground to include in the photo. The reference measure can be a tape measure or marked PVC pipe, metal, wood, sticks, etc.
3. Recorded data and photos for at least 3 soil pits on each acre if the disturbed area is 5 or fewer acres. For projects with more than 5 acres, the miner will dig and record at least 2 soil pits per acre. Each soil pit will be at least 18" deep, if soil conditions allow. The miner will insert a tape measure (or other scale) inside the hole and take a photo of each pit. The miner will also take a close-up photo of any soil removed from the pit. If there is gravel, permafrost, or other ground that prevents digging an 18" hole then the miner is to tell us in the reclamation plan and include photos.

### C. Uplands Revegetation Component of the Site Reclamation Plan

**Context:** Once the miner has collected baseline vegetation and soil data from the site, the miner will integrate this information into the site reclamation plan. There are three elements constructing this component of the plan: 1) baseline data, 2) descriptive narratives, and 3) maps.

1. **Baseline Vegetation and Soil Data** (BLM or miner-supplied data) consists of:
    a. Site photos from baseline data collection (as described in section B above). Ensure each photo has a reference number.
    b. Calculation of the topsoil volume within the area proposed for disturbance. Calculate the volume by averaging the depth of topsoil measured in each of the soil pits then multiplying that average by the square feet of the area to be disturbed. (Volume = average depth x average square feet)
    c. A scale map clearly illustrating the following, as applicable:
        - Claim boundaries, names, and corner posts
        - Project area within the claim block

- Proposed area of disturbance
- Access roads and other roads
- Stream location
- Stream diversion channel (REM applies)
- Stream crossing locations
- Stream buffer
- Photo locations labeled at each point with an arrow indicating the direction of view
- Soil pit locations
- Vegetation stockpile locations
- Topsoil stockpile locations
- Other major features

2. **Uplands Descriptive Narrative** component consists of:
    a. Location description for vegetation stockpiles at the site.
    b. Location description for topsoil storage and description of methodology to prevent erosion or topsoil loss including the estimated topsoil volume.
    c. Revegetation objectives to determine the site "reclaimed" and the bond released.
    d. Description of final reclamation earthwork. This should generally cover how the miner will establish final topography. It must describe how the miner will spread overburden, tailings and topsoil throughout the reclamation area. It is to include the estimated depth of the topsoil.
    e. Description of old vegetation (trees, shrubs, brush piles, etc.) and reuse on the site. Reusing stripped vegetation will encourage wildlife habitat creation, microclimates, and increase natural reseeding.
    f. Description of potential wildlife enhancement features the miner will use on site
    g. Description of the monitoring plan to prevent UUD from erosion, scouring, flooding, etc.
3. **A Scaled Site Map** incorporating the vegetation and soil conditions for uplands and flood prone areas and illustrating the intended post-reclamation conditions and features including at least:
    - Claim boundaries, names, and corner posts
    - Project area within the claim block
    - Final stream location and features (if diverted or reconstructed)
    - Seeded and planted areas
    - Roads and trails
    - Locations of alternative wildlife habitat features
    - Other major features

### D. Uplands Revegetation Component Completeness Review *(cross-reference 3809 Surface Management Handbook Section 4.3.3)*

**Context:** A completeness review does not analyze the quality of information. Rather, the review ensures that all information described in Section 2.C. is in the site reclamation plan.

1. **If the Uplands Component is NOT COMPLETE:** Return the reclamation plan to the miner with identified deficiencies for correction and resubmittal.
2. **If the Uplands Component is COMPLETE (per 3809.411)**: Distribute the reclamation plan to IDT specialists (specifically staff overseeing botany and soil science functions) for full plan and NEPA review. This ensures that the reclamation goals, baseline data, and other information is sufficient to meet the objectives of the Uplands Revegetation and Wildlife Habitat Rehabilitation IM as well as all other requirements.
    a. **If the Uplands Component is ADEQUATE:** continue to review the reclamation plan in accordance with 3809.411 and the 3809- Surface Management Handbook.
    b. **If the Uplands Component is INADEQUATE:** meet with the miner to discuss the deficiencies. If appropriate, IDT staff will apply an SSA (Attachment 2, Appendix 2) to properly assess the reclamation plan.

### E. Reclamation Plan Approval and NEPA (cross-reference Surface *Management Handbook Section 4.4.2.2*)

**Context:** When finalizing the NEPA document, incorporate Required Operating Procedures (ROPs) and Stipulations (STIPs) into the ROD that clarify BLM-specific criteria supporting uplands revegetation and wildlife habitat rehabilitation. For example, you may include:

1. Site-Specific Assessments (SSA) criteria;
2. Specific language that requires the miner to manage topsoil and vegetation stockpiles to prevent loss of material.

### F. Monitoring

**Context:** Annual mining compliance inspections provide an opportunity to monitor erosion of topsoil stockpiles, mine site stability, and presence of non-native invasive species. The annual site inspection is an excellent opportunity to provide the miner with suggestions for uplands reclamation preparation, use of alternative wildlife habitat features, and concurrent reclamation.

1. **Annual Site Inspection**

    Monitor site stability, soil resources, and vegetation success by:
    a. Measuring and photographing all topsoil stockpiles to ensure no loss of soil resources.
    b. Observe loss of topsoil or unnecessary mixing of stockpiles that can lead to UUD. Any UUD caused by mismanagement of soil resources may require a plan modification to address how the miner will achieve revegetation with the reduced soil resources.

c. Photographing unknown vegetation for possible non-native invasives. If non-native invasive species occur at a reclaimed site, work with miners to incorporate adaptive management practices for the inventory, monitoring, control, and potential removal of the infestations.
    **i.** Completing the *Site Stability Rapid Assessment* (Attachment 2 – Appendix 3) form to record reclamation stability and/or a *Simple Revegetation Assessment* (Attachment 2, Appendix 4), if necessary.

2. **Annual inspection Report**
   In addition to regular inspection information, include overview photos of the mine site, photos of the stockpile, and measurement/calculations of stockpiled topsoil. At a minimum, shoot photos from the same location as those shot during baseline vegetation and soil data collection the miner provided to comply with Section B, item 1 of this document. If there was a *Site Stability Rapid Assessment* and/or a *Simple Revegetation Assessment* at that time, complete the form (Attachment 2 – Appendix 3 and 4) to ensure a standardized assessment of the site.

3. **Final Earthwork Inspection**
   If the miner requests or the AO directs, inspect and provide advice to the miner at the conclusion of final earthwork. Complete the inspection by:
   a. Inventorying the condition of the re-applied topsoil by recording thickness measurements and photos for at least 3 soil pits on each acre if the disturbed area is 5 or fewer acres. For projects with more than 5 acres, dig and record at least 2 soil pits per acre. Each soil pit will be at least 18" deep, if soil conditions allow. Insert a tape measure (or other scale) inside the hole and take a photo of each pit.
      **i.** Completing *Site Stability Rapid Assessment* form to record reclamation stability, if necessary (Attachment 2 – Appendix 3)

### G. Bond Release (See the *Surface Management Handbook Section 6.4.3*)

**Context:** The criteria of the Revegetation and Wildlife Habitat Rehabilitation IM AK-2017-011 apply when operators request reclamation approval after the effective date of the IM and the reclamation plan lacks revegetation criteria.

1. **Pre-Bond Release Inspection**
   a. Using the *Simple Revegetation Assessment* (Attachment 2, Appendix 4), assess the revegetation in the reclaimed area while accompanied by the miner and IDT staff, if available.
   b. Photo inventory at least 10 points, looking vertically at a distance roughly 4 feet off the ground. Shoot a minimum of 8 photos overlooking the reclaimed area, 4 in each cardinal direction looking from inside and no closer than 1 meter from an

outside edge, and 4 in each cardinal direction from the center of the reclamation area.

2. **Bond Release Inspection Report:**
    a. Complete an Inspection Report that includes a summary of the Revegetation Assessment and photos (per subsection 1 listed above) with locations identified on a map.
    b. Route the report to the appropriate IDT specialists (specifically staff overseeing botany and soil science functions) for review.
    c. **If the Inspection Report contains NO REVEGETATION DEFICIENCIES** or the IDT specialists concur with the outcome of the Revegetation Assessment: route the inspection report to the AO with a recommendation for bond release.
    d. **If the Inspection Report contains REVEGETATION DEFICIENCIES** or the IDT specialists do not concur with the outcome of the revegetation assessment:
        i. Coordinate with the IDT specialists to conduct their own Revegetation Assessment using the *Simple Line-Point Transect Intersect* (Attachment 2, Appendix 5), or other measurement method as directed by the AO, of the reclamation site.
        ii. Share the IDT assessment and recommendations with the miner so the miner can modify the reclamation plan to address the reclamation deficiencies.
            1) After the miner submits a modification, repeat the process starting at subsection 1 above, as appropriate.
            2) If non-native invasive species occur at a reclaimed site, work with miners to incorporate adaptive management practices for the inventory, monitoring, control, and potential removal of the infestations.

## Section 3- Requiring a Modification to an Existing Plan or GFN

**Context:** Chapter 43 CFR 3809.430 and .431 regulate authorizations for plan modifications. The BLM may require an operator to modify a plan only under specific circumstances. They are:

*a. Before making any changes to the operations described in an approved plan of operations;*
*b. When BLM requires it in order to prevent unnecessary or undue degradation; and*
c. *Before final closure, to address impacts from unanticipated events or conditions or newly discovered circumstances or information,* (43 CFR 3809.431 (c)).

**Do not require a modification for lack of revegetation goals in a reclamation plan**. However, you may require a miner to submit a plan modification when reclamation failures are likely to cause UUD. Even then, the AO will consider modifications to existing plans on a case-by-case basis.

If the likelihood of UUD is present and as the AO directs, work with the miner to incorporate revegetation goals through a modification of a reclamation plan using one or a combination of the following processes:

- Advise the miner that the BLM considers 70% vegetative cover as "revegetated" (cite IM as needed) and notify the miner that the site must revegetate per 43 CFR 3809.420(b)(3)(ii)(D).
- Reduce the 70% revegetative cover as necessary, or as the AO directs, for previously disturbed ground with an existing plan. Base the vegetative cover percentage on IDT staff assessment of a surrogate site that has characteristics similar to the disturbed site prior to mining.
- Require the miner to modify the plan to identify revegetation goals if the correct sequence of reclamation was not followed (i.e. topsoil not properly replaced) and the site has the potential for excessive erosion and/or loss of growth medium (causing the potential for UUD).

## Section 4 – Processing Notice Operations (Post-2001 Exploration)

**Context:** Notice operations **must** prevent UUD. Since there is no BLM approval for a Notice, you cannot stipulate actions beyond those directed in 3809.420. However, successful revegetation and habitat rehabilitation are parts of UUD prevention and revegetation goals are required in the reclamation plan.

Per 3809.301(3), a Notice must account for revegetation and habitat rehabilitation in the reclamation plan. If the notice does not specify revegetation goals, then require the information as specified in 3809.301(c). The AO may determine when the exploration project has met the revegetation goal.

### A. Baseline Data and Reclamation Plan for Notice Level Operations

- The AO may decide the elements that construct sufficient "baseline" data. The AO will consider size, location, and extent of the exploration project as fundamental information.
- Notice operators should provide at least **4** pre-disturbance photos of the site, one looking at the area of activity from each cardinal direction. Photos do not have to be part of the original Notice but you should have them before the surface activity starts.
- If you do not have pre-exploration photos, then measure revegetation success in comparison to surrounding land conditions (surrogate reference site) when you monitor the site.
- To allow flexibility for the exploration project when addressing criteria in the revegetation and habitat rehabilitation IM, carefully consider the project scope and location.

### B. Bond Release for Notice Level Operations

**Context:** Be aware that when miners use Best Management Practices then Notice level exploration projects typically have small disturbance footprints and minimal vegetation impacts. Thus, photos of the reclaimed site may be sufficient to determine reclamation success but only at the AO's discretion. Otherwise, apply the following procedures for bond release.

1. **Pre-Bond Release Inspection**
   Complete a *Simple Revegetation Assessment* (see Attachment 2 – Appendix 4) and collect photos for large exploration projects that include road construction, laydown pads, large trenching activity, etc. if photos are not sufficient and/or the AO directs.

2. **Final Inspection Report**
   a. Incorporate assessment results and photos into the final inspection report.
   b. Ensure that appropriate IDT specialists review the inspection report - specifically staff overseeing botany and soil science functions.
   c. **If staff overseeing botany and soil science functions CONCUR with the results** route the final report to the AO with a recommendation for bond release.
   d. **If staff overseeing botany and soil science functions DO NOT CONCUR with the results**: ensure the ID team consults with the AO for the appropriate next step. For example:
      1) It may be appropriate to wait another growing season to determine reclamation. Exploration projects are often remote and expensive to access. The AO will carefully consider the extra cost to conduct an SSA outside a regularly scheduled inspection.
      2) Share the results and recommendations with the miner if you complete a Revegetation Assessment so the miner can modify the reclamation plan to address any deficiencies.
      3) Once a miner submits a modification – repeat the process starting at **subsection 1 above**.

## Section 5 – Using Best Management Practices (BMPs)

**Context:** As a technical resource for miners, you may need to help draft a site reclamation plan. *Best Management Practices* (BMPs) provide techniques and processes that, if followed closely, are likely to result in successful reclamation and revegetation of a mine site.

You will find a collection of BMPs for mine site reclamation on the Alaska 1990 Mining SharePoint. The 1990 Program Lead can also provide you with a copy.

Encourage miners to insert BMPs into their reclamation plans to fulfill the requirements of the Revegetation and Wildlife Habitat Rehabilitation IM or add BMPs as stipulations in the NEPA Decision Record.