

State of Alaska
Department of Transportation and Public Facilities
General Mining and Reclamation Preliminary Plan
Shageluk 5 Mile Pit Material Site: MS 3-02-0370-02

The general development procedures detailed here for the proposed Shageluk material site (MS) is intended to be used in conjunction with a Material Sales Agreement between the Department of Transportation & Public Facilities (DOT&PF) and Doyon, Inc, and Zho-Tse, Inc, negotiated for the Shageluk Airport Access Road Improvements project. These procedures shall form the basis the final mining and reclamation plan for this site.

This preliminary plan shall be modified when sufficient information is available for development of site-specific mining and reclamation procedures at this location. These procedures are subject to any site-specific and/or project-specific conditions and stipulations required by specific sales contracts, use agreements, and project permits.

Location and General Information

The proposed material site is situated on lands owned by Zho-Tse, Inc (surface) and Doyon, Limited (subsurface). The material site lies in the boundary of Township 31 North, Range 54 West, Section 36, Seward Meridian. This location is approximately five miles up the Innoko River from the Shageluk airport facility. The site was first explored in the 1980s and has been used by several contractors on multiple projects since. There is no road access to this property. Ice roads have been used for previous access.

This site was the desired MS for use in the production of crushed aggregate (ASC). Rock from this site has been proven to be high quality granitic andesite, a geologic anomaly for this area, from previous use. Both ASC and riprap produced here have met or exceeded DOT&PF specifications. Any riprap used on the project for erosion control along the Shageluk Airport Road should be examined for wear and durability after seasonal breakup of the Innoko River.

Mining of this site was accomplished by stripping overburden, benching into the hillside, then drilling and blasting. The main difficulty was the terrain in this site is very steep since the working face is nearly vertical. Overburden thickness will tend to increase for any future stripping farther into the hillside. Dimensional extent of the high-quality rock is unknown. Future rock production from this site by experienced contractors should be possible.

Material from this site will incur a royalty, to be paid by the contractor.

Mining and Reclamation

Mining and processing method selection is at the discretion of the contractor or user, subject to certain restrictions. Contractors or users are responsible for visiting and inspecting the site and reviewing available site information prior to mobilizing in any equipment. The contractor or user is responsible for the development of an approved Project Mining and Reclamation Plan and a Blasting Plan.

Cell Development

Cell development is intended to facilitate systematic extraction of materials while allowing development and reclamation to occur concurrently. Such practice also avoids large un-reclaimed areas to exist at any time.

Develop and reclaim the material site in cells. The development and reclamation of each cell shall be in accordance with procedures detailed in this document.

Cells will generally be less than 5 acres and developed sequentially. However, the presence of frozen ground within a site requiring natural thawing of material may result in multiple cells under development at a given time.

Buffer Distance

Maintaining distance (buffer) between pit limits and adjacent lands or water bodies is intended to screen the site from adjacent land and protect water quality and riparian habitats. Except where necessary to create access to the mining area, manage activities to eliminate disturbance within buffers.

Buffer widths vary. Other than disturbance required to create access to the mining area, manage activities to eliminate disturbance within buffers. Mining and overburden storage areas, work pads, stockpile locations or other developments will not be located within buffers.

Maintain a 200-foot-wide minimum buffer from the active channel of the Innoko River. Except for barge landing and access improvements, no mining or overburden storage areas, work pads, stockpile locations or other developments shall not be located within buffers.

Access Roads, Work Pads and Facilities

Access to the mine site will be determined by the contractor. Upon completion of the project, all facilities and equipment shall be removed. Garbage or other items such as guardrail, concrete, etc. shall not be disposed of or left within the site.

Blasting Requirements

When using blasting, prior notice and coordination are required with appropriate agencies and nearby residents or businesses. Persons conducting blasting shall be licensed by the State of Alaska for such purposes and shall observe all applicable laws and regulations.

A Fish Habitat permit may be required for any blasting operation that occurs either in or near a fish bearing water body. This permit may be obtained from the Alaska Department of Fish and Game, Division of Habitat office located closest to the proposed project location.

The term “explosives” includes explosives, blasting caps, boosters, detonation cord, timing delays or any other controlled materials used in the blasting process. Many factors determine the type of explosive and detonation method used, such as site conditions, water tables, geology and the size and volume of material needed. Contractor or user will determine all blasting method and material needs. These will be described in their Project Mining and Reclamation Plan.

Contractors or users are responsible for determining whether to store explosives within material site boundaries. Contractors or users that choose to store explosives within material site boundaries shall provide appropriate Explosives Storage Facilities in accordance with the Federal Regulations set forth in Title 29 CFR1910.109 and Title 27 CFR Part 555 as outlined by the BATFE Regulations Book. The length of the project and the amount of material needing producing will determine the duration of explosives storage.

If the contractor or user chooses not to store explosives at the material site, explosives for each blast will be transported to the site for each blast in appropriate vehicles. Unused explosives will be removed from the material site after each blast.

No undetonated explosives of any type will be left in or on the site at the end of a project or use, including undetonated explosives in the ground. Contractor or user is responsible for removal or detonation of any unused explosives.

Mining

The hardness and durability of the rock within this site may be variable. In portions of the site where material can be removed without blasting, development shall be performed in accordance to Figure 1. Slope of the working face shall be no steeper than 1H:1V. Pit floor shall be sloped to contain surface runoff within pit floor.

Where blasting is necessary, or selected as the mining method, development shall occur in accordance to Figure 2. In such locations, benches shall be no more than 40-foot tall. Benches shall be development in such a manner that the nominal slope is no steeper than 1H:2V. Developing pits in benches is intended to:

1. Provide multiple working faces.
2. Limit safety hazards to operators, the public and wildlife due to falling rock.
3. Provide safer slopes for continued development.

Mining will take place following these procedures:

1. The material site and buffer boundaries in the area to be mined will be surveyed and marked prior to breaking ground.
2. The surface vegetation and organic soils will be either windrowed or stockpiled for future use.
3. The overburden will be windrowed and stockpiled separately from the vegetation and organic soils or incorporated directly into reclamation areas being reclaimed.
- 4.
- 5.
6. Overburden berms will be located in such a manner to prevent overburden material from falling into the active pit.
7. If rock is sufficiently hard to require blasting, mining will proceed in a benched manner. Individual benches will be no more than 40 feet apart vertically and will be no narrower than 20 feet wide. Multiple benches can be in production at one time.
8. If rock is sufficiently hard to require blasting, individual bench faces may be vertical, but overall slope angles within the active pit will be no steeper than 1(H):4(V), flatter slopes are acceptable.
9. If rock is sufficiently soft to not require blasting, slopes of working faces shall be no steeper than 1H:1V.
10. Pit floors shall be sloped to drain and contain surface runoff

11. All mining activities will be in accordance with the Construction General Permit (CGP) and an approved Storm Water Pollution Prevention Plan (SWPPP).
- 12.
- 13.
- 14.
15. Grade the pit floor or pad to a flat or gently sloping shape and remove all equipment and non-native debris and waste.
16. Stockpiles of useable material will be located in a neat and orderly fashion, and appropriately signed.

Reclamation

Reclamation procedures and practices will generally adhere to the following requirements:

1. Previously reclaimed areas will not be disturbed.
2. Reclaimed surfaces will transition smoothly into surrounding topography and where applicable, previously reclaimed areas.
3. Steps will be taken to prevent erosion and sediment transport to surrounding, undisturbed areas.
4. Steps will be taken to facilitate reestablishment of native vegetation and development of wildlife habitat.
5. The site will be left in a safe condition that does not endanger people or wildlife.
6. .
7. Reclamation procedures and practices will be in accordance to applicable permits such as CGP and SWPPP.

If site is developed in multiple cells, reclamation of individual cells will occur as soon as possible after depletion, to the extent possible. Such reclamation may occur concurrently with develop of the cells in the active pit.

Reclamation activities will be in accordance to Figures 1 and 2 and the following general procedures:

1. After each use, Overburden or unusable material piles will be graded in accordance to figures 1 and 2.

2. . Pit or quarry walls will be graded in accordance to Figures 1 and 2. Stockpiled overburden or unusable material will be used for grading.
3. Any available and stockpiled organic soils will be spread over re-graded slopes. Any available and stockpiled vegetative material will be spread over the organic soils to aid reestablishment of native species.
4. Applicable agencies will be consulted to determine site-specific seeding and fertilizer requirements.
5. At the end of each use, un-reclaimed faces shall be scaled of loose and dangerous rock so the faces are left in a condition such that they will not collapse or allow loose rock that presents a safety hazard to fall from them.
6. A pit or quarry wall is exempt from the requirements of 2-4 of this section if the steepness of the wall makes them impracticable or impossible to accomplish.
7. After each use, the pit floor or pad will be graded to a flat or gently sloping shape, and the contractor or user will remove all equipment and non-native debris and waste.
- 8.

Project Mining and Reclamation Plan

Prior to site use, the contractor or user shall submit a final Project Mining and Reclamation Plan which will replace this preliminary plan, in accordance with AS 27.19 and 11 AAC 97, to Alaska DOT&PF review. The Plan shall describe the proposed plan of operation and shall follow procedures listed here. Upon approval, the Plan will be followed by the contractor or user and if applicable, the Alaska DOT&PF Project Engineer. The plan should include the following:

Sketch Map

Sketch maps shall have a scale sufficient for clarity under field conditions and should not be overly complex or inflexible. Items to be shown on sketch maps, when appropriate, shall include:

1. Site boundary (including monumentation and demarcation).
2. Existing access route.
3. Proposed working limits to be marked on the ground.

4. Development stages.
5. Approximate contours before and after excavation.
6. High and low water lines.

7. Vegetation lines and type of vegetation, screens and dimensions
8. Site boundary (including monumentation and demarcation).

Narrative

The mining and reclamation plan narrative may be made part of the sketch map or may be attached to the sketch map as conditions allow. Items to be addressed in the narrative shall include:

1. Methods of extraction and processing.
2. Estimated quantities for removal.
3. Estimated acreage.
4. Length and times of operation (day, month, year and working hours). Contractors or users shall make reasonable efforts to reduce noise impacts (such as crushing) to nearby residents or campgrounds.
5. Air and water pollution control measures.
6. Reclamation measures.

Blasting plan if applicable, detailing explosive and detonation types, onsite storage and duration of blasting.

Supplements and amendments

Supplements and amendments to an approved mining and reclamation plan may be initiated by the contractor, user or the Alaska DOT&PF Project Engineer, when conditions warrant such action. Supplements and amendments must be mutually agreed upon and proper approval obtained prior to commencement of work of a changed nature.

1. Minor changes are those that affect details of the operation but remain in compliance with the development procedures.
2. Major changes are those that cause the final outcome of the site to be significantly different from the approved mining and reclamation plan or are not in compliance with the development procedures.

Attachments:

Figure 1: Typical Cross Section of Soft Weathered Rock on Hillside.

Figure 2: Typical Cross Section of Rock Quarry.