
DECISION MEMO
ALASKA RAILROAD CORP. REMOTE AVALANCHE SYSTEM
GLACIER RANGER DISTRICT,
CHUGACH NATIONAL FOREST
U.S. FOREST SERVICE

SUMMARY

After careful consideration of public input, the recommendations of appropriate resource specialists, and the requirements of applicable laws and regulations, I have decided to authorize a request from Alaska Railroad Corp. to amend their current avalanche program permits to construct, maintain, and operate remote avalanche towers at three avalanche zones on the Glacier Ranger District: Kern located at MP 71.2 – 71.5 Seward Hwy., Centerline at MP69.6 Seward Hwy. and Door 4 at Whittier Branch. Construction will occur as funding is available. Also authorized is the installation of a Type 11 Remote Avalanche Magazine and clearing of the old Tunnel access path at MP49 AKRR.

BACKGROUND

The Glacier Ranger District accepted a proposal to amend a current permit to conduct avalanche control work for the Alaska Railroad Corporation (ARRC). The ARRC maintains and operates critical transportation infrastructure and is a crucial part of the supply chain for Alaska. The importance to maintain rail service for freight trains traveling from the Port of Whittier to Anchorage and occasional winter freight from the Port of Seward to Anchorage requires the railroad to maintain and modernize its avalanche mitigation program.

The focus of the ARRC Avalanche prevention program focus is on locations south of Anchorage, primarily in the Portage and Grandview areas with the Chugach National Forest. ARRC is proposing to modernize how avalanches are released as the Howitzer guns that were traditionally used are being decommissioned.

Remote avalanche towers (RACs) are being constructed at three major avalanche paths. Door 4 is located immediately west of the north portal of the Portage Train Tunnel of the Alaska Railroad's Whittier Branch Line (F Branch). This line runs from the Port of Whittier barge dock to the connection with the mainline in Portage at Seward Highway MP64.3. (See attached Map)

The Chugach National Forest Land Management Plan 2020 recommends management approaches to continue working in partnership with the AKRR to develop and maintain funding streams for recreation infrastructure. Additionally, the Kenai Peninsula Geographic Area within the plan, recognizes the importance of the Seward and Portage Highways as transportation corridors. The AKRR avalanche prevention program diminishes avalanches over the highways at the Kern, Centerline, and Door avalanche zones.

DECISION

I have decided to authorize the installation, operation, and maintenance of remote avalanche towers at Kern, Centerline, and Door Avalanche zones. Additionally, I am authorizing the installation of a Type II magazine in the Tunnel area MP49 AKRR line. Construction of the towers is dependent on budget and may be built in part or in whole in future years.

This action is categorically excluded from documentation in an environmental impact statement (EIS) or an environmental assessment (EA). The applicable category of actions is identified in agency procedures as CFR 36 220 (e)(3) *Approval, modification, or continuation of minor special uses of NFS lands that require less than 20 acres of land*. This category of action(s) is applicable because the project proposal is for an amendment to an existing authorization to conduct avalanche prevention work and the project area is less than 20 acres.

I find that there are no extraordinary circumstances that would warrant further analysis and documentation in an EA or EIS. I took into account resource conditions identified in agency procedures that should be considered in determining whether extraordinary circumstances might exist:

- Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species – There are no federally listed threatened or endangered terrestrial/marine mammals species or their designated critical habitat present in the analysis area. Mitigations measures have been added for the protection of goats and bears.
- Flood plains, wetlands, or municipal watersheds – None are present
- Congressionally designated areas such as wilderness, wilderness study areas, or national recreation areas – There are not Congressionally designated areas within the project location.
- Inventoried roadless areas or potential wilderness areas – The project area is located within *Inventoried Roadless Area #6 Twenty Mile*, however, no trees will be removed as part of this project.
- Research natural areas – None are present
- American Indians and Alaska Native religious or cultural sites – None are present.
- Archaeological sites, or historic properties or areas – None are present.

PUBLIC INVOLVEMENT

This project was listed on the Chugach National Forest Schedule of Proposed Actions (SOPA) beginning in March 5, 2021 and will remain on the SOPA until after a decision is made. Public involvement included scoping USFS resource specialists during the annual NEPA Rodeo January 14, 2021. Additionally, a “Request for Comment” notice was placed in the newspaper of record, Alaska Daily News on March 12, 2021. No comments were received in response to these notices.

FINDINGS REQUIRED BY OTHER LAWS AND REGULATIONS

This decision is consistent with the 2020 Chugach National Forest Land Management Plan. The project was designed in conformance with the plan.

IMPLEMENTATION DATE

This decision is not subject to the appeal or objection processes. Implementation of this decision may occur immediately. Implementation may occur immediately.

CONTACT

For additional information concerning this decision, contact: Dede Srb at debra.srb@usda.gov or by phone at (907)424-4726 or by FAX (907) 424-7102.

Additional information about this decision also can be found on the Chugach National Forest web page at: <https://www.fs.fed.us/sopa/components/reports/sopa-111004-2021-04.html>

JEFF SCHRAMM Digitally signed by JEFF SCHRAMM
Date: 2021.06.11 13:16:49 -08'00'

6/11/21

Jeff Schramm

Date

Forest Supervisor

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.



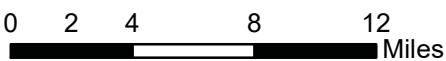
GLA1130 Alaska Railroad Avalanche Control Permit

Appendix A-1 Map Avalanche Target Areas



Authorization Information

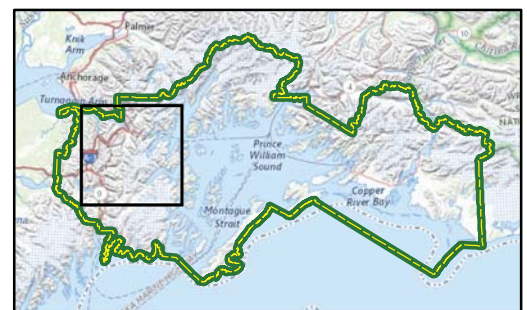
Permit Holder: AK Railroad Avalanche Control
 Exhibit Number: GLA1120
 Permit Areas: Area
 Township/Range:
 Meridian: Seward
 Scale: 1:400,000



Legend

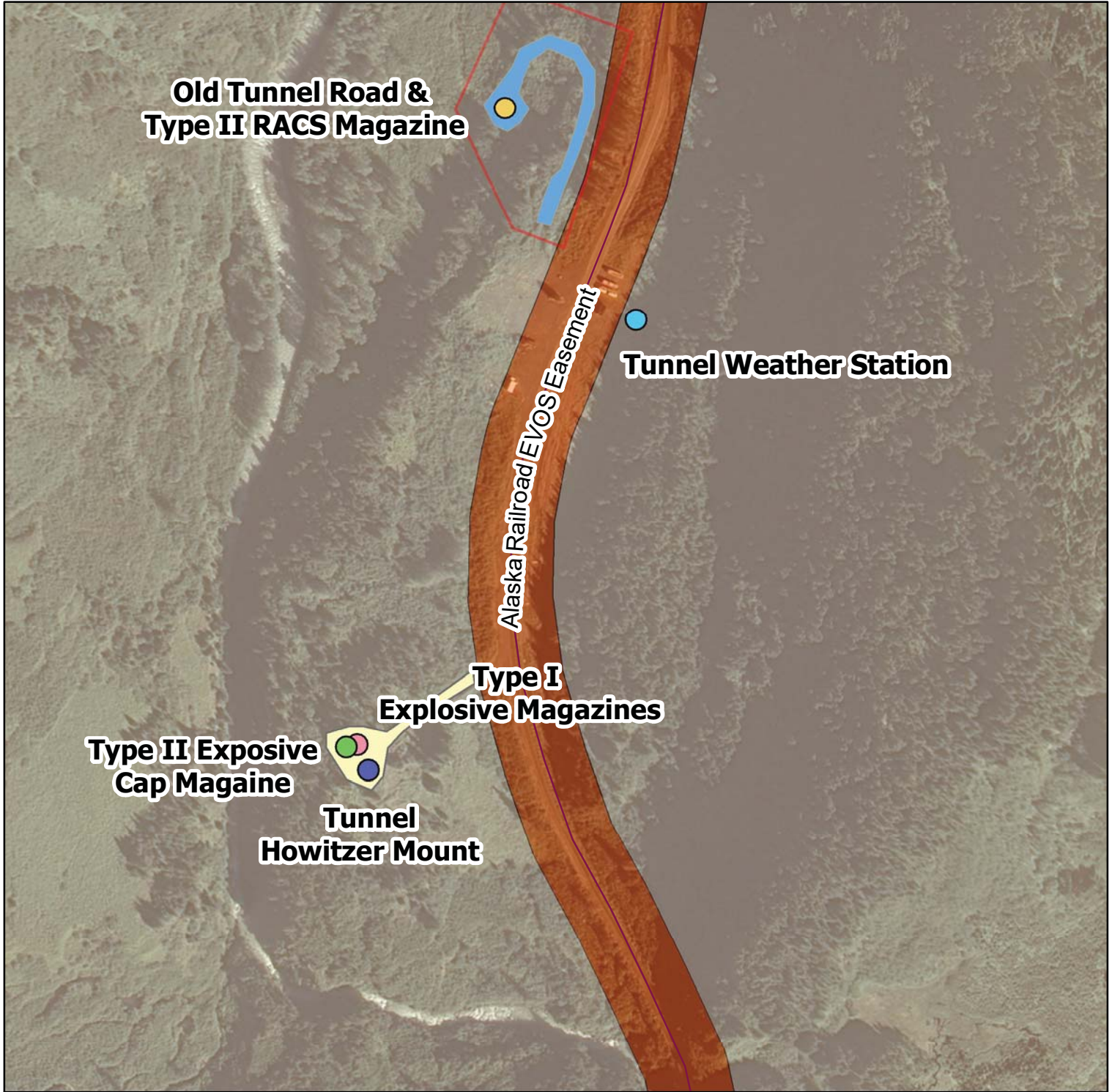
- Avalanche Target Areas
- Alaska_Railroad

Chugach National Forest Boundary



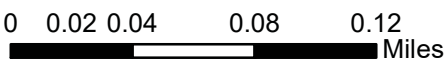
Disclaimer

The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map, and reserves the right to correct, update, modify, or replace this information without notification.



Authorization Information

Permit Holder: AK Railroad Avalanche Control
 Exhibit Number: GLA1120
 Permit Areas: AA45 Placer River Analysis Area
 Township/Range: T7N, R2E Sec.26
 Meridian: Seward
 Scale: 1:4,000



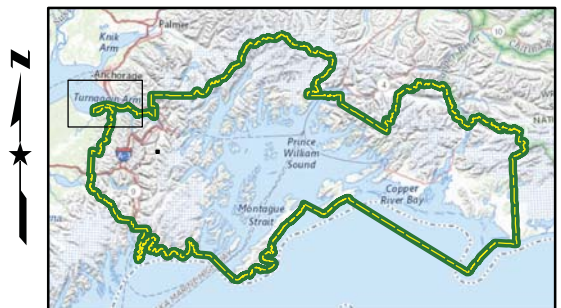
Disclaimer

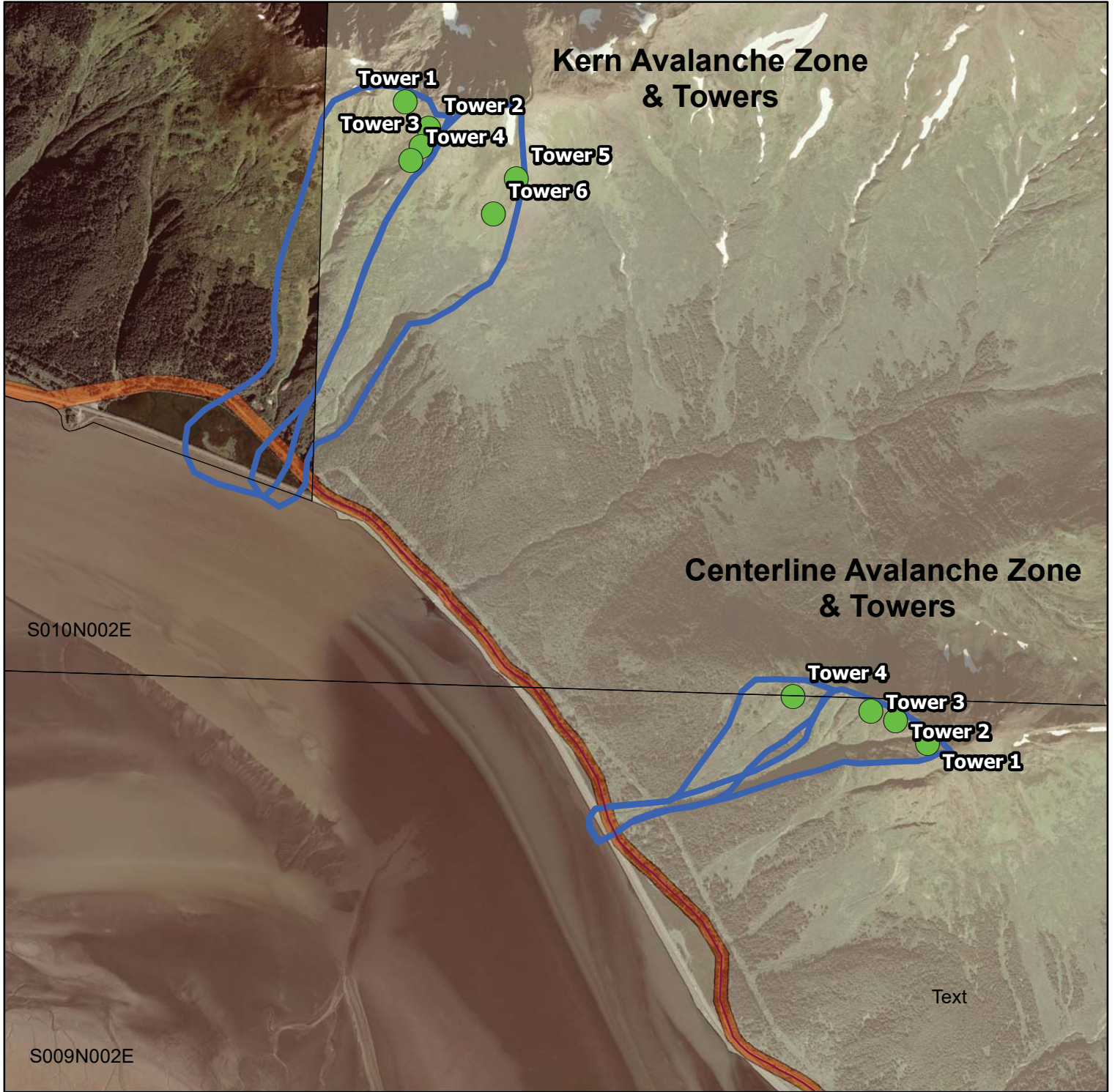
The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map, and reserves the right to correct, update, modify, or replace this information without notification.

Legend

- Alaska_Railroad
- Tunnel Howitzer Mount
- Tunnel Type I Explosive Magazines
- Tunnel Type II RACS Magazine
- Tunnel Weather Station
- Type II Explosive Cap Magazine
- Tunnel_Access_Road
- Old_Tunnel_Road_and_Magazine_Polygon

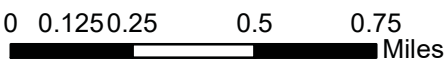
Chugach National Forest Boundary





Authorization Information

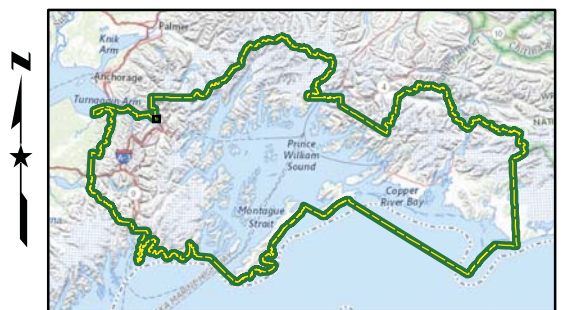
Permit Holder: Alaska Railroad Corp.
 Exhibit Number: Appendix A-3
 Permit Areas: Kern and Centerline Avalanche Zones
 Township/Range: S010N002E and S009N002E
 Meridian: Seward Meridian
 Scale: 1:125,000



Legend

- Alaska_Railroad
- Towers
- Kern and Centerline Avalanche Zones

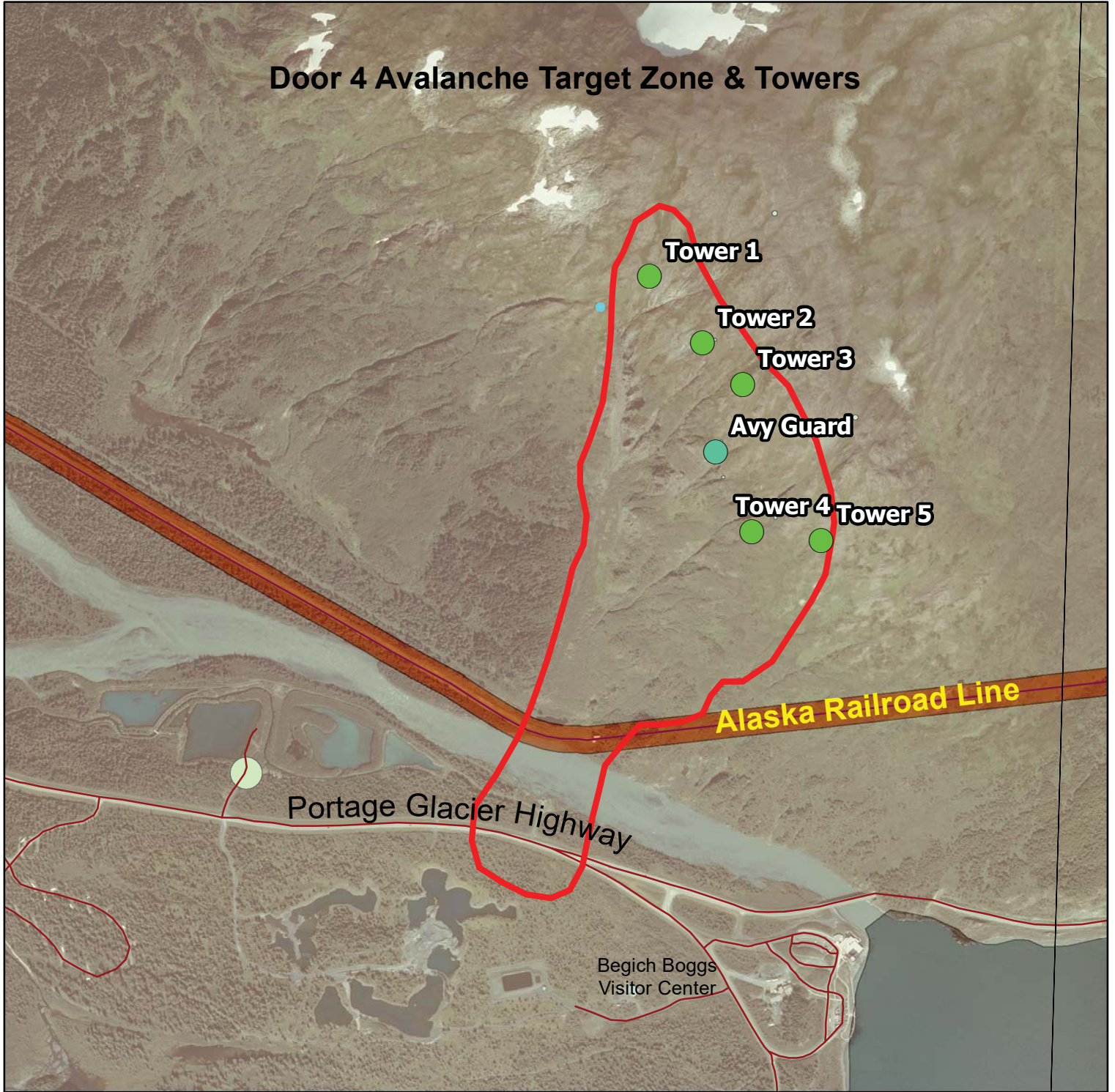
Chugach National Forest Boundary



Map Author: ; Map Creation Date: ####/####/####

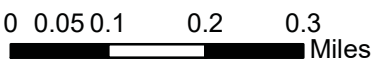
Disclaimer

The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map, and reserves the right to correct, update, modify, or replace this information without notification.



Authorization Information

Permit Holder: Alaska Railroad Corp.
 Exhibit Number: Appendix A-4
 Permit Areas: Door 4 Avalanche Zones
 Township/Range: S008N003E
 Meridian: Seward Meridian
 Scale: 1:12,500



Disclaimer

The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map, and reserves the right to correct, update, modify, or replace this information without notification.

Legend

- Tower
- Avy Guard
- Door 4 Avalanche Zone
- Road
- Alaska_Railroad
- Heli Landing & Gun Mount

Chugach National Forest Boundary



Map Author: ; Map Creation Date: ####/####/####



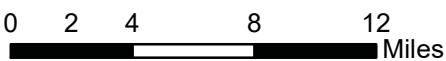
GLA1130 Alaska Railroad Avalanche Control Permit

Appendix A-5 Map Avalanche Target Areas and Goat Habitat



Authorization Information

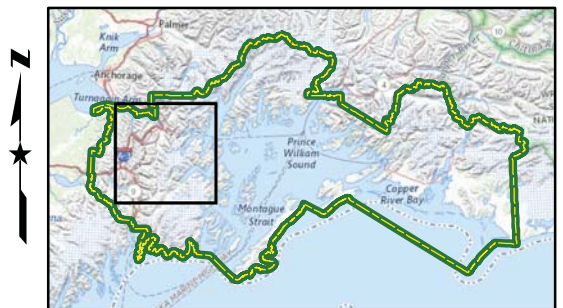
Permit Holder: AK Railroad Avalanche Control
 Exhibit Number: GLA1130
 Permit Areas: Area
 Township/Range:
 Meridian: Seward
 Scale: 1:400,000



Legend

- WinterGoatHabitat
- Avalanche Target Areas
- Alaska_Railroad

Chugach National Forest Boundary



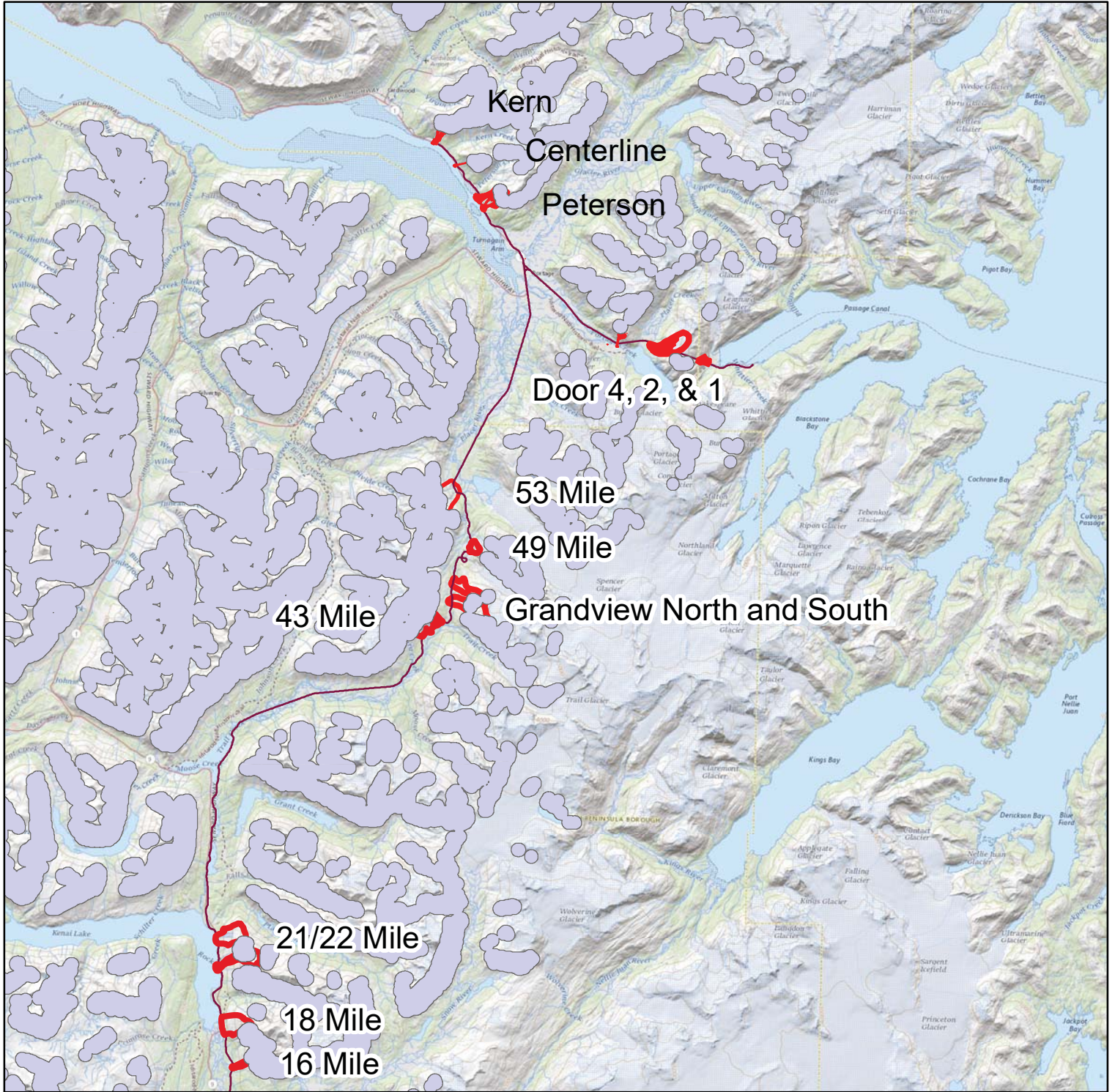
Disclaimer

The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map, and reserves the right to correct, update, modify, or replace this information without notification.



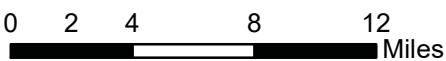
GLA1130 Alaska Railroad Avalanche Control Permit

Appendix A-6 Map Avalanche Target Areas and No Fly Zone



Authorization Information

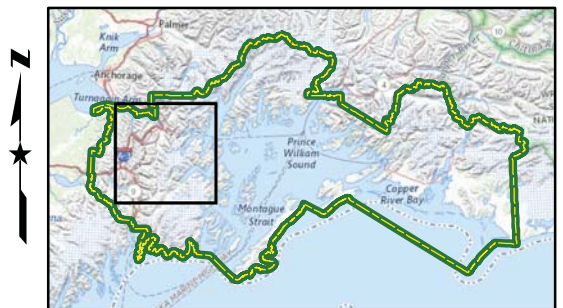
Permit Holder: AK Railroad Avalanche Control
 Exhibit Number: GLA1130
 Permit Areas: Area
 Township/Range:
 Meridian: Seward
 Scale: 1:400,000



Legend

- Goats_NoFly
- Avalanche Target Areas
- Alaska_Railroad

Chugach National Forest Boundary



Disclaimer

The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map, and reserves the right to correct, update, modify, or replace this information without notification.

Appendix B Stipulations
GLA1130
Alaska Railroad Corporation
Remote Avalanche Control System

The Holder Shall:

1. Ensure that aircraft maintain a minimum landing distance of one-half mile from observed mountain goats or Dall sheep.
2. Ensure helicopters will maintain a 1,500 ft. minimum vertical distance from all observed mountain goats or Dall sheep. Pilots will use flight paths to avoid goats and sheep and their habitat as much as possible. Such flights paths will generally avoid ridge tops.
3. Avoid aircraft activity in the ‘no-fly zones’ and mapped/known mountain goat habitat: from October 1 through May 30 (wintering) and from May 10 through June 15 (kidding). No-fly zones and mapped winter range have been developed to assist in implementing forest plan guidelines to reduce impacts to goats and sheep. These GIS layers have been provided to ARRC and are included on attached maps.
4. USFS understands there will be certain infrequent times when it is critical to break with the wildlife interaction avoidance guidelines; specifically when Remote Avalanche Control Systems (RACS) refills are needed and/or heli-bombing is needed as a back-up if the blaster boxes were to fail at Kern or 43 Mile in wintering goat habitat/timing (Oct 1-May 30). ARRC expects that these activities would happen very infrequently, less than once per winter, and perhaps with the RACS refills, once in 20 winters. During these rare occurrences, all efforts will be made to maintain a 1,500-foot minimum vertical distance from all observed mountain goats where possible. Avalanche mitigation activities are performed for public safety along the railroad/highway corridors throughout the State of Alaska. While all wildlife interactions are important, the health and safety of the people of the State of Alaska are paramount.
5. Ensure that human and pet food, garbage, and odorous attractants (fuel) are attended by humans or stored in a bear resistant manner when not being used (bear cans or lockers, containment barrels or inside of vehicles).
6. Surveys for Aleutian Cress (*Aphragmus escholtzianus*) should be conducted in areas suspected of harboring suitable habitat for this species (e.g., alpine tundra on moist, boulder-strewn, and solifluction slopes; wet mossy seeps; seepage areas among rocks; snow melt areas; and fine gravel saturated by snow melt).
7. Minimize ground disturbance during construction of avalanche towers, avalanche guards and weather stations to prevent impacts to possible Aleutian Cress (*Aphragmus escholtzianus*) populations and to avoid creating disturbance which would be favorable for invasive species.
8. If any previously undiscovered populations of Aleutian Cress (*Aphragmus escholtzianus*) are encountered at any time prior to or during implementation of this permit, protect the population and avoid any disturbance in the area containing the population (and similar habitats in that vicinity). The zone ecologist should be notified

immediately to evaluate the population and recommend avoidance or mitigation measures.

9. Ensure that no herbicides are used on National Forest System (NFS) lands without prior explicit written authorization.
10. Survey the improved portions of the permit area annually for invasive species. Identify and document invasive species with an [Alaska Center for Conservation Science invasiveness rank of 70](#) or higher and report to the [Alaska Exotic Species Information Clearinghouse](#) as well as the zone ecologist.
11. All invasive species with an [Alaska Center for Conservation Science invasiveness rank of 70](#) or higher found in the permit area shall be treated by the permit holder.
12. Apply protective ground cover such as native slash, displaced sod, or coconut fiber mats to disturbed areas with bared soil greater than 100 square feet in size where natural revegetation is inadequate to prevent accelerated erosion before the next growing season. To minimize the spread of invasive species, seeding or planting shall NOT be implemented without written authorization from the District Ranger or his authorized representative, who will review the proposed species and seed/plant source before approval.
13. All mineral materials, topsoil and straw or hay erosion control products used shall be certified as weed free under the State of Alaska's Division of Agriculture weed free certification program.
14. All seed products used shall not exceed the maximum allowable tolerances for noxious weed seed established in Alaska Administrative Code Title 11, Chapter 34.
15. Avoid walking through patches of non-native plants, particularly when they have gone to seed to prevent their spread into new areas.
16. Ensure all footwear, gear, equipment, clothing, and tents will be cleaned and free of all plant materials, soil, and slugs and slug eggs prior to entering NFS lands. Avoid camping and hiking in or near invasive infestations, especially where invasive plants have gone to seed as these seeds can contaminate gear and be spread to other sites (e.g., dandelions).
17. Prevent ground disturbances that would create favorable seedbeds for non-native plants.
18. Submit revegetation proposal to permit administrator for approval when ground disturbing activities occur. A revegetation plan would include:
 - a. The extent of the area to be revegetated, ideally as a map.
 - b. The revegetation goal. For example, native grass cover for a highly managed ROW or willow establishment for stream stabilization.
 - c. The method intended to be used to meet the revegetation goal. For example, hydroseeding or planting rooted cuttings.
 - d. Additional inputs to be used. For example, fertilizer, topsoil, hay/straw.
 - e. The specific species intended to meet the revegetation goal.
 - f. The sources to provide the needed seed or vegetative material.
 - g. A timeline for completing revegetation.

- h. The monitoring and care plan. For example, watering, fertilizing or over-seeding.
19. Ensure all tools, vehicles, and equipment used for construction or maintenance will be cleaned and free of all plant materials, soil, and slugs and slug eggs prior to entering NFS lands or when moving between sites on NFS lands.
 20. Ensure any heavy equipment used in project area will be inspected by a qualified Forest Service employee for plant materials, soil, and slugs and slug eggs prior to entry on NFS lands. The DOI Technical Memorandum No. 86-68220-07-05: Inspection and Cleaning Manual for Equipment and Vehicles to Prevent the Spread of Invasive Species should be provided to contractors prior to implementation to provide clear guidance for equipment cleaning.
 21. If any culturally related materials falling under the definitions contained within the Native American Graves Protection and Repatriation Act (NAGPRA) or any human remains are inadvertently discovered in connection with the use and occupancy authorized by this permit, all work will immediately cease in the area and the site and its contents will be protected by the FAA or its contracted employed archeological firm. The Alaska State Troopers, the Chugach National Forest Law Enforcement, the Forest Service Authorized Officer, and the Forest Archeologist will be immediately notified in the order presented. The protection of these remains and resources, by the FAA or its agents, will remain in effect until relieved by AST or CNF-Law Enforcement personnel. Work in the area of discovery will not resume until a notice to proceed is provided by the CNF's authorized officer. The 2017 Section 106 Programmatic Agreement has attached a State Protocol and FS requirements for making contacts in regard to the discovery of Human Remains and other NAGPRA related items.

AVALANCHE SAFETY PLAN

For the

AVALANCHE PROGRAM

ALASKA RAILROAD CORPORATION

Maintenance of Way Division

Revised February 2021

CERTIFICATION OF ACCEPTANCE FOR THE OPERATING/SAFETY PLAN

mmck

Holder Signature

7/07/2021

Date

[Signature]

Forest Service Authorized Officer Signature

7/15/21

Date

TABLE OF CONTENTS

1	Introduction.....	4
2	Avalanche Risk Reduction.....	5
2.1	General.....	5
2.2	Passive Risk Reduction.....	5
2.3	Cooperative Active Avalanche Mitigation	5
2.4	Military Artillery for Avalanche Control.....	6
2.4.1	Use of Weapons	6
2.4.2	Security and Storage	6
2.5	Explosives Use.....	7
3	Avalanche Forecasting.....	8
3.1	General.....	8
3.2	Weather Data	8
3.3	Snow Stability Inputs.....	8
3.4	Avalanche Hazard Ratings.....	9
4	Operations in Avalanche Areas	9
4.1	Slide Zone Procedures	9
4.2	Maintenance, Snow and Debris Removal Precautions	10
5	Avalanche Response and Rescue.....	11
5.1	General.....	11
5.2	Avalanche Alert	12
5.3	Self-Help Guidelines.....	13
5.4	Avalanche Rescue Plan.....	14
5.4	ARP Instructions for Site Leader	14
5.4	ARP Instructions for Rescue Coordinator	15
5.4	ARP Instructions for Scribe	16
5.4	ARP Rescue Team Check List	17
5.4	ARP Instructions for Support Coordinator	18
	Appendix A: Avalanche Path Inventory	19
	Map of MP 16 - 22	20
	Map of MP 43 - 53	21
	Map of MP 68 - 72	22
	Map of MP 75 - 84	23
	Map of MP F2 - F7	23
	Appendix B: Avalanche Hazard Rating	24
	Appendix C: Artillery and Magazine Locations (CONFIDENTIAL).....	29

1 Introduction

The Alaska Railroad Corporation (ARRC) is committed to providing a high degree of safety for its passengers, employees, cargo and equipment along the railroad right-of-way. Between Anchorage, Whittier and Seward the rail line passes through the Chugach and Kenai Mountains where numerous snow avalanche areas pose a potential hazard to the line. Avalanche paths that have the potential to affect the line are clustered at several locations: Bird Hill (7 paths), Girdwood Flats (15 paths), Kern and Peterson Creeks (4 paths), either side of Tunnel Section (7 paths), and around Kenai Lake (5 paths). Several other avalanche paths are located away from these clusters, such as the Door 4 avalanche path on the Whittier line. As part of the commitment to manage this potential hazard (avalanche risk), the ARRC has developed an Avalanche Management Program for which the Maintenance of Way Division is responsible.

The program strives to provide an acceptable level of avalanche risk for the ARRC through avalanche forecasting, avalanche avoidance, explosive release of unstable snow and avalanche safety training. The ARRC Avalanche Program Manager is responsible for and directs these activities. This safety plan has been developed as an integral part of the program, providing guidelines for personnel safety and outlining general avalanche procedures and policies. Many aspects of avalanche forecasting, control and rescue (procedures and policies) are beyond the scope of this document and are detailed in manuals and publications referred to or included as appendices of the plan.

The point of contact for administration of the ARRC Avalanche Program is the Avalanche Program Manager. Currently this is Matt McKee. His contact information is as follows:

Mobile	907-565-9204
E-mail:	mckeem@akrr.com
Mail:	P.O. Box 107500 Anchorage, AK 99510

Forest Service administration of the permit will be accomplished by:

Representative of;
U.S. Forest Service
Glacier Ranger District
907-783-3242

2 Avalanche Risk Reduction

2.1 General

Avalanche risk to ARRC employees, its passengers and equipment is significantly reduced by following standard avalanche safety procedures as described in this and related documents. In general, as the avalanche hazard increases in severity, progressively more stringent measures will be taken to protect life and property along the rail line.

2.2 Passive Risk Reduction

Known avalanche paths with potential debris volumes and/or return frequencies great enough to pose considerable risk to rail operations are posted at their boundaries along the line with highly visible slide zone markers denoting milepost locations. These slide zones are listed in Appendix A (Avalanche Path Inventory). Avalanche safety procedures for operations in slide zones vary depending upon hazard level and are discussed in Slide Zone Procedures section 4.1.

2.3 Cooperative Active Avalanche Mitigation

The Alaska Railroad and Seward Highway run parallel to each other from Anchorage to Portage and again from Moose Pass to Seward. There also exists a short section of shared road/railroad corridor on the Whittier spur. Because of this dual alignment, the ARRC and the AK DOT Seward Highway Avalanche Project (SHAP) have a shared responsibility for avalanche management. As a matter of course, the agency which has infrastructure closest to the avalanche run out zone shall assume the lead position when performing avalanche control for those paths since its facilities would be the first affected by avalanches. The exception to this is Girdwood Flats, Railroad milepost 75 through 80 where the SHAP continues to act in the lead capacity for mitigation efforts in spite of their highway relocation to the outside of the railroad tracks. This arrangement was a precondition of granting authorization to relocate the highway across railroad right-of-way.

The agency that assumes the lead for avalanche control shall direct and coordinate the activities. This control work may require the closure of the corridor and the use of military artillery or explosives to release areas of unstable snow. The “secondary” agency shall assist the other as much as possible with track/road closures, control procedures and debris removal. This cooperative effort benefits both agencies for effective and timely avalanche management with minimum disruption to operations. The SHAP sends out the highway closure notifications as far in advance as possible to maximize closure awareness to agencies that use the highway.

The goals of both agencies’ avalanche management programs are similar: to reduce avalanche risk and keep the track or road open safely as much as possible. There will be occasions when, due to increased exposure of maintenance activities or traffic volumes,

the “secondary agency” may take the lead in performing active avalanche mitigation (avalanche control).

Each agency must be satisfied with the others’ actions for this hazard reduction through avalanche control. If disagreement should arise, a consensus shall be reached through mutual consultations to resolve discrepancies. The ARRC is committed to cooperation with the SHAP in this shared responsibility along the transportation corridors. A table detailing the responsible lead agency for recognized slide zones is presented in the appendix.

2.4 Military Artillery for Avalanche Control

2.4.1 Use of Weapons

Surplus US Army weapons are commonly used for avalanche control. Their use by federal, state and other agencies is authorized through Army Regulation 725-20, the Army Avalanche Control Program (ACP), USDA Forest Service permits and memoranda of agreement. These documents describe in detail the policies, procedures and responsibilities required of the participating agencies using the weapons and ammunition. The policies and procedures will be strictly adhered to by the ARRC.

Firing of the weapons will be at the direction of the ARRC Avalanche Program Manager. Only trained qualified staff will fire, assist in firing, load the weapons or transport ammunition. Qualifications and training for avalanche artillery certification have been established through the Artillery Users of North America Committee whose training standards are recognized by the U.S. Army. The ARRC and its personnel shall abide by these standards and policies in all matters relating to weapon use. Additionally, all safety procedures as prescribed by ARRC operating rules, such as flag protection, shall be followed.

ARRC has agreed with the Anchorage Federal Aviation Administration (FAA) to set up Temporary Flight Restrictions (TFRs) through the Operations Manager in Charge (OMIC) for artillery avalanche control work. There are 5 distinct blocks that cover the ARRC’s avalanche control zones. ARRC is to call the OMIC at least 1 hour (preferably 3 hours) before control work starts to put a TFR in effect for a specified block for a specified time period. To release the TFR, ARRC will notify the OMIC as soon as control work is finished.

2.4.2 Security and Storage

General requirements for the security, transportation and storage of military weapons and ammunition are found in the documents mentioned in section 2.4.1. Review of these requirements is part of an annual review required of ARRC avalanche artillery gunners.

Storage of weapons during extended periods of non-use (i.e. during the summer) shall be at secure weapons storage facilities designated by such by the ARRC. During the avalanche season, they will be stored at field locations. When in field storage, all

weapons shall be secured to preclude tampering or theft as required by ACP regulations, and the firing mechanisms removed to render the weapons inoperative. Access to the firing mechanisms shall only be by the ARRC Program Manager, District #1 Roadmaster, or qualified ARRC Gunner.

Ammunition shall be stored only in the facilities designed to meet storage requirements of the ACP. Documentation on ammunition use and scheduled inventories shall comply with the applicable regulations. Responsibility for the ammunition storage, inventory, transportation and handling shall be with the ARRC Avalanche Program Manager.

Gun and explosive magazine locations are provided in a separate addendum, Appendix C. For Security purposes, this information is held as a separate part of this plan and is not subject to disclosure to the general public.

2.5 Explosives Use

Explosives are an integral part of avalanche control and are routinely used by experienced avalanche workers to test snow stability and release unstable areas of snow from above transportation corridors and facilities. The Bureau of Alcohol, Tobacco and Firearms (ATF) and other federal agencies strictly regulate the storage, handling and use of explosives. The ARRC and its employees shall abide these regulations at all times.

To provide for the flexibility needed in situations unique to avalanche blasting, specific procedures have been developed and exceptions to regulations have been adopted by the regulatory agencies of many “avalanche states”. For example, the state of Alaska does not require a blaster’s certificate for avalanche control and recognizes non-standard procedures for avalanche blasting.

One avalanche path where explosives are used incorporates the use of devices known as the “Avalanche Guard”. This system has an exemption from ATF that allows pre-loaded charges to be placed in a tamperproof box in the fall and be remotely launched during the winter season. Elaborate security procedures preclude unauthorized access. Charges from this system are equipped with a Recco reflector that allows their recovery with a receiving device if the charges don’t detonate.

An explosive charge that fails to fire is known as a dud. A dud can occur in any of the systems used including artillery rounds, hand charges, or prepared charges launched from the Avalanche Guard. The location of each dud is logged into a record that allows for site specific searches in the summer. Efforts are made to recover any duds during the summer season and dispose of them using accepted procedures. The dud recovery rate for hand charges and Avalanche Guard shots is fairly high because they are equipped with the Recco system. Artillery rounds are much more difficult to find and may require repeated trips to the avalanche starting zones. The Recco system cannot be used on artillery rounds. Given the very remote nature of most of the starting zones on the railroad’s avalanche paths, the risk from unexploded ordinance is relatively low in comparison to other programs in the country.

Prior to using explosives for avalanche mitigation, the ARRC will assess the risk of another user being in the target, runout, or overshoot area and take appropriate measures to mitigate this risk. The primary means of ensuring other users of the forest are not in the runout zones is by visual sweeps from the air, the tracks, or on the ground. The primary potential for other users in the area is with snowmachiners or helicopter skiers. Most avalanche work is conducted during very inclement weather and target locations are largely inaccessible to these user groups so the risk is relatively low during these periods. Activities conducted during good weather increase the risk of having another user of the forest exposed.

Snow blasting procedures, cornice blasting techniques, and helicopter bombing have been developed in part by the USDA Forest Service to facilitate avalanche control operations. These procedures are detailed in “The Avalanche Handbook” USDA Handbook #489, 1978, and its subsequent revisions “The Avalanche Handbook” by McClung and Schaerer, 1993, 2006. All ARRC employees engaged in these activities shall adhere to the outlined procedures. Those who transport explosives are required to attend a training session of at least four hours once every three years. Transport on a public highway requires possession of a Class A, B or C commercial driver’s license with a hazardous materials endorsement.

3 Avalanche Forecasting

3.1 General

Decisions made on avalanche safety are based on many factors from disparate sources: weather information, snow stability input, operational considerations and human factors. Some of the parameters considered in developing an avalanche forecast are quantitative measurements, but other inputs, equally as important, are intuitive, based on pattern recognition by the experienced forecaster. All of the factors must be integrated and processed by the avalanche forecaster to determine the appropriate level of response to varying degrees of avalanche risk.

3.2 Weather Data

Effective avalanche forecasting and control are highly dependent on past, present and near-future weather conditions. Real-time data acquisition from telemetry/radio accessible stations near avalanche starting zones and low elevation runout zones is standard industry practice and should be available to the forecaster. A coordinated effort to obtain and exchange data is a necessity for effective forecasting by the separate avalanche forecasting and control programs operating in the region: ARRC, Alaska DOT and Alyeska Resort.

Presently there are automated weather stations at Moose Pass, Peak 43, Grandview, Tunnel, Portage, Alyeska Base, Alyeska Mid, Alyeska Top, Max’s Mountain, Penguin Peak, Bird Point, Seattle Ridge, Turnagain Pass, and Indian Pass that provide real-time

data in the region. These are polled hourly by an avalanche server located in the main headquarters building of the railroad. These observations are available to the avalanche forecaster through a weather data storage system known as SmartMountain. The data is also published to the web hourly. The DOT has several manned low elevation stations along the Seward highway at maintenance camps.

3.3 Snow Stability Inputs

Observations of avalanche activity from field observers along the rail, highway and ski area are direct indicators of snow stability necessary for forecasting further avalanching. Stability data should also be acquired on a regular basis from avalanche starting zones to assess snowpack stability trends. This information is obtained by direct measurement of snowpack characteristics and by explosive testing of slopes (near to but not affecting the rail) to determine stability. Cooperative exchange of snow stability information between the various avalanche programs is essential for effective avalanche management by the ARRC.

3.4 Avalanche Hazard Ratings

The avalanche forecaster uses the weather, snowpack and stability observations available to determine the level of avalanche hazard. A rating scale is used to guide maintenance, rail operations and avalanche control activities. This rating scale is published daily to track workers who are required to follow the safety protocols contained within the ratings. Appendix B contains the current Avalanche Hazard Rating scale.

4 Operations in Avalanche Areas

4.1 Slide Zone Procedures

Historically, the normal avalanche risk to ARRC trains has been derailment due to collisions with avalanche debris deposited some time prior to the encounter. Only rarely do avalanches run into moving trains. Trains usually run into avalanches. To reduce these costly mishaps, the speed limit in slide zones shall be restricted to a maximum of 15 MPH when the avalanche hazard is moderate and rising or higher. The lower speed reduces the incidence of derailments but increases the exposure time of a train to direct contact with a moving avalanche. This exposure time can be minimized by the resumption of maximum authorized speed when the track is seen to be clear or the engines reach the end of the slide zone.

During periods of moderate or greater risk, personnel moving through slide zones shall check in prior to entering and again upon safely exiting the area. If working in slide zones for extended periods, scheduled check-ins will be used. In order to minimize exposure to avalanche risk, ARRC railroad cars, equipment and vehicles shall not be stopped in slide zones when the avalanche hazard for the slide zone is considerable or greater. Trains or other equipment not specially equipped for snow removal shall not attempt to push through avalanche debris as derailment and exposure to further avalanching are likely.

During periods of high to extreme hazard, avalanche control activities will likely take place. Coordination between the Avalanche Program Manager, Roadmaster, Section Foreman and Dispatcher is imperative to safely control train traffic, personnel and maintenance activities. Train traffic may be curtailed in order to achieve suitable risk reduction levels.

4.2. Maintenance, Snow and Debris Removal Precautions

ARRC staff who perform track maintenance and snow/debris removal are potentially the most vulnerable to avalanche hazard because of exposure time in the slide zones and lack of physical protection. To help manage this higher risk, they shall receive avalanche safety training, have avalanche rescue gear (shovel and probe) readily available for deployment and are required to use personal avalanche locator beacons during the avalanche season. ARRC personnel shall also use other standard avalanche safety procedures along the line during the avalanche season.

Exposure times should be reduced as much as practical by developing a work plan in advance that considers the following:

- A minimum number of trips should be made through avalanche areas.

- As few people as possible should be exposed to avalanche hazard.

- Waste and turn around areas should not be in active avalanche paths.

- An escape route should be designated and known by all in the work area.

When the avalanche hazard is high or extreme, snow removal in slide zones should be limited to emergency situations or expediting potential closures and avalanche control.

All bulldozers used for avalanche cleanup shall have a reinforced, enclosed cab to reduce the potential for cab breach in the event of an avalanche.

Snowcats can provide quicker clean-up times, which minimize the exposure to the operator and equipment. With less protection provided in the cab, compared to the Bulldozer and Excavator, careful assessment should be given to the avalanche type and probability before permission for snowcat clean-up is given.

During avalanche debris cleanup, a spotter shall be used to warn of further avalanches and an escape route designated. Removal of avalanche debris should be done only when there is sufficient light to observe for further avalanching or when the area is considered safe by the forecaster. The low side of debris removed shall be day-lighted promptly so as not to create a trap for snow by through cutting.

If it is imperative to remove debris or work in active slide zones under hazardous conditions, extra precautions shall be taken: a spotter is required; an escape route planned; rescue gear will be available; and only work absolutely necessary will be done.

5. Avalanche Response and Rescue

5.1. General

Reviews of avalanche accidents show that only about half of the people completely buried by snow survive for more than thirty minutes. These statistics emphasize the fact that help must be immediately available to buried avalanche victims. Considering the remoteness of the avalanche areas along the rail, the ARRC must be prepared to perform avalanche rescue without outside help in order to have a reasonable chance of recovering an avalanche victim alive.

Trained people with proper equipment are necessary to carry out successful avalanche rescue. Section crewmembers that normally work in avalanche areas shall receive training in avalanche rescue each year and practice rescue procedures. They shall be assigned personal avalanche locator beacons and wear them while on duty on the rail during the avalanche season. Vehicles and equipment that regularly work on sections of the rail with known avalanche paths shall carry avalanche probes and shovels during the avalanche season.

Initial response packs with equipment necessary for a hasty search will be carried in every section truck in avalanche territory. A main rescue cache with additional equipment for extended rescue operations shall be maintained at Tunnel. The equipment will be inventoried and checked for readiness by the section foreman or Avalanche Program Manager periodically throughout the avalanche season.

An avalanche alert and rescue packet containing notification and rescue procedures in the event of an avalanche accident shall be maintained in a prominent location at the section houses and main offices near avalanche hazard areas. Additionally, this emergency notification procedure shall be readily available to the ARRC dispatcher.

5.2. *Avalanche Alert*

If you come upon an avalanche or one is reported to you:

GET INFORMATION FROM WITNESSES.

- ASK** - Where is the avalanche?
- Are people or vehicles involved?

MOVE PEOPLE AND EQUIPMENT TO A SAFE LOCATION

NOTIFY BASE

INITIATE NECESSARY CLOSURES

EVALUATE AVALANCHE HAZARD

IF OKAY - PROCEED

IF HAZARDOUS - POSTPONE

IF MANAGEABLE - PROCEED CAUTIOUSLY

CHECK FOR POSSIBLE VICTIMS

GET HELP IF NEEDED

INITIATE FURTHER RESCUE ACTIVITY AS NEEDED

5.3. Self-Help Guidelines

If you are caught in an avalanche:

SOUND THE ALARM

REMAIN IN CAB

DO NOT SMOKE

SHUT OFF ENGINE & LIGHTS

LEAVE FLASHERS & RADIO ON

CALL IN LOCATION & STATUS

CHECK BEACON - TRANSMIT

PUSH PROBE UP & DIG SLOWLY

DO NOT LEAVE IF UNSAFE

DO NOT START ENGINE

5.4. *Avalanche Rescue Plan*

The following pages of instructions comprise the ARRC avalanche rescue plan. The instructions are to be used to guide rescue operations in the event of a major avalanche accident.

RESCUE PLAN

INSTRUCTIONS FOR SITE LEADER

1. **GATHER** - Personnel and Rescue Gear

2. **COMMUNICATE** - With Witness or First on Scene

3. **EVALUATE** - Avalanche Hazard
 - IF OKAY** - Proceed
 - IF HAZARDOUS** - Postpone
 - IF MANAGEABLE** - Proceed Cautiously
 - Expose Minimum Number of Rescuers
 - Have Spotter
 - Have Escape Route

4. **SEARCH** - The likely burial areas visually, then with avalanche beacon(s).

5. **SPOT PROBE** - Likely Burial Areas

6. **COARSE PROBE** - For Vehicles Using Four Foot Spacing
 - For People Using Two Foot Spacing

7. **DIRECT** - The Search for Maximum Effectiveness

8. **ACCOUNT** - For All Departing Personnel and Gear

RESCUE PLAN

INSTRUCTIONS FOR RESCUE COORDINATOR

1. **TAKE CHARGE** - When Notified Of Accident

2. **GET INFORMATION** - From Witness or First On Scene

3. **ASSUME** Role or **APPOINT** - Accident Site Leader

4. **NOTIFY**: Dispatcher: 265-2315
Avalanche Program Manager: Matt McKee 565-9204
District 1 Roadmaster: Stacy Ammerman 231-7111
State Troopers 911

5. **DIRECT** - The Rescue Operation by Assigning Tasks
 - Rescue Team Leaders
 - Scribe
 - Support Coordinator

6. **REFER** - Inquiries/Media to Office Spokesperson

7. **ACCOUNT** - For All People and Equipment when Done

8. **DOCUMENT** - The Rescue in Required Reports

RESCUE PLAN

INSTRUCTIONS FOR SCRIBE

1. LIST - People Assigned To Rescue Teams
2. RECORD - Time, Source and Messages/Events
3. ASSIST - Rescue Leader with Tasks

INITIAL ACCIDENT INFORMATION

TIME AVALANCHE REPORTED: _____

LOCATION OF AVALANCHE: _____

TIME AVALANCHE OCCURRED: _____

REPORTED / WITNESSED BY: _____

VEHICLES INVOLVED: _____

PEOPLE INVOLVED: _____

RESCUE PLAN

RESCUE TEAM CHECKLIST

<u>RESCUERS</u>	<u>TIME OUT - RETURN</u>	
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____

EQUIPMENT

	<u>OUT</u>	<u>IN</u>
<u>PROBES</u>	_____	_____
<u>SHOVELS</u>	_____	_____
<u>BEACONS</u>	_____	_____
<u>WANDS/CORD</u>	_____	_____
<u>HEADLAMPS</u>	_____	_____
<u>EMT KIT</u>	_____	_____
<u>OXYGEN</u>	_____	_____
<u>LITTER</u>	_____	_____
<u>OTHER:</u>	_____	_____

RESCUE PLAN

INSTRUCTIONS FOR SUPPORT COORDINATOR

1. COORDINATE - Field Operation for Other Resources with Rescue Leader:

EQUIPMENT / MANPOWER

DOT SHAP	783-2772
ALYESKA SKI PATROL	754-2285 EXT 3365
CHUGACH POWDER GUIDES	783-4354
AK MOUNTAIN RESCUE	566-2674

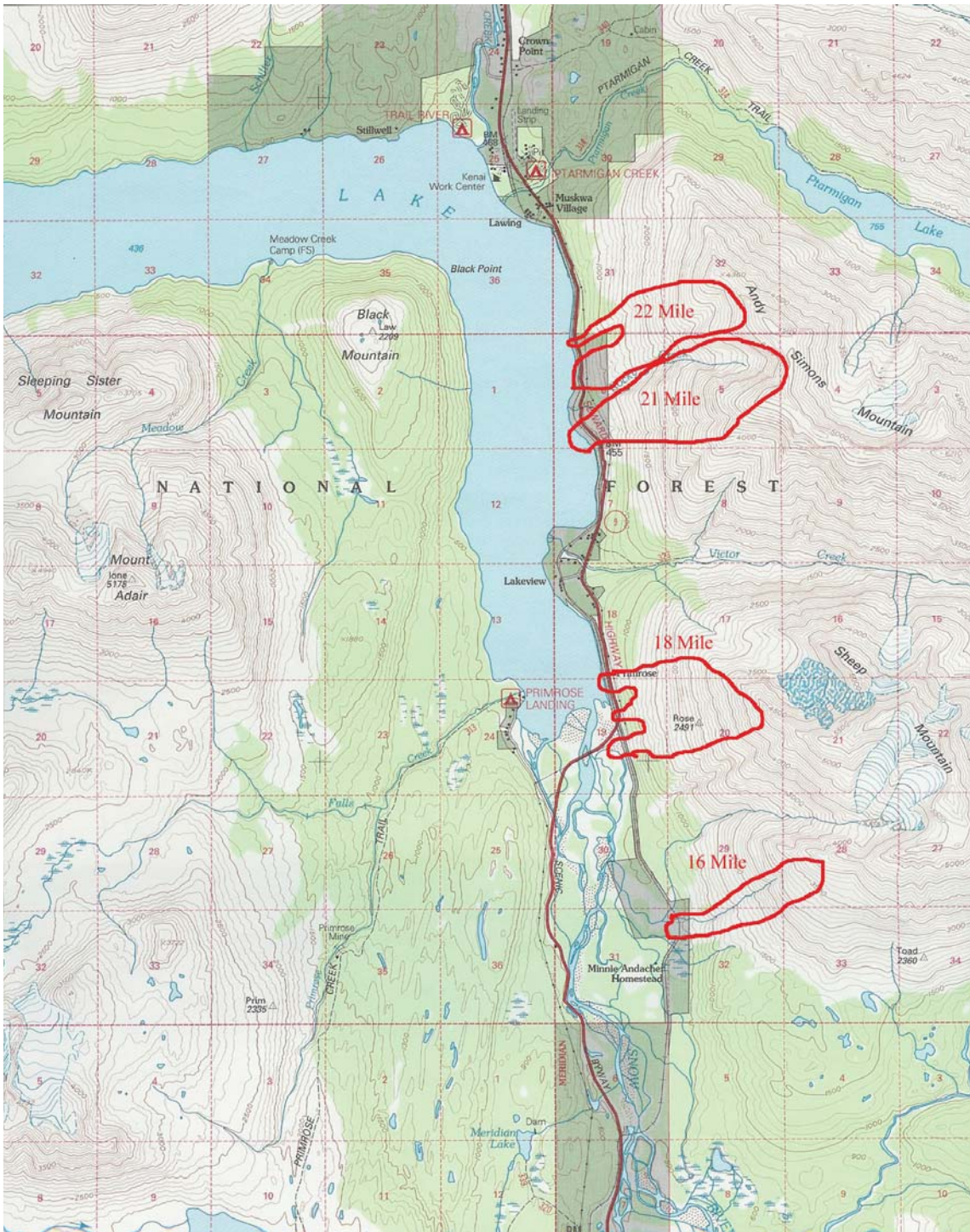
EMERGENCY SERVICES

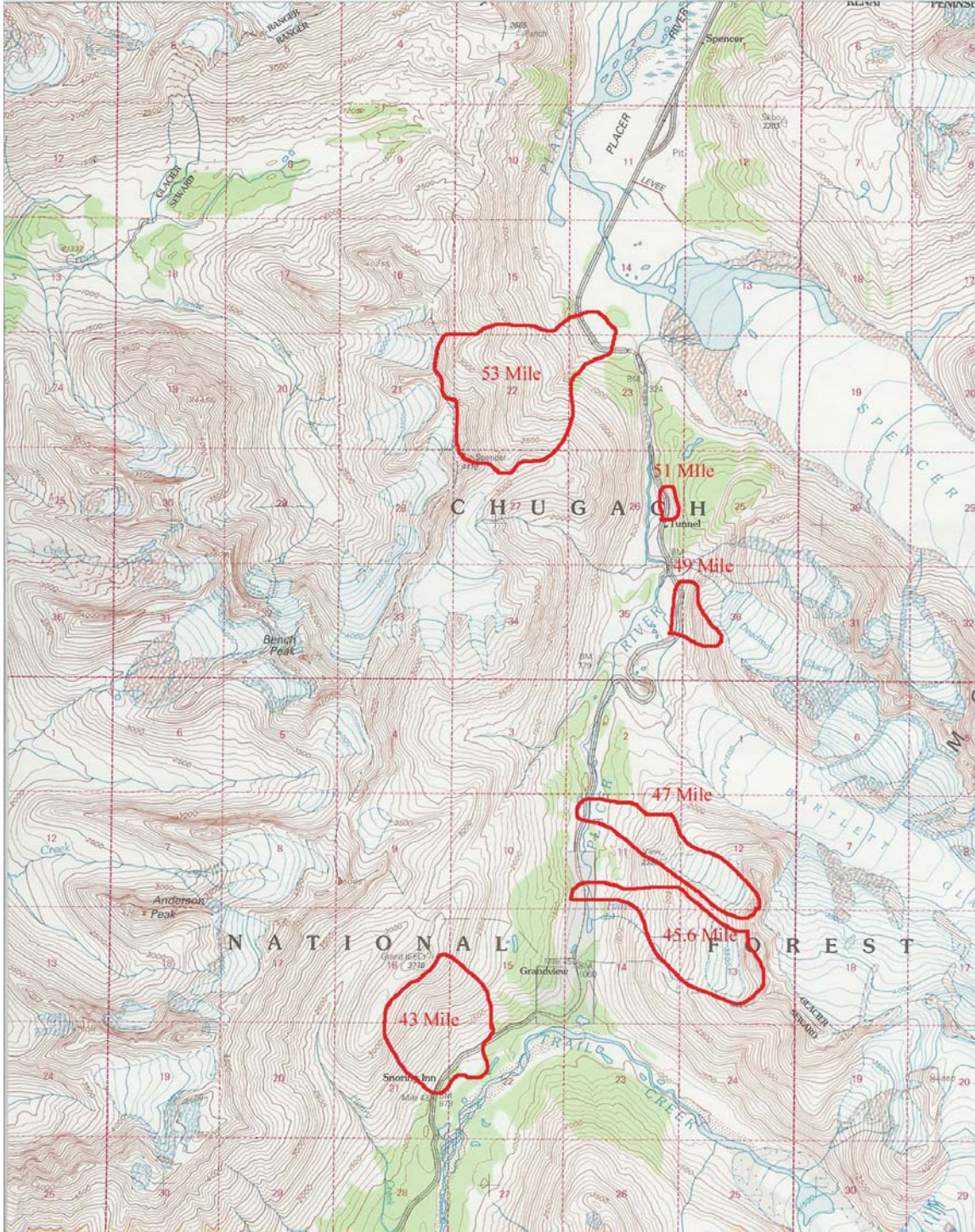
STATE TROOPERS	911
GIRDWOOD EMS	911 783-2511

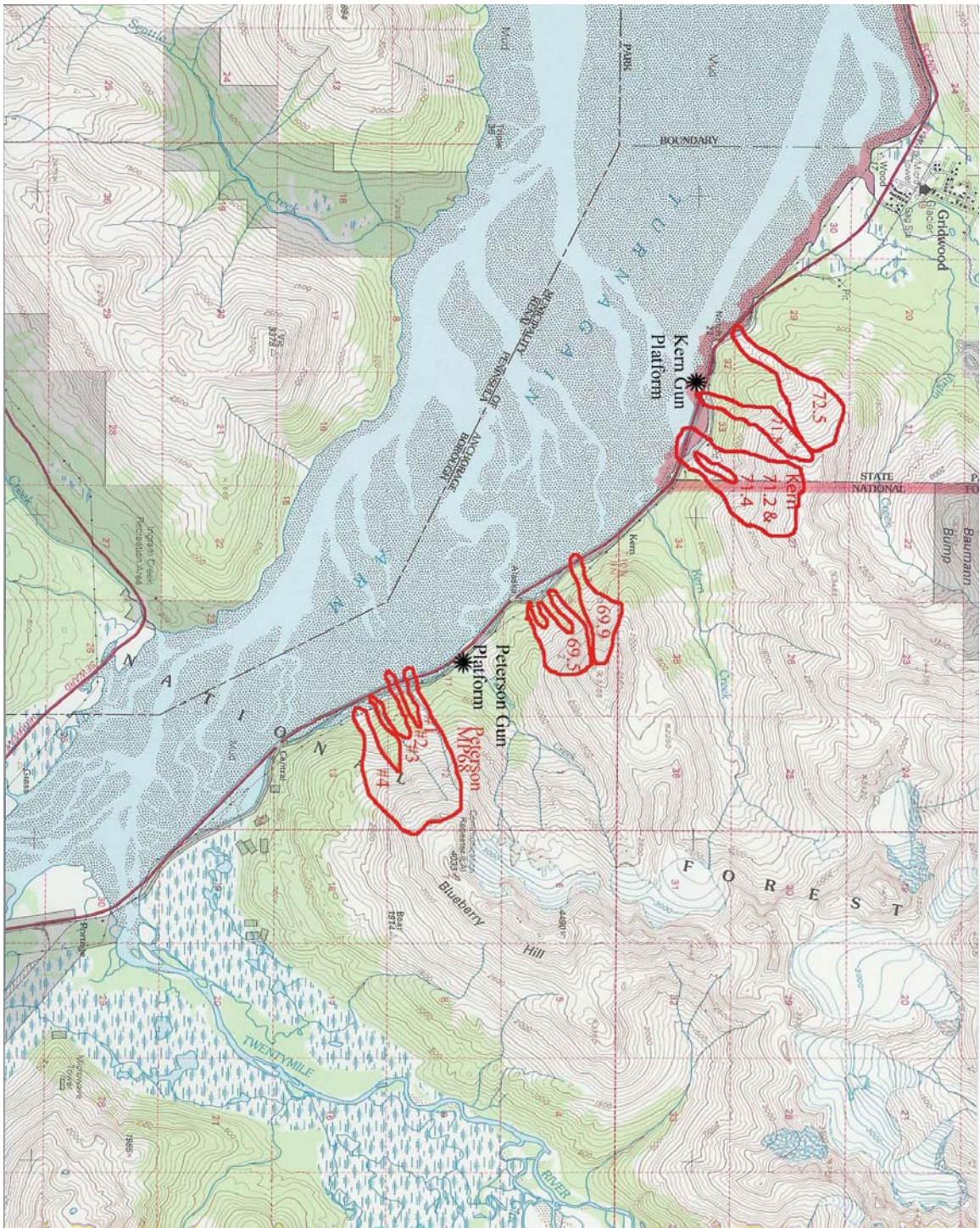
2. COMMUNICATE - Status of Operation to Designated Spokesperson
For Public Distribution. Update Periodically.

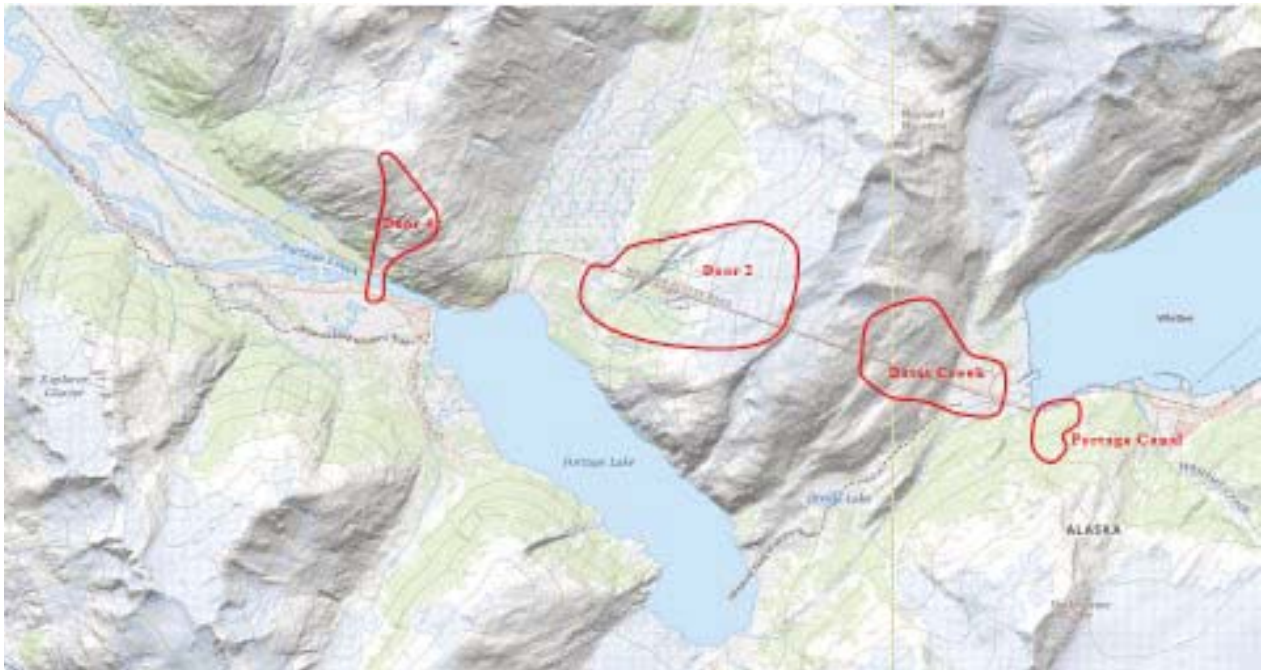
Appendix A: Avalanche Path Inventory

Path Number	Name	Slide Zone Limits	Lead Agency
16	16 Mile	16.3 – 16.4	ARRC
18	Snow River	18.1 – 18.7	ARRC
21	Horse Pasture	20.6 – 21.0	DOT
22	Andy Simons	21.4 – 22.0	DOT
43	43 Mile	43.0 – 43.6	ARRC
45.6 - 47	Grandview	45.5 – 46.7	ARRC
49	49 Mile	48.8 – 49.7	ARRC
51	Switch Slide	51.4 – 51.6	ARRC
51.5 - 53	Between Tunnels	51.5 – 52.6	ARRC
53	53 Mile	53.0 – 53.6	ARRC
F7	Door 4	F6.75 – F6.9	ARRC
68	Peterson Chutes	67.3 – 68.1	ARRC
70	Centerline	69.3 – 70.0	ARRC
71	Kern Mountain	71.2 – 72.6	ARRC
76	Girdwood Flats	75.5 – 80.2	DOT
83	Bird Flats	82.5 – 83.9	DOT









Appendix B: Avalanche Hazard Rating

ALASKA RAILROAD AVALANCHE HAZARD RATING

The Avalanche Hazard Rating (AHR) system is a five-level scale with corresponding color codes. The particular AHR is determined by the ARRC's Avalanche Forecasters (Avalanche Program Manager and District 1 Road Master). The AHR is based on local/regional snow, weather, avalanche observations and historical data. The Avalanche Forecasters shall be responsible for managing the AHR, putting Snow Slide Zones (Ж) into effect and notifying the Train Dispatcher.

Each level of avalanche hazard identified in the AHR contains specific operational restrictions. Both the AHR and operational restrictions may be edited at any time by the Avalanche Forecasters.

The current AHR will be delivered via track bulletin Form F. Trains and track car operators will receive the AHR and notification of slide zones that are in effect by TGBO. When the AHR changes, the change will be conveyed by the Train Dispatcher to any trains or track car operators holding authority in the area affected using normal track bulletin procedures.

Level 1 (Green) – Unrestricted

Avalanche Forecast: Chances for avalanche activity above the rail are low. Avalanche debris impacting the rail is unlikely.

Restrictions: None

Level 2 (Yellow) – Avalanche Statement

Avalanche Forecast: Moderate avalanche danger above the rail. Resulting avalanche debris reaching the rail is possible but not likely. Intermittent explosive testing may occur in certain areas to clean out starting zones in order to minimize future avalanche impacts.

Restrictions:

Avalanche Qualified Track Car Operators (completed ARRC avalanche training): Utilize safe travel and working procedures.

Call in and out of side zones that are in effect.

Expose only one vehicle/piece of equipment at a time when traveling through all identified slide zones.

Avalanche transceivers must be worn and access to rescue gear is required if stopped and working in an identified slide zone.

Non-Avalanche Qualified Track Car Operators:

If travel through an identified slide zone is necessary, approval is first required from an Avalanche Forecaster.

Train Crews:

Avoid stopping trains in identified slide zones. Have Dispatch notify the Avalanche Forecasters so they are aware of any prolonged stops in slide zones.

Avalanche transceivers must be worn and access to rescue gear is required if outside of a locomotive in an identified slide zone.

Level 3 (Orange) - Avalanche Watch

Avalanche Forecast: Considerable avalanche danger above the rail. Avalanche activity above the rail is likely, resulting avalanche debris reaching the rail is probable. Personnel restrictions are in effect. Train restrictions can be expected. Explosives mitigation may allow for continued train operations in certain areas.

Restrictions:**Avalanche Qualified Track Car Operators:**

Same as Level 2 plus:

Each crew member is required to wear a functioning avalanche transceiver and have access to an avalanche probe and shovel.

Avoid travel through identified slide zones when possible. If work in an identified slide zone is required, contact an Avalanche Forecaster for approval.

Work in a minimum crew size of two crew members utilizing two vehicles for separate transportation if possible.

Call in and out of all identified slide zones.

Each work group should carry at least one hand-held radio.

Crews need to protect against operating in remote slide zones with delayed rescue response.

Non-Avalanche Qualified Track Car Operators:

Not qualified to enter identified slide zones under this restriction level.

Train Crews:

Same as Level 2 Plus:

Must have at least one person with avalanche training to operate in identified slide zones.

Must get approval from Avalanche Forecaster to exit locomotive in an identified slide zone.

Level 4 (Red) – Avalanche Warning

Avalanche Forecast: High avalanche danger. Widespread large magnitude avalanche activity is expected. Avalanche debris impacting rail safety and rail travel is likely. Avalanche mitigation efforts are ongoing. No avalanche cleanup without the approval of the Avalanche Program Manager.

Restrictions:

Train Dispatcher: Train traffic suspended. Direct all trains in avalanche territory to move to the closest safe destination (Seward, Portage, Whittier, Anchorage) and tie up until hazard level goes back to Level 3.

Issue authority in avalanche territory only to avalanche mitigation crews.

All On-Track Equipment Operators: No travel into/through identified Slide Zones without the permission of an Avalanche Forecaster.

Personnel engaged in avalanche mitigation work will be under the direction of the Avalanche Forecasters. These personnel may travel as directed provided someone in the work group has ≥ 5 years' experience operating in avalanche territory.

Train Crews: All train traffic is required to travel to nearest safe destination. Cease train operations until rating goes back to Level 3.

Level 5 (Black) – Avalanche Track Closure

Avalanche Forecast: Extreme avalanche danger. Large magnitude avalanche activity above the rail is occurring. Numerous avalanches have deposited avalanche debris on or near the rail. Additional large magnitude avalanches reaching the rail grade can be expected.

Restrictions:

All avalanche mitigation work suspended until hazard decreases to Level 4.

Train Dispatcher: Full track closure. No authority issued except for emergency response.

All On-Track Equipment Operators: Rail access in avalanche territory closed to all personnel and equipment.

Train Crews: Same as Level 4

Appendix C: Artillery and Explosive Magazine Locations

CONFIDENTIAL – NOT FOR PUBLIC DISTRIBUTION

AKRR Artillery and Explosive Magazine Locations

Artillery

1 ea. 105 MM M101A1 Howitzer located at MP 54 on Railroad right-of-way.

1 ea. 105 MM M101A1 Howitzer located at MP 51.1 (Tunnel) on Forest Service land.

2 ea. 105 MM M101A1 Howitzers located at Girdwood train station in a secure alarmed storage facility.

2 ea. 105 MM m101A1 Howitzers located at the Anchorage train yard in a secure alarmed storage facility.

Explosive and Artillery Magazines

Type I - Artillery and Explosive Magazines - on USFS land adjacent to the gun mount at Tunnel.

Type II – Detonator Magazine - on USFS land next to Type 1 magazine at Tunnel.

Type I - Artillery Magazine - on AKDOT property at Girdwood DOT yard.

Type II – Seasonal Artillery Magazine - on ARRC right-of-way at MP 54.

Type II w/ ATF variance - 3 Avalanche Guard Explosive Magazines - on USFS land at 43 Mile slide path.

Type II – Explosive Magazine w/ attached Type II Detonator Magazine - on ARRC right-of-way at Curry (for District 2 Slide Zones).

Type V- Blasting Agent Magazine - on ARRC right-of-way at Curry (for District 2 Slide Zones).

CONFIDENTIAL – NOT FOR PUBLIC DISTRIBUTION

Future Explosive Magazines

For planned ARRC RACS projects:

6 ea. Type II Magazines w/ ATF Variance at Door 4 - on USFS land.

4 ea. Type II Magazines w/ ATF Variance at Centerline - on USFS land.

7 ea. Type II Magazines w/ ATF Variance at Kern - 6 on USFS land, 1 on Municipality of Anchorage, Heritage Land Bank property.

1 ea. Type II – Explosive Magazine w/ attached Type II Detonator Magazine - on USFS Land at old Tunnel magazine site (for RACS explosives storage.)



Alaska Railroad Corporation
Invasive Weed Plan for Tunnel Artillery Site
Chugach National Forest – Glacier District
Special Use Permit GLA1130

Updated 7/7/2021

The invasive weeds *Vicia Cracca* (Bird Vetch) and *Phalaris Arundinacea* (Canary Grass) have been found at ARRC's Tunnel artillery site. This occurrence covers part of an estimated 2 acres located at Alaska Railroad Mile Post 50.5 (See Image 1).

In accordance of USFS Permit GLA1130 permit clause V. Resource Protection, line C., pending approval, Alaska Railroad's plan to contain, control and eliminate the invasive plant species at this site is as follows:

- Scheduled July 2021, Alaska Railroad Corporation (ARRC) Environmental Operations Manager and ARRC Environmental Specialist, will apply herbicide using a hose and nozzle pump spray mounted to a Tundra (ARRC railway capable flatbed truck).
- ARRC's Herbicide mix includes:
 - Alligare Glyphosate 4 Plus, EPA Registration # 81927-9, active ingredient is glyphosate, at a rate of 64 oz./acre.
 - Corteva Milestone, EPA Registration # 62719-519, active ingredient is Aminopyralid, at a rate of 7 oz./acre.
 - To prevent overspray drift, included is:
 - Novita Drift Control at 2oz./100 gal.
 - Novita Foam, no more than 2 oz./100 gal.
- Both Aminopyralid and Glyphosate herbicides are approved for use on the Chugach National Forest in accordance with the 2014 Kenai Peninsula Invasive Plant Treatment Project Environmental Assessment and the 2020 supplement to that EA.
- Mixed herbicide will be applied using a hand sprayer, set up at 50 gal./acre.
- The application will be done using low pressure and large droplet size.
- All areas of Bird Vetch and Canary Grass are in reach of the Tundra and the radius of the spray hose.
 - This configuration will cover the estimated two-acre spray area.
- Site inspections will be made by Matt McKee, ARRC Avalanche Program Manager, throughout the summer to confirm the spray was effective on the Bird Vetch and Canary Grass, and that the spray area was adequate.
 - Any additional Bird Vetch or Canary Grass found would be either spot sprayed with a one-gallon pump sprayer or hand weeded and disposed of depending on amount.
- Bird Vetch seed pods can stay dormant for up to six years, for this reason ARRC plans to update and resubmit a pesticide use plan, in accordance with Clause V. C. outlined in USFS Special Use Permit GLA1130, until the invasive species are removed.

ALASKA RAILROAD CORPORATION



Corporate: P.O. Box 107500, Anchorage, AK 99510 • 327 Ship Creek Avenue, Anchorage, AK 99501



IMAGE 1: ARRC TUNNEL ARTILLERY SITE SHOWING INVASIVE WEED ZONE (60.6633°, -149.0454°)

Approved by:

7/15/2021

Matt McKee
Avalanche Program Manager
Alaska Railroad Corporation
McKeeM@akrr.com
907-565-9204

7/15/2021

Peter Frank
Kenai Peninsula Zone Ecologist
Chugach National Forest
Peter.Frank@usda.gov
907-280-9020