MANAGEMENT

The second phase of Scenic Management Systems is establishing the management requirements including the development of scenery goals and objectives. This phase references the established guidelines, goals and objectives in the Forest Plan to set standards and thresholds for acceptable levels of modifications to scenery.

The establishment of Forest-wide goals and objectives for the Tongass National Forest is outlined in Chapter Two 'Goals and Objectives' in the Forest Plan. The chapter presents the Desired Conditions for the Forest and the Forest-wide goals and objectives. The Forest-wide Desired Conditions for scenery is as follows:

> The outstanding scenery of the Forest is a major attraction for resident and nonresident recreation users; a full range of recreation opportunities is present. In some cases, scenic values from certain travel routes, trails, high vista points, or aerial observations are affected by timber harvest or mining activities. Users have the opportunity to experience independence, closeness to nature, solitude, and remoteness. (USFS, 2008, p. 2-2).

The goals of the Forest Plan respond to public issues and the ecosystems of the Forest to obtain desired conditions. These goals and objectives are broad general statements without a specific timeline. The Forest-wide goal and objective related to scenery are found below.

Forest-wide goals and objectives are achieved through the development of Management Prescriptions as found in Chapter 3 of the Forest Plan. These more specific goals represent management from an "ecosystem" perspective, where ecosystems are considered from the "site" to the "Forest" level. Goals are achieved through the development of management requirements for each of the eighteen Land Use Designations (LUDs) found within the Forest and the implementation of the standards and guidelines specified for each LUD. Each LUD has goals, standards and guidelines established for scenery resources. Additional objectives to help accomplish the goals are also found in Chapter 3 of the Forest Plan, and in the Resource Schedules contained in Appendix J (USFS, 2008).

Table 7. Forest Scenery Goal and Objectives:

Takatz Lake Hydroelectric Project

Scenery Goal	Scenery Objective
Provide Forest visitors with visually appealing scenery, with emphasis on areas seen along the Alaska Marine Highway, tour ship and small boat routes, state highways, major Forest roads, and from popular recreation places; recognize that in other areas where landscapes are altered by management activities, the activity may visually dominate the characteristic landscape.	Manage the scenery of the Forest in order to achieve the adopted Scenic Integrity Objectives.

(USFS 2008, p. 2-6)

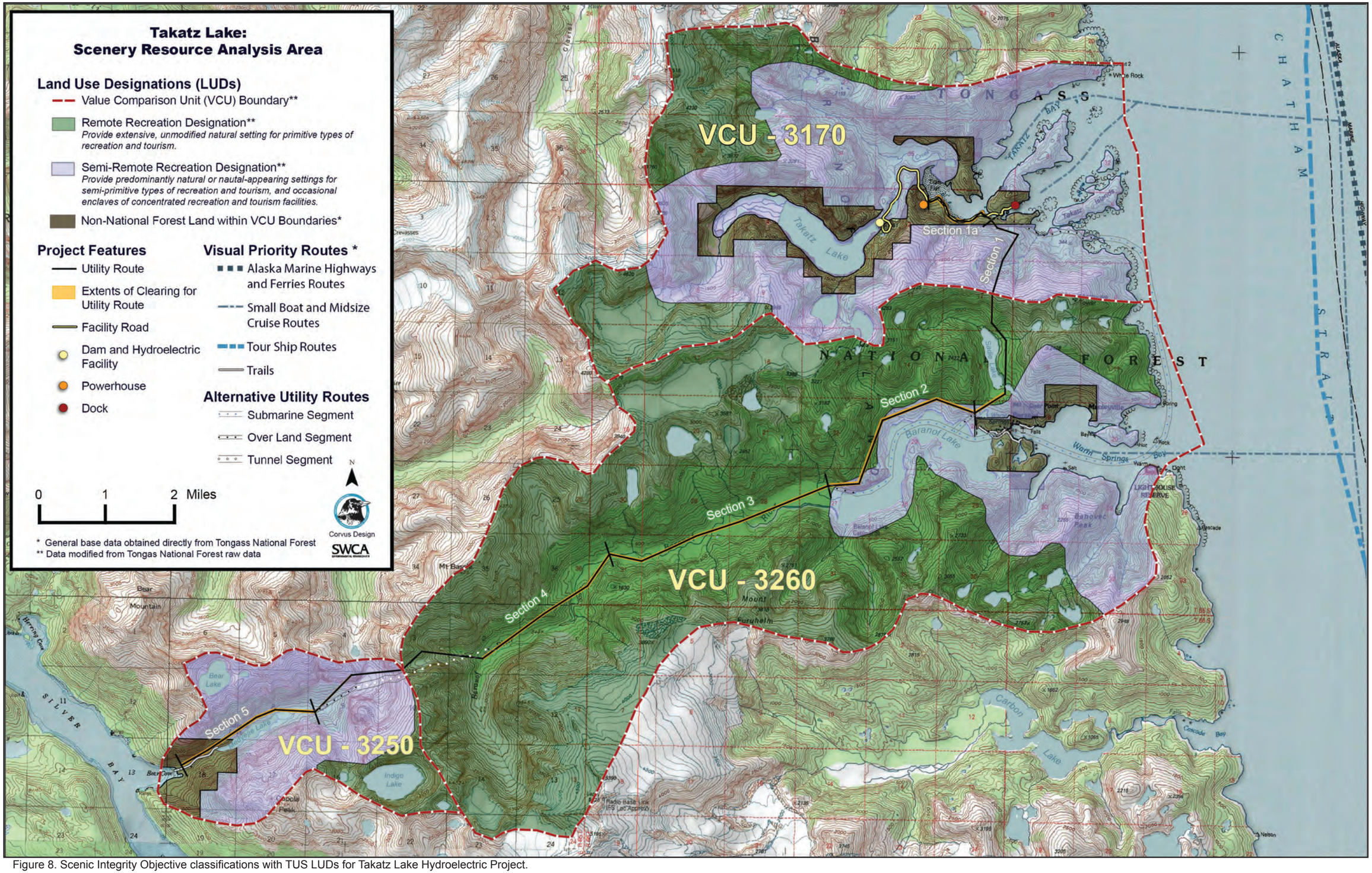

Figure 8. Scenic Integrity Objective classifications with TUS LUDs for Takatz Lake Hydroelectric Project.

Landscape Character Goals

Landscape character is a description for an identifiable area of a national forest or region. Landscape character gives a geographic area its visual and cultural image and consists of the combination of physical, biological and cultural attributes that make each landscape identifiable or unique. Landscape character defines the characteristics of landform patterns and features, vegetation patterns, surface water, and land use patterns or cultural features. The Landscape Character for the Project Area is the Baranof Fiordlands and is summarized previously under Landscape Character. Effects to scenery are referenced back to the Landscape Character of the Project Area and the impacts to its identifiable landscape characteristics (vegetation, landforms, surface water, etc.).

Land Use Designations (LUDs) are management zones within the Forest that define a range of allowable uses and affects upon the landscape and the specific Landscape Character as defined in the Forest Plan. LUDs are only for the management of USFS lands. Visual Comparison Unit (VCU) 3170, 3260 and 3250 are defined by two LUDs Remote Recreation and Semi-remote Recreation. The three VCUs include 28,054 acres of Remote Recreation and 15,639 acres of Semi-Remote. The goals, objectives, desired condition, and LUD Standards and Guidelines for scenery for the Project LUDs are as follows (USFS 2008, pp. 3-45 to 3-50, pp. 3-63 to 3-68).

Remote Recreation

Goals

- To provide extensive, unmodified natural settings for primitive types of recreation and tourism.
- To provide opportunities for independence, closeness to nature, and self-reliance in environments offering a high degree of challenge and risk.
- To minimize the effects of human uses, including subsistence use, so that there is no permanent or long-lasting evidence.

Objectives

- Manage recreation and tourism use and activities to meet the levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the Primitive Recreation Opportunity Spectrum (ROS) class.
- Provide trails and primitive facilities that are in harmony with the natural environment and promote primitive recreation experiences.
- Apply the High Scenic Integrity Objective (SIO).
- Fish enhancement projects may occur. Design wildlife habitat improvements to emulate natural conditions and appearance.

Desired Condition

Areas in the Remote Recreation LUD are characterized by extensive, unmodified natural environments. Ecological processes and natural conditions are not noticeably affected by past or current human uses or activities. Users have the opportunity to experience independence, closeness to nature, solitude and remoteness, and may pursue activities requiring self-reliance in an environment that offers a high degree of challenge and risk. Interactions between users are infrequent. Motorized access is limited to traditional means: boats, aircraft, and snowmachines. Facilities and structures are minimal and rustic in appearance.

Scenery

Provide a scenic condition in which activities are not visually evident to the casual observer.

1. Apply Forest-wide Standards and Guidelines for the High SIO.

2. Exceptions for small areas of non-conforming developments, such as recreation sites, may be considered on a case-by-case basis (see the Recreation and Tourism Forest-wide Standards and Guidelines in this prescription).

Semi-remote Recreation

Goals

- To provide predominantly natural or natural-appearing settings for semi-primitive types of recreation and tourism, and occasional enclaves of concentrated recreation and tourism facilities.
- To provide opportunities for a moderate degree of independence, closeness to nature, and self-reliance in environments requiring challenging motorized or non-motorized forms of transportation.

Objectives

- Manage recreation and tourism use and activities to meet the levels of social encounters, on-site developments, methods of access, and visitor impacts indicated for the Semi-Primitive ROS classes. Enclaves of concentrated recreation and tourism developments within the Land Use Designation (LUD) or management activities in adjacent LUDs may cause the ROS setting to become Rural.
- Determine on a case-by-case basis whether roads, trails, and other areas should be closed to motorized recreation activities. If so, incorporate into off-highway vehicle (OHV) plans. If not, the use of boats, aircraft, and snowmachines for traditional activities is allowed.
- Permit small-scale, rustic recreation and tourism facilities, and occasional enclaves of concentrated recreation and tourism facilities.
- Apply the Moderate SIO to any developments, facilities, or structures.
- Fish enhancement and wildlife habitat improvement may occur.

Desired Condition

Areas in the Semi-remote Recreation LUD are characterized by generally unmodified natural environments. Ecological processes and natural conditions are only minimally affected by past or current human uses or activities. Users have the opportunity to experience a moderate degree of independence, closeness to nature, solitude, and remoteness, with some areas offering motorized opportunities and others non-motorized opportunities (except for the traditional uses of boats, aircraft, and snowmachines). Interaction between users is infrequent. Facilities and structures may be minimal or occasionally may be larger in scale, but will be rustic in appearance, or in harmony with the natural setting.

Scenery

Design resource activities to remain visually subordinate to the characteristic landscape. Activities may repeat form, line, color, or texture common to the landscape. New form, line, color, or texture will be subordinate to the characteristic landscape.

1. Apply Forest-wide Standards and Guidelines for the Moderate Scenic Integrity Objective (SIO).
2. There may be cases where facilities associated with a concentrated recreation or tourism development may not feasibly meet the Moderate objective. After analysis of the proposal and public involvement, the NEPA decision document for this project should determine the specific SIO for the development. The environmental analysis

shall also prescribe design guidelines necessary to meet this scenery objective. During the Project's design phase, the USFS shall be closely involved in the review of design work as it evolves.

3. Design visitor facilities to blend, to the extent feasible, with the natural setting.
4. Rehabilitation techniques may be used to restore disturbed landscapes to be compatible with the Semi-Primitive setting.

In addition to the two Land Use Designations (LUDs) mentioned previously, the Project area has a third LUD. This LUD is Transportation and Utility System (TUS) and is in place to support the development of state and federal highways, railroads, public hydroelectric power projects and associated facilities, powerlines 66 kV or greater, and pipelines 10 inches or greater in diameter and would include the Takatz Lake Hydroelectric Project. A TUS LUD is defined as an "Overlay LUD" where the underlaying initial LUDs, Remote Recreation and Semi-remote Recreation, remain in effect until that time where the initiation of construction, and during system operation of the TUS facility, this management prescription will apply. Within the TUS corridor, the underlaying LUDs continue to exist but are superseded by the TUS only for the allowable uses prescribed by the TUS. The TUS LUD applies only to the project limits/corridor necessary for the infrastructure and maintenance of facilities required as part of the TUS. Outside the TUS corridor, the underlaying LUDs remain as the management prescription. (USFS, 2008, 3-128 to 3-133).

Transportation and Utility System

Goals

- To provide for, and/or facilitate the development of, existing and future major public Transportation and Utility Systems, including those identified by the State of Alaska and the Alaska Energy Authority.

Objectives

- Apply this management prescription to existing major systems corridors. Use the prescription as criteria in the planning and design of future system corridors. The corridors shown on the Land Use Designation (LUD) Map (2007) do not include viable routes that may be considered during project analysis. Consideration of alternate routes that meet corridor objectives while reducing costs and/or minimizing resource impacts is encouraged. During the period before actual construction of new systems occurs, the management prescription(s) of the (initial) LUD(s) underlaying the corridors will remain applicable. Upon initiation of construction, and during system operation, this management prescription will apply. The Transportation Utility System (TUS) LUD takes precedence over any underlaying LUD (subject to applicable laws) regardless of whether the underlaying LUD is a TUS Avoidance LUD or not. As such, it represents a "window" through the underlaying LUD through which roads and/or utilities can be built.
- For application of this LUD, "major systems" are defined as state and federal highways, railroads, public hydroelectric power projects and associated facilities, powerlines 66 kV or greater, and pipelines 10 inches or greater in diameter.
- Allow special uses and facilities not related to transportation or utility systems, if compatible with present or future systems.
- If the development of systems changes the Recreation Opportunity System (ROS) setting, manage recreation and tourism opportunities in accordance with the new setting. Consider the development of recreation and tourism facilities in conjunction with the planning of state or federal highways or reservoirs.

- Following construction of systems, lands in the right-of-way, if permanently cleared, will be considered unsuitable for timber production.
- Transportation and utility corridors, to the extent feasible, should follow the same route.
- Transportation Utility Systems may dominate the seen foreground area, yet are designed with consideration for the existing form, line, color, and texture of the characteristic landscape.
- Minimize and/or mitigate adverse effects to wildlife habitat and populations to the extent feasible.
- Maintain the present and continued productivity of anadromous fish and other fish habitat to the extent feasible.

Desired Condition

Transportation Utility Systems have been constructed in an efficient and economic manner, and have been designed to be compatible with the adjacent Land Use Designation to the maximum extent feasible. The minimum land area consistent with an efficient, safe facility is used for their development. Effects on other resources have been recognized and resource protection has been provided. Other resources uses and activities in the area do not conflict with utility operations. State and federal highways and reservoirs offer new developed recreation opportunities, as appropriate.

Scenery

The landscape may be dominated by activities associated with Transportation Utility Systems. Although Transportation and Utility System developments may dominate the seen area, they are designed with consideration for existing form, line, color, and texture found in the characteristic landscape.

1. Apply Forest-wide Standards and Guidelines for the Low Scenic Integrity Objective. Perform viewshed analysis in conjunction with project development to provide direction for retaining or creating a visually attractive landscape over time.
2. Work with topographic and vegetative features to screen the development when seen from Visual Priority Travel Routes and Use Areas (see Appendix F).
3. Consider the following during the design phase of routes, which are, or are seen from, Visual Priority Travel Routes and Use Areas:
   a. Vegetation of slopes seen from the road.
   b. Providing “planting pockets” or terraces or slopes, where needed.
   c. Maintaining landforms through road location and design.
   d. Breaking up the straight line effect of linear corridors by considering special treatment of vegetation on clearing slopes or application of other design techniques and principles.
4. Requiring roadside cleanup of construction debris and logging slash on all roads receiving general public use or expected to have such future use.

Scenic Integrity Objectives

A major component of the Scenery Management System (SMS) is Scenic Integrity Objectives (SIOs). SIOs are used to establish scenery standards for management and the degree to which the landscape must be retained intact or can be perceived as modified by alterations by human activities (USFS 1995). In the Forest Plan, SIOs were adopted that provide direction and objectives for landscape scenery and Distance Zones within each Land Use Designation (LUD) (USFS, 2008, pp. 4-57). The long-term future scenic condition for each area is set as a scenic integrity level that defines maximum levels of visual impact desirable from human alterations to the natural landscape character. Associated with each objective is a set of recommended scenery standards and guidelines for each allowable use. These recommendations are guidelines that generally define how much modification can occur and still meet the SIO. Each objective makes recommendations for each distance zone and the time line to meet the SIO (USFS, 2008, pp. 4-57 to 4-59).

SMS and the Forest Plan outline five classifications of SIOs.

- High: The characteristic landscape appears intact. Deviations may be present but must repeat form, line, color, texture, and pattern common to the landscape character so completely and at such a scale that they are not evident.
- Moderate: The landscape appears slightly altered. Noticeable deviations are visually subordinate to the character.
- Low: The landscape appears moderately altered. Deviations may be dominant, but are shaped to borrow from the natural landform and other visual dominance elements (line, form, texture, color) and are subordinate to the characteristic landscape when viewed as background.
- Very Low: Deviations are dominant, but borrow from the natural terrain and other elements common to the characteristic landscape.

LUD plays a key role in establishing management prescriptions and determining the SIO for the landscape. As previously discussed, the Project area has two LUDs, Remote Recreation and Semi-remote Recreation. There is also an overlay LUD of Transportation and Utility Systems over these initial LUDs. These initial underlaying LUDs remain in effect until initiation of construction and during system operation of the Transportation and Utility System (TUS) facility, at which point the TUS LUD supersedes the underlaying LUDs.

The Forest Plan adopts SIOs that provide direction and objectives for landscapes within each LUD. The long-term desired future scenic condition for a specific area is the maintenance of a scenic integrity level that is at least as high as the adopted SIO for that area. Adopted SIOs for each Distance Zones are listed for each LUD and found below. (USFS, 2008, p. 4-57).

Visual Comparison Unit (VCU) 3170, Takatz Lake, is comprised of a Semi-remote Recreation LUD surrounding Takatz Lake and the tract of non-federal lands and therefore a Moderate Scenic Integrity Objective (SIO). The upper elevations in the northwest and southwest portions

Table 8. Adopted Scenery Integrity Objectives for Each Distance Zone Based on Land Use Designation

Land Use Designation	Foreground SIO	Middleground SIO	Background SIO	Seldom Seen SIO
Remote Recreation	High	High	High	High
Semi-remote Recreation	Moderate	Moderate	Moderate	Moderate
Transportation and Utility Systems	Low	Low	Low	Low

Source: USFS 2008

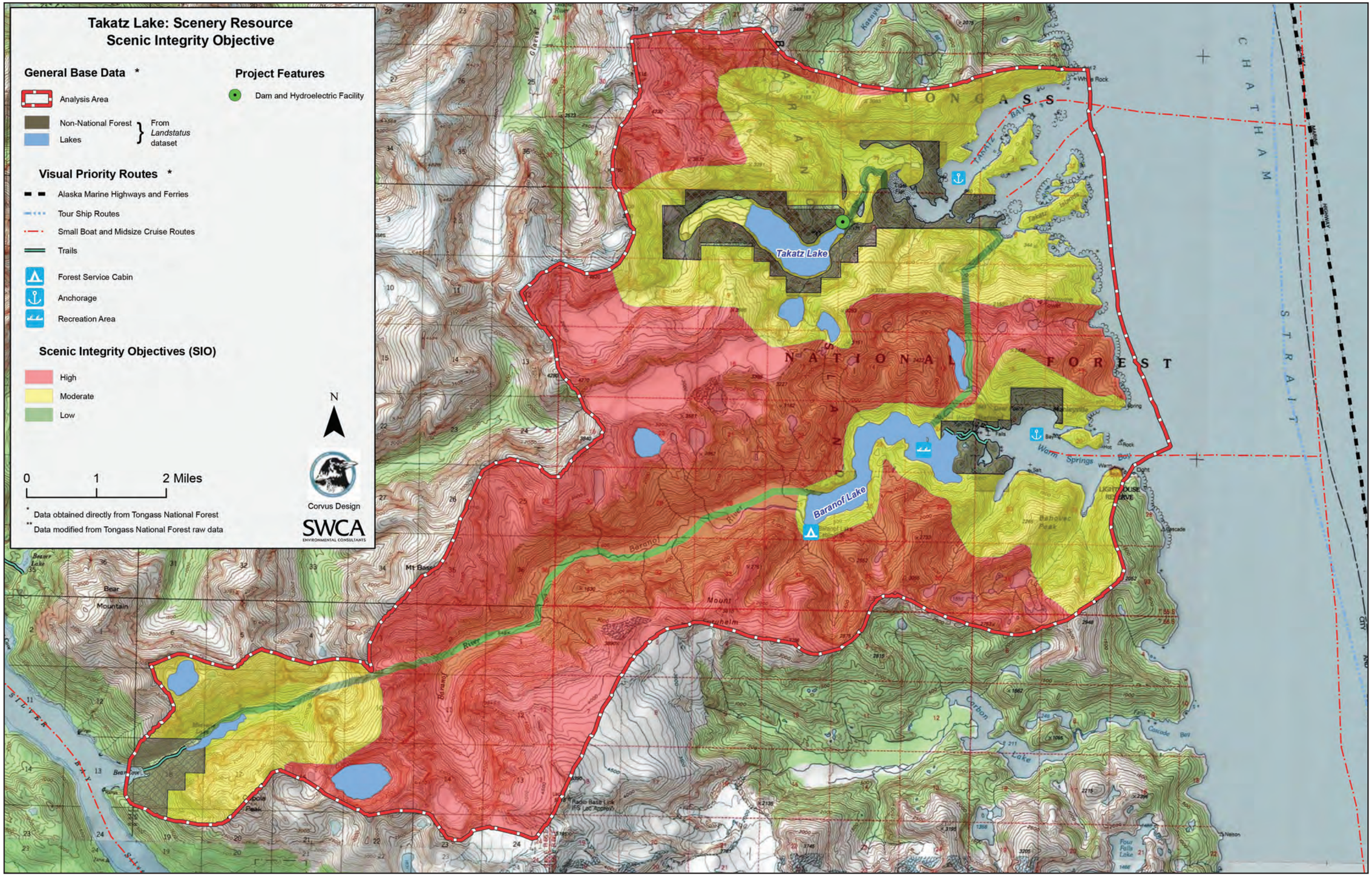

Figure 9. Scenic Integrity Objective classifications for Takatz Lake Hydroelectric Project.

Table 9.

Scenic Integrity Objectives:

Takatz Lake Hydroelectric Project

Scenic Integrity Objective Classification	Forest Service Lands Acres (%)
High	28,054 (64%)
Moderate	15,639 (36%)
Low	0 (0%)
Very Low	0 (0%)
Low*	11.7 miles

*TUS LUD overlay is a linear corridor designation without a prescribed width and is shown as linear miles (approximate).

of this VCU have a High SIO as a result of its Remote Recreation LUD. The Transportation and Utility System LUD overlay on federal lands runs from the mouth of Takatz Lake, along Takatz Creek, through non-federal Lands and reemerges on federal land south of Little Takatz Bay. The Transportation and Utility System (TUS) corridor runs southwest towards Sadie Lake. The TUS corridor has an overlay SIO of Low and runs approximately 3.1 miles on federal lands. The entire TUS corridor (Low SIO) within this VCU overlays a Moderate SIO.

VCU 3260, Baranof Lake, is largely made up of a Remote Recreation LUD and therefore designated as a High SIO. This area includes a majority of the middleground surrounding the community of Baranof Warm Springs and Baranof Lake, and the entire portion of the VCU west of the head of Baranof Lake. The remaining portions of this VCU are designated Semi-remote Recreation and include the foreground around the community of Baranof Warm Springs and Baranof Lake and the middleground up the top of Behovec Peak to the south of Warm Springs Bay and the middleground to the top of peak to the north of the community. This area of VCU 3260 has a Moderate SIO. The Transportation and Utility System LUD overlay runs exclusively on lands managed by the USFS and runs down the slope to the north of Sadie Lake, along the east side of the lake and down to the north side of Baranof Lake where the corridor heads west to Baranof River. The TUS runs within the bottomlands of the Baranof River valley crossing the river at several locations. The TUS corridor climbs the east side of Baranof Mountain to the peak and the limits of VCU 3260. The entire corridor length within this VCU is 11.7 miles all of which is on federal lands. Approximately 2.0 miles of corridor is located on the underlaying Moderate SIO along the north side of Baranof Lake with the remaining 9.7 miles of corridor being located over the underlaying High SIO.

Table 10. Land Use Designation Related to Distance Zones in the Seen Landscape

VCU	LUD	Foreground Acres (%)*	Middleground Acres (%)*	Background Acres (%)*
3170	Remote Recreation	-	2700 (22%)	2000 (16%)
	Semi-Remote Recreation	170 (1%)	1816 (15%)	2680 (22%)
	Transport and Utility Systems**	-	32 (0.3%)	-
3260	Remote Recreation	-	6618 (23%)	614 (2%)
	Semi-Remote Recreation	2400 (8%)	1910 (6%)	-
	Transport and Utility Systems**	49 (0.2%)	71 (0.2%)	-
3250	Remote Recreation	-	-	45 (1%)
	Semi-Remote Recreation	-	1790 (48%)	-
	Transport and Utility Systems**	-	37 (1%)	-

*Percentage of total Forest Service Lands acreage within each VCU.

**TUS LUD assumes an average width of 200' corridor.

VCU 3250, Medvejie Lake, has a dominant Semi-remote Recreation LUD which equates to a Moderate SIO. This area is found within the Medvejie Lake Basin and includes most of the VCU with the exception of the high altitude portion found in the south-east segment of the VCU. This high elevation, unseen landscape has a Remote Recreation LUD and receives a High SIO. The TUS LUD overlay runs from the peak of Baranof Mountain and down the west side to the north side at the head of Medvejie Lake. The TUS corridor runs along the north side of the lake to the boundary of the National Forest. Once on non-federal lands the corridor continues along the north side of the creek and ties into the existing Green Lake transmission lines. The entire TUS corridor (Low SIO) is approximately 3.6 miles within this VCU and overlays a Moderate SIO.

As discussed previously, the Transportation and Utility Systems Land Use Designation (LUD) overlays the Remote Recreation and Semi-remote Recreation LUDs. These initial underlaying LUDs remain in effect until that time where the initiation of construction and during system operation of the Transportation and Utility System (TUS) facility, at which point the TUS LUD supersedes the underlaying LUDs. The TUS is a linear LUD and its alignment over the underlaying Scenic Integrity Objective (SIO) is shown in Table 11.

Table 11.

Length of TUS LUD Based on Initial Underlaying SIO:

Takatz Lake Hydroelectric Project

Underlaying Initial Scenic Integrity Objective	Forest Service Lands Approx. Length (miles)
High	9.7 (53%)
Moderate	8.7 (47%)
Low	0 (0%)
Very Low	0 (0%)

Scenic Integrity Objectives: Specific Guidelines

Scenic Integrity Objective (SIO) High (Remote Recreation LUD)

Design activities to not be visually evident to the casual observer. This objective should be accomplished within 6 months following Project completion.

Facilities

- Keep vegetation clearing to a minimum and within close proximity of the site.
- Select materials and colors that blend with those found in the natural surroundings.
- Screening should be used from viewpoints and travel routes if feasible.

Transportation

- Rock Sources. When a forest development road is a Visual Priority Route (VPR), locate rock sources off the road, when possible. Spur road access may be necessary to minimize the visual impact. Rock source development should not be apparent from the road, use area, or marine travel route to meet this scenic objective.
- Corridor Treatment. Provide roadside cleanup of ground-disturbing activities.
- Depending on site conditions, cut stumps as low as possible and angled away from the viewer. Incorporate this treatment in the timber sale contract.

SIO Moderate (Semi-remote LUD)

Design activities to be subordinate to the landscape character of the area. This SIO should be accomplished within 1 year of Project completion.

Facilities

- Keep vegetation clearing to a minimum and within close proximity of the site.
- Emphasize enhancement of views from recreational facilities.
- Select materials and colors that blend with those found in the natural surroundings.

Transportation

- Design rock sources to be minimally apparent as seen from VPRs. Rehabilitation is usually necessary following closure of rock source developments. It may be necessary to modify some ground-disturbing activities seen from the foreground of VPRs.
- Corridor Treatment. Roadside cleanup of ground disturbance activities may be necessary.

SIO Low (Transportation and Utility System LUD)

Activities may visually dominate the characteristic landscape, but must have visual characteristics similar to those of natural occurrences within the surrounding area or character type. This SIO should be met within 1 year in the foreground distance zone and within 5 years in the middle and background Distance Zones following Project completion.

When planning activities, use naturally established form, line, color, and texture found in the landscape.

Facilities

- Siting and design should borrow from naturally occurring patterns in the landscape, and should not be visually dominant when viewed in the background distance zone.

Transportation

- Rock source operations and resulting landform modifications may be evident to the casual observer as seen from VPRs. However, the quarry location and design should mitigate, to the extent feasible, the apparent visual size and dominance of the activity (e.g., shaping of backwalls, roadside screening, and general orientation of the opening).

Other Scenery Related Goals And Objectives

Design Activities

The Forest Plan also indicates that in designing activities to meet specific Scenic Integrity Objectives (SIOs), a number of factors must be considered. These factors include the following:

The landscape's Existing Scenic Integrity (ESI) rating is an inventoried condition that rates the degree of change that has already occurred on the ground. It is important to compare the ESI of the Project area to the SIOs assigned by the Forest Plan. Should there be conflicting conditions presently existing and the intent of the Land Use Designation (LUD) is not presently met, it would be appropriate to consider either 1) some specific rehabilitation measures, or 2) Project deferral that would allow the landscapes in the Project area time to regenerate sufficiently.

Visual Absorption Capability (VAC), which is an estimate of the relative ability of a landscape to absorb management activities. High, Intermediate, and Low VAC ratings are used. These ratings reflect the degree of landscape variety in an area, viewing distance, and topographic characteristics. As examples, a Low VAC setting generally has steep slopes, with little landscape variety, while a High VAC setting may be relatively flat and/or has a high degree of variety in the landscape.

Size, shape, orientation to viewer, color, texture, etc. are critical elements in determining whether or not an activity meets the adopted SIO. Consideration for the scenery is essential early on in planning processes, particularly in areas seen from a Visual Priority Route. However, each landscape setting is different, and should be evaluated on a case-by-case basis. There may be instances where the SIO can be met while the proposed activity is greater than the guideline, or there also may be cases where the activity must be smaller to meet the intent of the SIO.

Remote and Semi-remote Recreation LUD

As discussed, the initial underlaying LUDs for the federal lands managed by the USFS within the Project area are designated as Remote Recreation and Semi-remote Recreation LUD. These have a High and Moderate SIO respectively. The overlaying Transportation and Utility System LUD for the Project has a Low SIO. The Takatz Lake Hydroelectric Recreation Resource Study Report (Anderson & Agnew:Beck, 2012) indicates that the Remote and Semi-remote Recreation designations are of importance by those that use the area for recreation. The visual impacts of a Low SIO linear corridor through a landscape with a High and Moderate SIO will impact the overall surrounding landscape and the visual impacts of the corridor will not be contained to the corridor itself. The linear impacts of the Project on the surrounding LUD will likely have a greater visual impact throughout the three Visual Comparison Units (VCUs).

SCENERY EFFECTS

As stated in the Project Description, the preferred routes are the Overhead Transmission Alternatives (OTAs) that utilize pole and tower supported transmission lines. Three overhead transmission lines will run along the proposed utility corridor from the Power house at Takatz Bay to the Green Lake utility corridor tie in at Silver Bay. Standard cross country tubular steel structures will generally be used at lower elevations coinciding with the lower elevation design loads. Heavy-duty cross country structures will be used at higher elevation areas and locations that have long spans. Guys will typically be used at angles, dead ends and to provide additional strength on longer span tangents. These structures, largely due to the use of guys, can be designed to be relatively light weight allowing setting of the structures with the use of a heavy lift helicopter. The structures have been assumed to be supported on micro-pile foundations.

The OTAs will require that tall trees be cleared from the transmission corridor at the initiation of construction and during the existence of the Project to eliminate potential hazards and allow access to the transmission lines. Vegetation management will be required as part of the scheduled maintenance of the corridor. The width of the cleared corridor varies depending on tower placement, existing vegetation, terrain, and slopes, and is determined by the utility engineer.

It is expected that the Project will have the greatest visual impacts immediately after completion of construction. As the forest naturally regenerates within the transmission corridor, the visual impacts will be reduced. In the middleground and background Distance Zones, visual impacts will be attributed to the deviation in color and texture from the surrounding undisturbed vegetated landscape. In the foreground, the transmission structures, utility lines, and the deviation in vegetation (color and texture) within the corridor will result in visual impacts.

Prominence and Sensitivity of Proposed Scenery Effects

To fully understand the expected scenery effects from the Project the following details the structures, sizes, spacing and corridor clearing limits for each of the Project segments within each of the three Visual Comparison Units (VCUs). The summary also identifies where scenery impacts are expected, the distance zone effected, and those areas that are sensitive including those with a Low Visual Absorption Capacity, Existing Scenic Integrity (ESI) of 1-3, and High Inherent Scenic Attractiveness (ISA). The landscape areas that are identified as being sensitive are highlighted in **bold** text under the prominence and sensitivity summary for each segment.

VCU 3170

This VCU includes the hydroelectric generation facility including the Takatz Lake dam, penstock, powerhouse, and switch yard. All of these facilities with the exception of the penstock is on non-federal lands and not included in the effects analysis. Other facilities associated with the Project include the access road and dock. Only a portion of the road is on USFS lands.

Access Road

The access road will be approximately 14’ wide gravel road with ditch drainage to either side. The access road starts from the dock at the inlet just south of Takatz Bay. It winds along Takatz Bay with Section 1a of the utility corridor, until the power house. Then it winds north and west around the hill at the mouth of the creek and enters USFS lands. The road follows Takatz Creek drainage to Takatz Lake and ends at the dam. The road runs approximately 1.5 miles on USFS managed lands within an unseen landscape.

Transmission Lines

The transmission lines in VCU 3170 comprise all of Section 1a starting at Station Point (Sta.) 0.00’ and up to the 8th pole in Section 1 at Sta. 13,870.08’.

Section 1a will have a single wood pole line that range from 50’ to 55’ in height with spans ranging from 148’ to 321’. This section is located on non-federal lands.

The first 8 poles of Section 1 are located in VCU 3170 and runs from the south of Takatz Bay and up the ridgeline between the Bay and Sadie Lake. The first pole is located on non-federal lands. Poles two through eight are located on USFS Lands. The poles range from 50’ to 80’ in height with spans ranging from 313’ to 2373’. The wire support structures will be standard cross country 3-pole dead end and tangent tubular steel structures, and heavy-duty cross country 3-pole dead end and tangent tubular steel structures. As the transmission line leaves the road and heads south up the hill (poles 6-8), the land is mostly rock with a few short trees, so no clearing is anticipated. As the transmission line leaves the road and heads south up the hill (poles 6-8), the land is mostly rock with a few short trees, with no clearing is anticipated.

Prominence and Sensitivity of this segment:

- Transmission lines: Middleground. Access road: Unseen landscape
- Transmission lines: Largely Intermediate Visual Absorption Capacity (VAC) with a **band of Low VAC**. Access road: High VAC

- Transmission lines and access road: **High ESI (Class 1)**
- Moderate ISA (Class B) with a **High ISA (Class A) along shoreline and access road**

VCU 3260

The Project in this Visual Comparison Unit (VCU) only includes the hydroelectric transmission lines. All facilities in this VCU are located on USFS managed lands.

Transmission Lines

The transmission lines within this VCU starts at the 8th pole in Section 1 (Sta. 13,870.08') and includes all of sections 2 and 3, ending at Pole 74 in Section 4 (Sta. 76,212.59').

Section 1 within this VCU starts at pole eight on the ridgeline between Takatz Bay and Sadie Lake and runs down the slope to the east side of Sadie Lake. This section continues to the south end of the lake and heads south west to Baranof Lake. Section 1 ends just north of Baranof Lake.

The poles in Section 1 range from 50' to 80' in height with spans ranging from 173' to 2373'. There are 6 types of poles in Section 1: standard cross country tangent, standard cross country in-line dead end, standard cross country 3-pole dead end, heavy duty cross country tangent, and heavy-duty cross country 3-pole dead end. There are patches of trees with some open areas between poles 8 and 10. The clearing width is anticipated to extend 75' to either side of the line for a total clearing width of 150'. Along Sadie Lake and down to Baranof Lake (poles 10 through 22) there are very short trees with some areas requiring clearing for a total clearing width of 75'.

Prominence and Sensitivity of this segment:

- Middleground on ridgeline above Sadie Lake and south end of Lake, unseen landscape on west side of Sadie Lake, **Foreground along Baranof Lake**
- Moderate and **Low Visual Absorption Capacity (VAC) on ridgeline above Sadie** Lake, High VAC along west side of Sadie Lake, Moderate and High VAC along south end of Sadie Lake (in middleground), **Low VAC along Baranof Lake (foreground)**
- **High ESI (Class 1)**
- **High ISA (Class A)**

Section two within this Visual Comparison Unit (VCU) runs along the north side of Baranof Lake and end to the north of the mouth of Baranof River.

The poles in Section 2 range from 60' to 85' in height with spans ranging from 255' to 1215'. There are 4 types of poles in Section 2: standard cross country tangent, standard cross country in-line dead end, standard cross country 3-pole dead end, and heavy-duty cross country A-frame dead end. Along Baranof Lake there are taller trees on a steep hillside requiring more clearing on the uphill side of the corridor. The clearing limits for the corridor are estimated at 75' on the downhill side and 150' on the uphill side, for a total clearing width of 225'.

Prominence and Sensitivity of this segment:

- **Foreground**
- **Low VAC**
- **High ESI (Class 1)**

- **High ISA (Class A)**

Section 3 starts at the mouth of Baranof River and runs west within the floor of the valley to the mid portion of Baranof River. The poles in Section 3 range from 60' to 85' with spans ranging from 509' to 1382'. There are 3 types of poles in Section 3: standard cross country tangent, standard cross country 3-pole dead end, and self-supporting tubular steel running angle. Along the eastern half of Baranof River there is a combination of vegetative openings and areas of tall trees. Clearing will be extended to avoid leaving narrow rows of trees. An effort will be made to make the clearing blend with the natural patches of trees. The corridor will have a clearing width of 200'.

Prominence and Sensitivity of this segment:

- Middleground for approximately one mile near mouth of river, then unseen landscape to the west
- High VAC
- **High ESI (Class 1)**
- **High ISA (Class A)**

Section four runs west within the valley floor from the mid-point of Baranof River and up the east slope of Baranof Mountain to the ridge line and the limit of the VCU.

This Section 4 ends at Pole 74 with pole heights that range from 50' to 95' with spans ranging from 623' to 3098'. There are 5 types of poles in this section: heavy-duty cross country tangent, heavy-duty cross country 3-pole dead end, heavy-duty cross country A-frame dead end, heavy-duty cross country in-line dead end, and extra heavy-duty cross country A-frame dead end. The western half of the Baranof River will be treated the same as the eastern half with a clearing width of 200' between Sta. 57,004.61' and Sta. 72,353.10'. No clearing is anticipated as the line climbs the ridge of Baranof Mountain.

Prominence and Sensitivity of this segment:

- Majority unseen landscape with a small segment of middleground along Baranof River valley and small amount of background on upper east slopes of Baranof Mountain.
- High Visual Absorption Capacity (VAC) with small amount of Moderate VAC in middleground portion along Baranof River valley
- **High ESI (Class 1)**
- **High ISA (Class A)**

VCU 3250

The Project in this Visual Comparison Unit (VCU) only includes the hydroelectric transmission lines. The transmission lines are located on both USFS managed lands and non-federal lands.

Transmission Lines

The transmission lines within this VCU starts at the 74th pole in Section 4 (Sta. 76,211.59') and includes the remaining pole of section 4 and all of section 5 ending at Pole 89 (Sta. 95,211.45'). The last pole of Section 5 on federal lands is pole 84.

The one pole in Section 4 in this VCU has a height of 60' with a span of approximately 3886'. This pole is an extra heavy-duty cross country A-frame dead end. There would be no

clearing related to this pole segment due to lack of existing vegetation.

The poles in Section 5 range from 50' to 85' with spans ranging from 591' to 3886'. There are 6 types of poles in Section 5: standard cross country tangent, standard cross country 3-pole dead end, self-supporting tubular steel running angle, standard cross country in-line dead end, heavy-duty cross country tangent, and extra heavy-duty cross country A-frame dead end. The terrain is mostly rocky, but there is one patch of trees in segment that will need clearing. The corridor is estimated to have a clearing width of 100 feet between Sta. 80038.91' and Sta. 83925.27'. As the line descends along the head waters of Medvejie Lake, between Sta. 83925.27' and Sta. 86937.52', the terrain is generally flat with tall trees. This portion of the corridor would have a clearing width of 200 feet. As the line parallels Medvejie Lake and continues to Bear Cove, the corridor has a steep cross slope and tall trees. The clearing limits of the corridor are estimated at clearing 75' on the downhill side and 150' on the uphill side between Sta. 86937.52' and Sta. 95211.45'.

Prominence and Sensitivity of this segment:

- Middleground on upper western slopes of Baranof Mountain, unseen at lower elevations adjacent Medvejie Lake.
- **Low Visual Absorption Capacity (VAC) on upper western slopes of Baranof Mountain**, Moderate and **Low VAC on mid and lower elevations surrounding Medvejie Lake**, and High VAC at head of Medvejie Lake.
- **High ESI (Class 1)**
- Moderate ISA (Class B) on upper elevations on Baranof Mountain, **all other areas High ISA (Class A)**

Construction and Maintenance

In addition to the physical features associated with the Project, construction techniques and scheduled maintenance during the operation of the facility will also determine the extent of scenery effects at various time periods during the life time of the Project until final decommissioning.

Construction operations within USFS lands includes clearing and grading a portion of the access road, clearing all trees from within the clearing limits of the transmission line corridor, construction of the gravel roadway, and placement of the hydroelectric poles and structures to support the transmission lines. The access road will be constructed with typical expected road building techniques and equipment. The equipment, personnel and the hydroelectric poles and structures will be placed with the use of helicopters due to terrain constraints and to minimize disturbance to the ground plane and existing vegetation (Brewton, 2012). A roadway is not required within the transmission corridor beyond the gravel access road described in Visual Comparison Unit (VCU) 3170. This will allow all remaining shrubby and herbaceous vegetation to remain and minimize exposure of bare earth except at the base of structures and where materials may be stockpiled. It is expected that once construction is complete, will be the greatest impact to scenery.

A component of the Project throughout its life will be maintenance and the removal of taller trees within the clearing limits. The width of the clearing limits is described above for each VCU. Vegetation management within transmission corridors is regulated by the National Electrical Safety Code, Section 218: Tree Trimming. The code states:

> Trees that may interfere with ungrounded supply conductors should be trimmed or removed. Note: Normal tree growth, the combined movement of trees and conductors under adverse weather conditions, voltage and sagging of conductors at elevated

temperatures are among the factors to be considered in determining the extent of trimming/removal required.

Based on the federal requirement, the City and Borough of Sitka's Electrical Department has a five year maintenance cycle where larger trees are removed from the within the clearing limits of the transmission corridor but smaller height trees and shrubby vegetation are left in place. Removal of trees greater than thirty feet tall within the clearing limits would be part of the expected maintenance (Brewton, 2012). After completion of construction, the period with the next greatest visual impact will be after the maintenance within the clearing limits.

Landscape Character Effects

The Landscape Character for the Project Area is the Baranof Fiordlands. Landscape character defines the broad characteristics of landform patterns and features, vegetation patterns, surface water, and land use patterns or cultural features. The effects by the Project to these identifiable landscape characteristics (vegetation, landforms, surface water, etc.) determine the extent and magnitude of the effects on the Landscape Character. Additionally these effects must be analyzed during the life time of the Project from initial construction, to operation and maintenance, and final decommissioning. These cumulative effects of the Project over its entire life/duration must look at reasonable expected actions and effects on scenery and identify impacts that do not meet the Landscape Character Goals. Landscape Character Goals represents the landscape at a macro level and sets the big picture goal.

As identified previously, the Project is located within two underlaying Land Use Designations (Remote Recreation and Semi-remote Recreation) but has an overlay Land Use Designation (LUD) of Transportation and Utility System (TUS). The Landscape Character Goal for a Transportation and Utility System LUD is as follows (USFS, 2008, p. 3-68):

Desired Condition

> Transportation Utility Systems have been constructed in an efficient and economic manner, and have been *designed to be compatible with the adjacent LUD to the maximum extent feasible.* The minimum land area consistent with an efficient, safe facility is used for their development. Effects on other resources have been recognized and resource protection has been provided. Other resources uses and activities in the area do not conflict with utility operations. State and federal highways and reservoirs offer new developed recreation opportunities, as appropriate.

Scenery

> The landscape character may be dominated by activities associated with Transportation Utility Systems. Although *TUS developments may dominate the seen area, they are designed with consideration for existing form, line, color, and texture found in the characteristic landscape.*

In summary the Landscape Character Goal allows the TUS development to dominate the seen landscape however the Project should be designed in consideration of the existing form, line color and texture found in the Baranof Fiordlands. Additionally, to the maximum extent feasible, the Project should be designed to be compatible with the adjacent (or underlaying) LUDs, Remote Recreation and Semi-remote Recreation. It is reasonable to set a long-term goal of 25 to 30 years for the landscape character to move from a TUS LUD based goal towards those goals for a Remote Recreation and Semi-remote Recreation LUD.

The Project facilities, expected disturbance to the landscape (vegetation, terrain, etc) to allow for the installation of the facilities, and the federal and local clearing limits requirements for the utility corridor are to be evaluated using the TUS Landscape Character Goal on lands managed by the USFS. In addition to the physical facilities and modifications upon the landscape, another aspect that must be considered is the expected maintenance of the Project over its lifetime and the natural regeneration of the Forest. The maintenance of the clearing limits and the natural regeneration of the Forest within the clearing limits will result in a dynamic and evolving landscape over time. The extent, magnitude and duration of these effects, both man-made and natural processes, needs to be predicted and evaluated as best possible during the entire life of the Project. The evaluation of reasonable future effects includes expected maintenance and frequency of maintenance, replacement of facilities, and the natural regeneration of the landscape.

It is expected that the Project will have the greatest visual impacts on the Landscape Character related to vegetation patterns and cultural elements. In regard to vegetation patterns, the linear nature of the utility corridor with its managed vegetation within the clearing limits of the corridor will visually contrast with the "Brushy landslide and avalanche chutes frequently dissect mountain slopes. Hemlock-spruce forests cover much of the lower elevations." The visual impacts to the existing vegetation will include form, line, color and texture. These will be attributed to the vegetation management within the clearing limits of the corridor which will contrast in color and texture due to the variation in plant species, maturity and height to the surrounding undisturbed landscape. The linear layout of the corridor and the vegetation management (color and texture) transecting an undisturbed landscape will create visual contrast in line and form within the seen landscape. It is expected that the greatest visual impacts to the Landscape Character will be at the onset of construction where patches of bare earth and rock may be present, trees are removed from road and utility corridors and the forest understory is exposed within portions of the transmission corridor. Once construction is completed, visual impacts to Landscape Character will be lessened as time passes due to the natural regeneration of the forest. Visual impacts will be the least just prior to management of vegetation within the transmission corridor, along road corridors and around structures when taller trees are removed but other vegetation remains. It is expected that the physical components (towers, poles and transmission lines) within a seen landscape will have minimal impacts to form, line, texture and color except when viewed in the foreground from a Visual Priority Route.

A visual impact to the Landscape Character is also expected in regards to the cultural elements. The cultural impacts of the Baranof Fiordlands is described as, "the majority of the landscape shows very little human influence." Notable human influence within the Project is the small community of Baranof Warm Springs but beyond the community the landscape is largely intact with over 99.9% of the project area having a Very High Existing Scenic Integrity". The linear layout of the Project's corridors and visual color and texture contrast as discussed previously will result in an increase in human influence within the seen landscape transecting all three Visual Comparison Unit (VCUs).

It is expected that the Project will meet the minimum Landscape Character Goals as set forth by a Transportation and Utility System (TUS) Land Use Designation (LUD) during and immediately after initial construction of the Project when impacts will be the greatest. The linear nature of the hydroelectric facility and its operation makes it difficult to reduce visual impacts and obtain a higher level goal for Landscape Character through incorporating existing form, line, color, and texture during the initial construction period of time. After initial construction and throughout the operation and maintenance, until final decommissioning, it is expected that the Landscape Character goal will move from a TUS designation towards being more compatible with the surrounding LUD landscape goals. During operation of the Project, revegetation within the transmission and access road corridors will reduce visual contrast (form, line, color, and texture) to the surrounding landscape. This will result in meeting the long term goal of moving from a TUS based landscape goal to those of a Remote Recreation and Semi-remote Recreation goal. Due to scheduled maintenance and removal of large trees within the clearing limits of the corridor it is not expected that the Project will ever obtain these higher goals but will move away from the lower TUS goal. Once the Project is decommissioned it is expected that the landscape will be restored over time as natural regeneration requires to the Very High Existing Scenic Integrity (ESI) and meet the Landscape Character Type of the Baranof Fiordlands.

Scenic Integrity Effects

Scenic Integrity is a major component of Scenery Management and is used to establish scenery standards for management and the degree to which the landscape must be retained intact or can be perceived as modified by human activities. Scenic Integrity Objectives (SIOs) provides direction and objectives for landscape scenery and is determined by the Distance Zones within each Land Use Designation (LUD). SIOs establish the long-term future scenic condition of the landscape by defining maximum levels of visual impact allowable from human alterations to the natural landscape character for each allowable use. The objectives also set schedules or periods of time after project completion or conclusion of construction in which the SIOs must be met. The effects by the Project related to the Scenic Integrity must determine the extent, magnitude and duration as viewed from areas of concern. Again these effects must be analyzed during the life time of the Project from initial construction, to operation and maintenance, and final decommissioning. These cumulative effects of the Project over its entire life/duration must look at reasonable expected actions and effects on scenery and identify impacts that do not meet the Scenery Integrity Objectives. Scenic integrity represents the landscape at a micro level from areas of concern.

As discussed in Landscape Character, the Project is located within two underlaying LUDs (Remote Recreation and Semi-remote Recreation) but has an overlay LUD of Transportation and Utility System (TUS). Once construction is initiated and throughout the operation and maintenance of the Takatz Lake Hydroelectric Project, the TUS LUD takes precedence and supersedes the underlaying Remote Recreation and Semi-Remote LUDs. The Scenery Objectives for a TUS LUD and Low SIO are as follows:

1. Apply Forest-wide Standards and Guidelines for the Low Scenic Integrity Objective. Perform viewshed analysis in conjunction with Project development to provide direction for retaining or creating a visually attractive landscape over time.
2. Work with topographic and vegetative features to screen the development when seen from Visual Priority Travel Routes and Use Areas.
3. Consider the following during the design phase of routes, which are, or are seen from, Visual Priority Travel Routes and Use Areas:
    a. Vegetation of slopes seen from the road
    b. Providing “planting pockets” or terraces or slopes, where needed
    c. Maintaining landforms through road location and design
    d. Breaking up the straight line effect of linear corridors by considering special treatment of vegetation on clearing slopes or application of other design techniques and principles
4. Require roadside cleanup of construction debris and logging slash on all roads receiving general public use or expected to have such future use
5. Activities may visually dominate the characteristic landscape, but must have visual characteristics similar to those of natural occurrences within the surrounding area or character type. This SIO should be met within 1 year in the foreground distance zone and within 5 years in the middle and background Distance Zones following Project completion.
    a. When planning activities, use naturally established form, line, color, and texture found in the landscape.
    b. Facilities. Siting and design should borrow from naturally occurring patterns in the landscape, and should not be visually dominant when viewed in the background distance zone.

In summary, the allowable visual impact upon scenery falls under the Low Scenic Integrity Objective (SIO) where activities may dominate the character landscape in the foreground and middleground. Once construction is complete the Low SIO must be met within the foreground and within five years in the middle and background. The project shall be developed to create a visually attractive landscape overtime through the planning and design that uses naturally established form, line, color, and texture found in the landscape. Use topography and vegetation to screen the development from Visual Priority Routes (VPRs). For linear corridors, break up the straight line edge of the corridor by using non-linear clearing limits and the use of planting pockets on visible slopes.

As discussed in Landscape Character, the greatest Project effects on the scenic integrity will be the period between the initiation and completion of construction and a short period of time following (approximately one year) until the Forest can begin to regenerate. These impacts will be the greatest within the seen landscape with a Low Visual Absorption Capacity. As the forest regenerates within the clearing limits of the transmission corridor and road corridors, these visual impacts will be reduced.

To fully understand the effects on Scenic Integrity, three dimension digital visual simulations were generated to document the expected effects of the Project on scenery from key VPRs. Viewpoints for the simulations corresponded with the photo points used in the inventory phase of the scenery work to verify existing conditions and establish a baseline for the model. All simulations are from established VPRs. Mapping of the visual simulations viewpoints and the simulations are found in the Appendix of this Report. Each simulation shows the existing conditions and the expected impacts based on the facilities and structures, clearing limits, terrain modifications, and impacts to the landscape as described in the work by Commonwealth, Associates, Takatz Overhead Transmission Line Alternative Feasibility Review Report Study (2012).

The simulations were created with raw geospatial data provided by the USFS that was compiled and verified in Quantum Geospatial Information System (QGIS). The data included shape files for hydrology and infrastructure, color maps, and a digital elevation model. The files were then imported into Visual Nature Studio 3.0 (VNS) - three-dimensional visualization software for outdoor environments. The VNS graphics were verified against the QGIS data and imagery of the existing landscape taken from recorded photo points to verify accuracy. LiDAR data (Light Detection And Ranging data) was provided by Aero-Metric and imported directly into VNS. It was used to create a detailed ground plane in the model. The ecotypes within the project are based on vegetation and canopy cover color maps and height is based on field observation and USFS records for the area. The utility infrastructure (towers, poles, roads, etc.) in the model is based on data provided by the project utility engineer, Commonwealth. Three-dimension models of the infrastructure elements and the clearing limits were inserted into the model. Two sets of renderings were generated from viewpoints that would best record the expected impacts to scenery. The first models existing conditions and the second models the proposed Project effects of the Project with expected regeneration after 5 years. Regeneration was modeled on expected growth rates for the Takatz area, based on USFS documentation and photographs of adjacent timber prescriptions after 5 years of unmanaged reforestation. Color, texture, line and form of the regeneration were derived from images of existing conditions taken in the field and previous discussion under Existing Scenic Integrity (ESI). The image locations in the model align with geo-referenced images captured during Corvus Design's field work in 2011.

The visual simulations were developed using the duration of five years after completion of construction, a point in which modifications to the landscape are to obtain the required SIO in the middleground and foreground as mandated by scenery requirements in the Forest Plan. Each simulation documents the expected effects upon scenery and forms the basis of the discussion below.

VCU 3170

Visual Simulation Photo Points: 1, 2 and 3

This Visual Comparison Unit (VCU) includes the hydroelectric generation facility including the Takatz Lake dam, penstock, powerhouse, and switch yard. Other facilities associated with the Project include the access road and dock. All of these facilities with the exception of the penstock and a portion of the road are on non-federal lands and not included in the effects analysis. The facilities on USFS lands fall within an unseen landscape.

Transmission Lines

The transmission lines in VCU 3170 comprise all of Section 1a starting at Station Point (Sta.) 0.00 and up to the 8th pole in Section 1. Section 1a is on non-federal lands.

Section One poles two through eight, are on USFS lands and run from the south of Takatz Bay and up the ridgeline between the Bay and Sadie Lake. The poles range from 50' to 80' in height with spans ranging from 313' to 2373'. The wire support structures will be Standard Cross Country 3-Pole Dead End and Tangent tubular steel structures, and Heavy Duty Cross Country 3-Pole Dead End and Tangent tubular steel structures. As the transmission line leaves the road and heads south up the hill (poles 6-8), the land is mostly rock with a few short trees, so no clearing is anticipated. As the transmission line leaves the road and heads south up the hill (poles 6-8), the land is mostly rock with a few short trees, with no clearing is anticipated.

Impacts to Scenic Integrity of VCU 3170 - Section One on USFS lands:

Access road:

- Unseen landscape; no impacts expected.

Transmission lines:

- Middleground, located mostly within intermediate Visual Absorption Capacity (VAC) with a band of Low VAC.
- Minimal impacts expected due to limited/no clearing of vegetation expected. Only transmission structures will be visible in the middleground.
- **Expected Scenery Integrity effects will be consistent with a Low Scenic Integrity Objective (SIO) as allowable in the Forest Plan.**

Area of Concern for VCU 3170 - Section One:

- None expected. Impacts expected do not exceed the Low SIO and will meet the minimum SIO requirements for the middleground distance zone. There are no impacts in the foreground or background distance zone.

VCU 3260

Visual Simulation Photo Points: 3 thru 11

The Project in this VCU only includes the hydroelectric transmission lines and support structures. All facilities in this VCU are located on USFS managed lands.

Transmission Lines

The transmission lines within this VCU starts at the 8th pole in Section 1 and includes all of sections 2 and 3, ending at Pole 74 in Section 4.

Section One within this VCU starts at pole eight on the ridgeline between Takatz Bay and Sadie Lake and runs down the slope to the east side of Sadie Lake. This section continues to the south end of the lake and ends just north of Baranof Lake. Poles range from 50' to 80' in height with spans ranging from 173' to 2373'. There are 6 types of poles in Section 1: Standard Cross Country Tangent, Standard Cross Country In-line Dead End, Standard Cross Country 3-Pole Dead End, Heavy Duty Cross Country Tangent, and Heavy Duty Cross Country 3-Pole Dead End. There are patches of trees with some open areas between poles 8 and 10. The clearing width is anticipated to extend 75' to either side of the line for a total clearing width of 150'. Along Sadie Lake and down to Baranof Lake (poles 10 through 22) there are very short trees with some areas requiring clearing for a total clearing width of 75'.

Impacts to Scenic Integrity of VCU 3260 - Section One on USFS lands:

Transmission lines:

- Middleground on ridgeline above Sadie Lake and south end of Lake, with Moderate and Low Visual Absorption Capacity (VAC) on ridgeline above Sadie Lake where no clearing is expected.
- Transmission corridor is viewed in the background distance zone from water craft in Chatham Strait passing by Takatz Bay. The 150'-wide clearing will be visible at Sta. 8946.55 (elev. 641.5) at the top of the knoll and again between Sta. 9945.95 (elev. 890) and Sta. 11184.24 (elev. 1062). Between Sta. 11184.24 and Sta. 13870.08 at the peak, little or no clearing is anticipated; however utility structures may be visible.
- Unseen landscape on east side of Sadie Lake with High VAC
- Middleground along south end of Sadie Lake with Moderate and High VAC
- Foreground distance zone along Baranof Lake with Low VAC.
- **Expected Scenery Integrity effects will be consistent with a Low Scenic Integrity Objective (SIO) as allowable in the Forest Plan.**
- **Expected impacts to scenery in the background distance zone from Sta 8947 to Sta Sta 11184 will dominate the visual landscape beyond five years and will continue to dominate throughout project's life due to maintenance cycle within utility clearing limits. This is not consistent with the Forest Plan.**

Areas of Concern for VCU 3260 - Section One:

- East end of Baranof Lake (Dispersed Recreation Area): Transmission lines in foreground along east end of Baranof Lake are expected to have a Low SIO and meet the scenery requirements for one year duration. Tower structures, transmission lines, and linear clearing limits will be visible within a Low VAC landscape from lake and could be an area of concern due to recreation use, however is consistent with allowable impacts indicated in the Forest Plan. Scenery impacts are increased when users access the southern portion of the lake. Moving towards a Moderate SIO may be appropriate for this portion of Section One, if feasible.
- Chatham Strait adjacent Takatz Bay (Alaska Marine Highway, Small Boat and Midsize Cruise and Tour Ship Route Visual Priority Route): The 150' wide clearing will be visible in the background distance zone from Sta. 8946.55 (elev. 641.5) at the top of the knoll and again between Sta. 9945.95 (elev. 890) and Sta. 11184.24 (elev. 1062). Effects are

consistent with SIO requirements for the background distance zone within five years. Visual effects will dominate the visual landscape beyond five years and this is not consistent with scenery requirements listed in the Forest Plan.

- Sadie Lake Trail: Although not listed as a Visual Priority Route (VPR), this is a trail used by those who visit Baranof Warm Springs. If the trail was a VPR, the transmission lines would be within a foreground distance zone between Baranof Lake and Sadie Lake. This could be a future concern if the trail becomes a VPR.

Section Two runs along the north side of Baranof Lake and end to the north of the mouth of Baranof River. Poles range from 60' to 85' in height with spans ranging from 255' to 1215'. There are 4 types of poles in Section 2: Standard Cross Country Tangent, Standard Cross Country In-line Dead End, Standard Cross Country 3-Pole Dead End, and Heavy Duty Cross Country A-Frame Dead End. Along Baranof Lake there are taller trees on the steep hillside requiring more clearing on the uphill side of the corridor. The clearing limits for the corridor are estimated at 75' on the downhill side and 150' on the uphill side, for a total clearing width of 225'.

Impacts to Scenic Integrity of VCU 3260 - Section Two on USFS lands:

Transmission lines:

- Foreground distance zone along Baranof Lake with Low Visual Absorption Capacity (VAC) for entire segment.
- Transmission corridor is viewed in the background distance zone from water craft on Chatham Strait passing by Warm Springs Bay. Portions of the utility corridor clearing along Baranof Lake may be visible between Sta. 24000.00 and Sta. 24485.00, and again between Sta. 28000.00 and Sta. 36400.00. The visible elevations along Baranof Lake range from 1036' down to 344'.
- **Expected Scenery Integrity effects will be consistent with a Low Scenic Integrity Objective (SIO) as allowable in the Forest Plan.**
- **Expected impacts to scenery in the background distance zone will dominate the visual landscape along Baranof Lake and Baranof River beyond five years and will continue to dominate throughout project's life due to maintenance cycle within utility clearing limits. This is not consistent with the Forest Plan.**

Areas of Concern for VCU 3260 - Section Two:

- Baranof Lake (Dispersed Recreation Area) Transmission lines in foreground along Baranof Lake are expected to have a Low SIO and meet the scenery requirements within one year period. Tower structures, transmission lines, and linear clearing limits will be visible within a Low VAC landscape from lake and could be an area of concern due to recreation use, however is consistent with allowable impacts listed in the Forest Plan. Transmission structures will be visible in some locations. Impacts increase when viewed from the southern portions of the lake and lessened on the north side of the lake. Moving towards a Moderate SIO may be appropriate for Section Two, if feasible.
- Baranof Lake Cabin (Recreation Cabin): Transmission lines in foreground in front of cabin are expected to have a Low SIO and meet the scenery requirements within one year period. Tower structures, transmission lines, and linear clearing limits will be visible within a Low VAC landscape from cabin and could be an area of concern due to recreation use, however is consistent with allowable impacts listed in the Forest Plan. Steep slopes and exposed bedrock across from cabin will reduce visual impacts of clearing limits. Transmission structures will be visible on ridgeline from cabin. Impacts

increase when viewed from the southern portions of the lake and lessened on the north side of the lake. Moving towards a Moderate SIO may be appropriate for Section Two, if feasible.

- Chatham Strait adjacent Warm Springs Bay (Alaska Marine Highway, Small Boat and Midsize Cruise and Tour Ship Route Visual Priority Route): The 225' wide clearing will be visible in the background at Sta. 24000.00 and Sta. 24485.00, and again between Sta. 28000.00 and Sta. 36400.00. Effects are consistent with SIO requirements for the background distance zone within five years. Visual effects will dominate the visual landscape beyond five years and this is not consistent with scenery requirements in the Forest Plan.

Section Three starts at the mouth of Baranof River and runs west within the floor of the valley to the mid portion of Baranof River. The poles in Section 3 range from 60' to 85' with spans ranging from 509' to 1382'. There are 3 types of poles in Section 3: Standard Cross Country Tangent, Standard Cross Country 3-Pole Dead End, and Self-Supporting Tubular Steel Running Angle. Along the eastern half of Baranof River there is a combination of vegetative openings and areas of tall trees. Clearing will be extended to avoid leaving narrow rows of trees. An effort will be made to make the clearing blend with the natural patches of trees. The corridor will have a clearing width of 200'.

Impacts to Scenic Integrity of VCU 3260 -Section Three on USFS lands:

Transmission lines:

- Middleground for first mile of segment then unseen landscape with a High Visual Absorption Capacity (VAC) for entire segment. It is expected that the transmission utility corridor including the first mile for this section will be unseen from Visual Priority Routes due to screening by existing vegetation.
- **Expected Scenery Integrity effects will be consistent with a Low Scenic Integrity Objective (SIO) as allowable in the Forest Plan.**

Areas of Concern for VCU 3260 - Section Three:

- None expected. Impacts expected do not exceed the Low SIO and will meet the minimum SIO requirements for the middleground distance zone. There are no impacts in the foreground or background distance zone.

Section Four runs west within the Baranof River valley floor from the mid-point of the river and up the east slope of Baranof Mountain to the ridge line and the limit of the Visual Comparison Unit (VCU). Pole heights range from 50' to 95' with spans ranging from 623' to 3098'. There are 5 types of poles in this section: Heavy Duty Cross Country Tangent, Heavy Duty Cross Country 3-Pole Dead End, Heavy Duty Cross Country A-Frame Dead End, Heavy Duty Cross Country In-line Dead End, and Extra Heavy Duty Cross Country A-Frame Dead End. The western half of the Baranof River will be treated the same as the eastern half with a clearing width of 200' to Sta. 72,353.10. No clearing is anticipated as the line climbs the ridge of Baranof Mountain.

Impacts to Scenic Integrity of VCU 3260 -Section Four on USFS lands:

Transmission lines:

- Large majority of transmission corridor is with unseen landscape with a very small segment of middleground along Baranof River valley and small amount of background on upper east slopes of Baranof Mountain. Corridor is located with a High VAC with small amount of Moderate VAC along Baranof River valley.

- **Expected Scenery Integrity effects will be consistent with a Low Scenic Integrity Objective (SIO) as allowable in the Forest Plan.**

Areas of Concern for VCU 3260 - Section Four:

- None expected. Impacts expected do not exceed the Low SIO and will meet the minimum SIO requirements within the one year duration. Effects will meet the minimum SIO requirements for the middleground and background distance zone within five years and are not expected to dominate the visual landscape after the five years due to short length of visible corridor.

VCU 3250

Visual Simulation Photo Points: 12 thru 14. Simulations 13 and 14 are not from Visual Priority Routes and are for reference only.

The Project in this Visual Comparison Unit (VCU) only includes the hydroelectric transmission lines. Project facilities in this VCU are located on both USFS managed lands and non USFS lands.

Transmission Lines

The transmission lines within this VCU include the final pole of Section 4 (pole 74) and all of section 5 ending at Pole 89 (Sta. 95,211.45). The last pole of Section 5 on federal lands is pole 84. The remaining five poles of Section 5 are on non-federal lands.

Section Four, the one pole in Section 4 in this VCU has a height of 60' with a span of approximately 3886'. This pole is an Extra Heavy Duty Cross Country A-Frame Dead End. There would be no clearing related to this pole segment due to lack of existing vegetation.

Section Five poles range from 50' to 85' tall with spans ranging from 591' to 3886'. There are 6 types of poles associated with this section. As the line descends along the head waters of Medvejie Lake, the terrain is generally flat with tall trees. This portion of the corridor would have a clearing width of 200 feet. As the line parallels Medvejie Lake and continues to Bear Cove, the corridor has a steep cross slope and tall trees. The clearing limits of the corridor is estimated at clearing 75' on the downhill side and 150' on the uphill side between Sta. 86937.52 and Sta. 95211.45.

Impacts to Scenic Integrity on USFS lands for VCU 3250:

Transmission lines:

- Middleground on upper western slopes of Baranof Mountain, unseen at lower elevations adjacent Medvejie Lake. Low Visual Absorption Capacity (VAC) on upper western slopes of Baranof Mountain, High VAC at head of Medvejie Lake, Moderate and Low VAC on mid and lower elevations surrounding Medvejie Lake.
- From Silver Bay, the utility corridor is seen in the background distance zone on the upper portion of the peak near the boundary of the VCU. It will be visible from Sta. 76,211.59 (2855' elevation) to Sta. 77000 (1800' elevation).
- **Expected Scenery Integrity effects will be consistent with a Low Scenic Integrity Objective (SIO) as allowable in the Forest Plan.**
- **Expected impacts to scenery in the middleground distance zone at low to mid forested elevations above Medvejie Lake and will dominate the visual landscape beyond five years and will continue to dominate throughout project's life due to maintenance cycle within utility clearing limits. This is not consistent with the Forest Plan.**

Areas of Concern for VCU 3250:

- Silver Bay (Small Boat and Mid-size Tour Boat Route, Saltwater Use Area, Anchorage): Transmission structures may be seen in the background distance zone between Sta. 76211.59 (2855' elevation) and Sta. 77000 (1800' elevation). Effects are consistent with SIO requirements for the middleground and background distance zone within five years. Visual effects will dominate the visual landscape beyond five years for lower and mid elevation segment above Medvejie Lake and this is not consistent with scenery requirements in the Forest Plan.
- Medvejie Lake: The lake and surrounding area is used for recreation and accessed by the Medvejie Trail, a popular 'locals' trail (Anderson & Agnew:Beck, 2012). Both Medvejie Lake and Medvejie Trail are not listed as Visual Priority Routes and the transmission corridor along the north shore of the lake is in an unseen landscape. It is expected to have a Low SIO and meet the impacts minimums. Tower structures, transmission lines, and clearing limits would be visible by those using the lake. Moving towards a Moderate SIO for this segment visible from Medvejie Lake may be appropriate, if feasible.

Cumulative Effects

Cumulative Effects takes into consideration not only this Project but also other anticipated projects within the area. At the time of this report, there are no known other planned projects in the area. Additionally their are no expansion plans or other anticipated future modifications to the Project (Brewton, 2012).

Table 12.

Expected change in Existing Scenic Integrity:

Takatz Lake Hydroelectric Project

Predicted Scenic Integrity Classification	Forest Service Lands Total Acres (%)
Class 2	173 (0.4%)
Class 3	1542 (4%)
Class 4	3133 (7%)

Cumulative Effects analyzes the visual impacts to the whole project area within the reasonable foreseeable future. Cumulative Effects related to scenery looks at the expected change in the Existing Scenic Integrity (ESI) as a result of the Project. ESI is a measure of the degree to which the landscape is perceived as whole, complete, or intact without any alterations or modification to the scenery by human activities. As indicated in the analysis, the ESI for the project area (VCU 3170, 3260 and 3250) is comprised of a Very High (1) rating with all except 0.002% of the character landscape being intact or unaltered.

To understand the cumulative effects, the proposed project and its expected visual impacts to the landscape are overlaid onto the ESI mapping to document the expected cumulative effects. These effects would extend beyond the physical limits of the Project and would impact the larger viewshed in which the modifications are located. These impacts would only occur within the seen landscape. The linear nature of the corridor and its clearing limits within the forested landscape will have a greater visual impact than alpine areas where there would not be clearing limits and only structures might be seen in the distant landscape. Regular scheduled clearing of large trees within the clearing limits every five year would prevent the landscape from returning to an intact undisturbed landscape.

Based on analysis of this Project, existing hydroelectric projects in the Tongass, the three dimensional digital simulations, and the landscape, it would be expected that a majority of the Project would result in three proposed Scenic Integrity ratings for the Project.

A majority of the proposed changes (7% of overall project area) would receive a Class 4, Low, where the landscape appears moderately altered where deviations begin to dominate the landscape character. This would be within VCU 3260 along Baranof Lake, Sadie Lake, and portions of the Baranof River, where the clearing limits would contrast with the existing forested landscape.

VCUs 3170 and 3260 has a limited length of clearing within a forested landscape with a larger portion of the corridor without clearing limits in the alpine above Takatz Bay and Sadie Lake. It is expected this segment of the Project would receive an Class 3, Moderate, where the landscape appears slightly altered where noticeable deviations are visually subordinate to the landscape character. It would be expected that the low to mid elevations above Medvejie Lake would also received a Class 3, where short segments of the clearing limits would be visible within the forested landscape. The Project would result in 4% of the total project area receiving a Class 3 rating.

The upper elevation portion above Medvejie Lake would not have a clearing limit in the alpine environment and would expect to receive an Class 2, High, where the character landscape appears intact.

As indicated, the current ESI for the Project area, prior to construction, is 99.998% of the character landscape being intact or unaltered.

It is possible to reduce the visual impacts of the project through the use of scenery protection measures/mitigation identified below. These were not used in the calculation of the cumulative effects of the project.

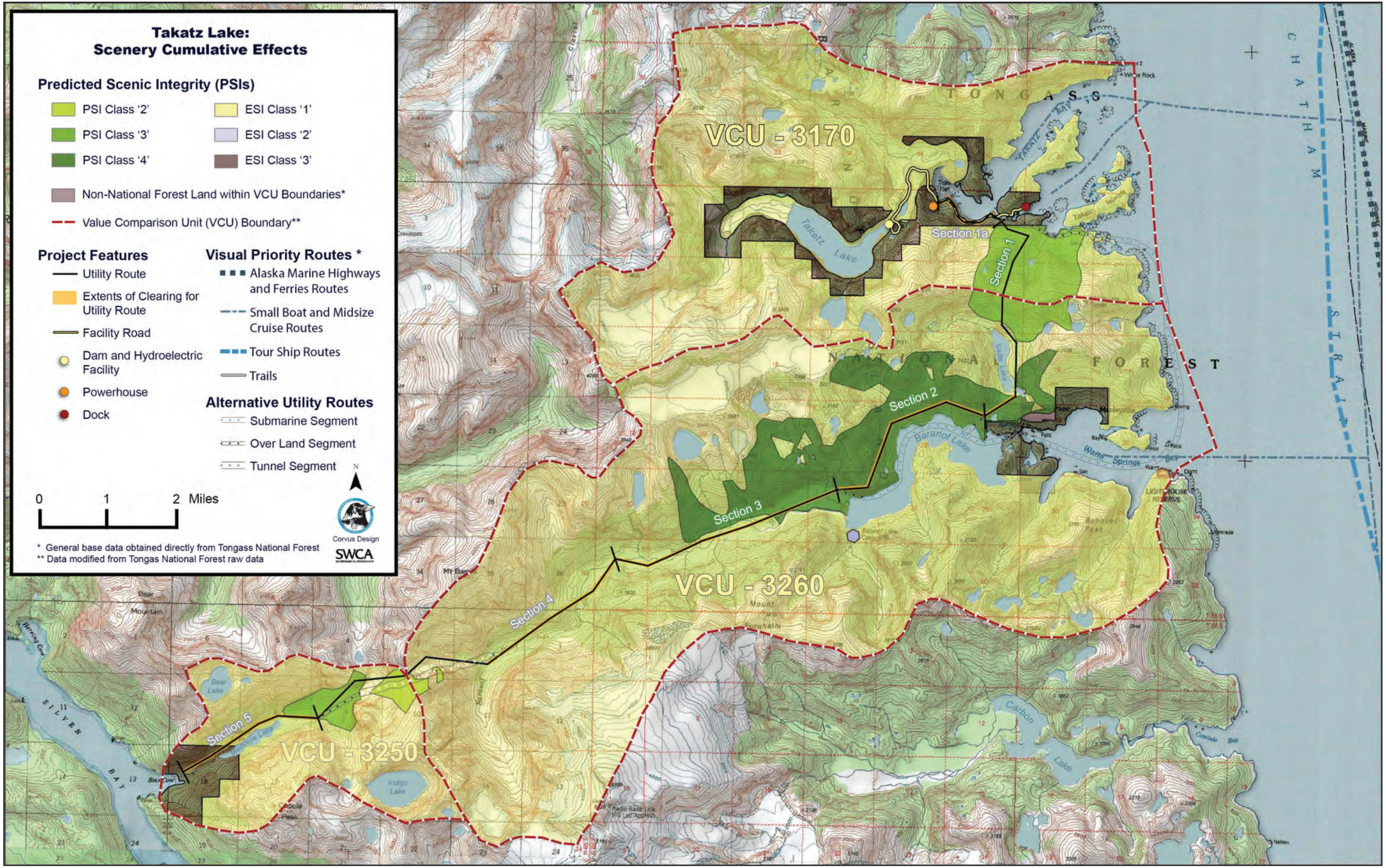

Figure 10. Scenery cumulative effects with Predicted Scenic Integrity.

Scenery Protection Measures/Mitigation

Scenery protection measures will ensure the Project achieves the scenery guidelines as outlined in the Forest Plan. These measures are established for the whole Project and identify specific actions for the Areas of Concern previously listed. Measures may include scenery enhancement, conservation, and restoration to protect the scenic condition of the landscape affected by the Project. These protection measures provide scenery management options for Project to meet or exceed the required Scenic Integrity. Where protection is not possible and the Scenic Integrity cannot be maintained, mitigation, either on-site or off-site, may be a method to offset the scenery impacts that results for the Project.

Project-Wide

The following protection measures are prescribed for the entire project and should be applied where appropriate or feasible. These measures were not used to determine the Project impacts upon scenery but are additional recommendations to assist the Project in maintaining or reducing the expected visual impacts.

Prior to beginning construction, once survey and layout of the corridor, clearing limits and location of facilities has been field located, verify Project conditions and note any deviations from the original Takatz Overhead Transmission Line Alternative Feasibility Review Report Study. Modifications, including minor ones, to the routing of corridor, clearing limits, and the location and size of facilities may have a positive or negative expected scenery impact that this Report will not have addressed. If modifications from the engineering report are required within the seen landscape, new visual simulations will be required prior to construction to determine the new visual impacts upon the landscape. Based on the new information expected impacts to landscape character and scenic integrity will need to be developed to understand if impacts meet the requirements in the Forest Plan.

The linear nature of utility corridors and the clearing limits create modifications which do not typically match the line, color, and texture found in the surrounding landscape and can dominate the character landscape. Where possible, feather edges of clearing limits rather than hardline clearing on the uphill slope of the corridor to reduce visual impacts. Match existing lines found in the immediate surrounding landscape to mimic meadow openings, rock outcrops, and avalanche and rock slide formations where present.

Transmission structures line the entire corridor and are constructed of either wood or metal. The wood poles will have the least visual impact as it is expected the color will blend with the surrounding landscape. The metal structures will visually contrast both in form and color. The metal structures can also have a reflective component from sunlight in certain conditions and from various VPRs that can further dominate the seen landscape. Metal towers should be painted with a non-reflective paint or coating. Additionally, each structure should be painted a color that matches the surrounding landscape. Several different color schemes may be needed for the corridor to match the colors found along the route (forested, alpine, rock outcrop, etc.).

The removal of vegetation within the clearing limits of the corridor should be limited to only trees that can obtain a mature height of thirty feet or greater or will require removal later as part of the transmission corridor maintenance. Maintain shrubby vegetation, perennials and smaller trees within the clearing limits to minimize visual contrast after construction and after maintenance of clearing limits. Avoid exposure of soil.

These mitigation practices would assist in speeding up the regeneration of vegetation, reduce visual impacts and expected changes to ESI, and provide further assurance that the Project meets the scenery guidelines in the Forest Plan. Many of the areas of concern

identified are expected to meet the SIO, however some will only marginally meet these requirements. These mitigation/protection measures will assist to reduce the likely visual impacts of the Project. Many of these practices are consistent with mitigation found in the Forest Plan to ensure compliance with scenery guidelines.

VCU Specific Protection Measures

VCU 3170

Impacts in this VCU are consistent with the Forest Plan, however to ensure full compliance with scenery guidelines the previously listed project-wide protection measures will further reduce visual impacts and reduce project close-out costs.

VCU 3260

To ensure full compliance with scenery guidelines the previously listed project-wide protection measures will further reduce visual impacts and reduce project close-out costs. Several Areas of Concern are identified and include Baranof Lake (Dispersed Recreation Area), Baranof Lake Cabin (Recreation Cabin) and Chatham Strait adjacent Takatz Bay and Warm Springs Bay where the project is viewed as background.

For Baranof Lake and the cabin, explore options to rerouting the corridor to move the expected impacts from marginally Low SIO to a higher level of Low or a Moderate SIO due to foreground distance zone and recreation use on the lake. Rerouting should consider a layout that reduces the expected visual impacts that result from the horizontal orientation of the clearing limits that visually dominates the landscape. Use naturally occurring terrain and vegetation between shoreline and transmission route to screen the clearing limits. Consider the submarine corridor route under Baranof Lake identified in the Transmission Line Feasibility Report. Special consideration will be required at the corridor entry and exit of the submarine alternative and minimizing visual impacts resulting from bringing the corridor to the lake edge. Consider relocating transmission structures from ridge tops above lake and across from cabin to eliminate silhouetting of structures against the skyline. Moving structures just below ridgeline, if possible, would likely reduce scenery impacts located in the foreground. Relocation of Baranof Lake Cabin could also be considered to a new location on the lake where visual impacts would be expected to be less.

From Chatham Strait adjacent to Takatz Bay and Warm Springs Bay approximately 1.6 miles of the corridor clearing limits will be visible adjacent to Baranof Lake. The 225 foot wide corridor will continue to dominate the background landscape after the five year period. The routine maintenance that includes the removal of all trees greater than thirty feet in height within the clearing limits will result in the Project not meeting scenery requirements for the background distance zone. Considering the submarine corridor alternate route under Baranof Lake would eliminate the clearing limits and therefore the corridor would be unseen as background from Chatham Straight. Given the steep terrain adjacent to the lake it is expected that any slight modifications to the existing layout would not result in eliminating the corridor from being seen as background. Minimizing vegetation removal as part of construction and scheduled maintenance to only trees larger than thirty feet tall and preserving all other vegetation, would reduce some visual impacts. Avoid exposure of bare soils and ground during construction and maintenance.

VCU 3250

To ensure full compliance with scenery guidelines the previously listed project-wide protection measures will further reduce visual impacts and reduce project close-out costs. The Area of Concern for this VCU includes Silver Bay (Small Boat and Mid-size Tour Boat Route, Saltwater Use Area, Anchorage) where clearing limits and transmission structures may be seen in the background distance zone and dominate the visual landscape beyond five years. Selecting appropriate colors to paint the structures to match the surrounding landscape would likely eliminate the issue. If feasible, relocation of structure from ridgeline so it is not silhouetted again the sky would reduce visual impacts. Rerouting the corridor to the tunnel alternative would eliminate the visibility of the tower structures but could have visual impacts equal or greater due the development of a tunnel portal.

Federal Power Act Mitigation

The Federal Power Act, along with its amendments in the Electric Consumers Protection Act of 1986 calls out the protection, mitigation and enhancement of a variety of resources including recreation opportunities and the protection of visual and aesthetic values. Section 4(e) of the Federal Power Act requires FERC to give "equal consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife (including related spawning grounds and habitat), the protection of recreational opportunities, and the preservation of other aspects of environmental quality." This gives FERC the authority to include mitigation for resources not able to be protected including those on public lands including National Forests, as conditions in the project license (United States. Congress, 1986).

It is expected that the Project will not meet the Scenery Objectives in VCU 3260 where the Project is viewed in the background from Chatham Strait adjacent Takatz Bay and Warm Springs Bay. It is highly unlikely that any scenery protection measures will reduce the visual impacts to the point where the clearing limits would not dominate the seen landscape. This is largely due to the required vegetation removal required as part of the corridor maintenance within the clearing limits. Vegetation within the clearing limits will not obtain the same color, line or texture found within the adjacent undisturbed landscape. Off-site mitigation as allowed by the Federal Power Act would be one avenue to mitigate this visual impact that does not meet scenery requirements in the Forest Plan.

Another area of concern is along Baranof Lake where the Project is located in the foreground adjacent a Dispersed Recreation Area and the Baranof Lake Cabin. Although the Project meets the scenery requirements of the Low SIO in this area there may be public support for additional scenery protection in this area. If scenery protection recommendations cannot feasibly be accomplished, this may be another area to be considered for off-site mitigation and could include relocation of the cabin to a new site either within the Project where there is no visual impacts or outside the Project area.

The development of Section 4(e) mitigation for these two areas of concern would be between the USFS and the City and is not part of this resource report.

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