APPENDIX F GRAVEL SOURCING PLAN AND RECLAMATION MEASURES

ALASKA LNG

GRAVEL SOURCING PLAN AND RECLAMATION MEASURES

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1.0 INTRODUCTION

Borrow materials (sand, gravel or select fill) would be needed to construct the Alaska LNG Project (Project). Existing permitted material sites would be used as sources to the greatest extent practicable. However, because of the remoteness of many locations, new material sites would need to be developed. During the development of material sites and through the processing of granular materials, space will be needed to store or dispose of unsuitable materials. Unsuitable materials may include unusable topsoil, overburden, or frost-susceptible material. Disposal sites may also be utilized for excess materials resulting from pipeline trenching and right-of-way (ROW) preparation. The purpose of this *Gravel Sourcing and Reclamation Measures Plan* (Plan) is to provide an overview of the material needs, potential sources to meet those material needs, disposal locations for excess and unsuitable materials, and general extraction/transportation protocols.

2.0 REGULATORY REQUIREMENTS

Federal, state, and borough permits, and other land manager agreements, would be required for developing new or existing material extraction sites, and using sites for the disposal of excess or unsuitable material. Typical authorizations are listed below. Additional authorizations may be necessary for associated activities, such as the construction of temporary access roads. Prior to permitting the Project, individual sites would be reviewed on a case-by-case basis to identify the site-specific authorizations required for each location. In many cases, multiple sites and other Project activities would be bundled under a single authorization from each agency or land manager.

- Alaska Department of Natural Resources (ADNR), Division of Mining, Land & Water (DMLW).
  - Material Sales Contract, including prerequisite documents such as a Material Sales Application, Environmental Risk Questionnaire, Development Plan, Material Site Reclamation Plan, Performance Bond and Deposit, and Proof of Insurance.
  - Temporary Land Use Permit (TLUP) may be required for surveys, tundra travel, ice-road construction, or other purposes.
  - Temporary Water Use Permit.
- ADNR Office of History and Archeology.
  - Cultural, Historical, and Archeological Resources Consultation (Section 106 Review), and potentially a review under the Alaska Historic Preservation Act.
- Alaska Department of Fish and Game (ADF&G).
  - Fish Habitat Permit (Title 16).
- Alaska Department of Environmental Conservation (ADEC).
  - Alaska Pollution Discharge Elimination System (APDES) Multi-Sector General Permit authorization (AKR06000), or individual permit authorization.
  - Excavation Dewatering General Permit (AKG002000).
  - The above permits may be superseded by a potential General Permit AKG320000 – Statewide Pipeline, Construction, Operation and Maintenance.
  - Clean Water Act Section 401, Water Quality Certification, Certificate of Reasonable Assurance.
- Alaska Department of Transportation and Public Facilities (ADOT&PF).
  - Driveway and Approach Road Permit.
  - Encroachment Permit.
- Bureau of Land Management (BLM)
  - Purchase of Mineral Material/Mineral Sales Contract including a Plan of Operations, Bonding and Reclamation Plan.
- Environmental Protection Agency (EPA).
  - Spill Prevention Control Countermeasure Plan.
- U.S. Army Corps of Engineers (USACE).
  - Department of the Army Permit for the placement of fill material in a Water of the U.S (Section 404 of the Clean Water Act).
- North Slope Borough.
  - Industrial Development & Use Permit (Form 100).

  - Certificate of Traditional Land Use Inventory Clearance (Form 500).
- Denali Borough.
  - Temporary Use Permit or Lease.
- Matanuska Susitna Borough.
  - Conditional Use Permit (CUP) Earth Material Extraction.
- Alaska Mental Health Trust Authority.
  - Material Sale Contract.
- BP Exploration (Alaska) Inc.
  - Road Use Agreement, Letter on Non-Objection, and Facilities Permits.
- Alaska Railroad Corporation.
  - Blanket Permit.
- Native Corporations and Village Corporations.
  - Surface Use Permits, Leases, and Letters or Non-Objection.

3.0 MATERIAL REQUIREMENTS

Various construction materials (e.g., sand, gravel, and stone) would be required for Project activities, including base material for facility pads, compressor station sites, temporary construction facilities, access roads, and other uses. Material would also be used during construction for concrete production, temporary laydown, and equipment staging sites, and other uses. A summary of the material requirements by Project component is provided as follows.

3.1 LIQUEFACTION FACILITY

After clearing and grubbing, approximately 4.7 million cubic yards of granular material would be required for fill. Approximately 1.2 million cubic yards of vegetation would be removed during clearing and disposed of at an onsite or approved offsite location Approximately 2.5 million cubic yards of topsoil contains organic materials that are unsuitable for construction. The unsuitable material would be removed during the grubbing of the site and transported to an onsite or approved offsite stockpile location.

3.2 PIPELINES

3.2.1 Mainline

Mining the necessary quantity of gravel required for preparing the construction ROW and bedding and padding of the Mainline require an early start of the construction activities to prevent any bottlenecking of the pipe-lay activities. Once the access roads are built, construction of the on-ROW gravel work pad would commence where necessary. The estimated need for granular material is approximately 9 million cubic yards for the work pad and an additional 1.95 million cubic yards for bedding and padding of the pipe. Minor amounts would also be needed for weight bags, as fill to protect the ditch and workspace areas, and for slope stabilization, all estimated at approximately 0.56 million cubic yards.

A summary of the granular material requirements for each Mainline construction spread is provided in Table 2.

3.2.2 Prudhoe Bay Gas Transmission Line (PBTL)

The Prudhoe Bay Gas Transmission Line (PBTL) would be an aboveground pipeline. Standard industry practice is to construct aboveground pipelines and support systems from ice roads and ice work pads in order to minimize impact to the tundra and the surrounding habitat. Granular material requirements for construction of the PBTL are anticipated to be minimal and are accounted for in the granular material requirements described for the Gas Treatment Plant (GTP) in Section 2.3.

3.2.3 Point Thomson Gas Transmission Line (PTTL)

The Point Thomson Gas Transmission Line (PTTL) would be an aboveground pipeline. Granular material would be needed for construction of new granular material pads for three Mainline block valves, however the construction camps and pipe storage yards would be located on existing sites or ice pads.

3.2.4 Pipeline Aboveground Facilities

Site grading is influenced by the topography of the site. It has been assumed for estimating purposes that approximately half of the permafrost sites would be leveled with a 2-foot-thick layer of pit-run gravel or select fill. This would be followed by finished grading where more material would be added to the leveled surface to protect the permafrost.

Facility pad quantities are estimated at approximately 1.25 million cubic yards of gravel for construction of the Mainline's compressor and heating stations.

3.2.5 Pipeline Associated Infrastructure

Permanent Access Roads would be built between the Pipeline Aboveground Facilities and the nearest public road. Permanent Access Roads would also provide access to the ROW and would be used to transport prefabricated modules, mobilize materials, equipment, facility contractor camps, and for future operations activities. Roads would be 34 feet wide and would have a minimum layer of fill placed on a prepared subgrade.

In Permafrost Areas, the minimum depth of fill would be such as to keep the underlying permafrost stable. The depth would vary between 3 feet to 5 feet, depending upon location. In unfrozen areas the depth of fill would be such as to provide a stable road surface and would vary between 2 feet to 3 feet, depending upon location. A 6-inch layer surface course, typically of crushed or screened granular material, would be placed on top of the fill to provide a vehicle traveling surface.

A total of 3.7 million cubic yards are estimated for access roads (temporary and permanent) and 94,000 cubic yards for rail spur roads.

A total of 19 campsites would require granular material pads. A total demand quantity for camps was calculated at 1.9 million cubic yards. Camps on existing pads would only need granular material for surfacing (surface course). New camps would need both sub-base (pit run granular material) and surface course (coarse granular material).

There are 46 Pipe Storage Yards (PSYs) currently planned. A PSY north of Livengood would utilize the former Trans-Alaska Pipeline System site or other existing sites to the extent practical. Eight PSYs located south of Livengood could utilize existing rail siding locations. Existing PSYs would only need granular material for surfacing (surface course). New PSYs would need sub-base (pit run) and surface course (crushed granular material). Total demand for PSYs was calculated as 1.5 million cubic yards.

The total off-ROW requirement (construction camps, pipe yards) for construction of the Mainline is estimated to be approximately 7.2 million cubic yards of gravel. A summary of the gravel requirements by spread is provided in Table 2.

Table 1: Gravel Requirements (Cubic Yards) for Construction of the Mainline and Associated Aboveground Facilities

Spread	ROW Gravel Pad	Bedding/ Padding/ Thaw Settlement Material	Miscellaneous ROW Gravel (Fill for Protection, etc.)	Total ROW Gravel	Access Roads and Rail Spurs Roads	Camp Pads	Pipe Storage Yards	Total Non-ROW Gravel	Total Aboveground Facility Pads	Total Gravel Required
1	3,534,000	869,000	77,000	**4,480,000**	315,000	219,000	412,000	**946,000**	**426,000**	**5,852,000**
2	3,638,000	772,000	64,000	**4,474,000**	457,000	489,000	301,000	**1,247,000**	**327,000**	**6,048,000**
3	1,403,000	264,000	11,000	**1,678,000**	2,666,000	634,000	384,000	**3,684,000**	**351,000**	**5,713,000**
4	176,000	43,000	406,000	**625,000**	379,000	553,000	421,000	**1,353,000**	**141,000**	**2,119,000**
TOTAL	**8,751,000**	**1,948,000**	**558,000**	**11,257,000**	**3,817,000**	**1,895,000**	**1,518,000**	**7,230,000**	**1,245,000**	**19,732,000**

3.3 GAS TREATMENT PLANT (GTP)

Granular material for the GTP would be used for construction of Dock Head 4, the GTP Facility Pad, the Integrated Construction and Operations Camp Pad, access roads, upgrades along the West Dock causeway, and other supporting infrastructure. Approximately 6.9 million cubic yards of material would be required. A summary of the material requirements for construction of the GTP is provided in Table 3.

3.3.1 GTP Associated Infrastructure

Approximately 1.25 million cubic yards of material would be used for the construction of Dock Head 4, and an additional 0.55 million cubic yards would be utilized along the West Dock causeway to support module transport. Approximately 5.1 million cubic yards of material would be used for onshore roads and pads. A summary of the material requirements is provided in Table 3.

Table 2: Material (Granular) Requirements for Construction of the GTP

Facility	Approximate Granular Quantities (cubic yards)
Dock Head 4 Construction	1,250,000
Causeway Upgrades, Barge Bridge Bulkheads, and Gravel Bags for Erosion Protection	550,000
Onshore Upgrades: GTP Pad, Integrated Construction and Operations Camp Pad, Module Staging Area, Miscellaneous Roads, Pipeline Crossings, etc.	5,100,000
Total	6,900,000

4.0 MATERIAL SOURCING

The required materials would be obtained from material sites that are either existing or would be developed specifically for the Project. When developing new sites, proximity to the Project area would be considered a key siting factor because it cuts down on transportation costs as well as potential environmental impacts related to air emissions and access road construction.

4.1 LIQUEFACTION FACILITY

Geophysical and geotechnical investigations at the proposed site indicate that significant quantities of onsite aggregate are suitable for road base and structural fill. Approximately 1.0 million cubic yards of granular fill would be cut from the heavy haul road and reused to build the Material Offloading Facility. The balance of the structural fill would be sourced from the eastern portion of the jobsite. A portion of the fill can be cut and placed directly to embankment, while some processing would be required to meet the design specification. In addition to the structural fill, approximately 0.5 million cubic meters of sand and gravel would be required for ready mixed concrete. This material can be processed on site or sourced from multiple quarries that are located within 20 miles of the site.

The majority of the granular fill would be sourced from the jobsite and supplemental quantities would be furnished by local quarries.

4.2 PIPELINES

4.2.1 Mainline

Gravel sources were chosen from previous descriptions in the public record (e.g., Alaska Department of Transportation and Public Facilities {ADOT&PF} and other sources) and from field investigations. More than 450 sites were considered, and 149 locations outlined in Table 4 were identified as potential off-ROW gravel sources for construction of the Mainline facilities. Working with mine site owners, regulatory agencies, and construction planning staff, the Project entity would narrow down this list of the most suitable sites.

Table 3: Borrow Sources Chosen for Mainline Construction

Type	Number of Sources Chosen	Estimated Acreage
Primary	85	4,261
Alternate	68	1,603
Total	**153**	**5,864**

The ranking and final selection of gravel sources was based on the following:

- The quality of the material in the borrow source.
- The quantity of material available.
- The distance of the borrow source from the ROW.
- The distance of the borrow source from the location(s) where the material is required.
- The ease of access to the borrow source from the pipeline.
- The borrow sources were not depleted by highway and other infrastructure work.

- The borrow sources have not been assigned to others and are available for the pipeline project.
- Prohibitive environmental conditions did not appear to be present. Additional environmental analysis may be needed to confirm this assumption.

In addition to these existing sources, material sites would be developed along the ROW, particularly at hill tops, to provide work pad material within the valleys, as practicable. Hill top cuts are anticipated to primarily be found:

- South of Prospect Creek and north of Livengood (Spread 2).
- Along Summer Ridge south of Livengood (north end of Spread 3).

Side hill cuts to be used for ROW work pad material are anticipated to be found along Spread 1 in the upper Dietrich River and to some extent in the hills north of Livengood. Depending on the granular material source's quality and water content, particularly north of Atigun Pass, a full summer of "seasoning" may be required to drain the moisture from the granular material to support summer construction equipment loads.

4.2.2 PBTL

The source for any granular material required for construction of the PBTL would be similar to that described for the GTP in Section 3.3.

4.2.3 PTTL

The source for any granular material required for construction of the PTTL has not yet been confirmed. Chosen locations will be included in the final Plan.

4.2.4 Pipeline Aboveground Facilities

The gravel sources listed in Table 4 would be used to supply the volumes needed for construction of the Pipeline Aboveground Facilities.

4.2.5 Pipeline Associated Infrastructure

The gravel sources listed in Table 4 would be used to supply the volumes needed for construction of the Pipeline Associated Infrastructure.

4.3 GTP

The primary source of material for construction of the GTP would be a new mine (quarry) site located southwest of the GTP plant site and just north of the Putuligayuk River. In addition, it is estimated that development of the new reservoir (adjacent to the mine site) would generate material to support GTP construction. Once the reservoir excavation meets design requirements, it would be filled and no longer be used as a granular resource.

Third-party material would be required until the new mine site is producing. It is anticipated that up to 1 million cubic yards of granular material could be acquired from the Put 23 mine or possibly from the ADOT&PF Pit 103, located south of the Deadhorse Airport.

4.3.1 GTP Associated Infrastructure

The source for material required during construction of the GTP Associated Infrastructure, including development/improvement of access roads and West Dock improvements, would be similar to that described for the GTP in Section 4.3.

5.0 MATERIAL EXTRACTION AND TRANSPORTATION PRACTICES

This chapter contains operational Best Management Practices (BMPs) that may be applied to the layout of a material site and various mining activities to reduce surface water and groundwater impacts.

5.1 BEST MANAGEMENT PRACTICES (BMPS) FOR THE MATERIAL SITES

5.1.1 Access Roads

The use of existing roads would be preferred for all aggregate site operations. However, where new roads are necessary, well-designed and constructed haul roads can make site operations safer, more productive, and cause less wear and tear on equipment. Some keys to effective access roads are:

- Keep roads dry by elevating them and cross-sloping the surface to facilitate drainage.
- Design the banking of curves and curve transitions to minimize the centrifugal forces on vehicles negotiating the curve.
- Maintain safe steepness grades.
- Place intersections at flat, straight alignments.
- Establish a regular grading program to minimize erosion, sediment build-up, noise, and dust.
- Potholes, washboarding, and frost heaving should be repaired immediately to minimize noise, dust, and equipment wear.
- Apply approved dust suppressants such as water or calcium chloride, if necessary.

5.1.2 Buffer Zones

A buffer zone is either a natural or enhanced vegetated area around a disturbed site, or near sensitive areas such as a stream, wetland, or inhabited area. It provides distance and adds time to reduce flow and velocity of storm water. Buffer zones also have the potential to reduce noise pollution, allow for dust settling, provide wildlife corridors, and reduce visual impacts. Once established, buffer zones that allow natural succession require little maintenance.

- Buffer zones would be placed at new material sites, to the extent practical.
- For existing sites, preserve the buffer zone around the site perimeter, adjacent to streams or other waters, along access corridors, and at the edges of disturbed areas.
- Help reduce sediment and pollution by preserving a buffer zone alongside stormwater drainages.
- Retain native trees and shrubs around the perimeter of disturbed areas to help reduce dust, noise, and provide a visual barrier.
- Use other methods to reduce or control flow of surface water such as flow barriers, diversions, sediment traps, check dams, and vegetative plantings, or silt fences when natural buffers are not possible.

5.1.3 Berms

Well-designed berms may provide some reduction of pollutants and could help reduce noise, dust, and the visual impact of the site within the community. Berms can be used around the

perimeter of the property or adjacent to areas sensitive to impacts such as wetlands or surface water bodies. A berm can be used as a site control for surface water entering or leaving a site.

- The elongated and raised structure may be composed of selected material from onsite or offsite.
- Berm heights should be at least 6 feet. For berms taller than 6 feet, vary berms and contour side hills to provide a more natural appearance.
- Plan that berm heights, contours, and vegetation would blend in with naturally occurring conditions.
- If the berm remains in place long term or permanently, add topsoil to help hold vegetation and provide for natural succession. Seed berm with native grasses or top with other native shrubs, trees, or other indigenous vegetation to reduce draining and drying of the berm.
- Establish ground cover quickly and stabilize soils with mulch, blankets, or other methods.

5.1.4 Signage

Use signs to inform and remind mine employees of sensitive areas on the site, such as established setbacks from streams or hazardous areas. Also use signs to warn the public and site visitors of mine hazards.

5.1.5 Vibration Reduction

Blasting, screening, and crushing, as well as movement of heavy equipment on site and from the site, may produce ground vibrations. Vibrations can affect unstable slopes and can potentially damage nearby structures such as houses. Because transport of materials is one of the primary causes of vibration, at populated areas levels may be reduced by maintaining roads free of potholes, reducing speeds, and limiting the weight of loads carried by trucks.

For blasting activities, which tend to generate stronger vibrations, it is important to monitor vibrations at nearby locations that may be impacted. In some cases, vibrations from blasting can increase the turbidity of groundwater, which can impact nearby wells. If residential wells are within 1,000 feet of a proposed blasting operation, vibration and groundwater turbidity before and after blasting should be monitored at the well sites.

5.1.6 Dumps and Stockpiles

Mines with thick overburden generate large amounts of waste soil and rock. This material is generally stockpiled either permanently or for later use in reclamation. Dumps and stockpiles, if poorly placed or constructed, can easily result in landslides and increased sediment loads to nearby surface waters. The following are some guidelines for placement and construction of stockpiles:

- Select a location that is geologically stable. Qualified professionals are to assess any landslide hazard.
- Select a location that is away from waterways, seeps, and springs.
- In non-permafrost areas, strip all vegetation from the storage area, as it will rot under the stockpile and create a plane of weakness and increase the chances of downslope movement. Vegetation removed from the stockpile area can be used around the perimeter of the stockpile to filter runoff.

- Install a blanket drain (drain rock and geotextile) at the base of the pile on any slope where drainage problems are anticipated, and key it into competent material within the slope.
- Construct diversion ditches above stockpiles on steep ground.
- Shape the pile to prevent water from ponding and to direct water to a drainage system.
- Final slopes should be between 2H:1V and 3H:1V or flatter. Flatter slopes are easier to access for reclamation. Slope designs may be optimized with the help of qualified professionals.
- Terraces may be constructed to slow runoff water velocities.
- When shaping is complete, seed and mulch the pile to establish vegetation.

5.2 BMPS FOR MINE ACTIVITIES

5.2.1 Employee Training

BMPs are only effective if they are properly implemented and maintained. This is accomplished through employee training. Field employees would be taught basic pollution-prevention principles, and that it is expected that employees would take personal responsibility for helping assure BMP effectiveness. Qualified supervision would always be on hand when operations are ongoing.

5.2.2 Test Holes

The operation would follow all regulations at the state and federal level when drilling test holes to determine the depth and extent of deposits to be mined. Avoid contaminating groundwater by:

- Placing holes in areas that do not flood and that have good surface drainage away from the hole.
- Keeping holes away from chemical storage areas, landfills, and septic tanks.
- Properly installing and decommissioning abandoned observation wells to avoid subsurface contaminant entry.
- Properly backfilling holes with bentonite and/or cement grout and surface seal.

5.2.3 Land Clearing and Grubbing

Clearing and grubbing the land is necessary to prepare a mine site for extraction, but increases the risk of environmental impacts from stormwater runoff. Permit coverage is required prior to beginning the land clearing and grubbing work. To reduce environmental impacts:

- Implement stormwater management, erosion, and sediment control BMPs concurrently with clearing so that sediment laden runoff does not leave the site.
- On slopes, divert slope water around disturbed areas using ditches or berms.
- If possible, clear land and grub during dryer, less windy times of the year.
- Establish, mark, and remember to stay out of buffer zones; stay outside of recommended or permit-required distances from streams, rivers, lakes, wells, etc.

5.2.4 Stripping

Stripping is the removal of topsoil and overburden. If a mine plan employs contemporaneous reclamation then topsoil and overburden can be placed onto previously mined areas as it is

removed, which reduces handling costs and maintains useful soil properties. Otherwise, topsoil and overburden should be stockpiled for use in reclamation. Make separate stockpiles for topsoil and other overburden. In overburden soil, try to preserve soil horizons in the stockpiles so that the soil layers can be placed back in the order in which they were removed. Make sure stockpiles are located and built in a way that provides easy access for reclamation.

5.2.5 Dewatering

Dewatering is sometimes necessary for gravel pit operations in Alaska during gravel extraction or while cleaning settling or retention ponds. Some generally recommended BMPs for dewatering include:

- Consider the proximity of the pit to contaminated or potentially contaminated sites and to local water wells. If substantial draw down may occur due to dewatering, a contaminant plume from a contaminated site may move or be exacerbated.
- Wells, well points, or other systems may be most effective in drawing down the aquifer prior to mining, and reducing effects to aquifers. These methods may be preferred over using a sump or trash pump to dewater a pit while mining, because clean water is extracted and that simplifies discharge.
- Where offsite impacts to shallow aquifers are likely, infiltration trenches or wells can help to mitigate offsite drawdowns.
- For pit seepage, keep a perimeter trench around the outside of the excavation's floor. This trench will collect the groundwater seeping out of the pit walls and create a sump from which less turbid and uncontaminated water can be pumped.
- Make sure that dewatering does not result in or otherwise cause re-suspension of sediments in receiving waters. It is very important that any fluid leaving the site be free of any contaminants or additives such as fuel, antifreeze, solvents, corrosion inhibitors, toxic substances, oil, and grease, and anything that causes foaming in the effluent.
- Perform equipment maintenance away from the pit perimeter.
- Dispose of waste away from the open pit.
- Store fuels and hazardous materials away from the open pit.

Dewatering should not be done in such a way that it results in thermal or physical erosion, typically a problem at the site of discharge. Dewatering should be avoided or carefully designed if it will result in offsite impacts such as contamination of surface or ground water, well impacts to neighboring properties, changes in flow patterns of surface water or aquifers, or if it causes flooding or damage to property or vegetation.

6.0 EXCESS MATERIAL DISPOSAL

Unsuitable material that is excavated along the pipeline ROW and cannot be placed over the pipeline would be disposed of along widened portions of the ROW or along access roads that touch the ROW. Material might be unsuitable because it is ice-rich or full of rock that if used as backfill, could damage the pipe.

Spoil not required may be transported to and placed in a controlled manner in a disposal area other than the ROW by following these conditions:

- The disposal area will be approved by the landowner.
- The disposal area will be located on the most moderately sloping and naturally stable areas available. Fill materials will be placed upon or above a natural terrace, bench, or berm if such placement provides additional stability and prevents mass movement.
- The disposal area will not contain cultural resources, wetlands, springs, natural waterbodies, or groundwater seeps.
- Any organic material will be removed from the disposal area, segregated, and redistributed or stockpiled, before the excess spoil material is placed in the disposal area.
- Slope protection will be provided as required to minimize surface erosion at the site.
- The spoil will be transported and placed in a controlled manner, in horizontal lifts not exceeding five feet in thickness, concurrently compacted as necessary to ensure mass stability and prevent mass movement, and graded to allow surface and subsurface drainage to be compatible with the natural surroundings.
- The fill will be inspected for stability at least annually for the first three years.

Geotechnical analysis of the ROW ditch and through cut areas supplied the locations and bank quantities of material that would need to be removed and disposed. The bank material quantities were bulked 25 percent for swell and it was determined that material totaling approximately 2,000,000 cubic meters would have to be disposed of at 113 locations. These locations add 423 acres to the Project footprint. The average disposal location is 4 acres with at least 28 locations greater than 5 acres in size. Material at disposal sites would be placed so that it is an average of 5 feet deep. At this time, no material sites would be used as disposal sites, but existing mine sites that are no longer required will be considered for use, depending on land owner and agency approval.

7.0 RECLAMATION

If reclamation is to be done at the conclusion of construction activities, this chapter describes various strategies and BMPs for reclamation. It has been taken from ADEC's *Best Management Practices for Gravel/Rock Aggregate Extraction Projects* (2012).

The primary goal of reclamation is to return a site to a condition that will not pose a hazard to public health and the environment. Reclamation plans would be site specific, but they will generally include:

- Removal of all facilities.
- A grading plan that establishes stable slopes and adequate drainage.
- Self-sustaining vegetative cover.
- Monitoring of performance during and after reclamation to ensure objectives are being achieved.

Reclamation plans would include the following key elements:

- A general description and diagram of the operation and the area that shows and states the number of acres to be mined during each year covered by the plan.
- The location corners or property boundaries and their relationship to the reclamation work.
- The tailings or spoil disposal areas.
- The areas otherwise affected by the operation.
- The information furnished must be reasonably appropriate to the scale and complexity of the mine.

Reclamation plans must be approved by ADNR DMLW. This applies to state, federal, municipal, and private land and water in Alaska.

7.1 RECLAMATION STRATEGIES

7.1.1 Contemporaneous Reclamation

In contemporaneous reclamation, material is transported from a newly mined area directly to a previously mined area in one circuit. This method minimizes handling of overburden and avoids creating large areas of unreclaimed land. It is optimal where a relatively small amount of material is extracted in comparison to the overburden moved, because it allows easy reproduction of soil and subsoil profiles. It may, however, be impractical for sites with very thin soil or where material like sand and gravel must be mixed from various parts of the mine in order to meet product specifications.

7.1.2 Segmental Reclamation

In segmental reclamation, the mine site is divided into segments and the order of mining and reclamation among the segments is determined. Prior to mining, topsoil from the first segment is stockpiled. After all resources have been extracted from the first segment and the slopes have been reshaped in accordance with the reclamation plan, topsoil is stripped from the second segment and placed on the first segment and vegetation is planted. This continues until the final segment is mined, and then it is reclaimed with the stockpile of topsoil from the first segment. This reclamation strategy minimizes handling of topsoil and avoids creating large areas of

unreclaimed land, but may be impractical for sites with very thin soil or where material like sand and gravel must be mixed from various parts of the mine in order to meet product specifications.

7.1.3 Post-Mining Reclamation

Post-mining reclamation is reclaiming a site after all resources have been extracted. While it may be necessary under certain circumstances, it generally results in large areas being left unreclaimed for long periods of time.

7.2 RECLAMATION BMPS

7.2.1 Overburden Storage

Overburden is often stockpiled for later use in reclamation backfill. This is a good practice, although long-term overburden stockpiles can contribute heavy sediment load to stormwater runoff. To avoid this, they should be:

- Properly constructed for good slope stability.
- Vegetated to prevent erosion.

7.2.2 Backfilling

Backfilling an excavated area may increase stability and help reduce erosion that otherwise might potentially affect surface water. Reducing slope angles can substantially reduce erosional effects and long-term stability concerns. Backfilling can be considered when the final face heights in an excavated area are higher and steeper than permit specifications or general standards. Some guidelines for backfilling include:

- Do not backfill or approach an existing slope if stability is in question or the slope is unsafe, because it threatens worker safety.
- Keep backfill slopes at angles of 2 or more horizontal to 1 vertical.
- If specified, fill layers may be placed in lifts and then stabilized by compacting, adding water to maintain moisture as needed. Compaction efforts can be made with equipment such as a sheep's foot roller or a smooth vibrating drum roller.
- Avoid flooding or erosion by providing good drainage with robust sediment control.
- Backfill materials may include overburden, waste rock, topsoil, clean excavation spoils from offsite, or select clean construction debris.
- Backfill materials should be free of contamination, brush, rubbish, organics, logs, stumps, and other material not suitable for stable fills.
- Use plastic sheeting, mulches, matting, or seeding with native species of grass or other vegetation to protect bare slopes against erosion if permanent planting is delayed.

7.2.3 Benching

In reclamation, benching is a way of reducing slope lengths, enhancing stability, and facilitating revegetative efforts in soft or hard rock where bedding and structure are not prohibitively oriented. In some situations, it may be preferable to backfilling. Some keys to benching are:

- Vertical bench cuts should be between 2 and 4 feet high.
- The vertical cut of the upper bench should begin immediately above the horizontal cut of the bench below.

- Benches should be horizontal and parallel to cut slopes or roadways.
- Excavation of each bench should be done in the opposite direction from the bench before, from the top of the slope to the bottom, to reduce the buildup of unconsolidated material at the side of the cut.

7.2.4 Topsoil Replacement

Proper replacement of topsoil on reclaimed surfaces is crucial to revegetation. Some topsoil replacement concepts are:

- Ideally, extract topsoil from its place of origin and place it directly onto an area already mined, backfilled, and graded for reclamation. In this scenario, soil is handled only once, has less moisture loss, and does not compact during storage within stockpiles.
- Before spreading the topsoil, establish the erosion and sedimentation control structures such as berms, diversions, dikes, waterways, and sediment basins.
- Maintain grades on the areas to be topsoiled, and just before spreading the topsoil, loosen the subgrade slightly for bonding of the topsoil and subsoil.
- Do not spread topsoil when it is frozen or muddy.
- Topsoil should not be compacted.
- If the volume of topsoil available for the site is low, restrict application to low areas that will conserve soil, retain moisture, and catch wind-blown seeds.

7.2.5 Refuse/Soil Disposal

If excess overburden remains that will not be used in reclamation, it should be disposed of with care. It should not be placed in natural drainages, like drainage hollows on slopes, because it would be more likely to fail and impact surface water. Options for disposal may include sale as a fill material or proper construction of a permanent, vegetated stockpile.

7.2.6 Revegetation

Revegetation is one of the last but most important steps in reclamation, because it reduces erosion, reduces storm-water runoff, provides habitat for animals, and increases the value of the property. Guidance for vegetation is discussed in the Project *Restoration Plan*.

7.2.7 Creating Wildlife Habitat Using Ponds

Mine site reclamation often involves the creation of ponds. Ponds can easily be made into good wildlife habitat by following some general guidelines:

- Keep submerged slopes at 5 horizontal to 1 vertical or flatter for the top 6 feet, to allow development of wetland plant species.
- Make the outline of ponds irregular to increase plant habitat.
- Build up islands in the ponds to provide nesting areas.
- Place structures like downed trees on the shoreline, and anchor them in place to provide fish habitat.

“North Slope Gravel Pit Performance Guidelines,” Technical Report Number 93-9, by Robert F. McLean (1993) is a useful resource regarding the creation of wildlife habitat.

8.0 ACRONYMS AND TERMS

Term	Definition
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
ADOT&PF	Alaska Department of Transportation and Public Facilities
APMA	Application for Permits to Mine in Alaska
BMP	Best Management Practice
DMLW	Alaska Department of Natural Resources, Division of Mining, Land & Water
DOR	Alaska Department of Revenue
EPA	Environmental Protection Agency
GTP	Gas Treatment Plant
MLUP	Miscellaneous Land Use Permit
PBTL	Prudhoe Bay Gas Transmission Line
PBU	Prudhoe Bay Unit
PSY	Pipe Storage Yard
PTTL	Point Thomson Gas Transmission Line
PTU	Point Thomson Unit
ROW	Right-of-Way
SHPO	State Historical Preservation Office
USACE	United States Army Corps of Engineers

APPENDICES

A – Application for Permits to Mine in Alaska (APMA)

B –Potential Material Sources for the Mainline

C – Potential Disposal Sites for the Mainline

Appendix A – Application for Permits to Mine in Alaska (APMA)

THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Natural Resources
DIVISION OF MINING, LAND & WATER
MINERAL RESOURCES SECTION

ANCHORAGE OFFICE
550 W 7TH AVENUE SUITE 900B
ANCHORAGE, ALASKA 99501
MAIN (907) 269-8647
FAX (907) 269-8949

FAIRBANKS OFFICE
3700 AIRPORT WAY
FAIRBANKS, ALASKA 99709
MAIN (907) 458-6896
OR (907) 451-2774
FAX (907) 451-2703

December 1st, 2014

APPLICATION FOR PERMITS TO MINE IN ALASKA (APMA)

Dear Miner:

Attached to this letter you will find the 2015 Application for Permits to Mine in Alaska packet. This packet is applicable to placer mining, hard rock exploration, and suction dredging operations. Miners are encouraged to submit your application early, as applications are processed in the order that they are received. Also, miners who are requesting winter cross country travel authorization should submit their application at least four weeks before the planned travel.

Processing Fees:

The annual application fee is $150.00. A Multi-Year is $150 for the first year and $50 for each year thereafter, for up to 5 years, payable in advance. A 5 year application is $350.00. There is also a $50.00 fee for any amendment to the application. Other agencies such as the Department of Environmental Conservation may require additional fees for permits or authorizations.

Multi-Year Renewal Requirements:

For miners with a multi-year permit, the following forms still need to be submitted annually:

1. Signed Bond Renewal form with appropriate fees (if applicable),
2. Signed Reclamation Plan or Letter of Intent to Reclaim.
3. Signed Reclamation Statement

Keep in mind that other permits, such as Wastewater Discharge Authorizations, Mining Tax License, or US Army Corps of Engineers Wetlands permits, may have expiration dates separate from the DNR multiyear permit expiration date. Miners should be aware of expiration dates on these other permits.

Reclamation Statement: Due December 31,2014

As a reminder, 2014 applicants are required to file an Annual Reclamation Statement by December 31, 2014 to keep their small miners exemption from bonding requirements or to satisfy the reporting requirements of their reclamation plan. This statement is due whether or not activity took place in 2014.

If assistance is required, please feel free to contact one of our offices listed above.

Sincerely,

Jack Kerin
Geologist IV
DNR Mining Section

STATE OF ALASKA

Application for Permits to Mine in Alaska (APMA); For placer mining, suction dredging, and hardrock exploration

Generally, to conduct such activities in the State of Alaska, permits and licenses may be needed from several State and Federal agencies. For convenience, your APMA will be initially reviewed for completeness by the Alaska Department of Natural Resources (ADNR) and then distributed to the other agencies involved for formal review.

This application should satisfy the requirements to obtain permits and approvals from the following government agencies:

ADNR Division of Mining, Land & Water (DMLW), Mining Section (DNR-Mining)

- Miscellaneous Land Use Permit (MLUP): For mining activity on State claims, prospect sites, upland and offshore mining leases
- Reclamation Plan: For mining activity on private property with greater than 5 acres disturbance and all State land
- Winter Cross Country Travel
- Surface Structures: Placement and/or use of any structure must be requested in writing and approved in advance. An active MLUP is needed for structures and/or equipment to remain on State land. (AS 38.05.255(a)).

ADNR DMLW, Land Section (DNR-Lands)

- MLUP: For access and surface activities on State land other than claims, prospect sites and mining leases
- Summer cross country travel: Easements are needed to construct access outside of a claim block. "Construction" is the use of mechanized equipment to create or improve access, including dropping the blade or bucket, and/or adding gravel to the surface. Applications may require six months to one year to process. Performance guarantee may be needed before a permit will be issued and will only be released after travel is completed and no trail damage has occurred. As-built surveys after work is done may be required as well.

ADNR DMLW, Water Section (DNR-Water)

- Temporary Water Use Permit, Water Rights Permit, or Certificate, for significant water usage (including the use of 100% recycle systems). For questions, contact Kindra Geis (907) 451-2790 kindra.geis@alaska.gov

Alaska Department of Fish & Game (ADF&G)

- Fish Habitat Permit (Title 16): Any equipment or vehicles fording anadromous streams, alteration of the bed and/or banks, water withdrawals, stream diversions and suction dredging in any fish bearing waters.
  For questions, contact:
  South Central/Southwest/Anchorage Office, Jacob Cunha (907) 267-2343 or jacob.cunha@alaska.gov
  Interior/Northern/Arctic/Fairbanks Office, Laura Jacobs (907) 459-7284 or laura.jacobs@alaska.gov
  Mat-Su/Palmer Office, Ron Benkert, (907) 861-3204 or ronald.benkert@alaska.gov
  Kenai Peninsula/Soldontna Office, Ginny Litchfield (907) 714-2477 or ginny.litchfield@alaska.gov
  Southeast/Douglas Office, Jackie Timothy (907) 465-4275 or jackie.timothy@alaska.gov
  Craig Office, Mark Minnillo (907) 826-2560 or mark.minnillo@alaska.gov

Alaska Department of Environmental Conservation (DEC)

- Wastewater Discharge General Permit authorization: For discharges to waters of the U.S. For questions, contact Nick Dallman (placer mining) at (907) 451-2142 or nicholas.dallman@alaska.gov; or Tim Pilon (hard rock exploration) at (907) 451-2136 or tim.pilon@alaska.gov.

Environmental Protection Agency (EPA)

- EPA Spill Prevention Control and Countermeasures (SPCC): For projects with cumulative fuel volume on site larger than 1,320 gallons. Fuel volumes larger than 10,000 gallons must have a SPCC plan certified by a professional engineer. For additional information contact Matthew Carr at (907) 271-3616 carr.matthew@epa.gov or visit http://www.epa.gov/osweroe1/content/spcc/

Alaska Department of Revenue (DOR)

- Alaska Mining License: Contact Cecilia Torres-Blanco, (907) 269-1017 or cecilia.licht@alaska.gov.

State Historical Preservation Office (SHPO)

- In consideration of potentially significant historic properties/cultural resources, please do not remove or disturb any buildings, structures, objects, or artifacts that were located on the site prior to conducting permitted activities If you have questions please contact Mckenzie Johnson of SHPO at (907) 269-8726 or mckenzie.johnson@alaska.gov

Bureau of Land Management (BLM)

- Notice or Plan of Operation: Go to the BLM - Alaska Minerals webpage at http://www.blm.gov/ak/st/en/prog/minerals.html and read the BLM Instructional Supplement to determine what additional information is required before your APMA can be processed. The BLM has prepared Supplemental Forms, posted on the Mineral webpage, to help you provide all of the information required by BLM mining regulations (43 CFR 3809). Contact your local BLM Field Office before submitting your APMA and BLM Supplements to ensure all necessary information is included and to avoid delays in processing your application.

U.S. Army Corps of Engineers (USACE)

- Under Section 404 of the Clean Water Act (CWA), the USACE has jurisdiction over mechanical clearing and placement of fill into waters of the U.S, which includes streams and wetlands. The CWA applies to operations on federal, state, and private lands. A wetland Jurisdictional Determination is required under Section 404.
- For all access constructed across "wetlands", ponds, streams, or other waters of the U.S. including those within your claim block. It is the responsibility of the applicant to contact the USACE for a determination.
- For questions contact Deb McAtee in Fairbanks: Debby.J.McAtee@usace.army.mil (907) 474-2166 or Leslie Tose in Anchorage: Leslie.W.Tose@usace.army.mil (907) 753-2712 or (800) 478-2712.

Do not assume that you have all permits you require. We strongly suggest that you contact each agency to be sure your application has been received and processed. Please read the stipulations of your permits carefully. Non-compliance can result in revocation of authorizations and financial penalties.

In accordance with Alaska Statute 27.19, miners may not engage in mining operations on State land until a reclamation plan has been approved. Operations less than five acres must submit a Letter of Intent to Conduct Reclamation and file an Annual Reclamation Statement. Reclamation Statements must be filed or postmarked by December 31st each year. Operations of five acres or more must be bonded. You may either join the State Wide Bond Pool or you may submit evidence of an individual financial assurance. All plans and notices on BLM managed lands as per 43 CFR 3809.10 require a separate reclamation plan (BLM Supplement B) to be filed with BLM. If your operation involves BLM managed federal land, you must obtain BLM approval of your bonding prior to submission of your application to DNR-Mining.

Amended Plans: Changes in operation must be submitted in writing and approved in advance before the start of such activity.

A $150.00 processing fee is charged when an APMA is submitted and thereafter $50.00 is charged for each amendment to the DNR approved permit or DNR approved plan of operations.

- "Multi-Year" MLUP and Reclamation Plan Approval and Approved Plan of Operations fees (for up to five years): $150.00 payable when APMA is submitted and a $50.00 fee for each additional year.
- Make check or money order payable to "Department of Natural Resources."

Applicants who request a mixing zone from DEC (section #25) are subject to an additional $150.00 annual fee. A $25.00 discount is available to facilities with fewer than 20 employees. DEC will mail a separate invoice upon authorization.

Interagency supplemental forms and documents are available at: http://dnr.alaska.gov/mlw/forms/?tab=mining

Submit completed applications to one of the following DNR offices

	State Division of Mining, Land & Water 550 W. 7th Ave. Suite 900B Anchorage, AK 99501-3577	or	State Division of Mining, Land & Water 3700 Airport Way Fairbanks, AK 99709-4699
Telephone:	(907) 269-8647		(907) 458-6896, (907) 451-2774 or (907) 451-2791
FAX:	(907) 269-8949		(907) 451-2703

APMA Instructions and Check List

Applications are processed in the order they are received. Applications submitted after May 1 may not be processed before the start of the mining season. Applicants who need winter cross country travel should submit their application at least 4 weeks before the planned travel.

State mining regulations require applications to be completed in ink or typed. Maps and plans can be in black and white or in color, provided they are on 8 1/2 " x 11" sized paper in order to ease distribution. Over size maps and plans needed to clarify complex operations, are allowed so long as 8 1/2" x 11" sized equivalents are included.

If an applicant is requesting authorization to conduct permitted activities on more than 12 claims, planning 5 or more drill holes or trenches, using more than 5 water take points or conducting in-stream activities in more than 5 locations, then the tabular information in electronic Micro Soft Excel is preferred. A template is downloadable at: http://dnr.alaska.gov/mlw/forms/?tab=mining. Please use the workbook provided. Electronic application materials can be submitted by e-mail to dnr.fbx.mining@alaska.gov or provided on other media with application packet.

Please review the following checklist and make certain all applicable items are included before submitting the application. Processing of incomplete applications is often delayed.

- [ ] Are the applicable processing and bond pool fees enclosed?
- [ ] Have you written "N/A", or draw a diagonal line through any un-applicable sections?
- [ ] Is there a current, legible sketch and narrative of proposed operation? (See sketch checklist)
- [ ] Is the reclamation page signed and dated and the appropriate boxes checked?
- [ ] Is the Annual Reclamation Report dated and signed?
- [ ] If you are not the owner of the listed State mineral locations, have you provided a Notice of Operator Authorization?
- [ ] Are all operators listed? Independent mining subcontractors and other persons not in an employment relationship listed?
- [ ] If applicable, have you completed a State Wide Bond Pool Form or State Wide Bond Pool Renewal Form? Include BLM signature if Federal claims are listed.
- [ ] Have you included MSDS sheets for all drilling fluids?
- [ ] Have you included latitude and longitude coordinates for the Wastewater Discharge Permit Application?
- [ ] Are all your maps and sketches, paper or electronic, included?
  - [ ] Plan map and cross section of operations, (see instructions near back of application packet)
  - [ ] Access map: Include the appropriate U.S. Geological Survey (USGS) topographic map or maps at a scale of one inch equals one mile (1:63,360) overlain with the proposed access route. Identify entire access on and off your claim block from a major road system, airstrip, or boat landing. Reproduced portions of maps in 81/2" x 11" size are acceptable, provided they are readable and suitable for copying. Each map should be clearly identified with a USGS identifier, i.e. Fairbanks A-3; and a legal description (meridian, townships and ranges involving the route).
  - [ ] Have you provided a map of your claims? Include a USGS topographic map illustrating: location; claim name; claim number; camp location; airstrips; and appropriate USGS map identifier. Identify those claims with past disturbance and those on which activity will take place this season.
- [ ] Offshore Dredging Operations: Have you listed where your camp or support facilities are placed?

STATE OF ALASKA

Application for Permits to Mine in Alaska (APMA)

☐ Single Year ☐ Multi-year - Start:_____ Finish:_____ APMA_____(**District/Year/Number)**

What type activity are you planning to perform?		Surface estate of mineral properties:		
☐ Exploration/Reclamation	☐ Access Equipment	☐ State (General)	☐ State (Mental Health)	**(1)**
☐ Mining/Reclamation	☐ Suction Dredge	☐ Private (Patented)	☐ Federal	
☐ Hardrock Exploration/Reclamation	☐ Reclamation	☐ Private (Native Corp.)	☐ City or Borough	

Check, as appropriate, and indicate permit number, if any of the following agencies have previously issued permits for these mineral properties:

☐ DNR-Water TWUP/ADL/LAS No:_____ ☐ DEC- APDES Wastewater discharge permit #: **(2)**

☐ ADF&G – Habitat Permit No: _FH-_____Date expires

☐ BLM – Notice_____ Authorization_____Occupancy

☐ USACE Permit No(s) for this APMA # POA-_____-_____, POA - _____-_____.

☐ Other State or Federal Permit No: _____.

Mineral Property Owners: **(3)** Company name and contact name if applicable	Lessee: **(4)** Company name and contact name if applicable	Operator: **(5)** Company name and contact name if applicable
Mailing Address for official correspondence:	Mailing Address for official correspondence:	Mailing Address for official correspondence:
Home phone# (winter):	Home phone# (winter):	Home phone# (winter):
Work phone# (winter):	Work phone# (winter):	Work phone# (winter):
Home phone# (summer):	Home phone# (summer):	Home phone# (summer):
Work phone# (summer):	Work phone# (summer):	Work phone# (summer):
Cell/Satellite:	Cell/Satellite:	Cell/Satellite:
FAX:	FAX:	FAX:
E-mail:	E-mail:	E-mail:
Winter contact effective dates fgnsfhnsf_____to_____. Summer contact effective dates _____to_____.	Winter contact effective dates _____to_____. Summer contact effective dates _____to_____.	Winter contact effective dates _____to_____. Summer contact effective dates _____to_____.
Project Name If Applicable: **(6)**	# of Workers: **(7)**	Start-Up/Shut Down: (Month/Day) **(8)** _____to_____.
Mining District: **(9)** _____	Applicable USGS Map: **(10)**	On What Stream Is This Activity? **(11)**

Legal Description of mineral properties to be worked and other projected related activities (MTRS): **(12)**

Revised 10/2014

MINERAL PROPERTIES LIST (13)

List only mineral properties with current and planned disturbance.
Attach additional sheets as necessary AND provide in electronic, tabular format if you are submitting more than 12 properties
DNR template available at http://dnr.alaska.gov/mlw/forms/?tab=mining.

	ADL/BLM/USMS #	PROPERTY NAME		ADL/BLM/USMS #	PROPERTY NAME
1.			7.		
2.			8.		
3.			9.		
4.			10.		
5.			11.		
6.			12.		

DESCRIPTION OF EQUIPMENT (14)

List all mechanized equipment to be used (type, size, purpose, and number of each, including pumps).

IN-STREAM ACTIVITIES and STREAM CROSSINGS (15)

List any equipment that will be crossing streams.

List any equipment that will be used in streams.

Describe method(s) used to prevent fish entrapment.

List all stream crossings, suction dredge or pump locations, including unnamed streams.

	Stream Name	NAD 83 Datum (approximate) Coordinates can be obtained using Alaska Mapper http://dnr.alaska.gov/MapAK/		MTRSC ¼ ¼ Ex: F001S001N01 SWSW	Check boxes to indicate type(s) of activity		
		Latitude ddd.mmmm	Longitude -ddd.mmmm		Crossing	Dredging	Pump intake
1.					☐	☐	☐
2.					☐	☐	☐
3.					☐	☐	☐
4.					☐	☐	☐
5.					☐	☐	☐

If in-stream activities and/or stream crossings are requested at more than 5 locations, please provide tabular data format (DNR template available at http://dnr.alaska.gov/mlw/forms/?tab=mining).

ACCESS OUTSIDE OF CLAIM BLOCK

(16)

Access across surface estates not owned by the State requires approval of the managing agency. It is the responsibility of the applicant to contact the owners of private property to obtain authorization for access.

A completed access map must be submitted with your application. Copies of USGS topographic maps at a scale of 1"=1 mile must clearly indicate the proposed access route from start to finish and include appropriate legal descriptions (township and range) on each map sheet. The quadrangle map name should also be indicated (Healy A-3, etc.). Paper size should be limited to 8 ½" x 11". Do not tape maps together.

Access outside the claim block crosses what type of land(s)? ☐ State (General) ☐ State (Mental Health) ☐ City/Borough ☐ Federal ☐ Private ☐ Private (Patented) ☐ Private (Native Corp. Land)

Does the proposed route of travel include use of RS 2477 access? ☐ Yes ☐ No. If the RS 2477 ROW has a State of Alaska RST number, please list _____.

If not, do you wish to nominate the route for RST assertion? ☐ Yes ☐ No.

Access is: ☐ Existing ☐ To be constructed off of claim block ☐ Both

Indicate Type(s) of existing access:

☐ All Season Road: May be an improved dirt road intended to be used during all seasons of the year without causing long term damage to the road.

☐ Summer Cross Country Travel off of claim block that is not generally allowed

☐ Existing airstrip ☐ Airstrip to be constructed off of claim block

☐ River

☐ Winter Cross Country Travel that is not generally allowed - Travel is not authorized if damage could occur.

Will water be needed to construct ramps/ ice bridges? ☐ Yes ☐ No.

If Yes, estimated quantity of water will be used _____ gallons/day

List all equipment and vehicles being transported:

Are you transporting fuel? ☐ Yes ☐ No If "yes ", indicate type and amount:

Are you transporting other petroleum products? ☐ Yes ☐ No If "yes", indicate type and amount:

Are petroleum products contained? (i.e., drums, bladders, steel tanks, etc.) Indicate size of containers:

How are petroleum products being transported? (i.e., skid-mounted tank; trailer; 55 gallon drums on skid; etc.)

Indicate proposed dates for each period of cross country travel:

PLACER MINING METHOD (17)

☐ Mechanical Placer Mining (e.g., terrestrial open-cut operations with dozer or excavator)

Estimated cubic yards processed annually: _____

☐ Suction dredge ☐ Mechanical dredge (e.g., excavator or clam-shell)

List all suction and mechanical dredges. If information is not applicable, write "N/A." Attach extra sheet if necessary.

	Dredge 1		Dredge 2		Dredge 3	
Vessel ID (Name or Number)						
Vessel Dimensions						
Suction Dredge Intake Nozzle Diameter / Pump Size	Inches:	HP:	Inches:	HP:	Inches:	HP:
Mechanical Dredge Bucket Volume	Cubic Yards:		Cubic Yards:		Cubic Yards:	
Processing Rate	Yds.^{3}/Hr.:		Yds.^{3}/Hr.:		Yds.^{3}/Hr.:	
Wastewater Discharge Rate	GPM:		GPM:		GPM:	
Maximum Water Depth	Feet:		Feet:		Feet:	
Average Daily Operating Hours						
Operation on Sea Ice (Yes/No)	Yes ☐ / No ☐		Yes ☐ / No ☐		Yes ☐ / No ☐	

Location: ☐ Offshore / Salt Water ☐ Stream ☐ Pond connected to stream
☐ Pond isolated from stream ☐ Mine cut isolated from stream

Additional Dredges (include all information above):

List any APMAs that include additional dredges:_____.

EXPLOSIVES (18)

Will explosives be used? ☐ Yes ☐ No If "Yes", Indicate: Type:_____ Amount:_____.

FUEL AT MINE SITE (19)

Total Volume of Fuel Stored in 55 Gallon or Larger Containers:_____ Gallons

Indicate Distance Stored From Flowing Waters: _____ Feet (Minimum distance from naturally occurring water bodies required by DNR is 100 feet).

Are fuel containment berms around storage containers? ☐ Yes ☐ No Is berm area lined? ☐ Yes ☐ No

STRUCTURES / FACILITIES (20)

☐ Request use of existing facilities (Indicate number and size of each):

Area of Camp: Length _____ Feet Width _____ Feet

☐ Frame _____ ☐ Trailer _____ ☐ Tent/Tent Frame _____ .

☐ Request authorization to place temporary structures **(**Indicate number and size of each):

Area of Camp: Length _____ Feet Width _____ Feet

☐ Frame _____ ☐ Trailer _____ ☐ Tent/Tent Frame _____ .

☐ Camp authorization not needed

If camp is on private land, provide camp name: _____ and camp location: _____.

EXPLORATION TRENCHING (21)

(Indicate locations on sketch sheet and/or topographic map)

Estimated number of trenches to be excavated: _____.

Average Size: Length: _____ Feet Width: _____ Feet Depth: _____ Feet

How long will trenches be open? _____.

Trench Location and Mining Claim Information			
Trench ID on Map	ADL/BLM/USMS NUMBER	NAD 83 Datum - Coordinates can be obtained using Alaska Mapper http://dnr.alaska.gov/MapAK/.	
		Latitude	Longitude (approximate)

If more than 5 trenches, please provide data in tabular format (http://dnr.alaska.gov/mlw/forms/?tab=mining).

EXPLORATION DRILLING (22)

(Indicate locations on sketch sheet and/or topographic map)

Number of Holes To Be Drilled: _____ Type of Drill Used: _____.

Estimated Maximum Depth: _____ Feet Diameter of Holes: _____ Inches

Will water be used? ☐ Yes ☐ No

How Will Drill Holes Be Plugged Upon Completion? _____.

Placer Drill Hole Location and Mining Claim Information			
Drill Hole ID on Map	ADL/BLM/USMS NUMBER	NAD 83 Datum - Coordinates can be obtained using Alaska Mapper. http://dnr.alaska.gov/MapAK/	
		Latitude	Longitude (approximate)

If more than 5 holes, please provide data in tabular format (http://dnr.alaska.gov/mlw/forms/?tab=mining).

WATER USE AUTHORIZATIONS (23)

Water usage (including 100% recycle systems) may require authorization by either Temporary Water Use Authorization or a Water Right Permit or Certificate. Information provided below will be used to determine the quantity of water that you may be authorized to use for your mining operation. When estimating water quantities, please estimate withdrawal amounts typical of a dry summer and provide the maximum quantity that you may withdraw from a particular source (e.g. stream, pond, groundwater, etc.) in a season.

A Temporary Water Use Authorization application may be initiated from this APMA application unless a Water Right is requested. Please contact the ADNR, Water Resources Section at telephone number (907) 451-2790 if interested in a Water Right or for more information.

A. START-UP WATER AND MAKE-UP WATER:

Is water withdrawn from any lake, stream, creek, river, etc. (does not include recycling/settling ponds)? ☐ Yes ☐ No

What is the name(s) of the lake, stream, creek, river, etc.? _____

What are the months of water use needed (for example May 1st through October 31st)? _____

Start-up water: Is water required at the start of the season ***to fill*** your recycle/settling pond system?

☐ Yes (if **YES**, complete information below). ☐ No

Source: ☐ Groundwater gain from cut / Seepage infiltration from stream

☐ Diversion ditch from stream. Number of days diverting from stream for start-up water: _____

Water intake rate: _____ gpm _____ hrs/day

☐ Pump from stream. Number of days pumping from stream for start-up water: _____

Number of water pumps for start-up water: ___ Water intake rate (list for each pump): _____ gpm

_____ hrs/day

Make-up water: Is water required ***to maintain*** water level in your recycle/settling pond system?

☐ Yes (if **YES**, complete information below). ☐ No

Source: ☐ Groundwater gain from cut / Seepage infiltration from stream

☐ Ditch from stream. Number of days diverting from stream for make-up water: _____

Water intake rate:_____ gpm _____ hrs/day

☐ Pump from stream. Number of days pumping from stream for make-up water: _____

Number of water pumps for make-up: ____ Water intake rate (list for each pump): _____ gpm

_____ hrs/day Pump intake size: _____inches

B. RECYCLE/SETTLING POND SYSTEM.

Beaver ponds or other natural water features will not be permitted for use as settling ponds.

Is a pre-settling pond used?: ☐ Yes ☐ No Is recycle used?: ☐ Yes ☐ No

How many ponds are used in the recycle system? _____

Recycle pond is pond # _____ Settling pond is pond # _____

B. RECYCLE/SETTLING POND SYSTEM (continued).

Indicate Length (L), Width (W), and Depth (D) of each pond:

Pond # 1: L: _____ ft W: _____ ft D: _____ ft Pond # 2: L: _____ ft W: _____ ft D: _____ ft
Pond # 3: L: _____ ft W: _____ ft D: _____ ft Pond # 4: L: _____ ft W: _____ ft D: _____ ft
Pond # 5: L: _____ ft W: _____ ft D: _____ ft Pond # 6: L: _____ ft W: _____ ft D: _____ ft

Estimated hours per day that pump(s) will be used, return line size (in inches), operating pump rate (in gallons per minute), and water usage days per month:

Pump #1: _____ hrs/day _____inches _____gpm _____days/month
Pump #2: _____ hrs/day _____inches _____gpm _____days/month
Pump #3: _____ hrs/day _____inches _____gpm _____days/month

C. CAMP WATER USE.

Is camp water used? ☐ Yes ☐ No

Maximum number of persons present in camp at a time_____

Camp water source: ☐ Well ☐ Haul ☐ Stream ☐ Spring ☐ Lake

Name of water source (if any): _____.

Camp pump intake diameter: _____ Camp pump rate: _____ gpm _____hrs/day

D. EXPLORATION ACTIVITIES.

Is water required for exploration activities? ☐ Yes ☐ No

If **YES,** What types of exploration activities are being performed? ☐ Trenching ☐ Drilling

If **YES,** How many pumps are used in the exploration activities?_____ Estimated hours per day that pump(s) will be used, return line size (in inches), operating pump rate (in gallons per minute), and water usage days per month:

Pump #1: _____ hrs/day _____inches _____gpm _____days/month

A map of your requested drilling water sources is required with the following information:
-MTRS sections,
-stream reaches or other water sources (please label, including take points if known)
-and drill hole locations

E. SUCTION DREDGING.

If suction dredging activity is occurring please ensure that you have completed the dredge table in Section **(17) PLACER MINING METHOD.**

DAM **(24)**

☐ No dam required ☐ Existing ☐ To be constructed

Purpose: ☐ Makeup water pond ☐ Settling/recycle pond ☐ Stream diversion ☐ Other:_____

Length: _____ ft Height: _____ ft Width At Crest: _____ ft Width At Base: _____ ft
Note: Height should be measured from the lowest point at either the upstream or downstream toe of the dam to the crest of the dam.

Water impoundment capacity (if applicable and known):_____acre-feet

WASTEWATER DISCHARGE PERMIT APPLICATION **(25)**

All mechanical placer mine, suction dredge, and mechanical dredge operations that discharge to a water of the U.S. require an Alaska Pollutant Discharge Elimination System (APDES) permit from DEC.

Do you want this APMA to act as an application or renewal for any of the following APDES general permits (GPs):

Mechanical Placer Miners GP* (open-cut terrestrial operations):	☐ Yes	☐ No
Small-Size Suction Dredge GP (nozzle diameter of 6" or less):	☐ Yes	☐ No
Medium-Size Suction Dredge GP (nozzle diameter greater than 6" to 10"):	☐ Yes	☐ No
Norton Sound Large Dredge GP (nozzle diameter greater than 10" or mechanical dredge):	☐ Yes	☐ No

Waterbody the discharge flows directly into, or would potentially flow: _____

Approximate coordinates of <u>mine site</u>:

Latitude: _____ Longitude: _____

Source (e.g., DNR - Alaska Mapper): _____ Datum: _____

*Mechanical placer operations that do not elect coverage under the Mechanical Placer Miners GP may be required to obtain coverage under the Multi-Sector General Permit for Storm Water. Contact DEC for additional information.

Optional* - Mixing Zone Request for Mechanical Placer Mine Operations

Do you wish to apply for a mixing zone and modified turbidity limit from DEC? ☐ Yes ☐ No

If a mixing zone is requested, provide the following:

Maximum Effluent Flow anticipated from your operation _____ (GPM) [must be greater than zero (0)]

Distance to nearest downstream drinking water source _____ ; placer mine water intake _____ ; and placer mine water discharge _____.

*The fee for an authorized mixing zone is $150 annually. A mixing zone authorizes an increase in the permit's turbidity limit based on available dilution from the surface water. Permittees without mixing zones must meet the water quality standard for turbidity at the point of discharge into the surface water.

Certification Statement – applicable only to information required for DEC authorizations (required for all DEC permit or mixing zone applicants)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

<u>Signature of Responsible Party</u>: _____.

<u>Responsible Party Name (First Last, Position) - Printed:</u> _____ .

<u>Business Name (if applicable) - Printed:</u> _____.

WETLAND JURISDICTIONAL DETERMINATION (26)

A Wetland Jurisdictional Determination (Wetland JD) determines if a USACE "404" permit is required. A JD is required every 5 years, or, when a new area is impacted. Certain information is required. Please submit Wetland JD information with brand new APMAs and renewed Multi-Year APMAs.

1. A wetland jurisdiction is required under Section 404. The Corps will conduct an offsite Wetland JD when you provide a photo of your operation (a.) and answer a few other questions (b.)

a. Photograph of your operation, with outline showing all activity and facility locations for the next five years. Photos must be clear, sharp, and reproducible. Sources of photos include (Please check)

- ☐ Aerial photos from your land manager; from a website or other sources (Alaska Mapper printouts are generally not acceptable.) Please outline your entire footprint on the photo.
- ☐ Photos taken by you. On a map, mark locations of where you took photos. Please provide all of the following:
  - ☐ vegetation on and around your operation
  - ☐ soil profile (from a bucket or shovel cut), Include an object for scale.
  - ☐ creek and riparian area (if within your plan of operation)
  - ☐ photos taken from top of hill or other high location to get an aerial view
  - ☐ general photos of your operation

b. Other Questions - Do you have: (check all that apply):

Vegetation: ☐ black spruce ☐ shrubs ☐ tussocks ☐ muskeg ☐ Other

Non-pay Overburden: ☐ None ☐ Gravel ____ feet ☐ Organic material____feet

Hydrology - Do you have:

- ☐ ponds that have naturalized
- ☐ other areas with saturated soil, or standing water
- ☐ frozen ground (permafrost soils)

How much of your proposed operation area has been previously mined? _____ Acres

What is the total size of your operation (including new areas)? _____ Acres

How many acres of black spruce, muskeg, frozen ground, etc.? _____ Acres

How many acres do you think are uplands?_____ Acres

2. Hire a wetland consultant to do a JD for you.

3. Operators working in uplands do not need a Corps permit. Uplands include areas such as old tailings or other well drained areas. As a service, Corps will supply an email stating that 'No Permit is Required' to operators who supply photos of their operations in uplands.

Your signature indicates acceptance of a Preliminary Jurisdictional Determination. (PJD) A PJD is standard for remote operations, however it is not appealable. You may at any time provide more information to clarify your PJD. Corps will do an Approved JD when your operation is in uplands or a consultant supplied JD is submitted.

Applicant
or Agent: _____

Print Name Signature Date

STREAM DIVERSON (27)

A MAP OF COMPLETE STREAM DIVERSION IS REQUIRED: Plan Map of Operation included in the APMA should show the entire length of the diversion (i.e. where the water is diverted from the natural stream channel to where it returns to the natural stream channel).

Please note: If you have a stream diversion structure; this structure may also qualify as a dam and be subject to the Alaska Department of Natural Resources Dam Safety Program per definitions provided in AS 46.17.900(3). Complete Section 24 (regarding a Dam) of this APMA. If you require further regulatory guidance regarding dams, please contact our Dam Safety and Construction Unit, Dam Safety Engineer at telephone number 907-269-8636 or for more information go to the Alaska Dam Safety Program website at: http://dnr.alaska.gov/mlw/water/dams/index.cfm

Is stream diversion required? ☐ Yes (if **YES**, complete information below). ☐ No

☐ Existing (Date Constructed_____) ☐ To Be Constructed (Date_____)

If a diversion is required or pre-existing, please contact your local ADF&G, Division of Habitat for Fish Habitat Permitting information. To facilitate permit issuance, please provide the following information:

Is Stream Diversion? ☐ Permanent ☐ Temporary _____ year(s) _____ months

Will diversion be reclaimed annually prior to freeze-up or be retained throughout the mine life?

☐ Annually reclaimed/returned to natural stream ☐ Maintained throughout mine life

Dimensions of existing stream in diversion area:
Length _____(ft) Top Width___(ft) Bottom Width___(ft) Depth___(ft) Floodplain Width_____(ft)

Dimensions of proposed diversion:
Length _____(ft) Top Width___(ft) Bottom Width___(ft) Depth___(ft) Floodplain Width_____(ft)

Substrate type in diversion area: ☐ Bedrock ☐ Boulder ☐ Cobble ☐ Gravel ☐ Sand ☐ Silt/Clay

Note: Diversion should approximate the existing stream in terms of meander bends, length, depth, stream width, and floodplain width.

(Please provide plan and profile diagrams of diversion in Section 28, PLAN MAP OF OPERATION)

PLAN MAP OF OPERATION

(28)

(Attach additional sheets, along with detailed explanations as necessary)

2014 ANNUAL RECLAMATION STATEMENT
Placer Mining and Suction Dredging

(29)

APMA # : _____.

Complete and return this statement by December 31, 2014. If you did not operate, fill in name, check bottom box, sign and return form.
In accordance with AS 27.19 (Reclamation Act):

I, _____ hereby file an annual reclamation statement for the 2014 mining operation described in subject Application for Permits to Mine in Alaska. (Submission of this statement does not constitute reclamation approval.)

Volume of material disturbed in 2014: _____ cubic yards (includes strippings and processed material).

Sluice days last season: _____ Cubic yards of material processed daily: _____ Annually : _____.

Total acreage disturbed in 2014: _____ acres. (Includes stripped areas, mining cuts, overburden and tailing stockpiles and disposal areas, temporary stream diversions, stream bypasses, and settling ponds). Federal operators should include area of camp and access roads.

Length _____ feet and Width _____ feet of stream diversion.

Stream diversion: ☐ Temporary ☐ Permanent (check one).

Total area reclaimed in 2014: _____ acres.

Total un-reclaimed acres: _____ (This should match "total acreage currently disturbed" on the 2015 reclamation/signature page)

For the areas reclaimed, the following reclamation measures were used (check only measures that were used). You must include photographs or videotapes of the completed reclamation work:

☐ Spread and contoured tailings

☐ Spread topsoil, vegetation, overburden muck or fines on the surface of contoured tailings

☐ Reestablished flood plain with stream channel in stable position

☐ Backfilled and reclaimed temporary stream diversions

☐ Camp removed, cleaned up and left free of debris

Other reclamation measures taken:

☐ I did not operate in 2014 and therefore did not conduct reclamation.

_____

Signed Date

Note: Submittal of this form meets the Army Corps of Engineers requirement for an annual report

ANNUAL RECLAMATION REPORT
FOR HARDROCK EXPLORATION REQUIREMENTS

The Alaska Reclamation Act AS 27.19 requires operations that disturb less than five acres to file an Annual Reclamation Statement. DNR- Mining requests that you do so by December 31st of each year that the permit is in effect. Operations that will disturb more than five acres are required to have a Reclamation Plan Approval and to submit an Annual Exploration Report detailing the exploration and reclamation actions taken during the year. Please ensure that your Annual Hardrock Exploration Report contains the following information:

- A written narrative describing your activities and the reclamation measures taken at all disturbances.
- A topographic map showing the portion of the claim block where surface disturbing exploration activities have occurred. The plan map should be at a scale of 1"= 1 mile, or other appropriate scale sufficient to illustrate: existing trails and roads; new trails and roads; drill hole locations (other than shallow auger holes); trench locations; the camp location; and, any other surface disturbances (please distinguish between reclaimed and unreclaimed features).
- A photo of representative sections of any new road or trail construction.
- A detailed description of the methods used to plug the drill holes.

DEPENDING ON YOUR LEVEL OF ACTIVITY, THE FOLLOWING REPORTING REQUIREMENTS INCLUDE A REQUEST FOR DATA IN TABULAR FORMAT

For reclamation reporting we require that operators submit requested reclamation information in tabular format. **Please use the MS Excel Workbook provided by DNR-Mining.** The table is available for download at http://dnr.alaska.gov/mlw/forms/ (electronic copies can be submitted via e-mail to dnr.fbx.mining@alaska.gov, dnr.anch.mining@alaska.gov or provided on other media with application packet). Contact DNR-Mining if you have questions or need assistance.

- A table of drill sites with Latitude & Longitudes in NAD 83. Included with the sites list if fuel storage is on site, if a tundra mat is present, where trash and sanitary facilities are located, if drill additives are in use, if artesian zones are encountered and if water is discharged from the drill site. Also list whether the drill site has been reclaimed. If a drill site has been reclaimed, please include how the hole has been plugged and cemented (may reference description for more detail), if there is a standing pipe, if the site has been revegetated and the date that the reclamation occurred.
- A table of sump pit sites with Latitude & Longitudes in NAD 83. Included with the sites list if there is a discharge trench and the dimensions of the pit. Also list whether the sump pit has been reclaimed.
- A table of drill water supply sites with Latitude & Longitudes in NAD 83. Included with the sites list what kind of site it is (lake, pond, stream, etc.), intake size, mesh size on intake, if the intake is completely submerged, hose color, average gallons per minute consumed and start up and stop dates.
- A photo, with appropriate caption including reference to drill site table location, of each reclaimed drill site and exploration trench.
- A list of Mining Claims by ADL# or BLM # that contain unreclaimed disturbance at the end of the year and a total acreage that remains unreclaimed.

Hardrock Exploration Statement of Need:

Alaska's mineral industry is important to the state's economy and its health is tracked by the Department of Natural Resources in part through a voluntary questionnaire <http://www.dggs.alaska.gov/minerals_questionnaire>. Your answers provided in the questionnaire are crucial to make an accurate compilation of yearly exploration and mining activities in Alaska, provided in annual *Alaska's Mineral Industry* reports <http://www.dggs.alaska.gov/sections/minerals/>.

Please consider submitting important information such as yearly exploration expenditures, which are not collected through any other agency. All information on the questionnaire will be considered to be confidential, unless items are clearly marked as publicly available or are already available in the public record.

RECLAMATION PLAN (30)

☐ RECLAMATION PLAN (Disturbed Area 5 Acres Or Greater or BLM Notices)

☐ LETTER OF INTENT TO DO RECLAMATION (Disturbed Area Less Than 5 Acres)

In accordance with Alaska Statute 27.19, reclamation is required of all mining operation. Reclamation bonding is required of operations with disturbance of 5 acres or greater. Completion of this application will meet the requirements for a "Reclamation Plan" for operations 5 acres and larger in size and "Letter of Intent To Do Reclamation" for operations under 5 acres. If you do not intend to use the reclamation methods presented below, please provide additional information concerning your plans for reclamation under separate attachments.

BLM requires that the reclamation plan be consistent with §43 CFR 3809.420, Performance Standards for the Surface Management regulations. **Refer to 43 CFR 3809 or the BLM minerals website available at http://www.blm.gov/ak/st/en/prog/minerals.html for more information on what is needed for a reclamation plan.**

Total acreage currently disturbed: _____ acres. This should match: "Total Unreclaimed Acres" on your 2014 Annual Reclamation Statement for Small Mines, or line #7 on your 2015 Bond Pool Renewal Form. Disturbed ground includes all unreclaimed mining and exploration activity (excluding camps and roads) since October 1991. Federal operators must include areas of camps and roads.

New acres to be disturbed in 2015 _____ acres. Total acreage (currently disturbed plus new acres): _____ acres.

Acreage disturbed by land status: _____ State (general) _____ State (Mental Health) _____ Private _____ Federal

Total acreage to be reclaimed in 2015: _____ acres; and:
☐ Reclamation conducted concurrently with the exploration. ☐ Reclamation will be conducted at the end of the exploration season

Total volume of material to be disturbed in 2015: _____ cubic yard. (Including strippings and overburden to be removed. (1 acre of disturbance is equal to 4,840 square yards).

The following reclamation measures shall be used. (These measures are required by law. Those that do not apply may be crossed out; but, an explanation must be given as to why these measures are not necessary at your site.)

- Topsoil, vegetation, and overburden muck, not promptly redistributed to an area being reclaimed, will be individually separated and stockpiled for future use. This material will be protected from erosion and from contamination by acidic or toxic materials and will not be buried by tailings.
- The area reclaimed will be reshaped to blend with the surrounding area using tailings, strippings, and overburden and be stabilized.
- Stockpiled topsoil, overburden muck, will be spread over the contoured exploration sites to promote natural plant growth such that the area can reasonably be expected to revegetate within five years. Stockpiled vegetation will be spread over topsoils.
- Exploration trenches will be backfilled. Brush piles, stumps, topsoil, and other organics will be spread on the backfilled surface to inhibit erosion and promote natural revegetation. Exploration trenches shall be flagged and signs posted to notify the public of the existence of the open trenches. All exploration trenches shall be reclaimed by the end of the exploration season in which they are constructed, unless specifically approved by the DMLW.
- Shallow auger holes (limited to depth of overburden) shall be backfilled with drill cuttings or other locally available material in such a manner that closes the hole to minimize the risk to humans, livestock and wildlife.
- All drill hole casings shall be removed or cut off at, or below, ground level. All drill holes shall be plugged by the end of the exploration season with bentonite holeplug or equivalent slurry, for a minimum of 10 feet within the top 20 feet of the drill hole. The remainder of the hole will be backfilled to the surface with drill cuttings. If water is encountered in any drill hole, a minimum of 7 feet of bentonite holeplug or equivalent slurry shall be placed immediately above the static water level in the drill hole. Complete filling of the drill holes, from bottom to top, with bentonite holeplug or equivalent slurry is also permitted and is considered to be the preferred method of hole closure during which they are drilled, unless otherwise specifically approved by the DMLW.
- If artesian conditions are encountered, the operator shall contact the DMLW (Kindra Geis (907) 451-2790) or the DEC (Tim Pilon at 907 451-2136) for hole plugging requirements.
- All buildings and structures constructed, used or improved, on State land, will be removed, dismantled, or otherwise properly disposed of at the completion of exploration. The campsite will be cleaned up and left free of debris. In consideration of potentially significant historic properties/cultural resources, please do not remove or disturb any buildings, structures, objects, or artifacts that were located on the site prior to the current operation without preauthorization from SHPO (Contact Mckenzie Johnson of SHPO at (907) 269-8726 or mckenzie.johnson@alaska.gov).

IMPORTANT: 1. Alternative reclamation measures may be approved if the reclamation measures presented above are not applicable to your site. Please explain in separate correspondence. Submit a sketch and describe additional reclamation measures you propose to conduct at your operation. Reclamation measures must comply with AS 27.19.
2. Federal land managers may require reclamation measures different to those identified above.

BONDING: In accordance with AS 27.19, bonding is required for all operations having a mined area of ≥five acres on State Land. This area must be bonded for $750.00 per acre, unless the miner can demonstrate that a third party contractor can do the needed reclamation for less than that amount. A Statewide bonding pool has been established and may be joined by completing the bond pool application form. No reclamation plan approval goes into effect until the bonding pool deposit and annual nonrefundable fee are paid. Federal land managers may have additional bonding requirements. Use bond form to calculate area of disturbance for bonding.

_____. Printed name (Applicant)	Relationship to Claim(s) ☐ Owner ☐ Lessee ☐ Operator ☐ Agent For: _____	Date: _____. APMA #: _____
_____ Signature (Applicant)		

CHECK LIST FOR COMPLETING MAP(S) OF OPERATIONS

Sketch your complete plans in detail, and included the following items as necessary

[ ] NORTH ARROW

[ ] SCALE BAR

[ ] TOPOGRAPHY – USGS enlargements or equivalent

[ ] CLAIM LOCATIONS – Only indicate ADL/BLM numbers and boundaries of claims where activities occur

[ ] STREAMS – Transfer names as necessary

[ ] IN STREAM ACTIVITIES AND STREAM CROSSINGS

[ ] MINING CUTS - Indicate dimensions, and sequence of mining, active cuts, areas currently stripped, and areas planned to be strip, areas to be reclaimed, and areas previously reclaimed

- [ ] SIZE OF VALLEY - indicate, with dotted lines, the approximate width of the valley floor
- [ ] OVERBURDEN STOCKPILES – include dimensions
- [ ] TAILINGS DISPOSAL AREAS

[ ] SUCTION DREDGE LOCATIONS

[ ] EXPLOSIVE STORAGE

[ ] FUEL STORAGE AREA - indicate location with respect to flowing waters

[ ] EXISTING AND PLANNED ROADS AND TRAILS – Other than your access to the claim block

[ ] EXISTING AND PLANNED TRENCHES

[ ] EXISTING AND PLANNED DRILL HOLES

[ ] TAKE POINTS FOR WATER - Label points for camp, mechanical placer mining, and any other site

[ ] DAMS

[ ] SETTLING PONDS - dimensions, sequence of use, discharge location, and recycle pump

[ ] CAMP FACILITIES or STRUCTURES indicate dimensions, type, and purpose of each structure

[ ] SANITARY AND SOLID WASTE – for example your outhouse; trash collection; etc

[ ] STREAM BY-PASSES

[ ] CROSS SECTION

[ ] SKETCH OF SUCTION DREDGE/BUCKET DREDGE (Offshore Nome operators only)

Example Narrative

Mechanical Placer Mining:

The mining operation is designed to economically recover gold and complete acceptable reclamation. The mine layout is directly related to reclamation. Mining will progress in the following steps -- see sketch:

1) A stream by-pass, 800' x 10', will be constructed on the left limit (facing downstream) of the operation. The [temporary or permanent] by-pass will be constructed to accommodate high water events (at least a 2-year flood interval) including break-up without bank erosion and will remain in place for _____ years or _____ mining seasons.
2) Vegetation, including trees, brush, tundra, etc., will be separated from topsoil and overburden gravel and stockpiled in such a manner as to avoid erosion. Stockpiles will be 200' x 25' x 15', located on the right limit of each cut.
3) Topsoil will be separated and stockpiled next to the vegetation stockpiles. A space will be maintained between the stockpiles so that topsoil can be re-spread before the vegetation. Each topsoil stockpile will be 200' x 25' x 15', located on the right limit of each mining cut.
4) Gravel overburden will be used to reconstruct the stream channel and cap ponds. Gravel will be stored in the following manner:
    a) Gravel from each cut will be pushed into the previously mined cut forming a dike for the next recycle pond. The dike will be constructed in such a manner that the largest portion of the pond will be immediately below the processing plant on the right limit. This places the pond sediment away from the reclaimed stream channel. The return portion of the pond will be narrow, one dozer blade width, forcing the fines to settle in the large pond area.
    b) A stockpile of gravel, 200' x 25', will be placed on the left limit of the mine cuts and used to reconstruct the stream channel in the left limit of the ponds.
5) Corse tailings will be pushed onto the pond dike and used to cap ponds.

Mechanical Placer Mining Reclamation:

Reclamation will progress in the following steps:

1) Ponds will be drained slowly with care taken not to lose sediment.
2) Reestablished streams will not run through reclaimed settling ponds. The stream will be reestablished to the left limit of the ponds (NO streams running through the settled fine material). All sediment will be bailed out and a stable stream channel will be established using tailings stockpiled in the center and left limit of the ponds. The flood plain will be wide enough to prevent erosion during high water events and maintain fish passage. For this stream, the reconstructed flood plain will consist of a stream bed 20’ wide with side banks 20’ wide. The banks will have a 20:2 foot slope. The by-pass will be filled and vegetation respread.
3) The remaining tailing stockpiles will be used to cap the large portion of the pond and/or stabilize any remaining pond areas from erosion. To minimize erosion, final shaping will be done across the slope rather than up and down.
4) Banks of ponds will be flattened out to allow natural revegetation and avoid erosional degradation. The banks will have a slope of 20:1 feet.
5) Topsoil will then be respread over the tailings.
6) Finally, vegetation will be respread over topsoil. The vegetation will trap seeds and moisture as well as reduce erosion.

Example Narrative

Hardrock Exploration:

1) Access to drill and / or trench sites, including type and length of access routes. Include a reference to the map showing existing and new roads, trails, airstrips, river routes and landings.
2) Exploration activities including type(s) of equipment to be used, when and where activities will occur.
3) Measures taken to prepare for reclamation upon completion of exploration activities, such as stockpiling organic materials.
4) Drill sites. Include pad construction methods. Include a reference to the map showing drill site locations.
5) Drill fluid disposal. Include MSDS sheets.
6) Trench excavation methods and location. Include a reference to the map showing trench locations.
7) Fuel handling at exploration sites (drill pads and trenches) and off site (camp or base of operations).
8) Indicate if there is a spill prevention and response plan in place.
9) Water use. Reference the map showing water withdrawal locations. State estimated daily water use and measures planned to prevent fish entrapment.
10) Cultural resource clearing. If needed, indicate measures take to avoid disturbance archaeological sites. Contact Mark Rollins at the State Historic Preservation Office if you need assistance determining whether or not you need to address cultural resource clearing. (907) 269-8722 or mark.rollins@alaska.gov

Hardrock Exploration Reclamation:

1) Plan for reclamation of disturbed areas in wetlands and uplands.
2) Drill hole plugging methods and materials.
3) Trench reclamation.
4) Trash disposal.
5) Methods proposed to promote the establishment of vegetation (measures can including promotion of natural growth by stockpiling & redistribution of organic material).
6) Disturbance calculations. Describe how acres of disturbance are calculated for drill pads, trenches, roads, trails and camps).
7) For bonding purposes, please indicate the amount of existing and proposed disturbance

Hardrock Exploration Statement of Need:

Alaska's mineral industry is important to the state's economy and its health is tracked by the Department of Natural Resources in part through a voluntary questionnaire <http://www.dggs.alaska.gov/minerals_questionnaire>. Your answers provided in the questionnaire are crucial to make an accurate compilation of yearly exploration and mining activities in Alaska, provided in annual *Alaska's Mineral Industry* reports <http://www.dggs.alaska.gov/sections/minerals/>.

Please consider submitting important information such as yearly exploration expenditures, which are not collected through any other agency. All information on the questionnaire will be considered to be confidential, unless items are clearly marked as publicly available or are already available in the public record.

Example Narrative

Suction Dredging:

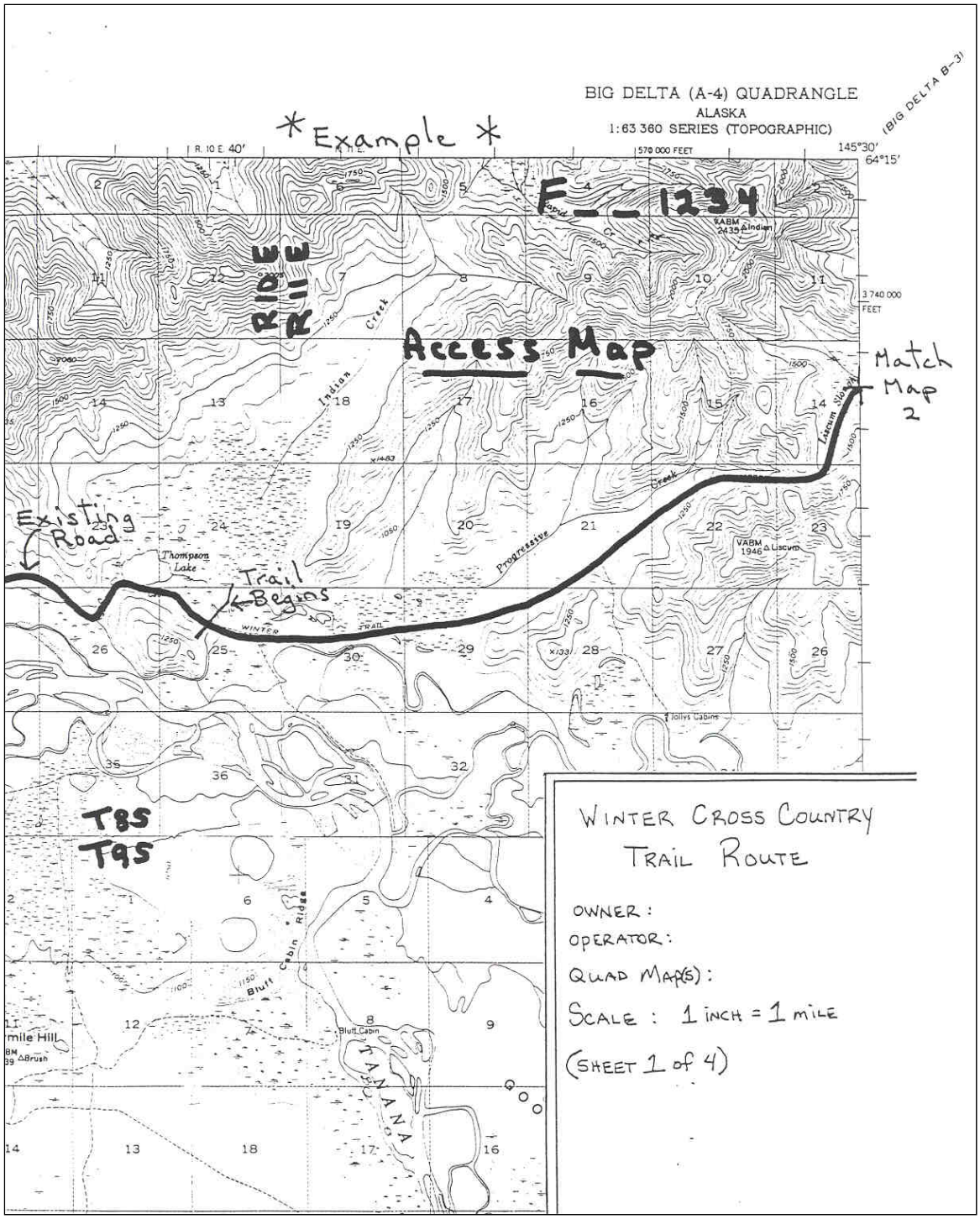
The mining operation is designed to economically recover gold and complete acceptable reclamation. The mine layout is directly related to reclamation. Mining will progress in the following steps -- see sketch:

1) We will be operating a suction dredge with an 8" nozzle and a 36 hp motor. The maximum depth will not exceed 10 feet. Material will be washed and processed in 2'X 4' sluice box and deposited back on the water body floor.
2) Operations are beginning early June or as soon as the ice gone and will continue throughout the mining season.
3) Access to mine site is via all season road. We will launch our 16' boat from public boat launch and travel upstream to mining claims. Camping structures will consist of a removable wall tent.

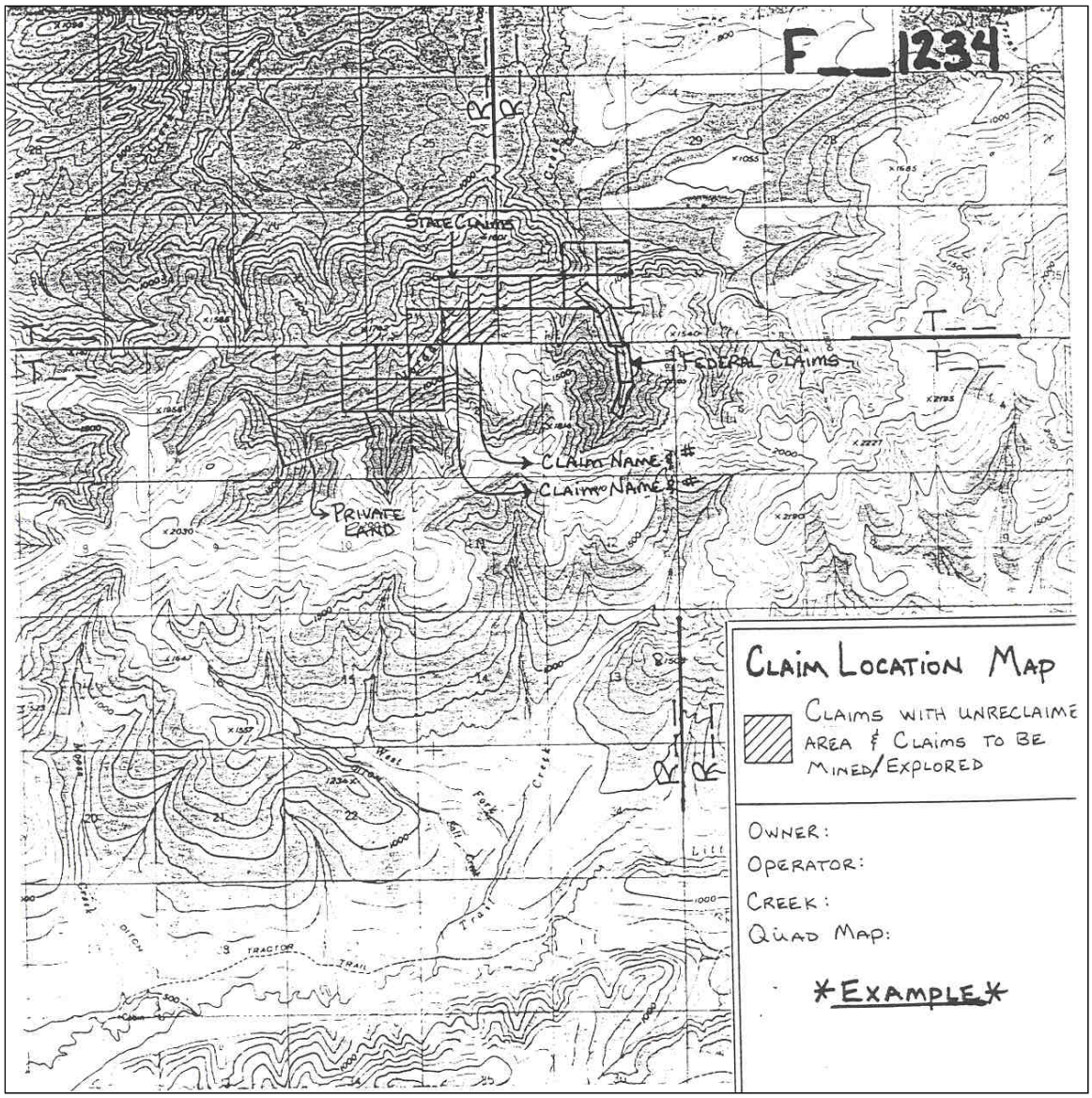
Suction Dredging Reclamation:

Reclamation will progress in the following steps:

1) Reclamation will be concurrent with mining. All dredge tailings will be returned to approximately the same location from which they were dredged. Reclamation shall consist of leveling or contouring any tailing piles, contouring gravel bar and stream bed tailings in a manner that will approximate the adjacent bottom surface.

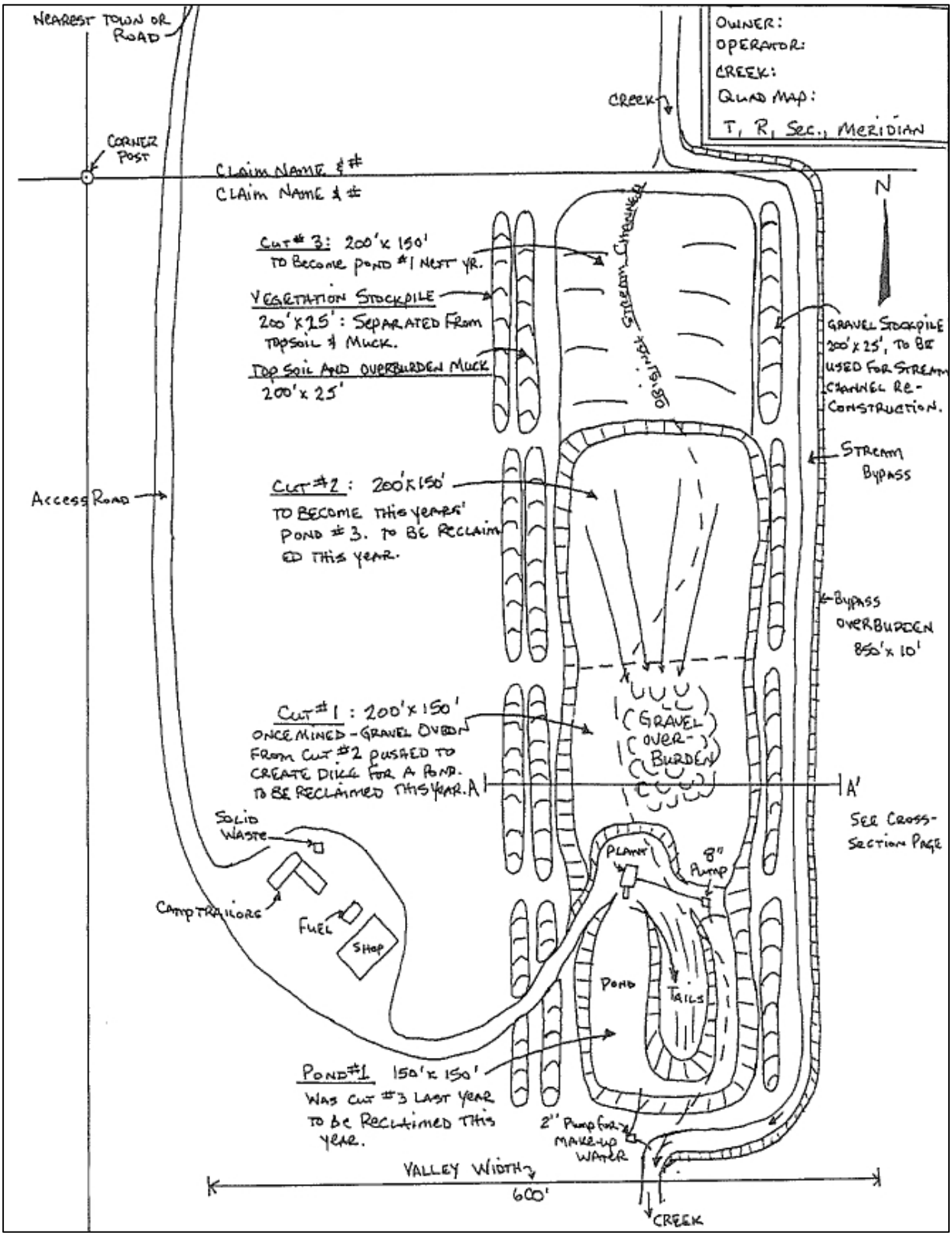


Example of Access Map



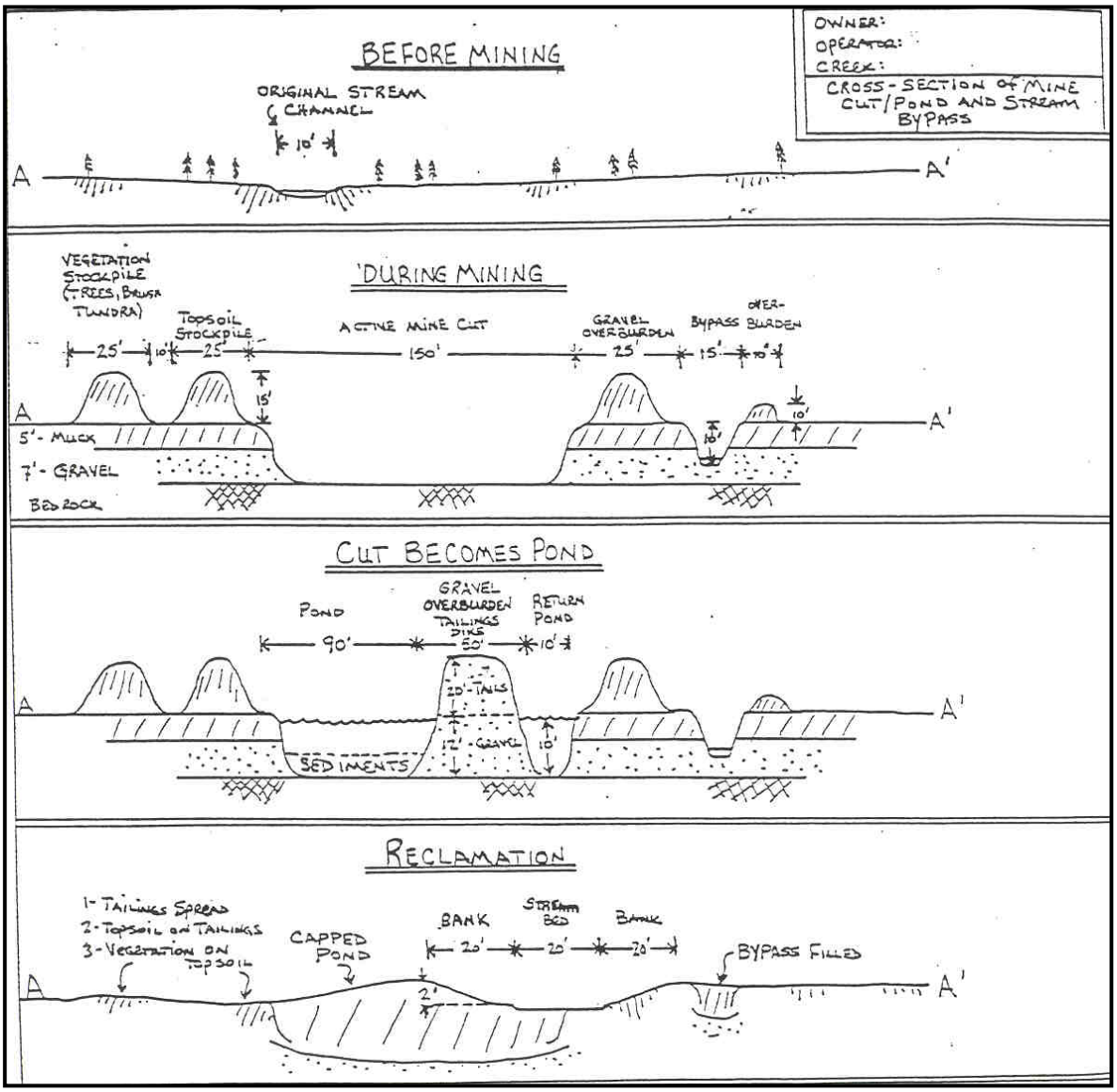
Example of Claim Location Map

Example of Plan of Mechanical Placer Mining



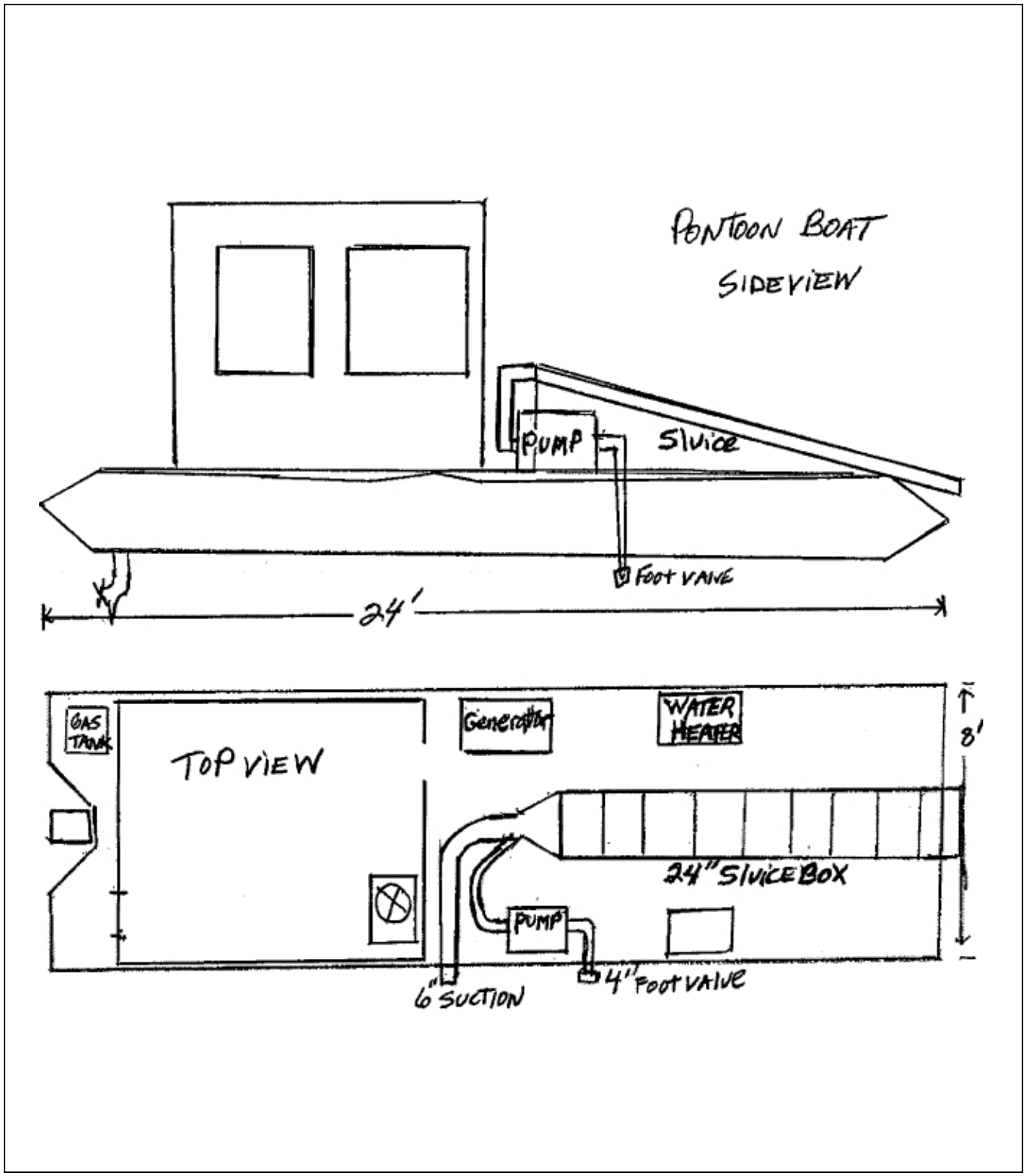
(Attach additional sheets and narrative as necessary)

Example of plan of operations cross-section sketch sheet



(Attach additional sheets and narrative as necessary)

Example of dredge sketch (Offshore Nome Only)



STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
STATE WIDE BOND POOL FORM

APMA # _____.

_____.
Name

_____.
Mailing Address

_____ _____ _____.
City State Zip Code

Submits unto the State of Alaska, Department of Natural Resources, the sum of

$ _____ DOLLARS

for payment into the State Wide Bonding Pool to meet the bonding requirements of Alaska Statute 27.19 for mining activity located on claim numbers

_____.

These claims are located within legal description (Township, Range, Section, Meridian

_____.

This bond amount was calculated as follows:

For **Federal Claims**: The total area of the mining operation, including camp site, access roads, unreclaimed areas, and areas to be stripped for mining next season is _____ acres. Acreage should be rounded to the next whole acre. This acreage must include all areas disturbed by mining operations after January 1, 1981, that have not been approved as reclaimed by BLM. If a mining operation disturbs a previously mined area, that area must also be included in the acreage to be bonded.

For **State and Patented Claims**: The active mining disturbance, not including camp and access roads is _____ acres (acreage should be rounded to the next whole acre). This includes all areas that are part of the mining operation; including stripped areas, mining cuts, overburden and tailing stockpiles and disposal areas, temporary stream diversions, stream bypasses, and settling ponds. This acreage must include all areas disturbed by a mining operation after October 15, 1991 that have not been approved as reclaimed by ADNR. If a mining operation disturbs a previously mined area, that area must also be included in the acreage to be bonded.

Refundable bond deposit (new): _____ acres X $112.50 = $ _____.

Nonrefundable bond pool annual fee (new): _____ acres X $ 37.50 = $ _____.

Total $ _____.

Make check payable to 'Department of Natural Resources'. Sign and return form with applicable fees to: DNR - Mining: 550 W. 7th Ave. Suite 900B, Anchorage, AK 99501-3577 or 3700 Airport Way, Fairbanks, AK 99709-4699.

_____
Signed - Miner Date

_____
ADNR - Division of Mining, Land & Water Date

_____
BLM - Bureau of Land Management Date

AMENDED ACREAGE

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
STATE WIDE BOND POOL FORM

APMA # _____.

_____.

Name

_____.

Mailing Address

_____.

City State Zip Code

Submits unto the State of Alaska, Department of Natural Resources, the sum of
$_____ DOLLARS

for payment into the State Wide Bonding Pool to meet the bonding requirements of Alaska Statute 27.19 for mining activity located on claim numbers

_____.

These claims are located within legal description (Township, Range, Section, Meridian

_____.

This bond amount was calculated as follows:

For **Federal Claims**: The total area of the mining operation, including camp site, access roads, unreclaimed areas, and areas to be stripped for mining next season is _____.
acres. Acreage should be rounded to the next whole acre. This acreage must include all areas disturbed by mining operations after January 1, 1981, that have not been approved as reclaimed by BLM. If a mining operation disturbs a previously mined area, that area must also be included in the acreage to be bonded.
For **State and Patented Claims**: The active mining disturbance, not including camp and access roads is _____ acres (acreage should be rounded to the next whole acre). This includes all areas that are part of the mining operation; including stripped areas, mining cuts, overburden and tailing stockpiles and disposal areas, temporary stream diversions, stream bypasses, and settling ponds. This acreage must include all areas disturbed by a mining operation after October 15, 1991 that have not been approved as reclaimed by ADNR. If a mining operation disturbs a previously mined area, that area must also be included in the acreage to be bonded.

Original acreage bonded:_____.

New acreage bonded:_____.

Refundable bond deposit (new): _____ acres X $112.50 = $ _____.

Nonrefundable bond pool annual fee (new): _____ acres X $ 37.50 = $ _____.

Total $ _____.

Grand total of bonded acres:_____.
Make check payable to 'Department of Natural Resources'. Sign and return form with applicable fees to: DNR - Mining: 550 W. 7th Ave. Suite 900B, Anchorage, AK 99501-3577 or 3700 Airport Way, Fairbanks, AK 99709-4699.

_____
Signed – Miner Date

_____
ADNR - Division of Mining, Land & Water Date

_____
BLM - Bureau of Land Management Date

STATE OF ALASKA, DEPARTMENT OF NATURAL RESOURCES
STATE WIDE BOND POOL RENEWAL FORM
FOR 2015 OPERATIONS

APMA # _____.

Name

Mailing Address

Submits to the State of Alaska, Department of Natural Resources, a renewal of reclamation bonding in accordance with AS 27.19 for mining activity on claim's:_____.

located in T._____.,R._____., Sections _____.,_____.M.

The amount of the refund or amount owed was calculated as follows:

1. Number of acres bonded in 2014: _____. acres
2. Total number of acres disturbed in 2014? _____. acres

This includes unreclaimed acreage from previous years, October 1991 to present, for state or private lands, and 1981 to present for federal claims. On federal claims include area of camp and access roads.

Bonding credits carried forward from 2014 to 2015:

3. Number of acres bonded in 2014 but not disturbed: _____.acres x $ 112.50 = $_____.
   (1 minus 2 above)
4. Number of acres reclaimed in 2014 and approved by BLM/DNR (must submit Bond Release Application for State claims, when field inspection was not completed for reclaimed area -- (PHOTO/VIDEO DOCUMENTATION REQUIRED.) _____.acres x $ 112.50 = $_____.
5. Dollar total of lines 3 + 4: $_____.

Bonding obligations for 2015:

6. Number of acres disturbed but not bonded in 2014: _____.acres x $ 150.00 = $_____.
7. Total number of <u>all</u> unreclaimed acres: _____.acres x $ 37.50 = $_____.
   (line 7 should match "total acreage currently disturbed" on your 2015 Reclamation Plan. (2 minus 4 above)
8. New acres to be disturbed in 2015: _____.acres x $ 150.00 = $_____.
9. Dollar total of lines 6 + 7 + 8: $_____.
10. Total acreage bonded in 2015 (7 + 8): _____.acres

If line 5 is larger than line 9 enter the difference here $ _____.. This amount will be refunded.

If line 9 is larger than line 5, the difference is due DNR $ _____.. Make check payable to: DEPARTMENT OF NATURAL RESOURCES.

_____
Signed – Miner Date

_____
ADNR - Division of Mining, Land & Water Date

_____
BLM - Bureau of Land Management Date

NOTICE OF OPERATOR AUTHORIZATION -- STATE MINERAL LOCATIONS

All operators or lease holders submitting APMAs for operations on State mineral locations must submit a "Notice of Authorization" from the owner of record. This notice of authorization must name the operator and leaseholder (if different), the claims(s) by Name and ADL number(s), and the time frame (beginning and ending dates) for which the authorization remains in force. The Division of Mining, Land & Water will not issue any mining permits until we receive this Notice of Authorization. **Please include it with your APMA**.

OPERATOR AUTHORIZATION

I,_____, OWNER of state claim(s) :

Claim Name	**ADL Number**	**Claim Name**	**ADL Number**	**Claim Name**	**ADL Number**
_____	_____	_____	_____	_____	_____.

(Attach additional sheet if necessary)

Have authorized _____.

Address of Operator_____.

to operate on these claims from___/___/___ to ____/____/_____

Owner's Signature _____ Date _____

NOTARY

Subscribed and sworn to before me this _____ day of_____, 20___.

For (owner)

(Signature of Notary)_____.

My commission expires:

OR (If the LESSEE and OPERATOR are not the same, both sections must be completed)

I,_____, LESSEE of state claim(s) :

Claim Name	**ADL Number**	**Claim Name**	**ADL Number**	**Claim Name**	**ADL Number**
_____	_____	_____	_____	_____	_____

(Attach additional sheet if necessary)

have authorized _____to operate on these claims from___/___/___ to ___/___/___**.**

Lessee's Signature _____ Date_____

Lessee's Address _____.

NOTARY:

Subscribed and sworn to before me this _____ day of_____, 20 ___.

For (Lessee)

(Signature of Notary) _____.

My commission expires:

Appendix B – Potential Material Sources for the Mainline

Table 4
Potential Material Sites for the Project
(Sites located less than 35 miles from the Mainline centerline)[1]

No.	Type of Site	Approximate Rev B MP	Site Name / Location	Land Owner / DNR Unit	Offset (feet)[2]	Site Acreage[3]	Estimated Quantity Available[4] (cubic yards)	Existing Site (E) / Proposed New Site (P) / No Information (-)
1	Primary_1	12.0	65-9-102-2 (MS 3) FP	STATE OF ALASKA	25515	25	403,000	E
2	Primary_1	18.0	MS-17.81 FP	STATE OF ALASKA	23503	25	403,000	E (in river)
3	Primary_1	25.0	65-9-026-2 FP	STATE OF ALASKA	7686	20	322,000	E (in river)
4	Alternate	34.0	Alternate 133-1 FP	STATE OF ALASKA	2044	25	403,000	E (in river)
5	Alternate	35.0	65-9-041-2 FP	STATE OF ALASKA	1658	26	419,000	E (in river)
6	Alternate	41.0	65-9-024-2 FP	STATE OF ALASKA	5045	25	403,000	E
7	Primary_1	47.0	65-9-040-2 FP	STATE OF ALASKA	7840	10	161,000	E (in river)
8	Primary_1	57.0	65-9-096-2 FP	STATE OF ALASKA	2583	10	161,000	E
9	Primary_1	67.0	Alternate 65-9-073-2 FP	STATE OF ALASKA	4869	61	984,000	E
10	Alternate	76.0	65-9-072-2 FP2	STATE OF ALASKA	3999	80	1,290,000	E (in river)
11	Primary_1	76.0	65-9-072-2 FP1	STATE OF ALASKA	2192	80	1,290,000	E
12	Primary_1	87.0	Alternate Site 34 Extra FP	STATE OF ALASKA	6738	111	1,790,000	P
13	Primary_1	96.0	Proposed Site 1 Extra FP	STATE OF ALASKA	2394	20	322,000	E
14	Primary_1	99.0	65-9-067-2 FP	STATE OF ALASKA	7314	45	725,000	E
15	Primary_1	111.0	65-9-062-2 FP	STATE OF ALASKA	3391	30	483,000	P
16	Primary_1	114.0	65-9-061-2 FP	STATE OF ALASKA	2292	15	241,000	E
17	Alternate	119.0	Alternate Site 35 Extra FP	STATE OF ALASKA	805	20	322,000	E
18	Alternate	120.0	Alternate Slope Mountain FP	STATE OF ALASKA	85	20	322,000	E
19	Alternate	122.0	Alternate Site 37 Extra FP	BLM	919	24	387,000	P
20	Primary_2	123.0	MS-122.9 FP	BLM	2062	44	709,000	E
21	Primary_1	131.0	Alternate 65-9-059-2 FP	BLM	8036	45	725,000	E
22	Primary_1	137.0	Alternate Site 38 Extra FP	BLM	2192	45	725,000	E
23	Primary_1	145.0	Galbraith Airstrip FP	BLM	7807	60	967,000	P
24	Primary_1	149.0	65-9-056-2 FP	BLM	359	80	1,290,000	E
25	Primary_1	152.0	Alternative Site 40 Extra FP	BLM	177	25	403,000	P
26	Primary_1	156.0	65-9-022-2 FP	BLM	216	50	806,000	P (adjacent to Existing site)
27	Primary_1	161.0	Alternate Site 41 Extra FP	BLM	202	25	403,000	E
28	Primary_1	163.0	65-9-008-2 FP1	BLM	0	5	80,000	E
29	Primary_1	163.0	65-2-008-2 FP2	BLM	95	11	177,000	E
30	Primary_1	175.0	Chandalar Airstrip FP	BLM	2146	25	403,000	P
31	Primary_1	180.0	Upper Dietrich FP	BLM	51	10	161,000	P
32	Primary_1	191.0	65-9-079-2 FP2	BLM	484	9	145,000	P
33	Primary_1	191.0	65-9-079-2 FP1	BLM	31	7	112,000	E
34	Primary_1	194.0	Unnamed Creek FP2	BLM	613	85	1,371,000	P
35	Primary_1	194.0	Unnamed Creek FP1	BLM	97	70	1,129,000	P
36	Primary_1	219.0	65-9-052-2 FP	BLM	0	75	1,209,000	E
37	Primary_1	230.0	MS-229.2 FP	BLM	740	50	806,000	E
38	Primary_2	235.0	BS235 FP	BLM	1579	40	645,000	P
39	Primary_1	237.0	65-9-098-2 FP	STATE OF ALASKA	6405	35	564,000	P
40	Primary_1	244.0	Proposed Site 3 Extra FP	STATE OF ALASKA	1520	85	1,371,000	E
41	Primary_1	261.0	Alternate Site 43 Extra FP	BLM	0	76	1,226,000	P
42	Primary_1	272.0	65-9-045-2 FP	BLM	3234	90	1,451,000	E
43	Alternate	282.0	Proposed Site 4 Extra FP	BLM	1288	25	403,000	P
44	Alternate	284.0	Alternate Site 44 Extra FP	BLM	86	15	241,000	P
45	Primary_1	291.0	Bonanza West FP	BLM	1458	10	161,000	P
46	Primary_1	300.0	Alternate Fish Creek FP	BLM	10239	30	483,000	P
47	Alternate	302.0	DHMP 112.3 FP	BLM	1740	25	403,000	P
48	Primary_1	306.0	65-9-075-2 FP	BLM	2451	15	241,000	E
49	Alternate	313.0	Kanuti Approach FP	BLM	1562	26	419,000	E
50	Primary_1	325.0	65-9-043-2 FP	BLM	3488	39	629,000	E
51	Primary_1	337.0	65-9-078-2 FP	BLM	2784	90	1,451,000	E
52	Primary_2	340.0	MS-340 FP	BLM	100	25	403,000	P
53	Primary_1	349.0	65-9-029-2 FP	BLM	4492	45	725,000	E
54	Primary_1	366.0	65-3-019-2 FP	STATE OF ALASKA	591	90	1,451,000	E
55	Alternate	372.0	65-3-016-2 FP	STATE OF ALASKA	89	24	387,000	E
56	Primary_1	379.0	Alternate 65-3-015-2 FP	STATE OF ALASKA	5542	21	338,000	E
57	Primary_1	382.0	65-3-014-2 FP2	STATE OF ALASKA	601	90	1,451,000	P
58	Primary_1	382.0	65-3-014-2 FP1	STATE OF ALASKA	5703	91	1,467,000	P
59	Primary_1	395.0	Alternate 65-3-012-2 FP	STATE OF ALASKA	3632	50	806,000	E
60	Primary_1	403.0	Tolovana D FP	STATE OF ALASKA	1284	46	742,000	P
61	Primary_1	406.0	2015-LF1 FP	STATE OF ALASKA	1621	185	2,984,000	P
62	Primary_1	407.0	Alternate Site 12 Extra FP	STATE OF ALASKA	23255	27	435,000	E
63	Alternate	414.0	Proposed Site 14 Extra FP	STATE OF ALASKA	41748	39	629,000	E
64	Primary_1	415.0	2015-LF2 FP	STATE OF ALASKA	6328	130	2,097,000	P
65	Primary_2	419.0	Alt-BS-ROW-A FP	STATE OF ALASKA	0	114	1,839,000	P
66	Primary_1	440.0	2015-LF6 FP	STATE OF ALASKA	200	117	1,887,000	P
67	Primary_2	441.0	MS FL-A-A FP	STATE OF ALASKA	38573	15	241,000	P
68	Primary_2	442.0	Alt-Murphy-Dome-Plt FP	STATE OF ALASKA	52311	25	403,000	E

Table 4
Potential Material Sites for the Project
(Sites located less than 35 miles from the Mainline centerline)[1]

No.	Type of Site	Approximate Rev B MP	Site Name / Location	Land Owner / DNR Unit	Offset (feet)[2]	Site Acreage[3]	Estimated Quantity Available[4] (cubic yards)	Existing Site (E) / Proposed New Site (P) / No Information (-)
69	Alternate	442.0	3B-H-B FP	STATE OF ALASKA	5777	48	774,000	P
70	Primary_2	445.0	Alt-Murphy-Dome-Area FP	STATE OF ALASKA	29754	102	1,645,000	P
71	Primary_1	446.0	2015-LF7 FP	STATE OF ALASKA	0	57	919,000	P
72	Primary_1	450.0	2015-LF8 FP	STATE OF ALASKA	176	84	1,355,000	P
73	Primary_2	462.0	Alt-31-1-039-2 FP=Alt 37-1-034-2	TOGHOTTHELE CORPORATION	25641	25	403,000	E
74	Primary_2	463.0	Alt-37-1-038-2 FP	TOGHOTTHELE CORPORATION	16185	25	403,000	E
75	Primary_2	464.0	Alt-37-1-039-2 FP	STATE OF ALASKA	16214	25	403,000	E
76	Primary_1	465.0	2015-LF10 FP	STATE OF ALASKA	0	39	629,000	P
77	Alternate	467.0	37-1-042-2 FP	STATE OF ALASKA	6473	79	1,274,000	E
78	Alternate	470.0	37-1-044-2 FP	STATE OF ALASKA	2983	20	322,000	E
79	Primary_1	471.0	Alternate 37-1-045-2 FP	TOGHOTTHELE CORPORATION	97	32	516,000	P
80	Alternate	472.0	37-2-011-2 FP	ALASKA MENTAL HEALTH TRUST AUTHORITY	1719	31	500,000	E
81	Primary_1	484.0	2015-P2 FP	STATE OF ALASKA	652	6	96,000	P
82	Alternate	493.0	37-2-004-2 FP	STATE OF ALASKA	33771	25	403,000	E
83	Alternate	499.0	37-2-069-2 FP	STATE OF ALASKA	8289	42	677,000	E
84	Primary_1	500.0	37-2-096-2 FP	STATE OF ALASKA	61	76	1,226,000	E
85	Alternate	501.0	37-2-073-2 FP	STATE OF ALASKA	0	35	564,000	E
86	Alternate	502.0	37-2-099-2 FP	STATE OF ALASKA	0	30	483,000	E
87	Alternate	503.0	37-2-102-2 FP	STATE OF ALASKA	1309	18	290,000	E
88	Alternate	506.0	37-2-107-2 FP	STATE OF ALASKA	66	10	161,000	E
89	Alternate	508.0	37-2-110-2 FP	STATE OF ALASKA	1228	8	129,000	E
90	Alternate	510.0	37-2-111-2 FP	STATE OF ALASKA	2839	10	161,000	E
91	Alternate	513.0	37-2-086-2 FP	STATE OF ALASKA	16	10	161,000	P
92	Alternate	515.0	37-2-142-2 FP	ADOT & PF	678	11	177,000	P
93	Primary_1	518.0	37-2-089-2 FP	DENALI BOROUGH	1249	50	806,000	P
94	Alternate	519.0	37-2-119-2 FP	DENALI BOROUGH	712	10	161,000	E
95	Alternate	520.0	37-2-120-2 FP	DENALI BOROUGH	1649	14	225,000	E
96	Alternate	521.0	37-2-124-2 FP	DENALI BOROUGH	234	25	403,000	E
97	Alternate	522.0	37-2-125-2 FP	DENALI BOROUGH	606	14	225,000	E
98	Alternate	523.0	37-2-143-2 FP	STATE OF ALASKA	0	55	887,000	E
99	Alternate	524.0	37-2-128-2 FP	DENALI BOROUGH	1916	25	403,000	E
100	Primary_1	526.0	37-2-007-2 FP	ALASKA RAILROAD CORPORATION	8478	52	838,000	E
101	Alternate	531.0	37-2-010-2 FP	STATE OF ALASKA	564	29	467,000	E
102	Primary_1	552.0	52-2-064-2 FP	AHTNA INCORPORATED	2143	29	467,000	E
103	Alternate	554.0	52-2-080-2 FP	AHTNA INCORPORATED	267	25	403,000	P
104	Primary_1	561.0	52-2-056-2 FP	STATE OF ALASKA	457	21	338,000	P
105	Primary_1	567.0	MS4AG FP	STATE OF ALASKA	31	31	500,000	P
106	Primary_1	568.0	35-4-015-2 FP	AHTNA INCORPORATED	1354	6	96,000	E
107	Primary_1	582.0	35-4-033-2 FP	AHTNA INCORPORATED	3798	16	258,000	E
108	Alternate	592.0	35-4-101-2 FP	STATE OF ALASKA	2095	15	241,000	E
109	Alternate	594.0	35-4-040-2 FP	STATE OF ALASKA	670	25	403,000	P
110	Primary_1	595.0	35-4-043-2 FP	STATE OF ALASKA	1542	37	596,000	E
111	Primary_1	607.0	35-4-025-2 FP3	ALASKA RAILROAD CORPORATION	49	7	112,000	E
112	Primary_1	607.0	35-4-025-2 FP2	ALASKA RAILROAD CORPORATION	854	8	129,000	P
113	Primary_1	607.0	35-4-025-2 FP1	ALASKA RAILROAD CORPORATION	1055	14	225,000	E
114	Alternate	612.0	35-3-035-1 FP	DENALI STATE PARK	467	25	403,000	E
115	Alternate	614.0	35-3-034-1 FP	DENALI STATE PARK	1492	25	403,000	P
116	Alternate	616.0	35-3-032-1 FP	ADOT & PF	0	15	241,000	P
117	Alternate	617.0	35-3-029-1 FP	DENALI STATE PARK	73	25	403,000	P
118	Primary_1	618.0	35-3-027-1 FP	DENALI STATE PARK	112	25	403,000	E
119	Alternate	619.0	35-3-024-1 FP	DENALI STATE PARK	608	25	403,000	P
120	Alternate	625.0	35-1-020-1 FP	DENALI STATE PARK	4100	25	403,000	E
121	Alternate	630.0	35-3-016-1 FP	DENALI STATE PARK	34	16	258,000	P
122	Alternate	634.0	35-3-013-014-2 FP	DENALI STATE PARK	97	25	403,000	P
123	Alternate	636.0	35-3-053-1 FP	DENALI STATE PARK	0	6	96,000	P
124	Primary_1	637.0	35-3-010-1 FP	DENALI STATE PARK	878	21	338,000	E
125	Alternate	640.0	35-3-009-1 FP	DENALI STATE PARK	175	25	403,000	P
126	Alternate	648.0	35-3-047-1 FP	STATE OF ALASKA	54	25	403,000	E
127	Alternate	649.0	35-3-5016-1 FP	STATE OF ALASKA	28	20	322,000	P
128	Alternate	650.0	35-3-5015-1 FP	STATE OF ALASKA	397	25	403,000	E
129	Primary_1	656.0	35-3-5013-1 FP	STATE OF ALASKA	418	64	1,032,000	P
130	Alternate	661.0	35-3-5011-1 FP	STATE OF ALASKA	1461	20	322,000	E
131	Alternate	663.0	35-3-5002-1 FP	STATE OF ALASKA	3857	25	403,000	E
132	Alternate	666.0	35-2-5007-1 FP	STATE OF ALASKA	990	25	403,000	P
133	Alternate	668.0	35-2-5006-1 FP	STATE OF ALASKA	78	15	241,000	P
134	Alternate	669.0	35-2-5005-1 FP	STATE OF ALASKA	72	20	322,000	E
135	Alternate	672.0	35-2-5003-1 FP	STATE OF ALASKA	3304	25	403,000	E
136	Alternate	674.0	35-2-5001-1 FP	STATE OF ALASKA	3664	25	403,000	E

Table 4
Potential Material Sites for the Project
(Sites located less than 35 miles from the Mainline centerline)[1]

No.	Type of Site	Approximate Rev B MP	Site Name / Location	Land Owner / DNR Unit	Offset (feet)[2]	Site Acreage[3]	Estimated Quantity Available[4] (cubic yards)	Existing Site (E) / Proposed New Site (P) / No Information (-)
137	Primary_1	675.0	2015-1 FP	STATE OF ALASKA	354	134	2,161,000	P
138	Primary_1	685.0	2015-2 FP	STATE OF ALASKA	73	10	161,000	P
139	Primary_1	693.0	2015-3 FP	STATE OF ALASKA	118	10	161,000	P
140	Primary_1	698.0	2015-4 FP	STATE OF ALASKA	77	66	1,064,000	P
141	Alternate	715.0	2015-7 FP	STATE OF ALASKA	62	25	403,000	P
142	Primary_1	721.0	2015-8 FP	STATE OF ALASKA	79	44	709,000	P
143	Alternate	730.0	2015-10 FP	STATE OF ALASKA	160	25	403,000	P
144	Alternate	734.0	2015-11 FP	STATE OF ALASKA	22	25	403,000	P
145	Primary_1	740.0	2015-12 FP	STATE OF ALASKA	678	20	322,000	P
146	Primary_1	750.0	2015-13 FP	STATE OF ALASKA	0	80	1,290,000	P
147	Alternate	752.0	2015-14 FP	STATE OF ALASKA	25	25	403,000	P
148	Primary_1	759.0	2015-15 FP	ALASKA MENTAL HEALTH TRUST AUTHORITY	115	70	1,129,000	P
149	Primary_1	794.0	2015-KP7 FP	SALAMATOF NATIVE ASSN INC	0	60	967,000	P

Notes:

[1] Calculated using existing road system, most material site locations are within 0.5 mi. of the pipeline corridor.

[2] Minus numbers designate west measurement from the proposed pipeline centerline.

[3] Site acreage is the total acres available for each material site.

[4] Estimated Quantity Available was calculated using total footprint to 10' depth, rounded down to nearest 1000cy.

Appendix C – Potential Disposal Sites for the Mainline

Appendix C
Proposed Disposal Sites for the Project

No.	Approximate Rev C MP	Site Name / Location	Land Owner / DNR Unit	Offset (feet)[1]	Site Acreage[2]
1	71.37	WD-001	STATE OF ALASKA	423	12.29
2	85.16	WD-002	NORTH SLOPE BOROUGH	289	3.33
7	143.81	WD-007	BLM	290	3.16
8	147.11	WD-008	BLM	212	4.11
15	160.37	WD-015	BLM	257	3.88
16	162.75	WD-016A	BLM; ADOT & PF	205	4.49
17	163.14	WD-016B	BLM	249	4.35
19	172.09	WD-020	BLM; ADOT & PF	207	10.75
20	174.71	WD-021	BLM	2,131	11.42
21	182.07	WD-023B	BLM; ADOT & PF	301	4.36
23	184.81	WD-024A	BLM; ADOT & PF	208	12.47
24	185.68	WD-024B	BLM; ADOT & PF	204	7.52
25	188.41	WD-025A	BLM	186	10.34
26	191.22	WD-025B	BLM	353	6.62
28	196.65	WD-027	BLM	451	6.51
29	197.51	WD-028	BLM; ADOT & PF	178	7.75
31	199.78	WD-029	BLM	190	5.47
32	202.39	WD-030	BLM	150	3.07
34	215.88	WD-032	BLM; ADOT & PF	268	10.78
36	223.45	WD-034	BLM	437	9.36
37	228.33	WD-035	BLM	387	16.27
45	247.71	WD-041B	BLM	297	4.10
48	249.65	WD-042B	BLM; ADOT & PF	322	6.70
50	259.01	WD-044	BLM	182	5.45
51	260.55	WD-045	BLM; ADOT & PF	472	6.01
55	271.52	WD-049	BLM	159	3.09
67	344.06	WD-059	BLM	166	4.35
75	370.49	WD-067	STATE OF ALASKA	206	3.28
77	377.90	WD-069	STATE OF ALASKA	149	4.31
79	380.58	WD-071	STATE OF ALASKA	227	3.30

Appendix C
Proposed Disposal Sites for the Project

No.	Approximate Rev C MP	Site Name / Location	Land Owner / DNR Unit	Offset (feet)[1]	Site Acreage[2]
82	393.98	WD-074	STATE OF ALASKA	923	7.32
83	397.32	WD-123	STATE OF ALASKA	234	3.94
85	408.29	WD-077	STATE OF ALASKA	600	6.30
86	416.23	WD-078	STATE OF ALASKA	488	7.53
87	434.59	WD-079	STATE OF ALASKA	254	7.64
88	448.09	WD-080	STATE OF ALASKA	140	18.34
89	455.60	WD-081	STATE OF ALASKA	312	10.24
90	472.33	WD-084	THE DFMS OF THE PROTESTANT EPISCOPAL CHURCH; ALASKA RAILROAD CORPORATION	388	3.05
91	473.90	WD-085	DOYON NATURAL RESOURCES DEVELOPMENT CORPORATION	829	6.01
93	530.08	WD-093	DENALI BOROUGH; ADOT & PF	305	8.01
96	542.00	WD-114	DENALI BOROUGH	275	6.18
98	548.05	WD-115	AHTNA INCORPORATED	266	3.42
99	554.33	WD-116	AHTNA INCORPORATED	238	7.22
100	556.19	WD-117	AHTNA INCORPORATED	327	13.59
104	596.05	WD-120	STATE OF ALASKA	270	6.53
110	718.86	WD-102	STATE OF ALASKA	244	4.78
				Total Acreage	422.80