

APPENDIX E

VISUAL IMPACT ASSESSMENT

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Shotgun Cove Road Extension Mile 2.0 to 4.5

AK Whittier 2016(1)

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Prepared for:
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Western Federal Lands Highway Division

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INTRODUCTION

The purpose of this visual impact assessment is to document potential visual impacts caused by the Proposed Action and propose measures to lessen any detrimental impacts that are identified. Visual impacts are demonstrated by identifying visual resources in the project area, estimating the amount of change that would occur as a result of the project, and predicting how the affected public would respond to or perceive those changes. This document follows the guidance outlined in the publication Guidelines for the Visual Impact Assessment of Highway Projects published by the Federal Highway Administration (FHWA) in January 2015 (FHWA 2015).

PROJECT DESCRIPTION

The Western Federal Lands Highway Division (WFLHD) of the FHWA with the City of Whittier (City), in cooperation with the U.S. Forest Service (Forest Service), proposes to construct an approximately 2.5-mile gravel road extension of Shotgun Cove Road. The road would run parallel to the shoreline beginning at the current Shotgun Cove Road terminus (mile 2.0) and continue on to Forest Service land at Trinity Point (mile 4.5). The proposed project begins two miles northeast of Whittier, Alaska.

The proposed road extension would be constructed approximately 250 to 350 feet from the shoreline and would run roughly down the middle of City-owned land. The project would include nine new parking areas and eight spur/access roads accessing future beach access points, trailheads for uplands access, and future private parcels. The road would terminate at Trinity Point with two parking areas. Figure 1 shows the proposed main road and proposed spur/access road alignments.

The main road would have two 10-foot-wide gravel travel lanes with 5-foot-wide gravel shoulders with recoverable slopes and drainage swales or rock cuts along uphill sides. The roadway would follow existing contours to limit steep grades (maximum grade would be 10%) and significant changes in grade. The spur roads would be slightly narrower, with two 9-foot-wide gravel travel lanes and varying width recoverable slopes. Both the mainline and spur roads would have designed rockfall catchment areas on the uphill side. Typical traffic control and wayfinding signage would be installed along the route.

Nine new parking areas would be constructed to provide access to public land along the corridor, with capacities ranging from 8 to 50 parked vehicles. Public toilet facilities would also be installed at two of the lots. The parking areas are planned in locations near recreation resources such as viewpoints, beach access, backcountry access, and kayak launch areas. Four segments of the existing Emerald Cove Trail near the parking areas would be left in place and would undergo minor improvements for safety. New trail segments would be constructed at three of the proposed parking areas to lead to the improved trail sections or directly to shoreline access.



Figure 1. Proposed Shotgun Cove Road Extension Project Location and Vicinity

PROJECT LOCATION AND SETTING

The project location and setting provide for the context for determining the type of changes to the existing visual environment. The project is located two miles northeast of Whittier, Alaska, at the terminus of the existing Shotgun Cove Road and extends onto Forest Service land at Trinity Point. There are no Wild and Scenic Rivers or Scenic Trails and Byways designated within Whittier (National Park Service 2020). However, much of the surrounding land is undeveloped wilderness. The nearest residences and businesses are located approximately two miles from the project area in downtown Whittier.

The study area for the assessment, or area of visual affect (AVE), is defined as *the area of land that is the sum of the viewsheds of all travelers with views from the road and neighbors with views of the road, and is determined by topography, vegetation, and viewing distance*. For purposes of this analysis, neighbors are considered to be travelers passing by the road corridor with views of the road because there are no neighbors that will occupy land adjacent or visible to the proposed roadway. The AVE for the project is therefore defined as portions of the existing Shotgun Cove roadway (Phase I), the proposed road itself, and the marine waters of Passage Canal adjacent to the new road corridor where viewers passing by might observe the

proposed road (Figure 2). Primary views from the proposed road corridor will include the existing mountain/glacial landscape, surrounding vegetation, and the roadway itself (Figure 3). Primary views of the roadway will include constructed features such as the gravel roadway, parking lots, retaining walls, and cleared vegetation.



Figure 2. Area of Visual Effect (AVE) for the Proposed Action

VISUAL RESOURCES/AFFECTED ENVIRONMENT

Visual resources of the project setting are defined and identified below by assessing visual character and visual quality in the project corridor.

Visual Character

Visual character refers to how color, texture, diversity and continuity describes the project area. The landscape in the AVE is essentially natural with no development in view beyond a small trail that follows the coastline. The project corridor is comprised of forested hillside interspersed with patchy muskeg areas. Diverse vegetation species in the project corridor range from large spruce trees typical of coastal temperate rainforest to native low shrubbery. These plants give the project area a coarsely textured appearance. The vegetation colors change depending upon the season and rainfall, but is dominated by the evergreen tree species that remain dark green year-round. The hillside slopes down and at many places drops off steeply via exposed rock cliffs to Passage Canal's rocky shoreline.



Figure 3. View of Passage Canal from the Project Corridor

Visual Quality

Visual quality refers to what viewers like and dislike about visual resources that compose the visual character of a particular scene. Different viewers may evaluate specific visual resources differently based on their interests in natural harmony, cultural order, and project coherence (FHWA 2015). For the AVE under consideration, the landscape is characterized by natural harmony with extensive marine, mountain, and glacier vistas, with forest, muskeg, and steep mountain slopes to the east and views of Passage Canal and the mountains and forested areas on the opposite bank to the west. Also prominent throughout the project area are relatively undisturbed wetlands including freshwater forested/shrub and freshwater emergent wetlands (U.S. Fish and Wildlife Service 2020).

VIEWERS AND VIEWER RESPONSE

The viewers represent the individuals that would be visually impacted by the proposed project. FHWA generally considers two distinct types of viewers when analyzing visual impacts: neighbors and travelers. Neighbors are those people adjacent to the proposed roadway and have views of the road and include recreationists participating in recreation within the AVE. Travelers are those people using the roadway and have views from the road (FHWA 2015). While the proposed Shotgun Cove Road Extension would not have any fixed neighbors with

views of the road since the nearest businesses and residences are at least two miles away, recreationists would have views of the road as they pass by on the water in Passage Canal.

CRW Engineering Group, Inc. (CRW) modeled the proposed roadway design with an AutoCAD application combined with a colorized survey-grade Lidar point cloud from Kodiak Mapping, Inc. to simulate views of the proposed project from three different perspectives (Appendix A). The models enabled clear perspectives to evaluate and predict how viewers could respond to the environmental changes the proposed project would have on the landscape, and how the proposed project may alter viewer perspectives.

Types of Viewers Analyzed

Visual perspectives of three types of subjects were simulated by CRW: viewers passing by in a small watercraft (elevation of 0 to 20 feet), viewers passing by on the top deck of a cruise ship (elevation of 220 feet), and viewers passing by in aircraft (approximate elevation of 10,000 feet). The three viewer perspectives have unique levels of viewer exposure and viewer sensitivity, therefore the simulated models helped predict possible visual concerns and responses the viewers will have due to the visual alterations the proposed project will have on the landscape. Also considered (but not modeled in the visual impacts simulation) were the road users themselves.

Viewer Sensitivity and Response

Viewer sensitivity is a measure of the viewer's exposure to and awareness of the scene or object in question. Viewer response is the anticipated reaction from viewers resulting from visual changes the proposed project would have on the landscape. Analysis of different user group viewer sensitivities help measure each group's viewer response.

Viewer Exposure

Viewer exposure is a way to evaluate a viewer's ability to observe a specific object. Viewer exposure has three attributes: proximity, extent, and duration. Proximity relates to the where the viewer is located in comparison to the scene or object being viewed. The closer in proximity the viewer is to the scene or object, the more exposure the viewer will have. Extent relates to the number of people that will view the object: fewer viewers means less exposure; many viewers means greater exposure. Duration relates to how long a viewer is able to view the scene or object, and incorporates narrowness of the view and speed at which the viewer travels. The longer a viewer can keep the scene or object in sight, the more exposure the viewer will experience.

Viewer Awareness

Viewer awareness, or recognition of a particular scene or object, has three attributes: attention, focus, and protection or local values placed on a scene or object. Attention is associated with routine; the more routine a scene is to a viewer, the less sensitive the viewer is to it. Focus relates to the scene or object's specific visual elements. If the view has no specific element or focal point, the less sensitive viewers will be to the details. Protection, or local values, are associated with the importance and value that a community places on the object or

surrounding environment aesthetics. The more a community values the object, the more sensitive they will be to changes to its visual aspect.

The proposed project is located in an area that has not been developed. Local and non-local viewers will have different sensitivities. Most local and some non-local viewers will have viewed the area pre-construction and would observe changes the project has on the environment which could increase their sensitivity to the changes. Visitors (primarily tourists) may only have views of the environment post-construction and would not have memory of the undisturbed wilderness for comparison which would decrease their sensitivity to change.

VISUAL IMPACTS

Visual impacts are determined by assessing changes to the visual resources, characteristics, and quality induced by the project and predicting viewer response to those changes. Visual impacts were analyzed for the two project alternatives: the No Action Alternative and the Proposed Action Alternative.

Visual Impacts: No Action Alternative

A No Action Alternative was also considered for potential visual impacts. Under this alternative, no construction would occur; therefore, there would be no change within the project corridor or impacts to the existing visual resources, characteristics, or quality of the AVE.

Visual Impacts: Proposed Action Alternative

The Proposed Action would impact the AVE's undisturbed wilderness through vegetative clearing, grade modifications, and construction of a new, 2.5-mile-long roadway. The Proposed Action would create adverse impacts on visual quality for some travelers by causing changes to the visual resources of the natural environment, similar to those of the existing (Phase I) Shotgun Cove Road. For others, the Proposed Action would enhance visual quality by increasing traveler awareness and exposure to scenic vistas as they travel on the roadway and stop at viewpoints/parking lots along the corridor.

The proposed road extension's gravel travel lanes, parking lots, and rock cuts in the hillside will cause disruption to the natural harmony of the AVE. However, the viewshed would be impacted to varying degrees depending on the viewer's location. Although the roadway would be in view for some recreationists within the AVE, the road's low profile would be partially screened by the area's topography and vegetation and many roadway elements will blend into the existing landscape. CRW's model simulation illustrated that the majority of the roadway from views at lower elevations would be concealed by existing vegetation, and views of the roadway would become more apparent as viewer elevation increases. Therefore, viewer groups would be impacted by the proposed project at different levels depending upon the viewer's location.

Visual Impacts from Low Elevation

The small watercraft perspective showed simulated views of the proposed project from an elevation from 0 to 20 feet from the surface of Passage Canal (Appendix A; pages 2 – 19). This

viewer group would have the longest viewing duration and would potentially be closest in proximity to the proposed roadway; however, viewers from small watercraft are expected to experience a low level of visual exposure from the proposed project due to the low viewer elevation. They would experience low visual impacts due to tall, dense vegetation that will screen the proposed project. The roadway would not be seen from the low elevation of a small watercraft; however, the staging areas, spur road embankments and rock cuts would be in view.

Visual Impacts from Mid-Level Elevation

The top deck of a cruise ship perspective showed simulated views of the proposed project at a 220-foot elevation from the surface of Passage Canal (Appendix A; pages 20 – 41). This group has a moderate level of visual sensitivity and exposure to the proposed project, as most of these viewers would be aware of and focused on the visual quality of their surroundings.

Viewers at this elevation would be expected to experience low to moderate visual impacts from the proposed project. While existing vegetation would screen portions of the roadway, some sections of the mainline, parking areas, staging areas, spur road embankment, and spur road rock cut would be in view. However, the project area is small in relation to the vastness of Passage Canal and the project surroundings. As this user group is predominantly composed of non-local (tourist) viewers that may not have visited Whittier in the past, they are less likely to be sensitive to or impacted by perceived changes in the AVE.

Visual Impacts from High Elevation

The air perspective simulated “bird’s eye” views of the proposed project (Appendix A; pages 42 – 56). Viewers from aircraft above the area have a low to moderate level of visual exposure to the proposed project. This viewing group is estimated to have the smallest number of viewers in comparison to the other two viewer groups and would be farthest away, but would be able to view most of the project components.

These viewers would experience moderate visual impacts as the entire project would be visible. The overall visual character and visual quality of the area as viewed from this perspective would be moderately impacted. Although the entire project would be in view from above, the large-scale scenic vistas prominent in the Passage Canal/Shotgun Cove areas lessen these project impacts.

Visual Impacts from the Roadway

Travelers on the proposed road would experience scenic views of Passage Canal and surrounding areas from the roadway, parking lots, and trail extensions. The opportunity to view and experience scenic resources within the AVE will be enhanced by allowing easier access to the area via the extended road. The Proposed Action will enhance visual quality for travelers by improving exposure to and awareness of desirable (harmonious, orderly, and coherent) views.

Temporary Visual Impacts

Temporary impacts to visual quality would occur during construction activities. The movement of equipment in and out of the project area, staging areas, and general construction activities would be visible to boaters on Passage Canal.

Overall Visual Impacts

After completion the gravel roadway, cut slope excavation areas and other road components would be visible at a few points from Passage Canal, depending on viewer height. The use of BMPs and conservative clearing zones (80 feet) would reduce visual impacts, but the proposed project would change the visual quality of the Passage Canal and the surrounding area. However, users traveling along the road would experience a view with a high level of scenic integrity that might otherwise have been inaccessible to them prior to implementation of the Proposed Action.

Potential Future Impacts

Since the area to be impacted consists of dense forests and mountain hillsides, any future private development on parcels spurred by construction of the Proposed Action would add additional visual impacts to the AVE. It is expected that there would be 70 to 90 lots available for private sale, ranging from a quarter to a half-acre in size. If development occurs on these lots, it would be mainly limited to primitive, dry cabins as utilities would not be available in the near future. It is expected that most cabin owners would leave most of vegetation on their properties intact, since adds to the natural feel and beauty of the site, it provides protection from the elements, and because clearing of large trees and hard earthscape would be difficult.

Whittier residents hold their scenic resources in high regard. One of Whittier's visions is to "preserve our unspoiled environment," so it is likely that any present or future actions will be scrutinized carefully with regards to maintaining the viewshed that persists in much of Whittier (City of Whittier 2020). The level of visual impacts from these private dwellings could be minimized through use of covenants, conditions, and restrictions imposed by the City for land use permits issued in this area including, for example, only earth-toned buildings limited to a certain height.

AVOIDANCE AND MINIMIZATION MEASURES

The proposed project will mitigate adverse impacts on natural visual resources and adverse impacts on the exposure of viewers. Avoidance and minimization measures included in the design of the project to lessen visual impacts caused by the project are listed below.

1. **Project design includes a conservative clearing area (approximately 80 feet) to minimize disturbance to visual aesthetics, and vegetation buffers will be left intact as much as possible along the project corridor.** Vegetation will be utilized to help lessen the displeasing views the road and other features and construction would have on the viewers. The vegetation buffers will help screen portions of the road from view to minimize adverse impacts to human view.

2. **No roadway lighting is proposed in conjunction with the Proposed Action.** Roadway lighting will not be installed to avoid light pollution and to avoid other adverse visual effects such as poles from the proposed project.
3. **Visual impacts from future private cabins along the project corridor would be minimized.** The City would adopt codes, covenants, and restrictions designed to encourage structures to blend with the existing landscape and vegetation.

REFERENCES

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APPENDIX A

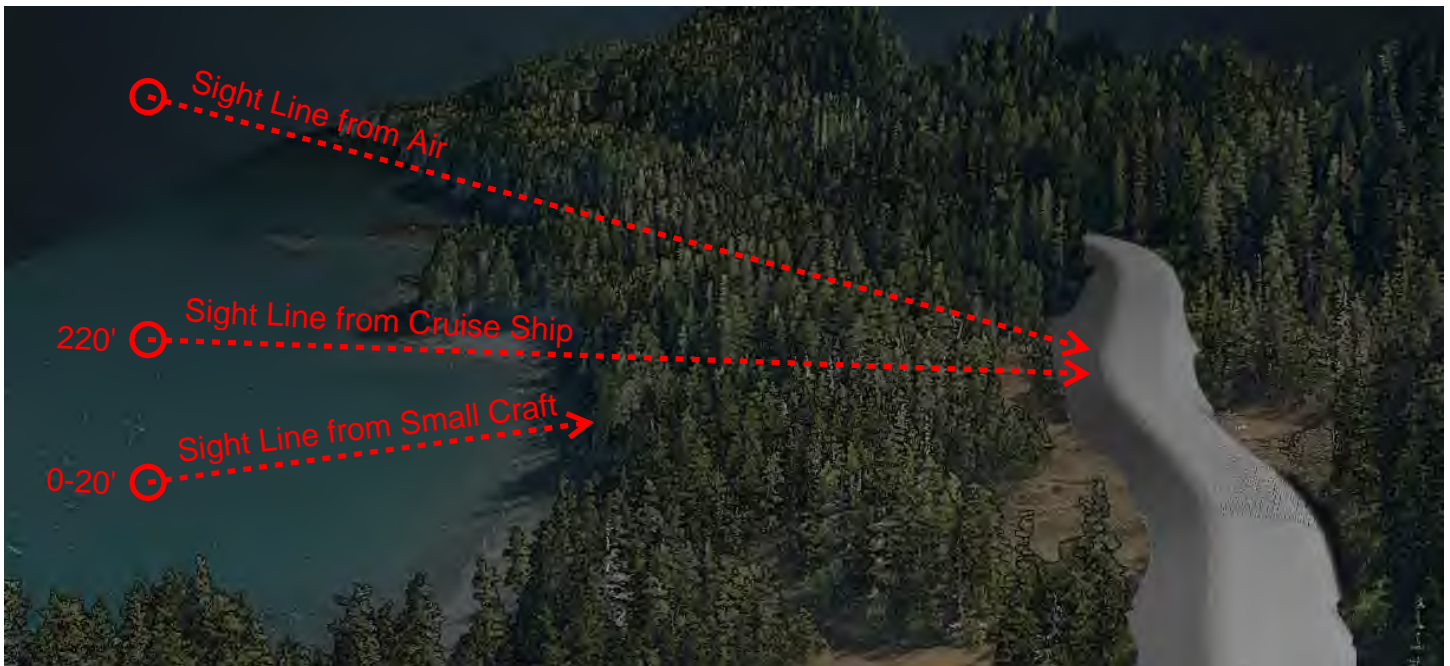
Visual Impact Model

Proposed Visual Impacts

Summary

The proposed roadway design was modeled by an Autocad application and combined with a colorized survey-grade Lidar point cloud from Kodiak Mapping Inc on a common coordinate system. The rendering depicts existing vegetation and the terminus of the existing roadway per the May 2019 aerial imagery. The proposed improvements depict the main alignment of the Shotgun Cove Road Extension (Mile 2.0 to 4.5), along with access roads and proposed short and long term infrastructure improvements at Trinity Point. Approximate footprints of proposed staging areas, waste and borrow sites, or proposed parking facilities are shown.

Proposed visual impacts are presented using three perspectives: from small water craft, from top deck of a cruise ship, and from the air. These perspectives demonstrate how existing vegetation screens much of the roadway from view at lower elevations and increased visual impacts when the roadway is viewed from higher elevations. Photos of existing conditions taken from small water craft (2019) and airplane (2017) accompany respective renderings, and show different stages of work at the existing terminus of Shotgun Cove Road.

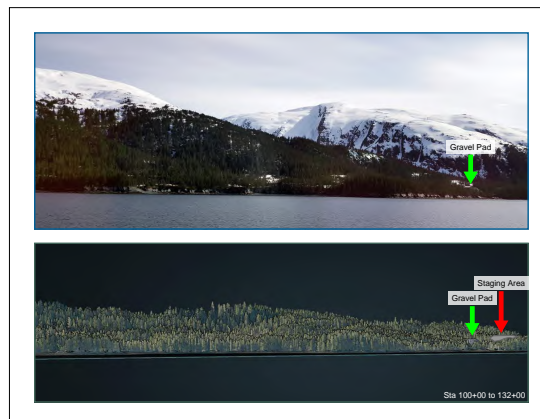


Key

Photo of Existing Conditions

Screenshot of Lidar Point Cloud Viewer, Showing Proposed Design over Existing Site

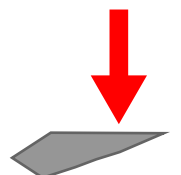
Mainline Station Range



Point of Reference

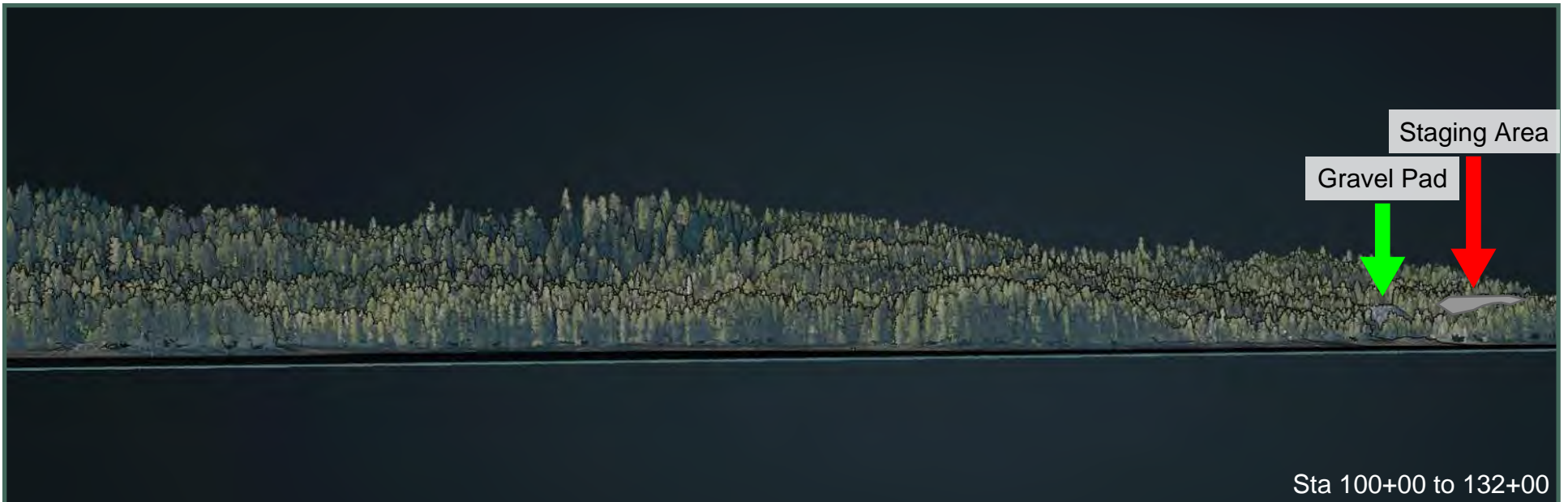
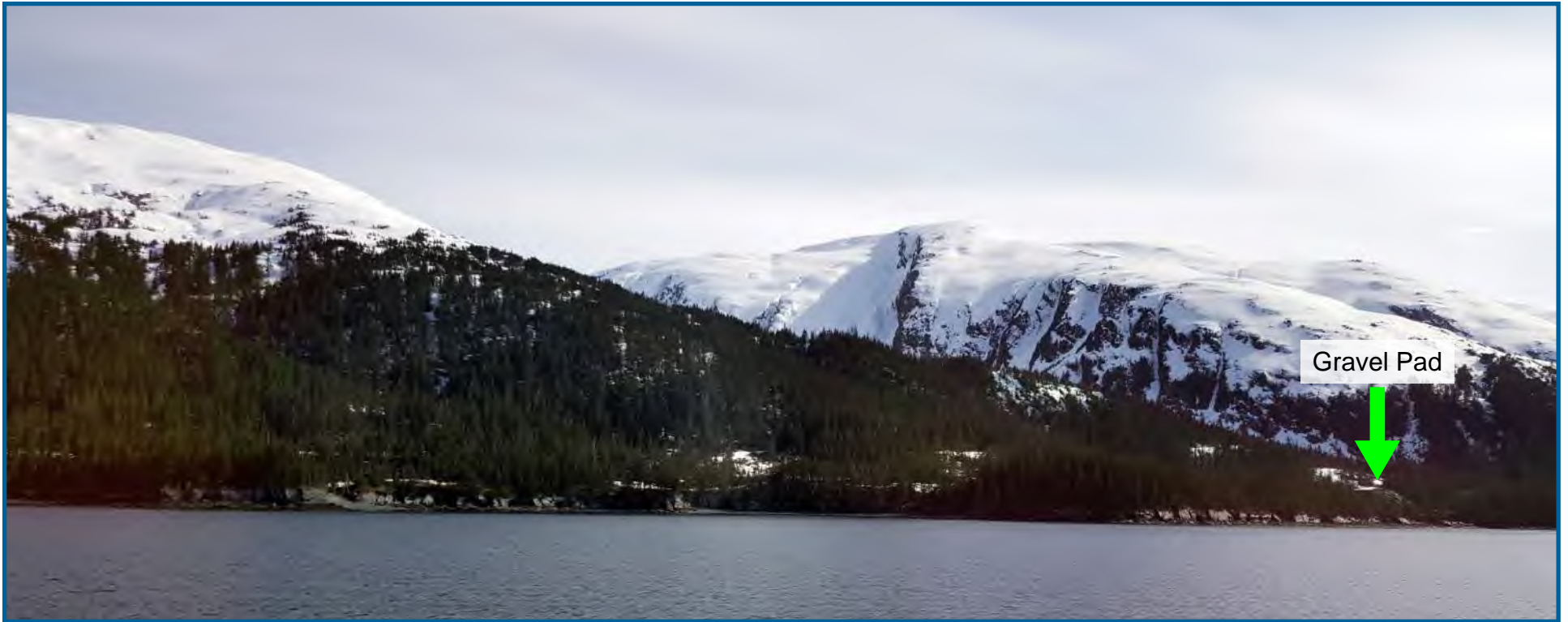


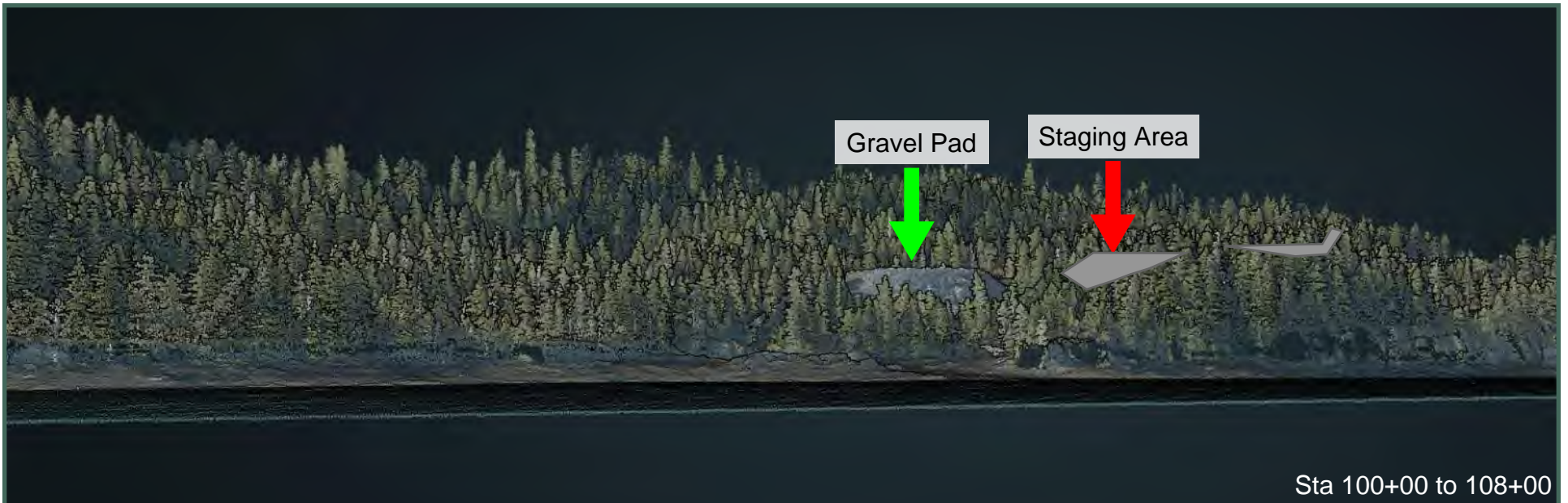
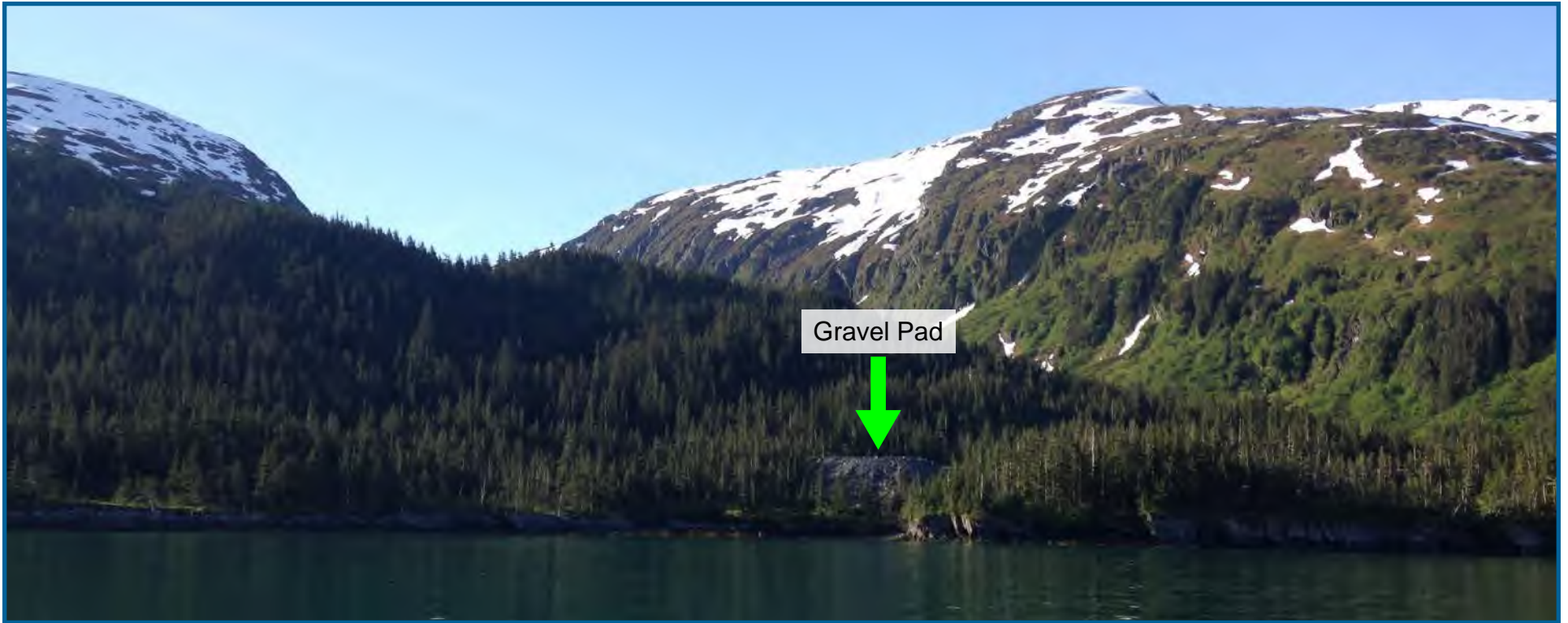
Visual Impact

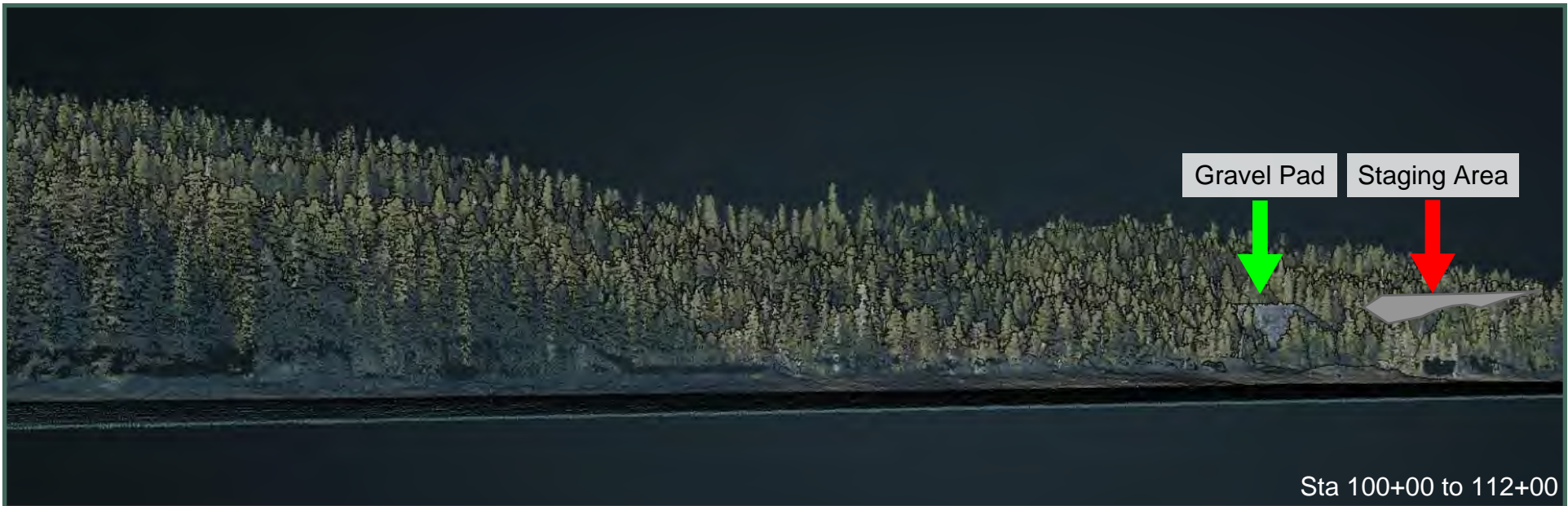
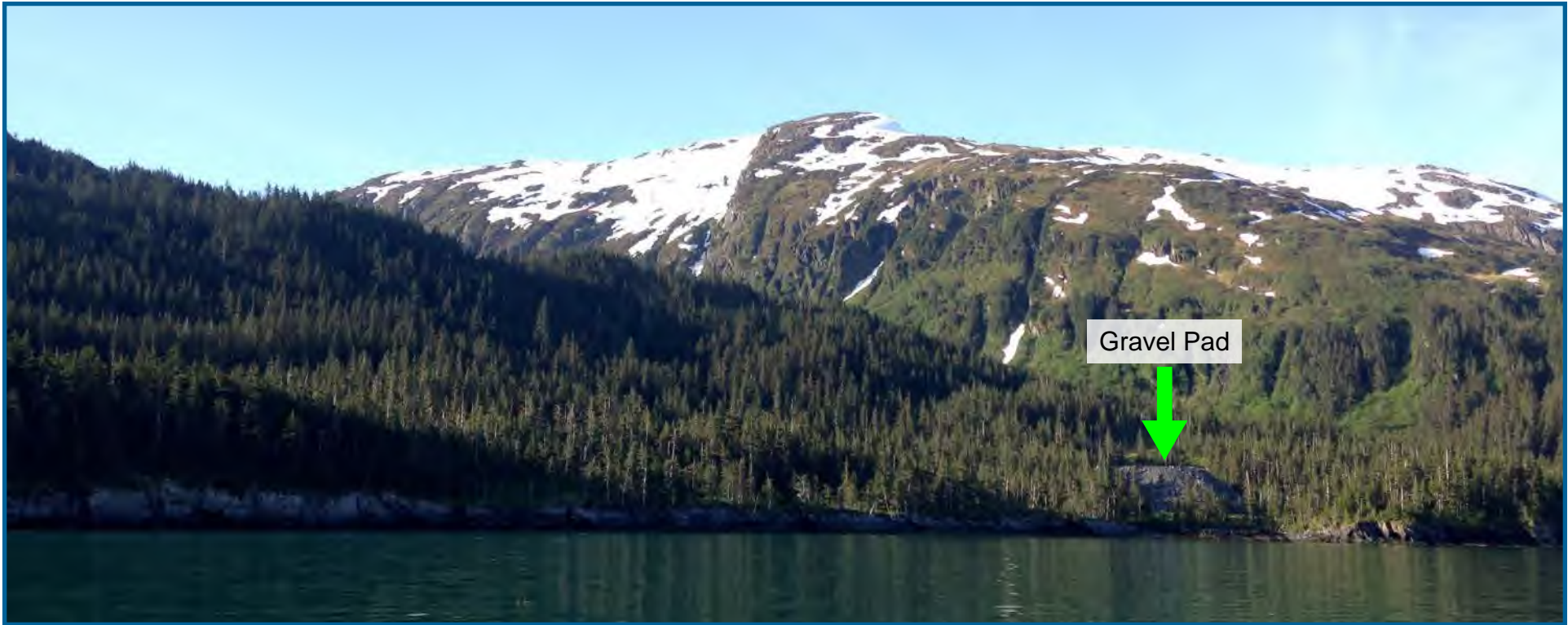


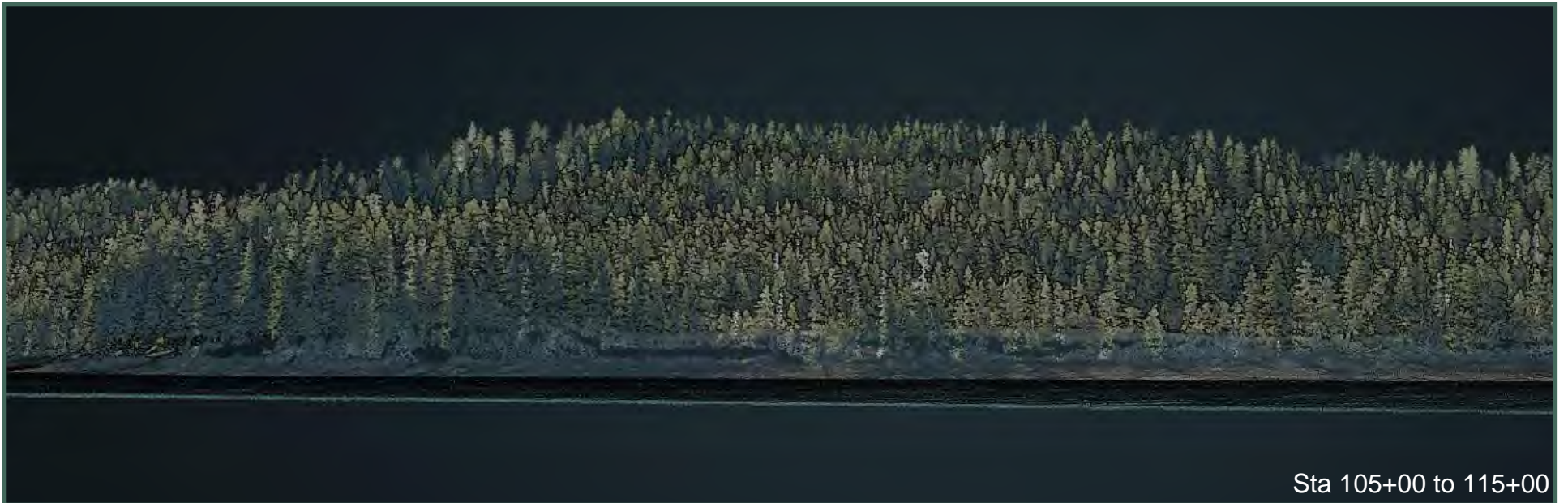
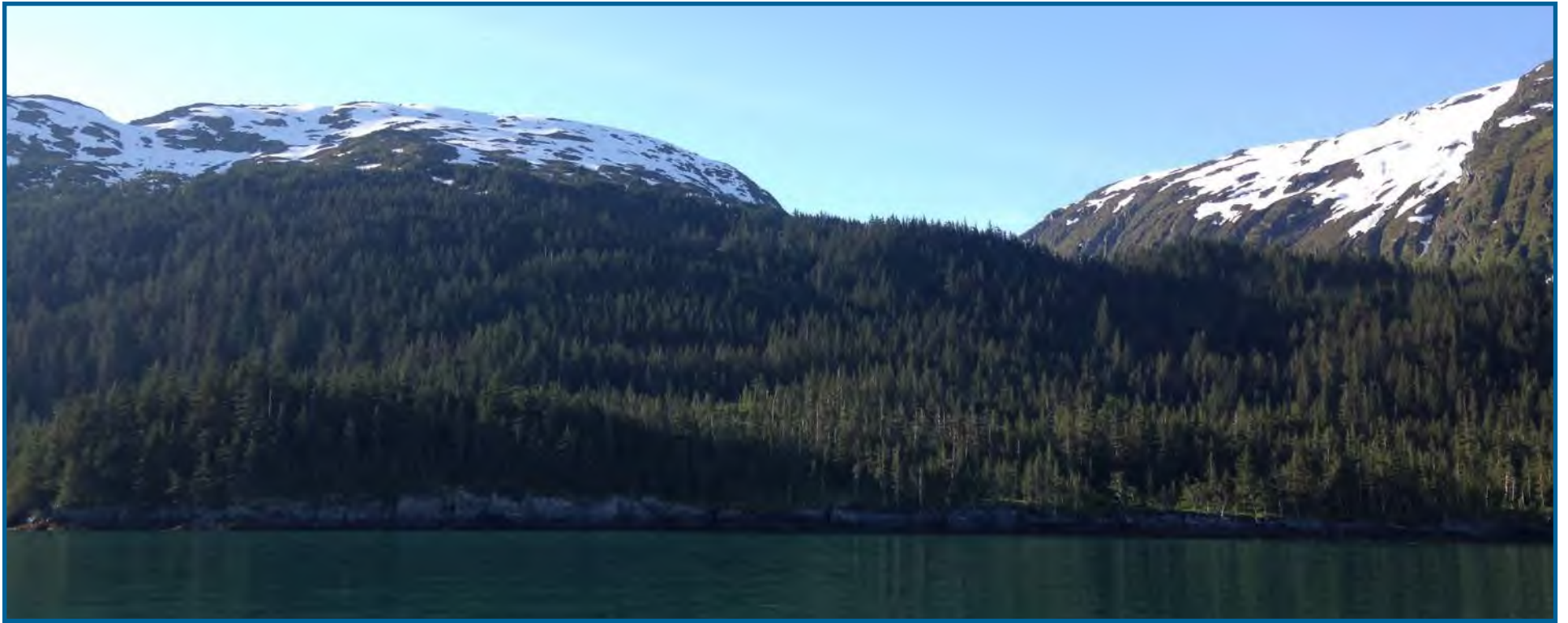
Approximate Footprint of Road or Staging/ Parking Area

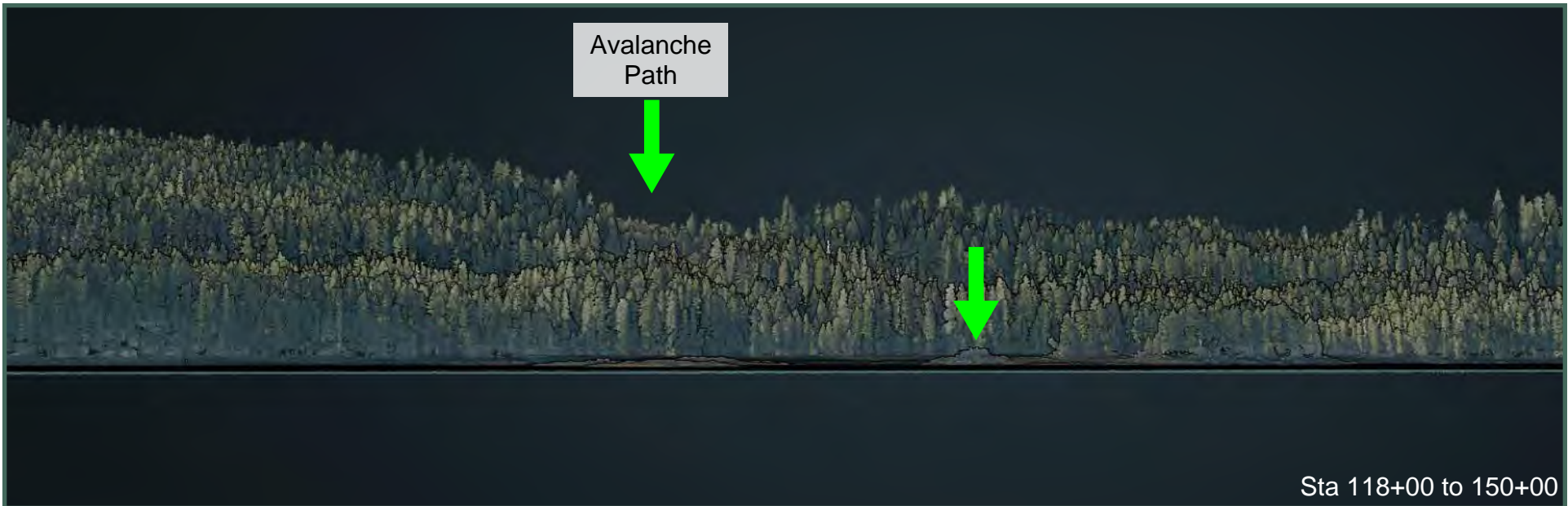
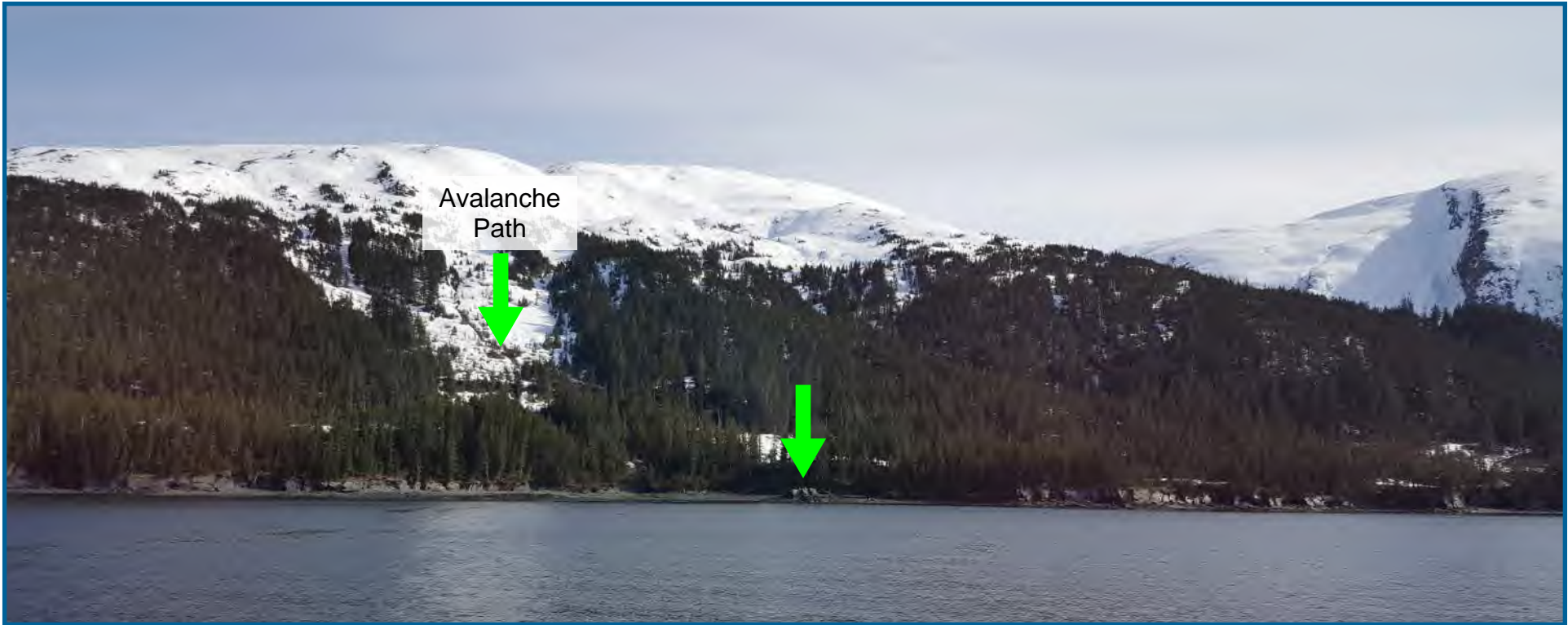
Proposed Visual Impacts As Seen From Small Water Craft

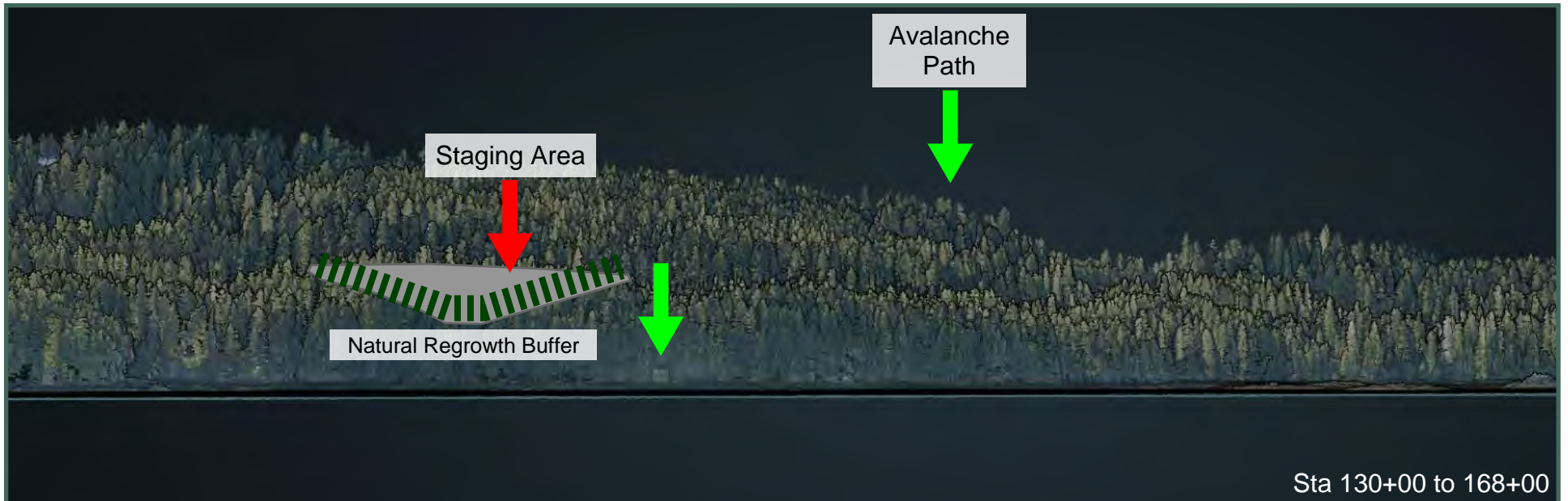
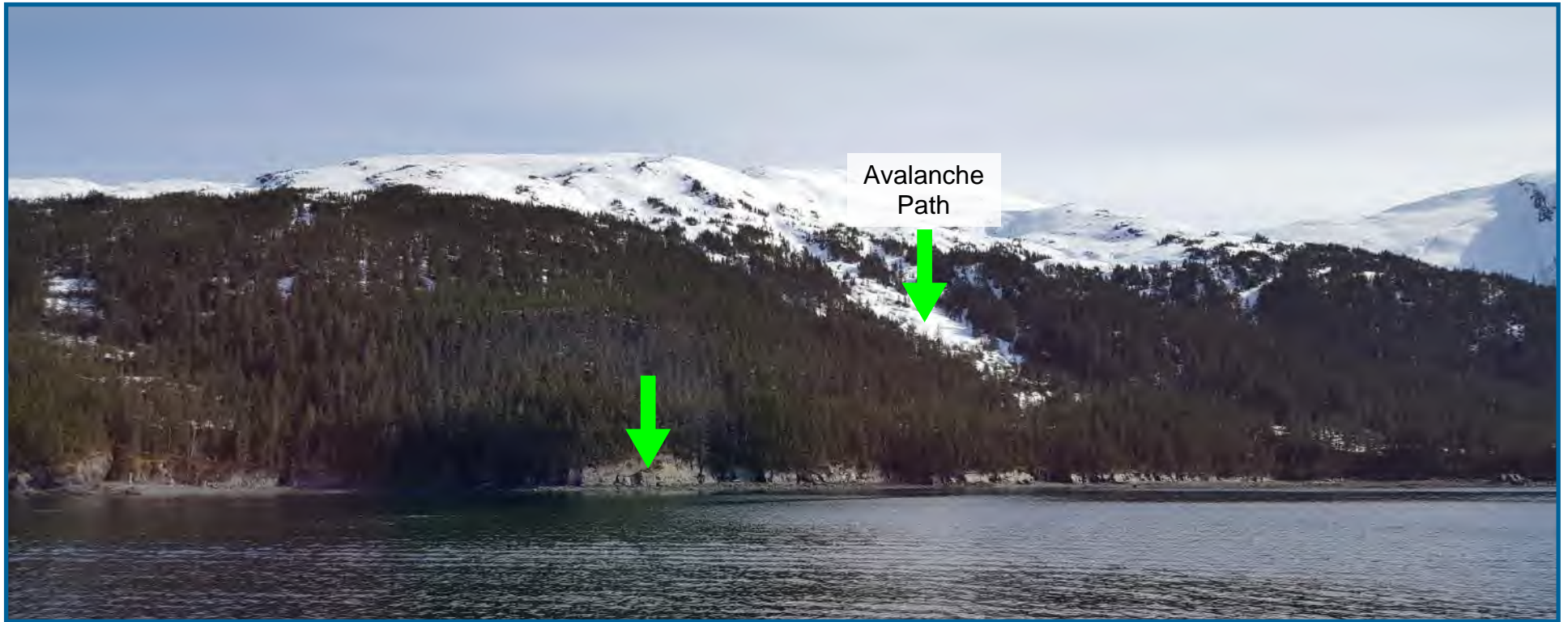


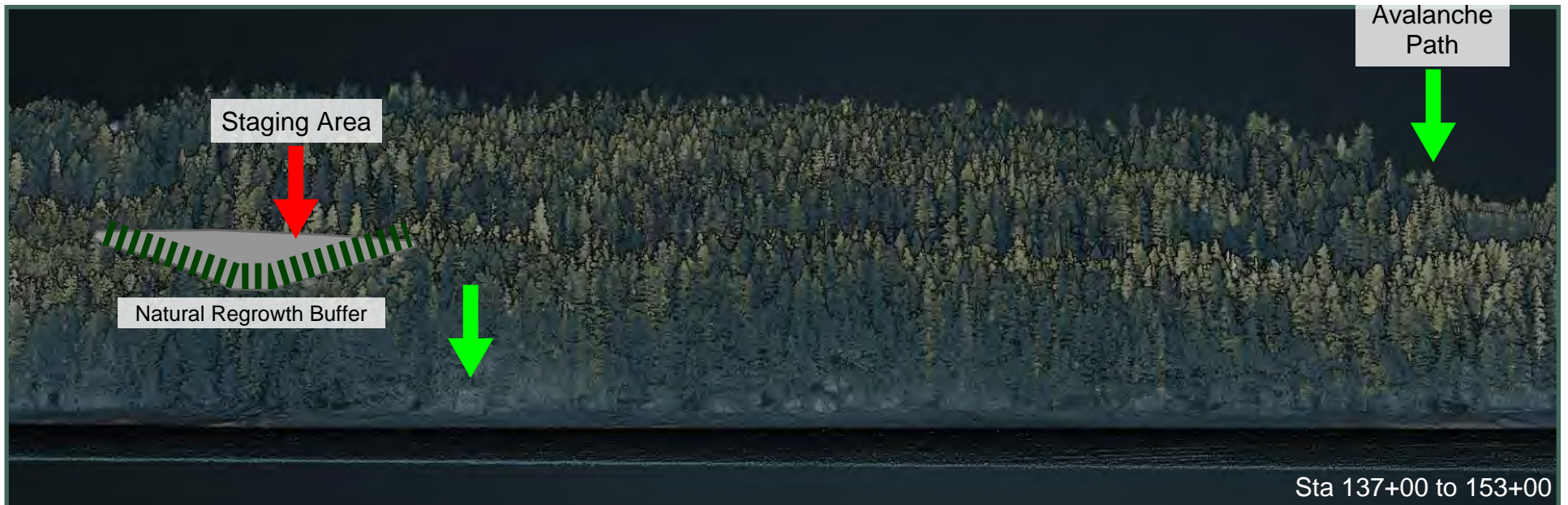


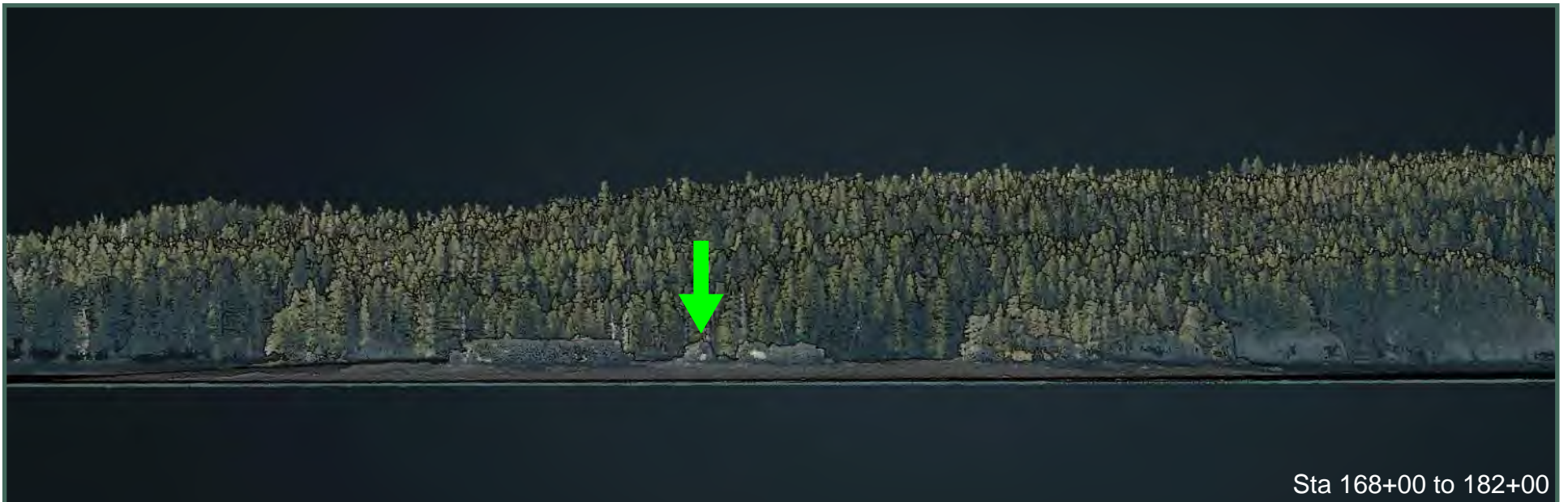




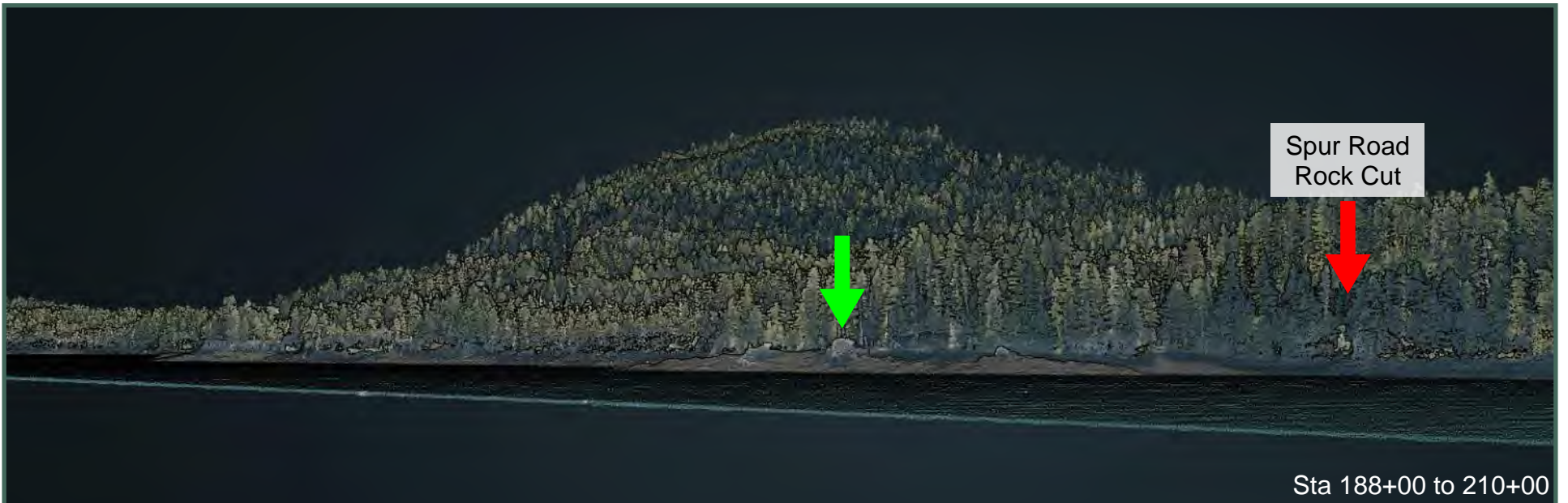


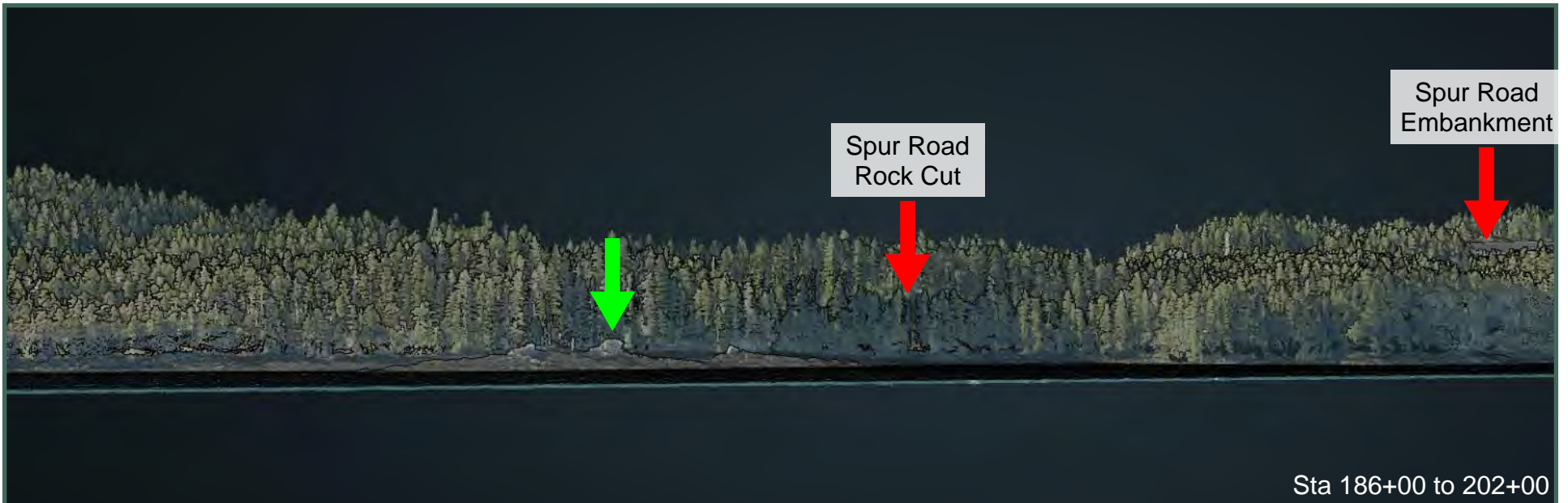


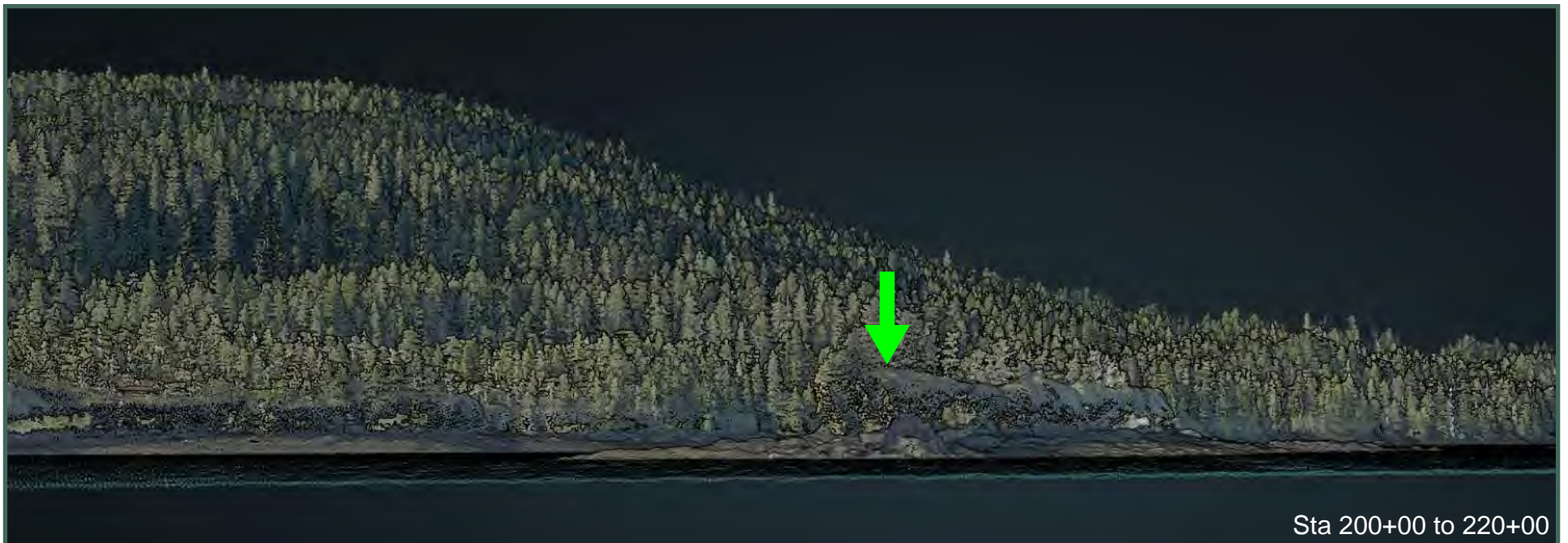


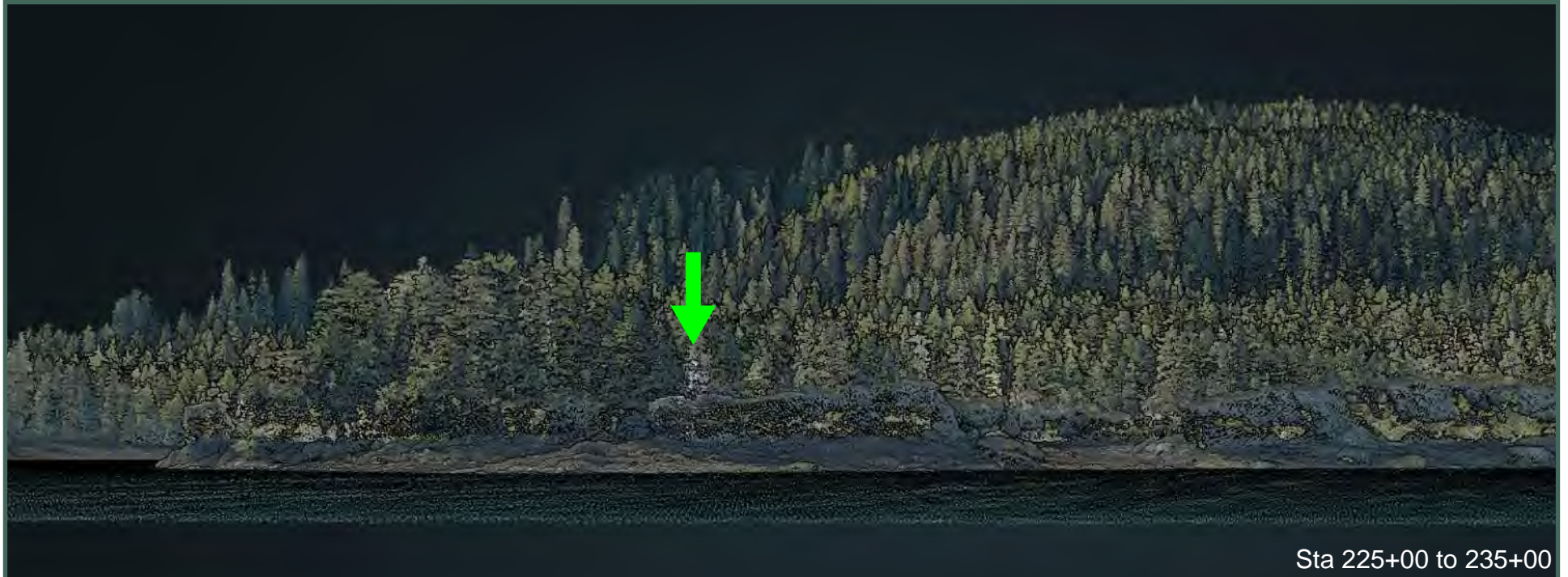


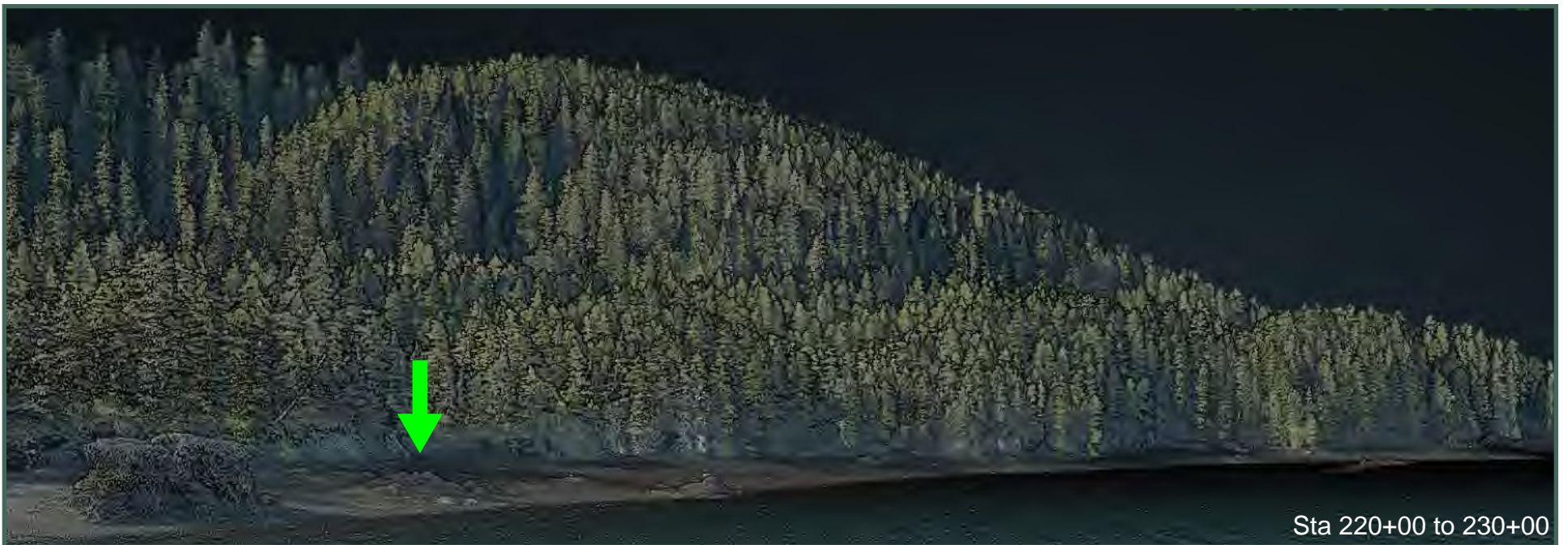




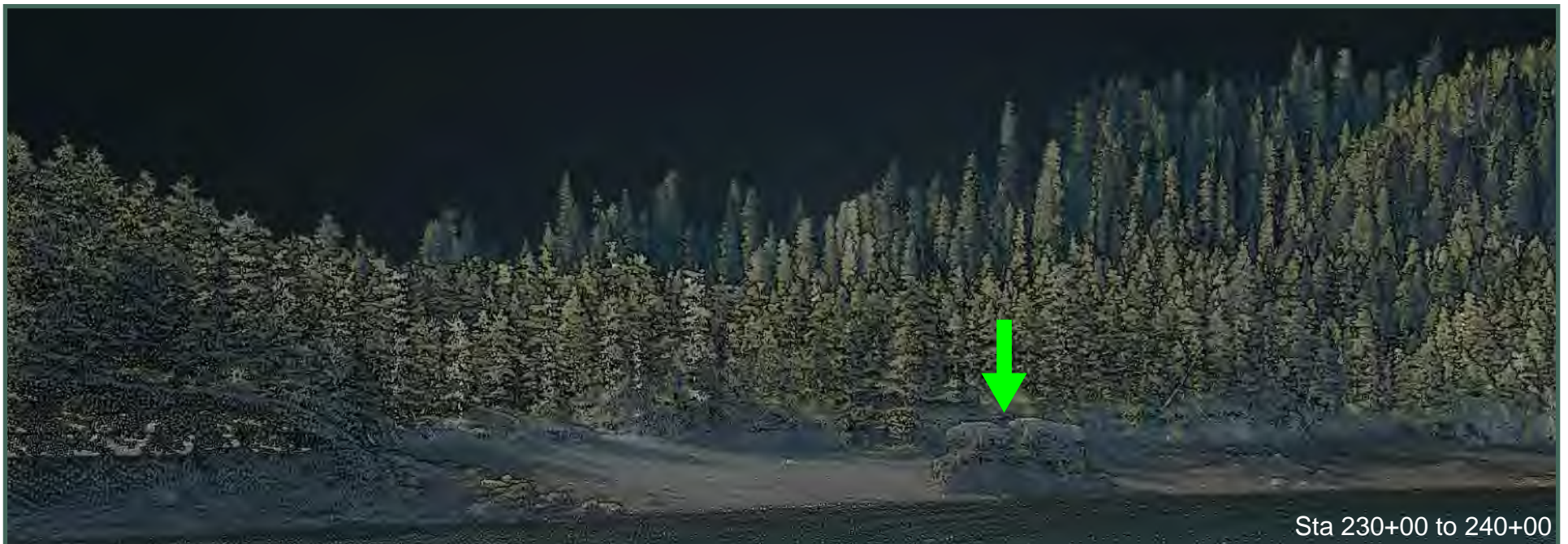
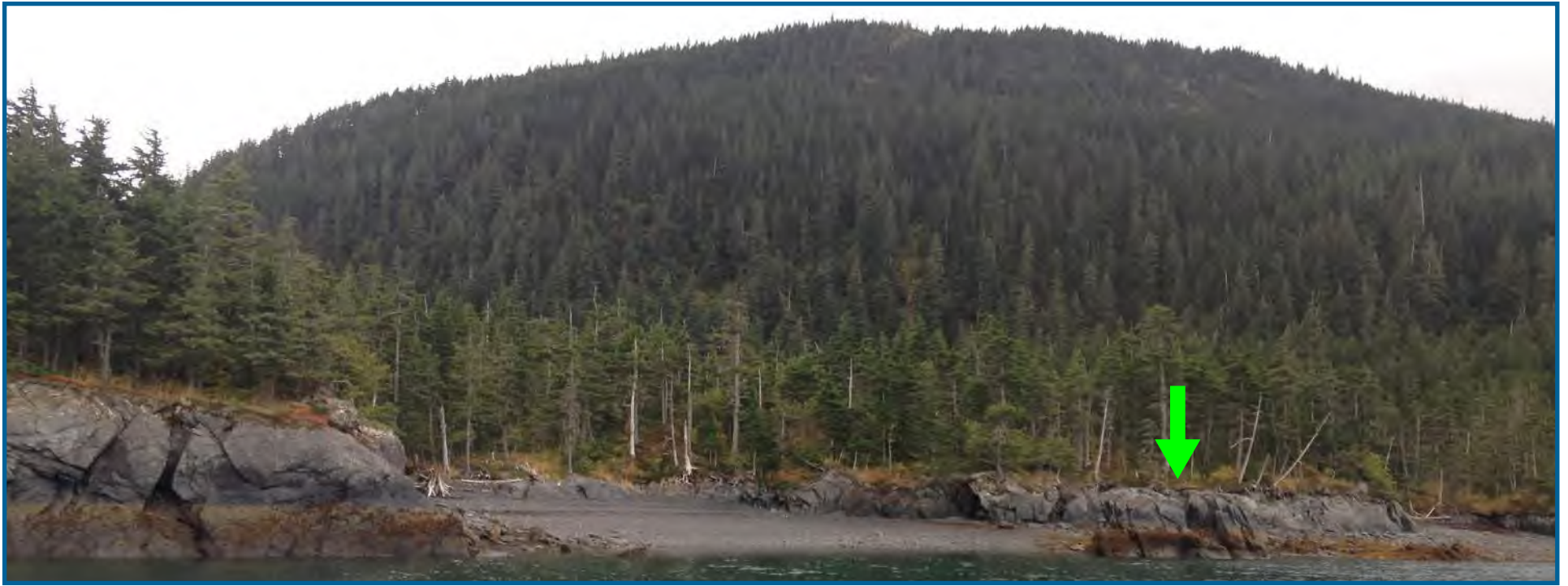


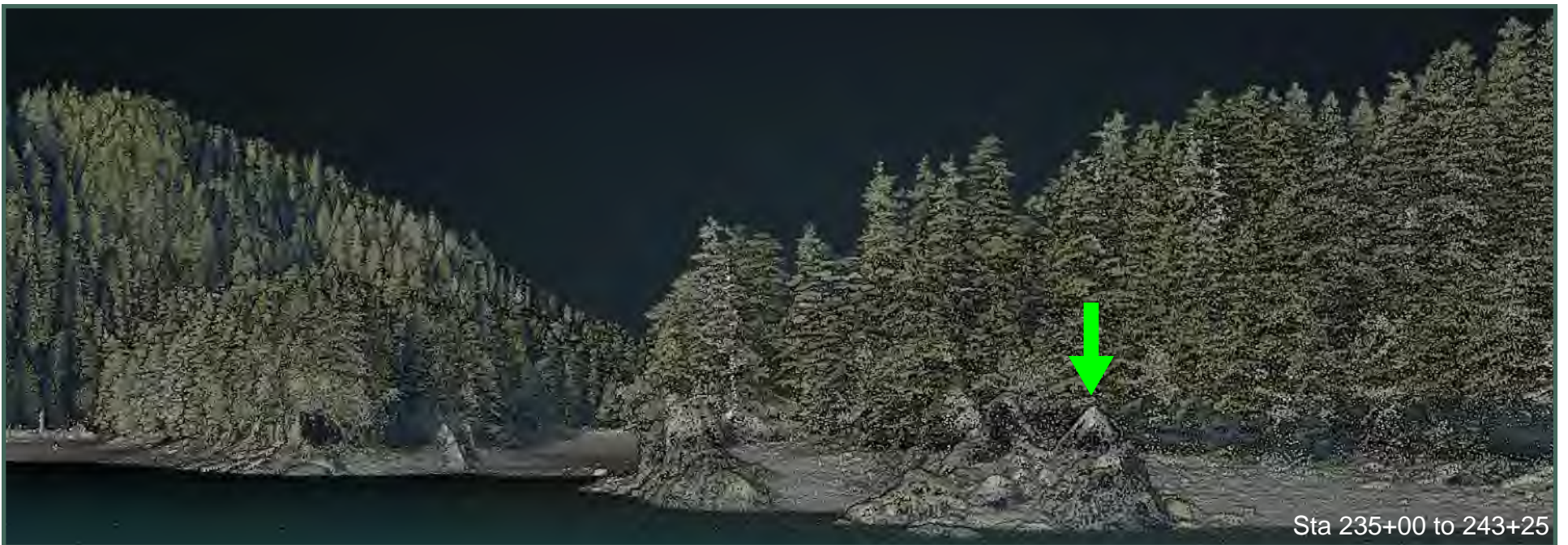












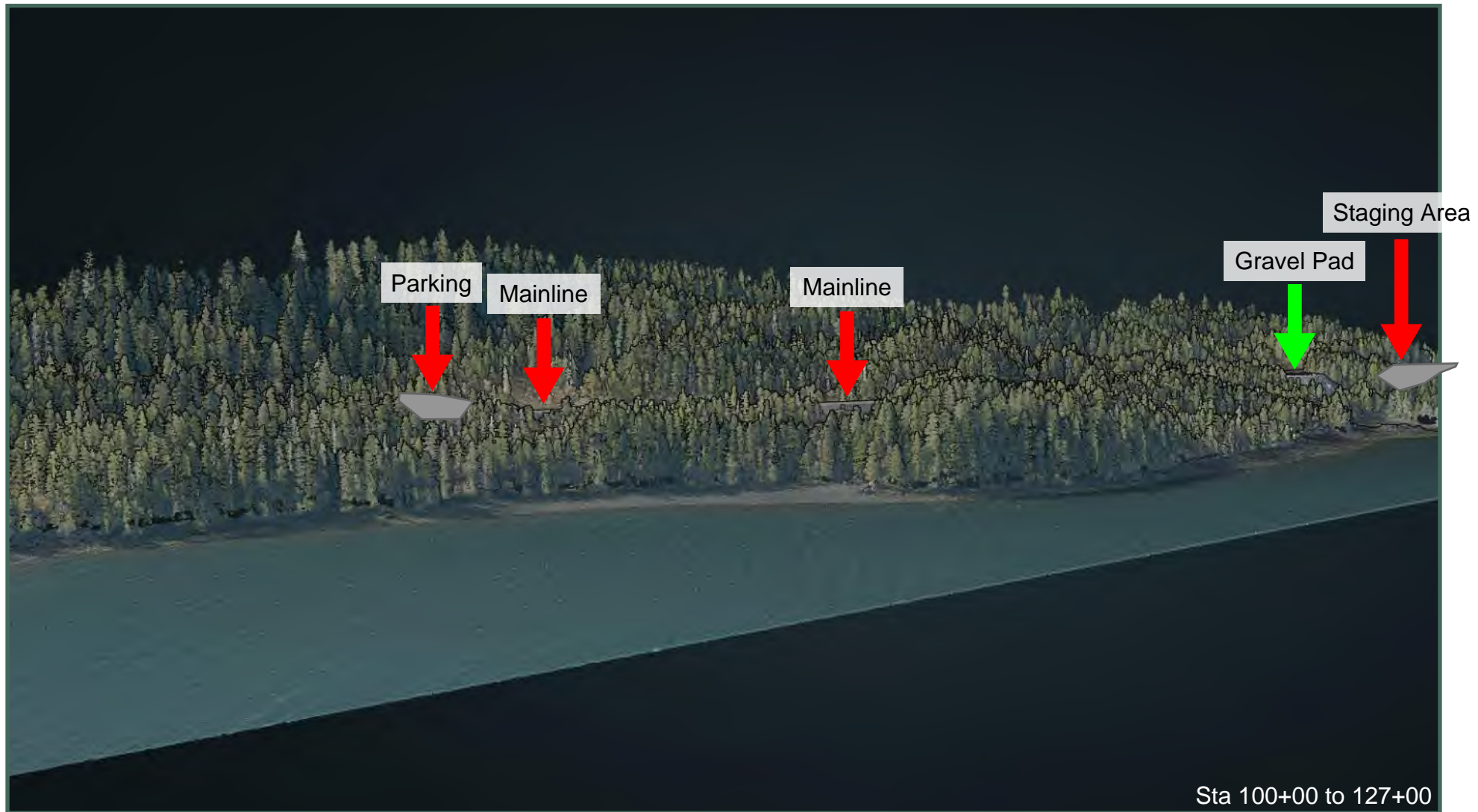
Proposed Visual Impacts

As Seen From 220' Elev.

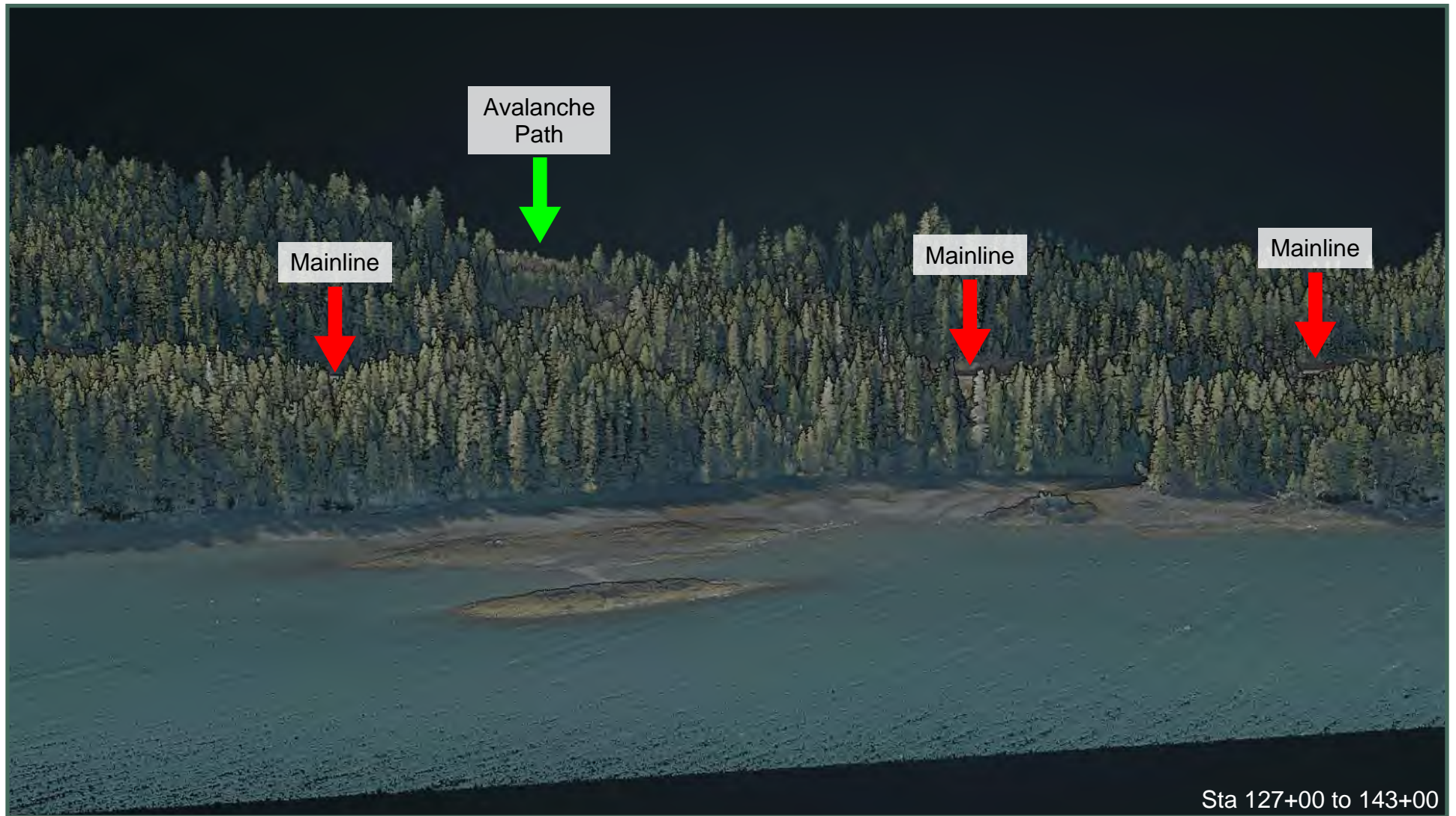
Simulating Top Deck of Cruise Ship

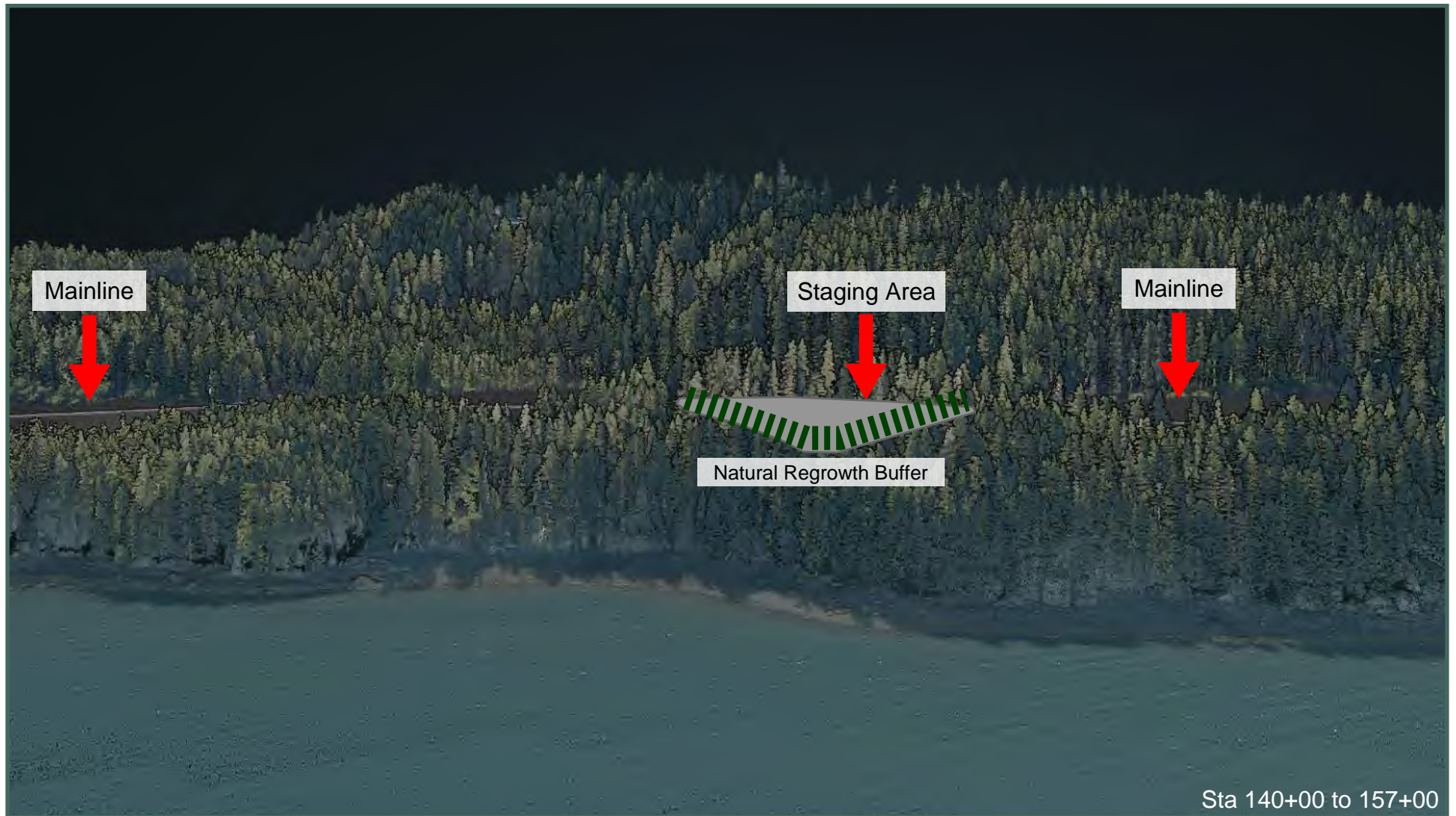


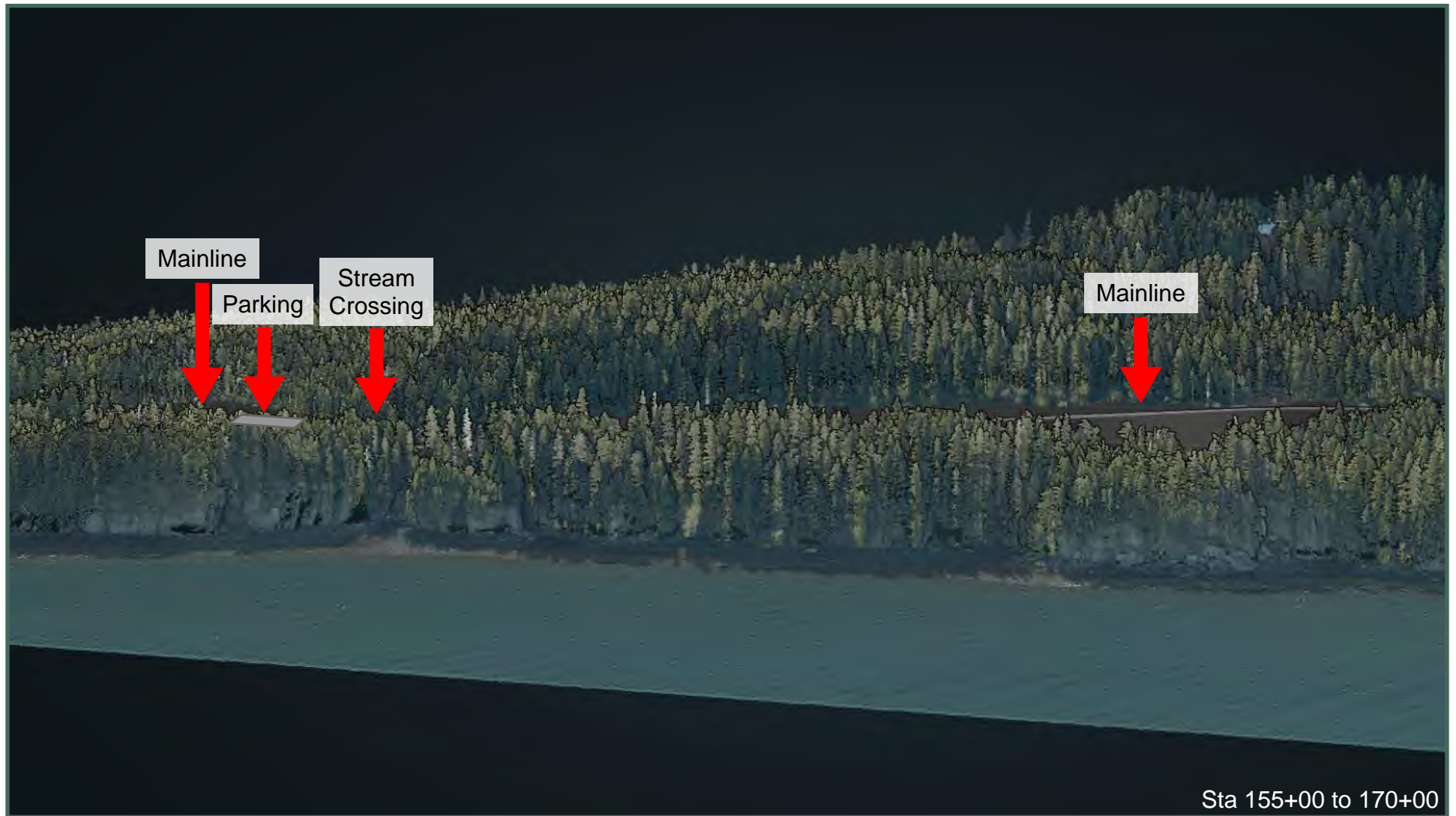










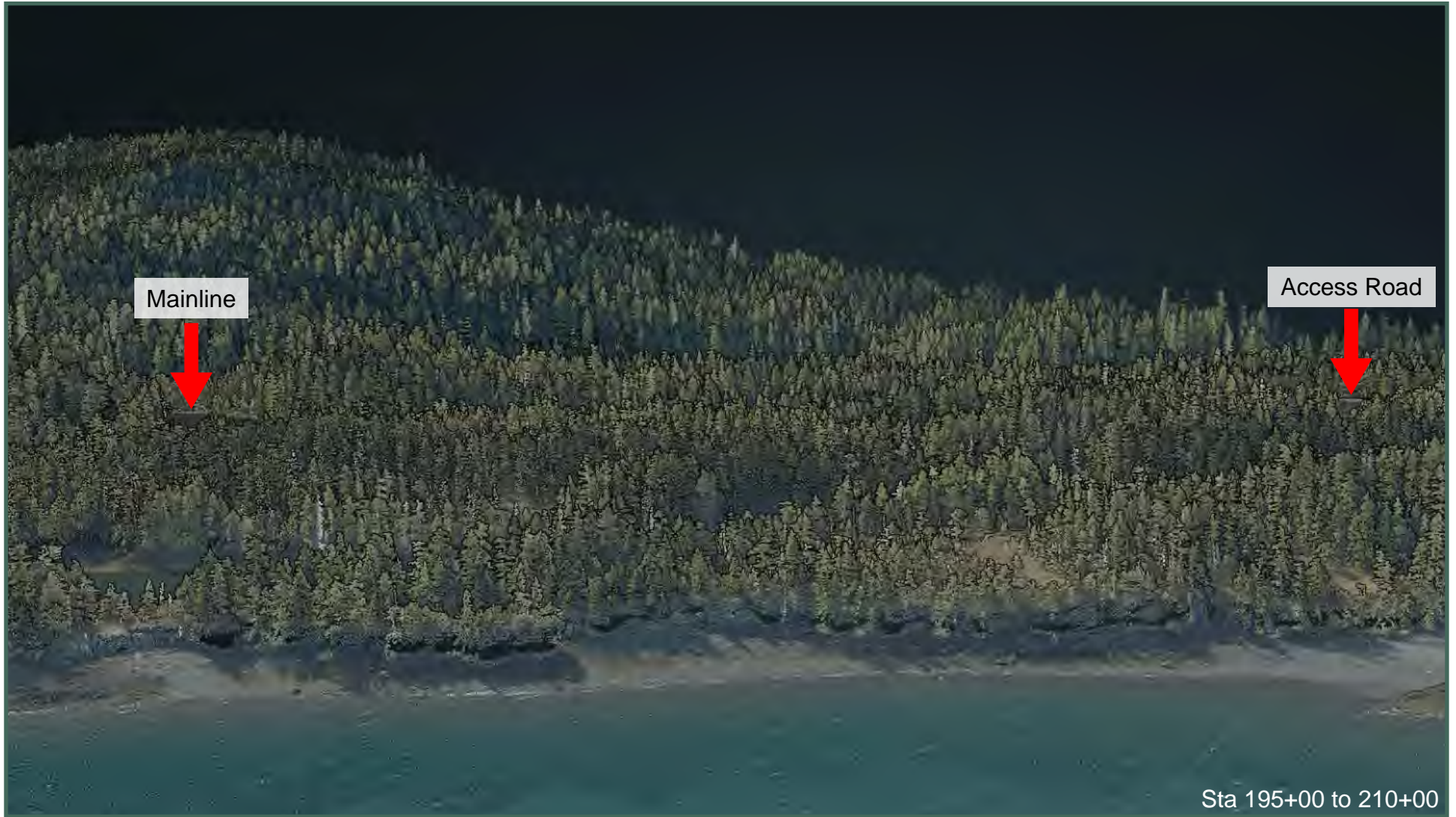




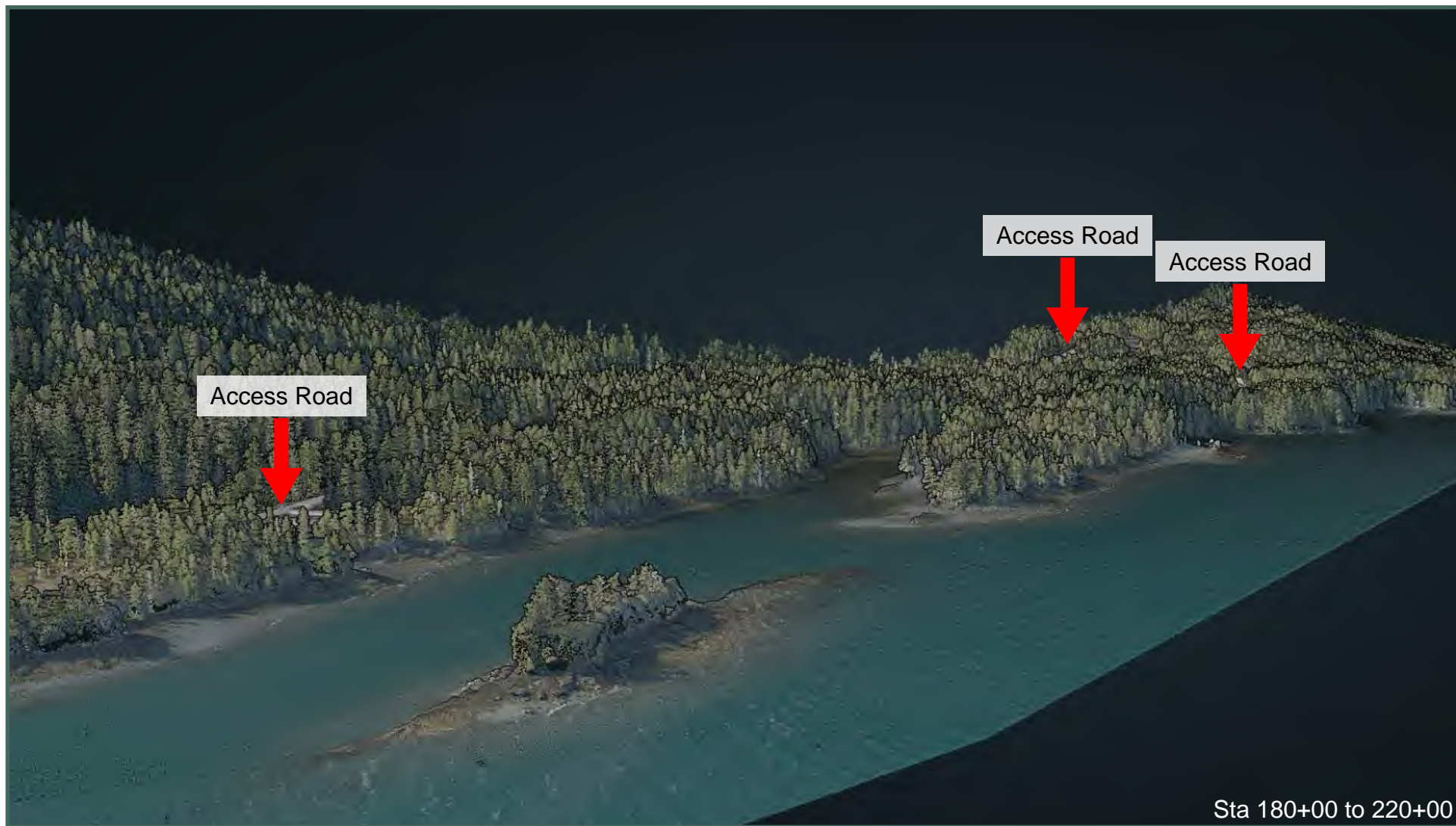


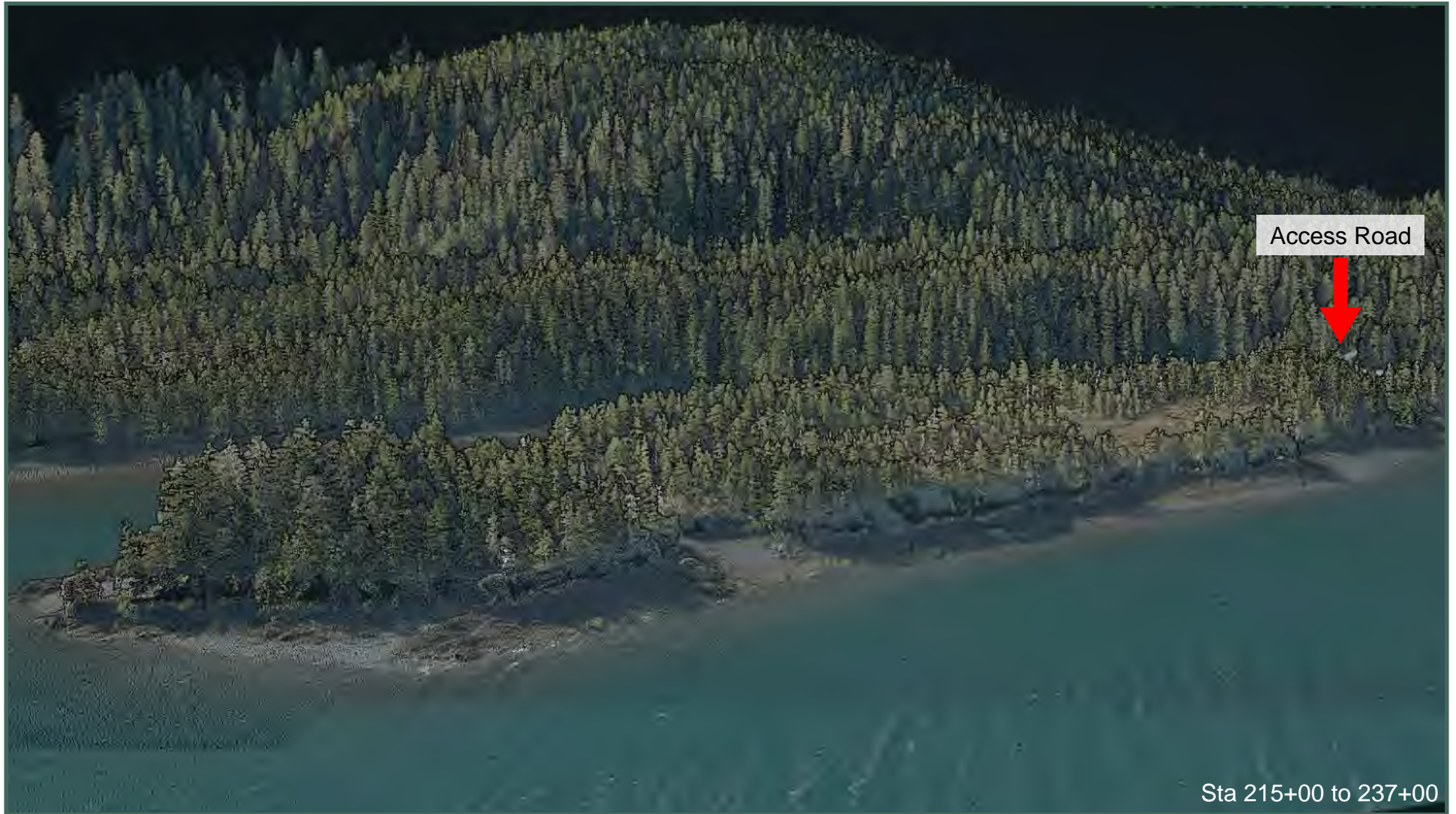


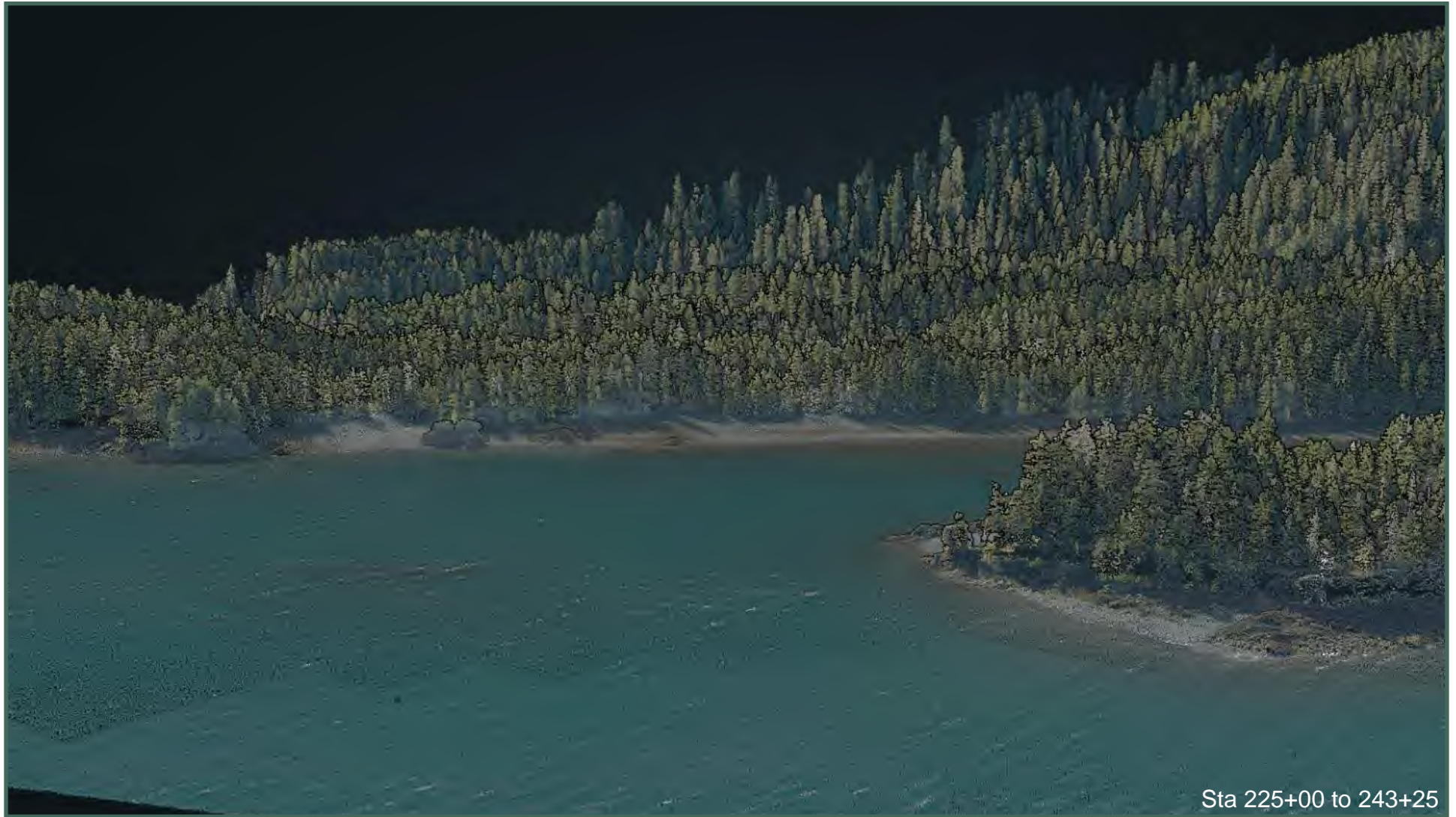




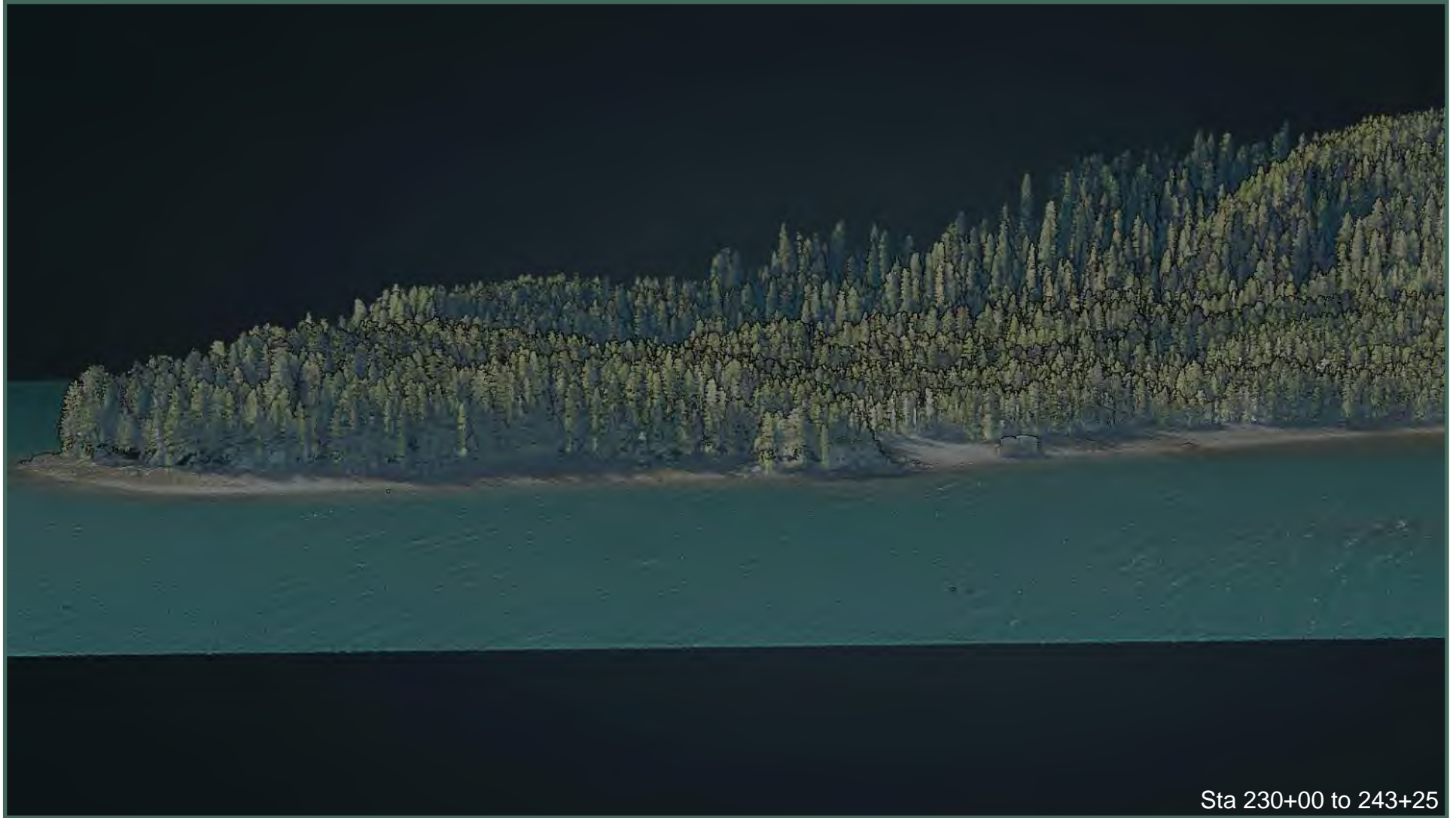


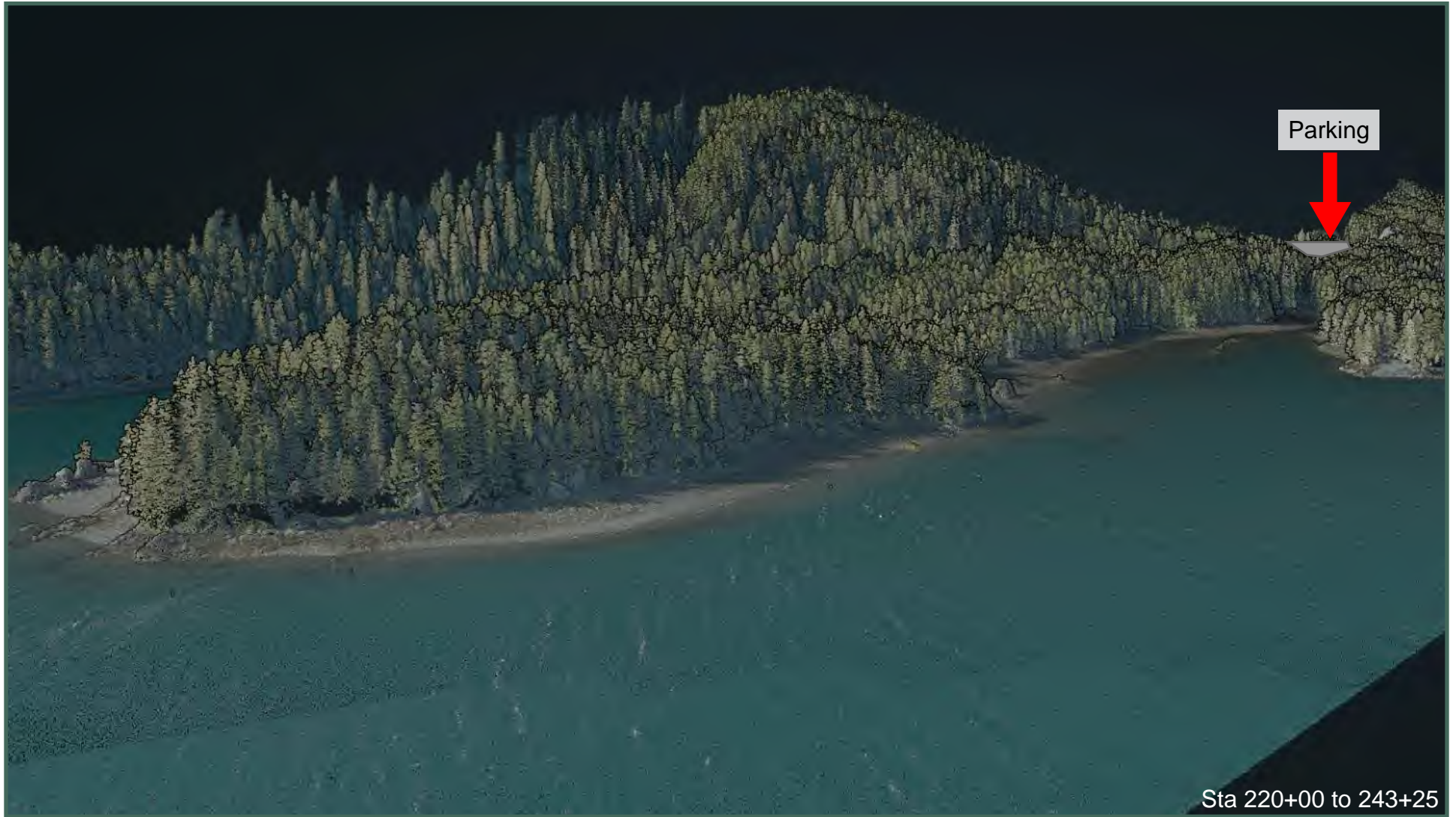






Sta 225+00 to 243+25







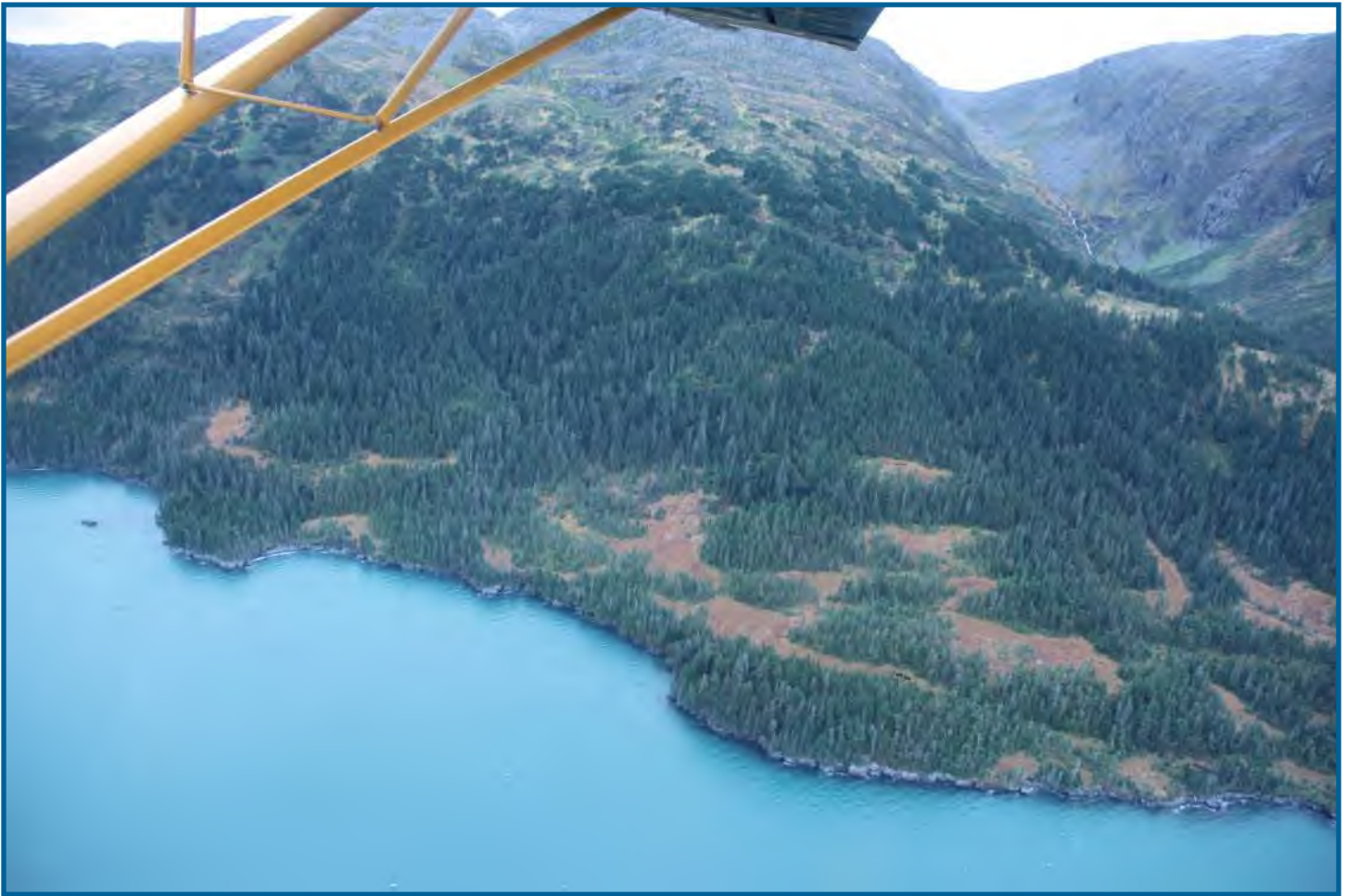
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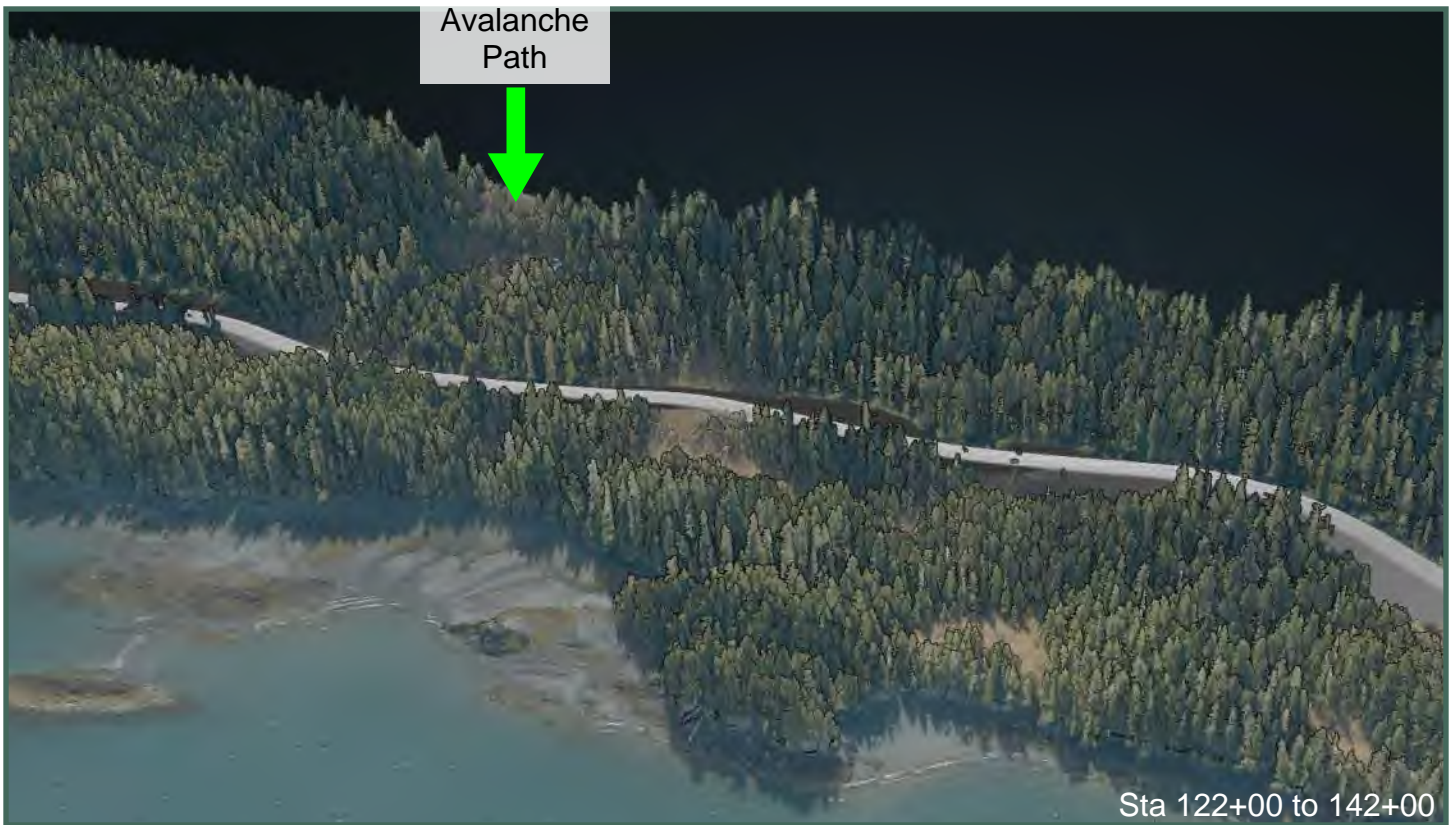


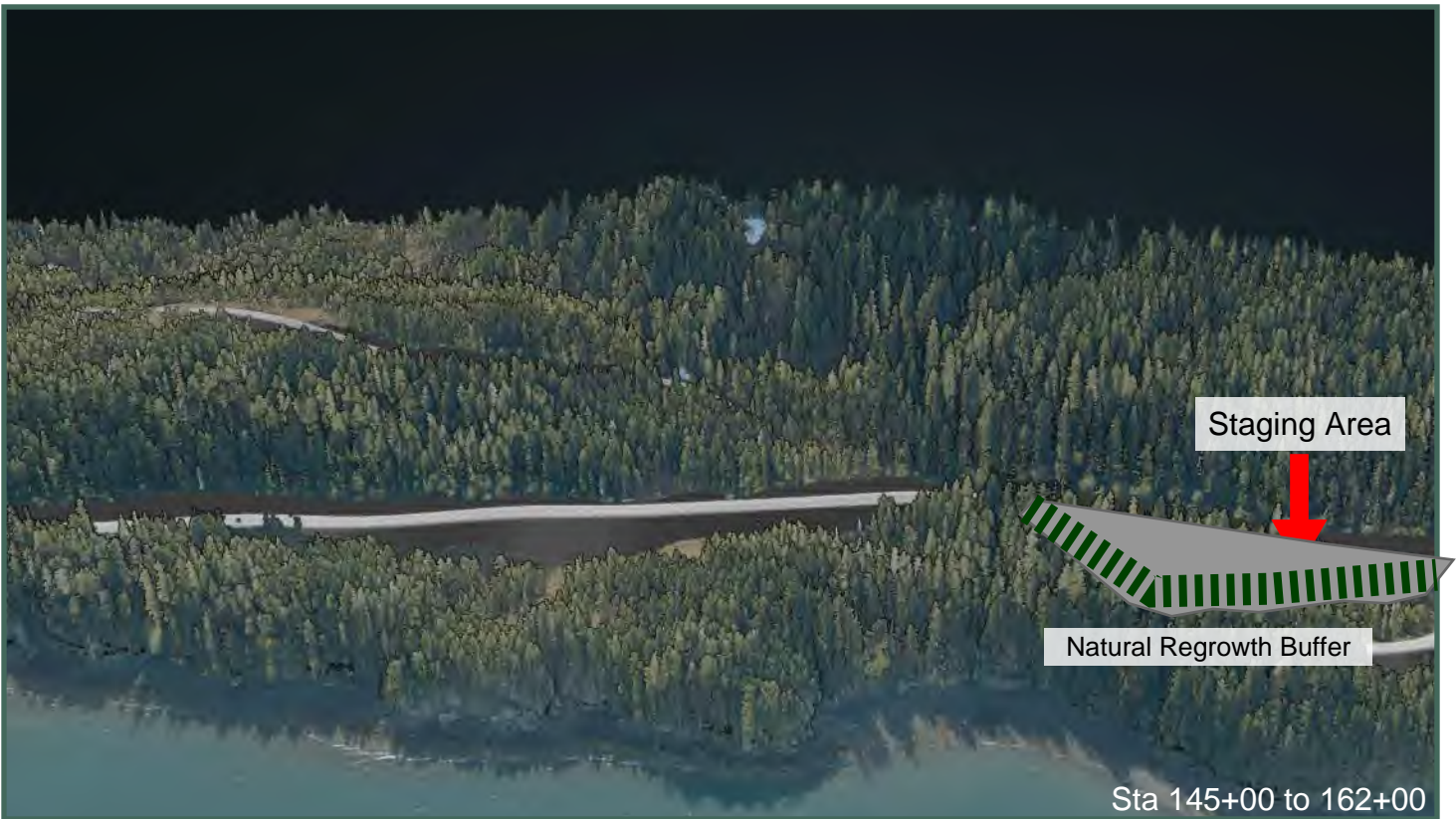


Proposed Visual Impacts As Seen From the Air

























Parking



Sta 215+00 to 243+25



