PEBBLE PROJECT
ENVIRONMENTAL BASELINE DOCUMENT
2004 through 2008

CHAPTER 24.
VISUAL RESOURCES
Bristol Bay Drainages

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ACRONYMS AND ABBREVIATIONS

BG	background (distance zone)
FG	foreground (distance zone)
MG	middle ground (distance zone)
min	minute(s)
NEPA	National Environmental Policy Act
sec	second(s)
USFS	United States Forest Service

24. VISUAL RESOURCES

24.1 Introduction

This chapter describes work completed during 2004 through 2008 for the visual resources analysis component of the environmental baseline studies for Pebble Project. The work consisted of characterizing visual resources in the Bristol Bay drainages.

This visual resources analysis uses tools and methodologies described in the U.S. Forest Service (USFS) document *Landscape Aesthetics, A Handbook for Scenery Management* (USFS, 1995). The handbook is a recognized and often-used guide for the analysis of landscapes, and the analysis process, while intended primarily for use as a management tool, still provides a useful framework for review of scenic quality. The analysis process employs steps for the definition of landscape units and provides guidance for defining viewer (or constituent) groups, landscape character, scenic integrity, and scenic classes.

For this study, visual characterization included the following:

- Determination of viewed areas.
- Evaluation of constituent viewer groups, and their sensitivities and expected exposure.
- Analysis of the landscape's existing scenic character and quality.

24.2 Study Objectives

Objective of this study is to analyze the existing landscape character and quality in the study area.

24.3 Study Area

The study area (Figure 24-1) encompasses potentially viewed areas in the vicinity of the Pebble Project deposit and possible transportation corridors in the Bristol Bay drainages. The eastern edge of the study area is the boundary between the Bristol Bay drainages and the Cook Inlet drainages. The study area extends westward through Chinkelyes Creek Valley and the Aleutian Range and includes portions of Iliamna Lake. The western edge of the study area is located in the lowlands west of Sharp and Groundhog mountains.

The northern edge of the study area is approximately the border of Lake Clark National Park and Preserve, except in the vicinity from Roadhouse Mountain to Hoknede Mountain where the study area boundary crosses into the park. The southern edge of the study area generally follows offshore of Iliamna Lake's northern shoreline and includes a complex archipelago of bays and islands, as well as a few settlement areas including Pile Bay, Pedro Bay, Iliamna, and Newhalen. The study area also encompasses the Newhalen River drainage, Sixmile Lake, and the community of Nondalton.

24.3.1 Regional Context

The general landscape of the area is characterized by mountains of varying topographic relief, fast-flowing rivers, tundra, marshy lowlands, and ponds. Depending on elevation and location, most of this land is covered by alpine tundra, low or tall shrubs or areas of mixed broadleaf and spruce trees. The area has many drainage basins including the Pile and Iliamna rivers, as well as Chekok, Canyon, Knutson, Upper and Lower Talarik, Chinkelyes, and Dennis creeks. Major waterbodies include Iliamna Lake. Prominent peaks include Groundhog, Roadhouse, Knutson, and Sharp Mountains. The study area has a small range of landscapes, varying from small rural communities (Nondalton, Iliamna, Newhalen, and Pedro Bay) to primitive backcountry.

24.3.2 Visibility

Portions of the study area are potentially visible from local small communities and existing road corridors, as well as from aircraft and from boat traffic on Iliamna Lake.

24.4 Scope of Work

The scope of work for the visual resources analysis is to characterize and document the visual resources in the study area, particularly with regard to the sensitivities of potentially affected parties. Researchers completed the field work for this study during 2004. Other components of the study include mapping and coordination with other consultants for the Pebble Project (specifically those performing subsistence and socioeconomic analyses) regarding locations of possible viewers. Work conducted by Land Design North.

24.5 Methods

24.5.1 Research Methods

Researchers communicated with Pebble Project consultants to gain an understanding of the sensitivities of individuals and groups within the study area. Using this information, researchers developed a plan for documenting the existing visual conditions at locations and altitudes that would be of most concern to key parties. Researchers then traveled to the study area to document the existing visual conditions of select areas. The team traveled by helicopter to document landscape character and views using a digital camera and global positioning system (GPS). The team then catalogued and mapped the locations of all photographs.

Researchers created initial base maps using a geographic information system (GIS) map that was based on ecological units digitized by Nowaki et al (2001) of the U.S. Geological Survey and derived from units defined by Bailey (1994). That information was combined with the protocol for landscape aesthetics used by the USFS to create mapping that is included in the baseline document (Figures 24-1 to 24-8).

Researchers telephoned airlines that travel to, from, and across the study area to determine flight patterns and areas of interest (Figure 24-3). Iliamna Air Taxi (Hornberger and Laport, pers. comm., 2004) defined its flight paths to help determine the extent of the study area. In 2006, conversations with flight services for the recreational study confirmed these findings.

24.5.2 Landscape Analysis Units

Five landscape analysis units were identified for the Bristol Bay drainages study area (Table 24-1 and Figure 24-2). Each unit represents a unique set of characteristics and component parts of the landscape with respect to its scenic attractiveness and scenic integrity. Results of the analysis of each of the five units are described in Section 24.6 and are depicted on unit maps (Figures 24-4 through 24-8), which show differentiations among subunits within each unit. Landscape analysis units are based on ecological unit mapping produced by Nowaki et al (2001) and derived from units defined by Bailey (1994). For purposes of this study, the landscape analysis units have been divided into subunits based on variations in scenic class, scenic attractiveness, distance zones, concern levels, and scenic integrity.

TABLE 24-1
Landscape Analysis Units, Bristol Bay Drainages

Unit #	Unit Name	Description	Elevation (in feet)	Hydrology
1	Talarik Creeks	This area encompasses the northwestern shore of Iliamna Lake and low-lying areas north of the coast.	50-850	Lakes, streams, and lake coast
2	Groundhog and Sharp Mountains	This area, which includes the Pebble deposit location, is located north-northwest of the community of Iliamna and west of Nondalton and Sixmile Lake.	50-2550	Streams and lakes, bogs
3	Iliamna	This unit encompasses the community of Iliamna, the area of Roadhouse Mountain, and the Iliamna Lake coast from west of Iliamna to Chekok Bay.	50-2800	Lakes, streams, and lake coast
4	Pedro Bay	This unit comprises the eastern portion of Iliamna Lake from west of Chekok Bay to just east of Pile Bay, including the Knutson Mountain uplands.	50-4250	Lakes, streams, and lake coast
5	Chigmit Mountains	This area is located east of Iliamna Lake in the Chigmit Mountains and includes Summit Lakes and the Iliamna River valley.	50-3200	Lakes and rivers

24.5.3 Identification of Viewer Groups

Researchers identified a number of potentially interested parties and their sensitivity levels through discussions with Pebble Project consultants. Key parties that were identified included residents of local communities, hunters and fishermen (including subsistence users), recreational visitors to Lake Clark National Park and Preserve, and travelers by boat and air. Based on discussions that Pebble Project consultants have had with many of the parties, it appears there is a high level of sensitivity for many in the area, particularly those who operate flight-seeing services, fly-in fishing operations, or hunting camps.

Researchers identified four major types of viewer groups or constituents in the study area. Table 24-2 identifies the viewer groups and their expectations and values for the viewshed of the area.

TABLE 24-2
Viewer Groups, Bristol Bay Drainages

Viewer Group	Description	Expected Values
Residents	Iliamna, Nondalton, Newhalen, and Pedro Bay	Generally desire protection of visual quality, including views from roadways, waterways, and individual residences. Generally cautious concerning changes to visual environment. High variability in levels of concern.
Tourists and Recreationists	Fishing, hunting, boating, sightseeing	Generally have high appreciation for visual quality of an area and desire for undisturbed areas.
Subsistence Users	Fishing, hunting	Generally have high appreciation for visual quality of an area and desire for undisturbed areas.
Aircraft Passengers	Katmai, Port Alsworth	High variability in visual values and acceptance of changes to existing visual conditions. Many are sightseers with high degree of sensitivity to visual quality, while destination-oriented travelers are not as sensitive.

24.5.4 Analysis of Visual Character and Quality

Landscape visibility and scenic attractiveness, and their derivative, scenic classes, are used to assess the existing visual conditions in the study area. Mapping for the scenery inventory takes into account the landscape visibility, the concern levels of users/residents, scenic attractiveness, scenic class, and scenic integrity.

24.5.4.1 Landscape Visibility

Landscape visibility addresses the relative importance of and the sensitivity of the public to what is seen in the landscape. It consists of three elements:

- Travelways and use areas.
- Concern levels.
- Distance zones.

Landscape visibility is a function of several considerations, including context of viewers, duration of view, degree of discernible detail, seasonal variations, and number of viewers. These factors are considered in the analysis of individual landscape units.

The first area of analysis was whether the study area can be viewed from “travelways” and “use areas.” Travelways represent linear concentrations of public viewing. Use areas are specific locations that receive concentrated public viewing. Even though much of the study area is remote with no road access, it still may be viewed from the air at low altitudes; therefore, the entire study area was analyzed as a travelway/use area.

Concern level is a function of both the travelway/use area and the interest in scenery. In general, the USFS recognizes that individuals participating in passive recreational activity have a high concern level for the visual quality of their setting. According to the USFS scenery management handbook (USFS,

1995), primary and secondary travelways/use areas of either high, moderate, or low use in which constituents have a high interest in scenery are assigned a high concern level. Concern levels are ranked from 1, high concern, to 3, low concern.

The issue of concern is different from that of "seen area." Seen-area analysis deals with the ability of the viewer to see the area and the position of the area with respect to the overall seen landscape. The USFS measures this in terms of distance zones. The distance zones are foreground, middle ground, background, and seldom seen (Table 24-3).

TABLE 24-3
Distance Zones

Distance Zones	Distance	Description
Foreground (FG)	0 to 0.5 miles	Can distinguish vegetative detail, medium to large birds, tree movement; can detect animal/tree sounds and smells
Middle ground (MG)	0.5 to 4 miles	Can distinguish individual tree forms, large boulders, flower fields, small openings in the forest, and small rock outcrops
Background (BG)	4 miles to horizon	Can distinguish groves or stands of trees, large openings in the forest, and large rock outcrops; texture has disappeared and color has flattened
Seldom Seen (SS)	Varies	Seldom seen as a result of topography and/or distance from viewing locations; may be seen from aircraft

Source: USFS, 1995

24.5.4.2 Scenic Attractiveness

Scenic attractiveness measures the scenic importance of a landscape based on human perceptions of the intrinsic beauty of landform, water characteristics, vegetation patterns, and cultural features. Scenic attractiveness is divided into three classes (Table 24-4).

TABLE 24-4
Scenic Attractiveness Classes

Class		Description
A	Distinctive	Areas where landform, vegetative patterns, water characteristics, and cultural features combine to provide unusual, unique, or outstanding scenic quality. These landscapes have strong positive attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance.
B	Typical or Common	Areas where landform, vegetative patterns, water characteristics, and cultural features combine to provide ordinary or common scenic quality. These landscapes have generally positive, yet common, attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance. Typically they form the basic matrix in the landscape unit.
C	Indistinctive	Areas where landform, vegetative patterns, water characteristics, and cultural features have low scenic quality. Often water and rock forms of any consequence are not present. These landscapes have weak or are missing attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance.

Source: USFS, 1995

24.5.4.3 Scenic Classes

Scenic classes are used to measure the value of scenery by looking at the relative importance of discrete landscape areas with similar characteristics with regard to scenic attractiveness and landscape visibility. Scenic classes are determined using the matrix shown in Table 24-5.

TABLE 24-5
Scenic Class Determination Matrix

	Landscape Visibility Distance Zone		
Scenic Attractiveness	**Foreground**	**Middle Ground**	**Background**
A. Distinctive	1	1	1
B. Typical	1	2	2
C. Indistinctive	1	2	3

Scenic class ratings: 1 to 2 = high public value, 3 to 5 = moderate public value, 6 to 7 = low public value

Note: Because all locations in the study area are considered to be areas of high public concern, this table applies specifically to areas of high public concern.

Source: USFS, 1995

Generally, scenic classes one and two have high public value, classes three through five have moderate public value, and six and seven have low public value. Because the entire study area has been deemed of high public concern (Section 24.6.1), all zones in the study area would fall into Classes 1 through 3. However, many areas may have very low visitation; therefore, while the areas may be of some sensitivity, this analysis recognizes that the level of visitation should be considered as well.

24.5.4.4 Scenic Integrity

According to *Landscape Aesthetics, A Handbook for Scenery Management* (USFS, 1995), "scenic integrity" is defined as a measure of the completeness of a landscape. A very high rating would be assigned to landscapes where there is very little or no deviation from the landscape that is valued by constituents for its visual appeal. Conversely, a very low rating would be assigned to those landscapes where the valued landscape has been highly disturbed. Scenic integrity ratings range from very high to very low:

- VH = very high.
- H = high.
- M = moderate.
- L = low.
- VL = very low.

Sometimes architecture or other man-made aspects of an environment can add to the integrity of a landscape because the man-made piece is valued by the constituents. In the study area, however, the natural character is the most valued aspect of the landscape, and deviations from that natural setting result in ratings ranging across the ratings scale.

24.6 Results and Discussion

24.6.1 Landscape Visibility

For this study, primary use travelways/use areas are the existing road system connected to the communities of Iliamna, Newhalen, and Nondalton, and the road system and surface waters of Iliamna Lake near Pedro Bay. The core areas of these communities encounter high use, with diminishing levels of use with distance from the core. Secondary travelways/use areas include Roadhouse Mountain, the Pile Bay to Williamsport Road, the rest of Iliamna Lake, and fished creeks and rivers that feed Iliamna Lake, including Upper and Lower Talarik creeks. Secondary travelways also include air routes between Iliamna airport, Lake Clark, and Talarik Creek, and hunting areas to the west, as well as air routes between Iliamna and area communities. All secondary travelways/use areas receive low levels of use. Regardless of the level of use, those areas within view of travelways/use areas are deemed by the USFS to have high concern levels (Level 1).

Level of concern for scenery in an area is sometimes measured by polling members of the public. The possible development of the Pebble Project has generated a high level of discussion, which in turn has generated an increased amount of visitation by the public to portions of the project area and has raised the public's awareness of the area. While much of this is political discourse centered on fishery resource issues, a higher level of awareness typically translates into a higher level of concern for aesthetics.

24.6.1.1 Residents

This viewer group typically has strong ties to existing visual conditions and responds strongly to negative changes to familiar surroundings. The group is likely to have a high level of concern about changes to existing visual conditions of frequently used areas. This will be particularly true for foreground and middle-ground areas. It is worth noting, however, that there can be high variability in levels of concern based on economic conditions, personal values, and expectations regarding community growth and the nature of that growth.

24.6.1.2 Tourists and Recreationists

Tourists and recreationists typically travel to locations such as rural Alaska in search of an isolated or low-population experience. Travel brochures typically use words such as "pristine" and "wilderness" as enticements to visit the area. This implies an experience without indications of the presence of people. This viewer group is likely to have a high level of concern for aesthetics because expectations of a high-quality visual experience are part of what draws them to the Iliamna area.

24.6.1.3 Subsistence

Subsistence users typically have a high appreciation for traditional practices and typically enjoy travel to undisturbed locations. For this group, undisturbed areas, particularly those far from roads and other disturbances, often equate to a plentiful harvest that has not been picked over or destroyed; therefore, there is a strong connection to undisturbed areas. This viewer group is likely to have a high level of concern for intrusions into the natural landscape.

It should be noted that the often-used criteria of complexity, used as a measure of vividness in the landscape, may not apply to Native subsistence users as it might to non-Native subsistence users. Because of their culture, Native subsistence users may be much more attuned to and appreciative of landscapes that yield bountiful berry harvests or that are historical routes for caribou passage, may have less appreciation for dramatic scenery than other groups, and may place higher value on landscapes such as rolling hills with low groundcovers that better equate with traditional subsistence use.

To a great degree, the use of locations in the study area for subsistence is addressed in the subsistence discussion (Chapter 23); therefore, this visual resources analysis considers only the aesthetic issues. Where appropriate, the visual resources discussion will address how this specific group's landscape preferences may differ from those of other groups. This study assumes that subsistence users are present in all landscape units, but that details of specific activities, travel routes, and cultural values are covered in the subsistence chapter.

24.6.1.4 Aircraft

Users in aircraft have markedly different viewing locations than are identified by other user groups. All aircraft-based views are from relatively high altitudes, and the duration of a view may change dramatically depending on altitude and airspeed. While it is possible to identify the flight paths of scheduled air carriers, it is not possible to accurately predict the flight paths of personal aircraft that transit the area or of guide services that may fly to locations of low use. However, it is believed that the largest amount of air traffic in the area is within scheduled air-traffic corridors, and these corridors receive special consideration with respect to views and mapping.

24.6.2 Viewer Exposure

Viewer exposure is expressed by the number of viewers, distance, duration, and speed of views for each of the viewer groups.

- Tourists and Recreationists—exposure period varies depending on travel method, altitude, and activity.
- Residents—exposure period is continual but varies depending on location, orientation, variability in vegetation, and season.
- Subsistence—exposure period varies depending on activity.
- Aircraft—exposure period varies depending on route, altitude, and speed.

24.6.2.1 Residents

This constituent group is composed of residents distributed around Iliamna Lake. Residents are generally considered to have "continual" exposure. However, the "continual" exposure classification describes opportunity, but actual exposure for this group is heavily dependent on location, orientation, vegetation presence, and seasonal variations.

24.6.2.2 Tourists/Recreationists

Tourists and recreationists generally frequent Pedro Bay, Talarik Creek, and other fishing or hunting destinations around Iliamna Lake, arriving from Anchorage via the Iliamna airport. Their exposure time varies depending on their specific activity. Boaters could have a limited amount of exposure time depending on whether they were cruising or exploring. Fishermen, on the other hand, could have an exposure period of hours if they were to stay in one location over a long period. (See Chapter 25, Recreation, for more information on recreational use of the study area.)

24.6.2.3 Subsistence

Local individuals are known to use both the deposit area and the transportation corridor study area for subsistence harvesting. The duration of exposure depends on specific location, activity, and weather conditions and can vary from hours to several days.

24.6.2.4 Aircraft

Preliminary information gathered on aircraft patterns indicates that aircraft typically originate from lodges scattered through the area, with concentrations at Port Alsworth (on Lake Clark, north of the study area) and Iliamna. These aircraft travel to and from area streams and lakes throughout the fishing season and to hunting camps in the autumn. Scheduled air traffic en route between Anchorage and points southwest of the study area is typically by Boeing 737 or similar aircraft traveling at a speed of 575 miles per hour and altitudes greater than 20,000 feet. Individuals on these aircraft would have middle-ground to background views (4 miles or greater), and their exposure times would be estimated at several minutes for background views and approximately 30 seconds for middle-ground views.

Smaller air carriers have scheduled flights by smaller aircraft traveling between villages or from Anchorage to small and medium-size villages. These aircraft typically travel at altitudes (above mean sea level) of anywhere from 2,000 to 5,000 feet, but may reach altitudes up to 10,000 feet, depending on their origin, destination, and flight path, and the weather conditions. A typical aircraft traveling at 300 to 345 miles per hour (for example, a Beechcraft King Air) would have an exposure time of approximately 5 to 10 seconds for foreground views and for up to one minute for middle-ground views. They would have longer exposure times for background views, depending on the topographic feature involved.

Many individuals travel by floatplane from Lake Clark or from lodges around Iliamna Lake to fishing streams. For those traveling by floatplane, the views would generally transition from background to foreground. Assuming a floatplane would be traveling at an altitude of 500 feet above ground level and a speed of 150 to 165 miles per hour cruising speed (for a Cessna 185 or 206), passengers and pilot would have background views for many minutes, middle-ground views for approximately two minutes, and foreground views for approximately 30 seconds.

Flight paths identified by both the scheduled carriers and air taxi operators are shown on Figure 24-3.

24.6.3 Seasonal Variations

There is a large difference in the numbers of viewers that might see the study area in the summer and autumn versus the number who might view the area in the winter and spring. A large majority of visitors

travel in and through the area during the prime fishing and hunting periods from late May through early October. The visitor population drops drastically after the fishing and hunting seasons are over; thus, the numbers of both on-the-ground viewers and air travelers are much lower during winter and early spring.

This seasonal variation is also true for subsistence users. Although subsistence hunting occurs in the winter and spring, the largest portion of the subsistence use in the area is expected to occur in the summer and autumn for berry picking, fishing, and hunting.

In the winter and spring months there is a seasonal drop in the village resident populations, much of which is related to the movement of those employed in the tourism sector to other locations. There is an associated drop in the number of residents viewing the study area in the winter and early spring months.

24.6.4 Landscape Analysis by Unit

24.6.4.1 Unit 1, Talarik Creeks

PHOTO 24-1, Lower Talarik Creek, looking north.

PHOTO 24-2, Lake near Upper Talarik Creek, typical of area near Iliamna Lake, looking north.

Description

The Talarik Creeks Unit includes two distinct drainages approximately 13 miles apart perched atop and cutting through low-lying terraces. Landforms are muted and indistinctive throughout the unit. The unit is divided into four subunits based on variations in scenic characteristics (Figure 24-4).

Viewer Exposure and Concern Level

Viewer exposure and concern level for each applicable viewer group are summarized in Table 24-6.

TABLE 24-6
Unit 1, Talarik Creeks, Viewer Exposure and Concern Level

	Tourists/ Recreationists	Aircraft	Subsistence
Exposure Period	Varies, generally minutes to several hours	Scheduled Carriers: 5 min or less BG, 30 sec MG Small Aircraft: 5 min or more BG, 2 min MG, 30 sec FG	Varies
Concern Level	High	High	High

Notes:
min = minute(s)
sec = second(s)

Tourists and Recreationists: Results from the recreation portion by Waring (2010) of the Pebble Project environmental studies (Chapter 25) indicate that fishing is the main attraction for this group in this landscape unit, and anglers are expected to have high level of concern and a preference for an undisturbed landscape. Their exposure period is expected to be measured in hours. Most fishing is concentrated in the first 0.75 miles upstream of the mouth of Lower Talarik Creek. Views to and from specific locations throughout this area vary greatly depending on specific landforms. Upper and Lower Talarik creeks are known for high-quality rainbow trout sport fisheries and salmon-spawning grounds. Most anglers fishing in Lower Talarik Creek are guided non-residents who fly in daily from the many lodges operating in the Iliamna Lake area. From 20 to 30 anglers can be accommodated in the lower portion of the creek at any given time from June through May (ADF&G, 2001).

Hunting for caribou, moose, or bear attracts some users into this landscape unit. As a viewer group, hunters are expected to have a high concern for aesthetic values. (Chapter 25, Recreation, contains detailed data about hunting in this vicinity; however, those data are based on game management units, the boundaries of which do not correspond with the landscape unit boundaries. Accurate numbers for hunting within the landscape units are not available.)

Aircraft: Aircraft fly to and from Talarik Creek because of the world-class trout fishing. Aircraft also fly through this area en route to fishing and hunting resources to the north and toward Bristol Bay. Flights are by smaller aircraft at low altitudes (900 to 1,500 feet); therefore, the areas along the flight paths are seen mostly as foreground views.

Subsistence: Subsistence users are known to frequent this unit, particularly in search of the large game (caribou, moose, and bear) that are supported by the lowland vegetation characteristic of this area and to

gather berries growing in pockets of tundra. (See Chapter 23 for more information on subsistence.) As previously mentioned, this viewer group is likely to have a high level of concern for intrusions into the natural landscape.

Landscape Character

Vegetation in this unit is typified by dense lichen on the ground broken up by shrub tundra and grassy vegetation, with some large shrub and conifer woodland around the mouths of the two creeks.

Iliamna Lake is a dominant water feature and typically features a broad beach at the lake edge. Sand dunes are found at numerous locations where prevailing winds blow off of the lake. Both Lower and Upper Talarik creeks are distinct water features and are clear-water streams approximately 20 to 50 feet wide within the unit. They meander throughout the constraints of broad floodplains. Lower Talarik Creek (Photo 24-1) is a world-class rainbow-trout-fishing stream with Coho salmon runs. There is little evidence of human presence in the unit, although Lower Talarik Creek often is visited by fishermen accompanied by boats or airplanes at the Iliamna Lake edge. This area is considered to have a very high level of scenic integrity. Several blue-green, rounded lakes (Photo 24-2) border Iliamna Lake and give the landscape uniqueness, a sense of harmony, and variety. This area is intact and coherent.

Scenic Inventory Summary

The entire unit is considered to have a high level of concern. The scenic attractiveness of the foreground coastline is considered to be distinctive (Class A), given the strong contrast of land and water at the shoreline. The middle ground and background are generally considered typical (Class B). Landform, water, and vegetation generally reflect consistent and typical patterns for the area, though the meandering creeks and coastline are distinguishing hydrologic characteristics that contribute to strong positive attributes of vividness and intactness. The scenic classes for subunits within this unit are either 1 or 2, depending largely on whether the distance zone is foreground or more distant.

24.6.4.2 Unit 2, Groundhog and Sharp Mountains

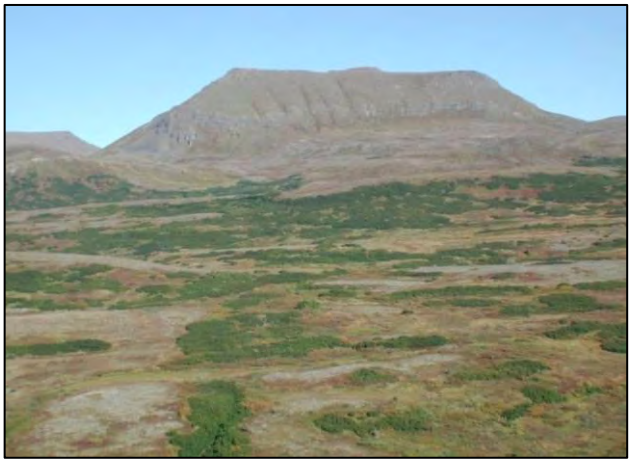

PHOTO 24-3, Looking north toward Pig Mountain.

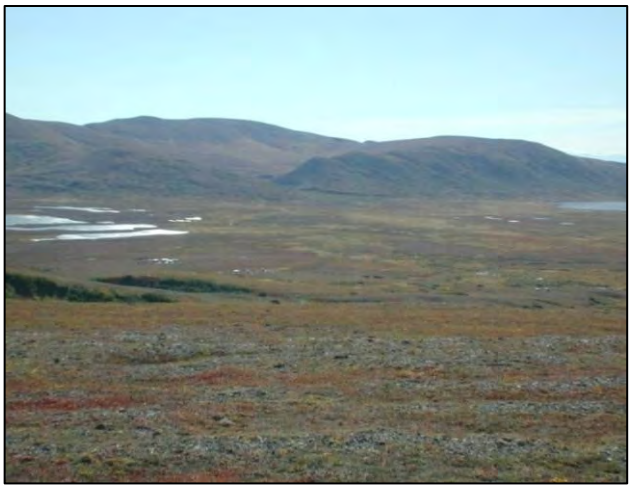

PHOTO 24-4, Valley south of deposit area, looking southeast.

Description

This unit is generally defined as the area of low hills and wide valleys northwest of Iliamna, including Groundhog, Sharp, and Kaskanak mountains; Frying Pan Lake; and the vicinity of the Pebble Deposit. The unit is divided into four subunits based on variations in scenic characteristics (Figure 24-5).

Viewer Exposure and Concern Level

Viewers of this unit are primarily those overflying the area for fishing, hunting, or sightseeing. Viewer exposure and concern level for each applicable viewer group are summarized in Table 24-7.

TABLE 24-7
Unit 2, Groundhog and Sharp Mountains, Viewer Exposure and Concern Level

	Tourists/ Recreationists	Aircraft	Subsistence
Exposure Period	Varies	Scheduled Carriers: 5 min or less BG, 30 sec MG Small Aircraft: 5 min or more BG, 2 min MG, 30 sec FG	Varies
Concern Level	High	High	High

Tourists/Recreationists: Fishing is an attraction for this group in this landscape unit, and anglers are expected to have high level of concern and preference for an undisturbed landscape. Six lodges grouped around Iliamna attract sportfishers; however, most of this activity occurs on Iliamna Lake, Upper and Lower Talarik creeks, and the Newhalen River. Of these, only a portion of Upper Talarik Creek is within the boundaries of this landscape unit, but most fishing on the creek occurs near the mouth, outside of this unit. Most viewing associated with fishing is in the form of overflights by aircraft which transport fishermen to desired fishing locations.

Hunting for caribou, moose, and bear also attracts users into this landscape unit. As a constituent group, hunters are expected to have a high concern for aesthetic values with exposure periods that range from

hours to days. (Chapter 25, Recreation, contains detailed data about hunting in this vicinity; however, those data are based on game management units, the boundaries of which do not correspond with the landscape unit boundaries. Accurate numbers for hunting within the landscape units are not available.)

Aircraft: This unit is located northwest of Iliamna in an area that residents and visitors traverse by aircraft en route to hunting, fishing, and/or sightseeing destinations. Those destinations include Upper and Lower Talarik creeks, the Koktuli River, the Kvichak River, and the Nushagak River. Scheduled and charter flights between Lake Clark and Dillingham pass north of the deposit area, and those flying between Lake Clark and New Stuyahok or King Salmon pass south and east of the deposit area, flying over Lower Talarik Creek (Figure 24-3; Waring, 2006).

Subsistence: Subsistence users are known to frequent this unit, and the high landscape diversity supports a number of activities. Many residents in Iliamna and Newhalen are known to participate in subsistence activities, and harvests include salmon, trout, grayling, moose, caribou, bear, porcupine, hares, and berries. Areas of particular concern with regard to aesthetics would include Upper Talarik Creek, Sharp Mountain, Groundhog Mountain, Frying Pan Lake, Kaskanak Flats, and the headwaters of the Koktuli and Stuyahok rivers.

Landscape Character

This unit has high landscape diversity with uplands and upland tundra grading to bottomland forest. Barren rock and tundra interspersed with conifers cover the area, and in the background are hills of approximately 1,000 to 2,000 feet in elevation.

The area supports only a few vegetative species, but the combinations vary to the west and south. Lower elevations with creeks and small ponds often include open to moderately-closed stands of spruce that show little evidence of the bark beetle damage that characterizes forests to the east. The forest transitions to low, highly patterned shrub vegetation at lower upland locations; lichen and rock cover with little variation is prevalent at higher elevations. Patterns at lower elevations are more pronounced in autumn with contrasting colors of vegetation and less so in winter when snow blankets the area. Higher elevations do not exhibit heavy patterning because of the lack of a diverse mix of vegetation types.

Overlaying the vegetative patterns are game trails created by caribou that transit the area; this is a strong landscape characteristic for almost this entire unit. Virtually all higher elevations exhibit strong linear patterns where caribou have traversed the area.

The unit is composed primarily of ground moraines with interspersed outwash valleys and alluvial fans. Further west and south the elevation increases, as does the occurrence of bogs and lichen tundra, and there are few or no coniferous trees. Groundhog Mountain and Pig Mountain (Photo 24-3) are conspicuous peaks in this unit, though relatively low, with Groundhog Mountain having a summit elevation of 3,074 and Pig Mountain with a summit of approximately 2,775 feet. Their peak and shoulders are mostly barren, with some grasses and small shrubs. Further southwest, Kaskanak and Sharp mountains are noteworthy peaks with elevations of 2,760 feet and 2,398 feet, respectively. They have similar vegetation patterns as Groundhog Mountain and Pig Mountain.

Water features in this unit include numerous small kettle ponds and streams throughout the shrub tundra of the lower, flat areas (Photo 24-4). The South Fork Koktuli River runs primarily east-west and creates a

narrow floodplain lined with shrubs and grasses. The river is relatively narrow, from 10 to 20 feet wide, and meanders throughout the confines of its banks.

The area is almost fully intact with little evidence of human presence. There are no distinctive destinations in this unit and, it would generally be considered as seldom seen; however, because small aircraft fly through this area in transit to hunting and fishing areas or other destinations, it has been evaluated as having foreground views (some flights are at low altitudes from 900 to 1,500 feet).

Scenic Inventory Summary

The entire study area is considered to have a high concern level, as previously explained. The scenic attractiveness throughout this unit is considered to be typical (Class B). Though landform, water, and vegetation provide generally strong patterns, there are no distinguishing vegetative, hydrologic, or geologic characteristics. Furthermore, the landscape is typical for the area, and the visual characteristics of this unit are common within the region. (A person at a given location in this area could be viewing a landscape similar to that seen by a person 4 miles away; therefore, the landscape is considered typical.) The scenic class is 1 for foreground views (Subunit 1) and 2 for middle ground (Subunits 2 and 3) or background (Subunit 4).

24.6.4.3 Unit 3, Iliamna

PHOTO 24-5, Looking north up the Newhalen River from Iliamna Lake toward Newhalen (foreground) and Iliamna airport (background).

PHOTO 24-6, Iliamna airport, looking northwest.

PHOTO 24-7, Looking north along Newhalen River Road, north of Iliamna, where road turns from pavement to gravel.

PHOTO 24-8, Roadhouse Mountain, looking north-northeast.

PHOTO 24-9, Looking southwest from summit of Roadhouse Mountain to Iliamna Lake.

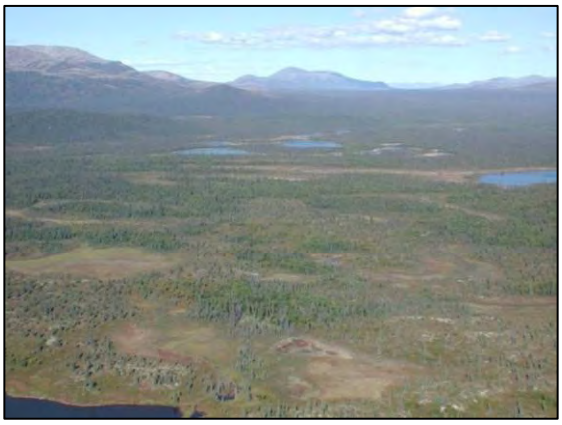

PHOTO 24-10, Looking northeast from Iliamna Lake, east of Roadhouse Mountain.

Description

This unit includes a portion of Iliamna Lake's coastline and extends north into the Lake Clark National Park and Preserve. The Newhalen River drainage and Sixmile Lake are located in the western portion of the unit. Roadhouse Mountain is a prominent landscape feature at the unit's center, surrounded by lowland tundra and backing up to the Knutson Mountain foothills on the eastern edge. Cultural landscape features, including roads and the Iliamna airport, are associated with the three communities in this unit—Nondalton, Iliamna, and Newhalen.

The unit is divided into 14 subunits based on variations in scenic characteristics (Figure 24-6). Because viewer groups are different for portions of the unit, the landscape analysis discussion below is split between two groups of subunits:

- Iliamna Lake coast and the Newhalen River drainage—Subunits 1, 2, 3, 4, 5, 6, 7, and 8.
- Roadhouse Mountain and surrounding lowlands—Subunits 9, 10, 11, 12, 13, and 14.

Iliamna Lake Coast and Newhalen River Drainage (Subunits 1 through 8)

Viewer Exposure and Concern Level: Viewers in this group of subunits include residents, subsistence users, and those traveling in or overflying the area for fishing, hunting, or sightseeing. Viewer exposure and concern level for each applicable viewer group are summarized in Table 24-8.

TABLE 24-8
Iliamna Lake Coast and Newhalen River Drainage, Viewer Exposure and Concern Level

	Tourists/ Recreationists	Residents	Aircraft	Subsistence
Exposure Period	Varies	Continual	Scheduled Carriers: 5 min or less BG, 30 sec MG Small Aircraft: 5 min or more BG, 2 min MG, 30 sec FG	Varies
Concern Level	High	High	High	High

Tourists/Recreationists—six lodges located around Iliamna attract a number of sportfishing recreationists, particularly to Iliamna Lake, Upper and Lower Talarik creeks, and the Newhalen River. Both Iliamna Lake and the Newhalen River are within this unit and are important for fishermen. Settings and views from these locations are of importance, and constituents are sensitive to the setting.

Residents—Iliamna and Newhalen are located 6 and 9 miles, respectively, from the possible road corridor and are centers of commerce for the area. Iliamna has a regionally significant airport. Residents work in a number of different service and commercial employment fields, with many involved in the tourism and sporting industry. Thus, there may be a bias toward maintaining the existing setting for the majority of residents. Most residents live relatively close to the center of the communities, with Iliamna occupying 23,000 acres and Newhalen occupying 3,900 acres. Nondalton is located near the northern edge of this landscape unit on the southwestern shore of Sixmile Lake. It is a small community of slightly over 200 residents, who are primarily Alaska Natives. Subsistence is an important component to the lifestyle of most residents in these three communities.

Aircraft—a large percentage of visitors to the Iliamna Lake area use aircraft to travel to fishing areas throughout the Iliamna Lake region. Aircraft frequently use the northern shore of Iliamna Lake as a travel route because of heavy winds that make it difficult to fly over the lake itself. Locally, smaller aircraft generally fly at altitudes of approximately 1,000 to 2,000 feet, from which landscape disturbances are easily discernible because Iliamna Lake is approximately 50 feet above mean sea level. Commercial aircraft using VFR-HI-Range instruments generally fly at altitudes between approximately 2,000 and 5,000 feet (Waring, 2006).

Subsistence—many residents in Iliamna, Newhalen, and Nondalton are known to participate in subsistence activities, and harvests include salmon, trout, grayling, moose, caribou, bear, porcupine, hares, and berries. Because the presence of humans is more concentrated along the Newhalen River corridor (Subunits 4, 6, and 8), the availability of subsistence resources is somewhat limited there and in surrounding areas. As a result, the sensitivity to changes to the landscape in these areas will be less than in undisturbed locations with more bountiful resources; however, within the subunits are areas with little indication of the presence of humans where there will be more sensitivity to changes. Areas where this

group would have particular concern for aesthetic quality would include Iliamna Lake's coastline and the Newhalen River, both of which have a history of subsistence as represented by some historic trails and a few archeological sites along the river and lakefront. This group is expected to use the full unit to a lesser degree, with the level of use depending on the berry crop and the availability of game in any given year.

Landscape Character: These subunits are characterized by flat to gently rolling terrain. Many deep blue/green ponds dot the tundra, providing some pattern and variety to the otherwise typical landscape.

Key water features include Iliamna Lake and the Newhalen River. The Newhalen River has deep, clear water and is surrounded by lichen/shrub tundra interspersed with spruce, willows and alders. It is a relatively wide river, as much as 500 yards wide where it broadens at its mouth (Photo 24-5) and 100 yards wide over much of the rest of its course. The river has high volumes of water with many cascades. The Newhalen River is unique and powerful in its appearance and volume. The river is deep, with a turquoise cast, and generally clear for a glacial stream because glacial sediments settle upstream in 75-mile-long Lake Clark. This blue-green river feeds Iliamna Lake and contrasts highly with the less intense colors of the surrounding tundra, making it a prominent feature and one of the most vivid elements in this landscape unit.

Vegetation is mostly open forest with patchy stands of 50- to 60-foot-tall spruce throughout the unit. Low shrubs and lichen are characteristic of the area and provide strong fall seasonal color when many hunters and fishermen are in the area. Patterns are less distinct when snow blankets the area.

As previously noted, three communities are located in this unit—Nondalton, Iliamna, and Newhalen. The three are connected by Newhalen River Road, Airport Road, and Iliamna Village Road, although there is no bridge across the Newhalen River for the Newhalen River Road to reach Nondalton. Because of the low-lying vegetation, these roads are prominent and fragment the landscape, which therefore is not intact.

The Iliamna airport (Photo 24-6), the regional airport for the area, is located between the community of Iliamna and the Newhalen River. The airport represents a high degree of visual contrast. Its two crossed, paved runways are situated on a high-level lake terrace among many small lakes and thus are highly visible compared to their natural surroundings. The paved runways and the road leading to them contrast strongly with the surrounding lichen/shrub tundra in shades of green and brown. The roofs of the buildings lining the runway are brightly colored, drawing attention to them and away from the natural features surrounding them.

The Newhalen River Road (Photo 24-7) is paved near Iliamna but becomes gravel north of the community. It runs parallel to the Newhalen River north from the Iliamna airport to Fish Village on Sixmile Lake. The road initially cuts straight through the landscape north of Iliamna and then begins to curve with the contours of the land with distance from the airport. It has a high degree of visual contrast with the surrounding landscape as a result of its location on a flat, open landscape and its gray color against the green shrubs and tundra and the deep green-blue of the river.

The communities of Iliamna and Newhalen are located in scenic surroundings of well-patterned vegetation of tundra and shrubs with some stands of short spruce. Otherwise the landscape tends to be featureless except where interrupted by water features such as the Newhalen River. Developed use areas generally sprawl across the landscape with no defined, concentrated area of development. The housing developments are located along the roads, and development is easily viewed from roads or the air.

Structures are architecturally similar to those in other remote communities, with some log homes or lodges that blend in with the landscape rather than standing out. **Scenic Inventory Summary:** This area is considered of high concern, as explained previously. Larger aircraft traveling to or from Iliamna and to or from Anchorage travel at higher altitudes making this area middle ground for the viewers on those aircraft. Smaller aircraft traveling in the area generally travel along the Iliamna Lake coastline at low altitudes of 1,000 to 1,500 feet (sometimes lower) because of winds; therefore, this area is considered foreground for viewers on smaller aircraft. Developed areas are in Class C for scenic attractiveness and are considered Scenic Class 1.

The blue-green Newhalen River feeds Iliamna Lake and is used by boaters and fisherman. The river contrasts highly with the less intense colors of the surrounding tundra, making it a prominent feature and one of the most vivid elements within this area; therefore, the river is categorized as scenic attractiveness Class A, or distinctive, within 0.5 mile of each side of the river. The northern stretches of the river near the community of Nondalton, are defined by increasing topographic relief that adds character and is also of distinctive scenic attractiveness. Other than that, areas beyond the 1-mile-wide river corridor are considered typical, or in Class B, for scenic attractiveness.

Roadhouse Mountain and Lowlands (Subunits 9 through 14)

Viewer Exposure and Concern Level: Viewers of this subunit group are primarily those overflying the area for fishing, hunting, or sightseeing. There is also some off-road-vehicle use in the vicinity of Roadhouse Mountain. Viewer exposure and concern level for each applicable viewer group are summarized in Table 24-9.

TABLE 24-9
Roadhouse Mountain and Surrounding Lowlands, Viewer Exposure and Concern Level

	Tourists/ Recreationists	Aircraft	Subsistence
Exposure Period	Minutes to hours	Scheduled Carriers: 5 min or less BG, 30 sec MG Small Aircraft: 5 min or more BG, 2 min MG, 30 sec FG	Varies
Concern Level	High	High	High

Tourists/Recreationists—Roadhouse Mountain is located at one of the southernmost points of Lake Clark National Park and Preserve. Although the core of the park is distant to the north, Roadhouse Mountain is sometimes a destination for hikers, sightseers, and all-terrain-vehicle users.

Aircraft—small aircraft fly along the shoreline of Iliamna Lake at low altitudes (1,000 to 5,000 feet). The land and waters over which they travel lie between 50 and 100 feet above mean sea level, thus view altitudes are only slightly different than flight altitudes. Aircraft flying between Port Alsworth and Iliamna Lake have a short flight of 30 to 40 miles and may fly at lower altitudes, varying from 500 to 1,000 feet, in an area with ground elevations of 50 to 350 feet and would have foreground or middle-ground views of this area. Passengers on these aircraft have elevated views of the full landscape unit.

Subsistence—while the proximity of this subunit group to the developed communities of Newhalen and Iliamna limits the availability of game for subsistence purposes, the area provides opportunities for berry picking. This group is expected to have a high concern level to disturbances to natural areas.

Landscape Character: Standing at 3,252 feet, Roadhouse Mountain is the tallest peak near Iliamna Lake and is prominent and visible from the communities of Iliamna, Newhalen, and Nondalton (Photo 24-8). Its location and lack of connection to other background peaks make it a memorable landscape feature. This barren peak is speckled with small amounts of shrub, grasses, and lichen at lower elevations. The peak is a hiking and all terrain vehicle destination, as evidenced by the number of trails that ring the peak. From the peak there are sweeping views to Iliamna Lake, Lake Clark National Park and Preserve, and the low hills and rolling tundra to the west, including the general area of the Pebble Deposit.

The area south of the mountain is wide-open, flat, and vast (Photos 24-9 and 24-10) and is covered in lichen, marshes and bogs, small lakes, and grassy tundra. Many blue-green ponds dot the tundra landscape.

Scenic Inventory Summary: Roadhouse Mountain has a distinct character relative to the surrounding ground plane and is in scenic attractiveness Class A**.**

Trails used by hikers and all-terrain vehicles can be seen from the air, but the vegetative patterns and topographic features are generally intact. This area is considered to be of high visual quality and scenic integrity.

Although the blue-green ponds in the area south of the mountain provide some pattern and variety, this area is considered a typical landscape with a scenic attractiveness of Class B.

24.6.4.4 Unit 4, Pedro Bay

PHOTO 24-11, Hedlunds site, approximately 10 miles west of Pedro Bay, looking north.

PHOTO 24-12, View to northeast towards Knutson Mountain, western margin of Knutson Bay.

PHOTO 24-13, Chekok fish camp at Mink Creek, looking north-northeast.

PHOTO 24-14, Looking east at Pedro Bay airport with the village in the distance.

PHOTO 24-15, Community of Pedro Bay, looking eastward toward town.

PHOTO 24-16, Looking north across Pedro Bay toward the community of Pedro Bay, at the head of the bay at the base of the mountain in the center of the photo.

PHOTO 24-17, Looking north-northeast toward community buildings in Pedro Bay (note spruce bark beetle-killed trees).

Overview and Subunits

This unit is located at the northeastern end of Iliamna Lake and features an archipelago with complex shorelines of islands and peninsulas in Knutson, Pedro, and Pile bays. Along the coast are cultural landscape features associated with the small community of Pedro Bay, including an airstrip, roads, home sites, cabins, and lodges, generally nestled into the forest and dotting the coast. The unit also includes portions of the Knutson Mountains and several lower river valleys. The unit is divided into seven subunits based on variations in scenic characteristics (Figure 24-7).

Viewer Exposure and Sensitivity

In this unit is an archipelago featuring complex shorelines of islands and peninsulas with small settlements, numerous home sites, and some lodges. Pedro Bay is the largest settlement in this unit and an airfield provides access to the community, as does Iliamna Lake's waterfront.

Viewers in these subunits are primarily residents or visitors to recreational lodges and cabins, although viewers also might be overflying the area for fishing, hunting, or sightseeing or traveling on Iliamna Lake. Viewer exposure and concern level for each viewer group are summarized in Table 24-10.

TABLE 24-10
Unit 4, Pedro Bay, Viewer Exposure and Concern Level

	Tourists/ Recreationists	Residents	Aircraft	Subsistence
Exposure Period	Varies and may be addressed by aircraft column	Continual	Scheduled Carriers: 5 min or less BG, 30 sec MG Small Aircraft: 5 min or more BG, 2 min MG, 30 sec FG	Varies
Concern Level	High	High	High	High

Tourists/Recreationists: There are approximately four fishing and/or hunting lodges located in or around the community of Pedro Bay. These are located at the water's edge of Iliamna Lake to afford access to boats and floatplanes. Locals and visitors typically use boats to gain access to many creeks in the unit and sometimes use aircraft to get to more distant locations. They are provided views of the community and surrounding areas from both the water and the air.

Residents: The village of Pedro Bay is located at the northern extremity of Pedro Bay. Many homes and cabins are perched at the water's edge, providing views to Iliamna Lake and the surrounding landscape. Views within the community are generally closed by vegetation, though the death of many trees because of spruce bark beetles has opened vistas that did not previously exist.

Aircraft: Small aircraft flying along the shoreline at low altitudes or landing or taking off from the 3,000-foot-long gravel airstrip have foreground views to this unit. There are few general carriers that fly directly over the area, though there is some traffic from Anchorage to southwestern communities in the area.

Motorized Vehicles: Travelers using the Pedro Bay-Pile Bay trail and boaters near the shoreline in this unit have foreground views to all areas that are between mountain slopes and the water's edge. Boaters have similar views. The time of exposure for boaters depends on the speed of travel. Views are affected by spruce trees in individual settings, although many of those trees have been killed by spruce bark beetles.

Subsistence: The area is used for subsistence hunting, fishing, and berry picking. This viewer group has a high level of concern for disturbances to the natural landscape.

Landscape Character

The Pedro Bay landscape unit can generally be described as an archipelago at the eastern end of Iliamna Lake flanked by peaks that rise quickly from the lake edge. The small village of Pedro Bay is located on a shelf at the lake's edge.

The Hedlunds is a site and camp approximately 10 miles west of the Pedro Bay community but within the unit. The Hedlunds site sits on the neck of a unique, multi-lobed inlet along the shore of Iliamna Lake (Photo 24-11). A brown-roofed, white-faced building at Hedlunds borrows colors from the barren, light-colored tundra and the pale-colored beaches.

Areas west of Pedro Bay village transition from open, flat tundra to forested hillside, backed by rounded hills that meet background, serrated peaks. This landscape is complemented by a matrix of lakes and creeks that add complexity while maintaining harmony (Photo 24-12).

Chekok fish camp (Photo 24-13) is located on the northwest end of Knutson Bay near Canyon Creek and houses two small groups of structures. Buildings generally fit landscape colors that are present in the area. Also, the landscape is not heavily disturbed by trails or large openings in the vegetation. Chekok camp sits near the western edge of Knutson Mountain and a dense coniferous forest in which Pedro Bay is located.

The mosaic of islands and peninsulas, the full range of vegetation, and the small scale of the Pedro Bay community nestled into the hillside (Photos 24-15 through 24-16) provide a unique and harmonious

landscape that is highly memorable. Close to Pedro Bay, mixed and coniferous forests on the islands and the sloped shoreline and peninsulas provide continuity and balance to the exposed, rocky, high-wave-energy coastline. Patches of shrubs and grasses, and bogs atop alluvial fans and floodplains open to areas farther inshore. Also, the rounded low peaks that line the shoreline are steep and patterned with rock, making the landscape complex and dramatic. Pedro Mountain (elevation 1,000 feet) is located just west of the community of Pedro Bay on a peninsula that wraps around the coastline to the west and creates Knutson Bay and Pedro Bay. Porcupine Island, more heavily contoured than Flat Island to the west, divides the east end of Iliamna Lake, creating Pile Bay, and encloses this unified landscape.

The community of Pedro Bay is nestled among hills to the north, Pedro Mountain, and Porcupine Bay, making it inconspicuous and visible by land only from Knutson Valley to the west and from the air. The community itself is composed of small structures mostly set within a forest of white spruce. While the forest has provided a closed vegetative setting for the community and much of the unit, the white spruce that are the dominant vegetative feature are in decline. Spruce bark beetles have caused the death of as many as 90 percent of the trees, most of which still stand. As with many Alaskan forests, the spruce forest in this unit is going through a progression of stages that will result in an open forest that will be primarily deciduous for many years. Over time, the spruce forest will probably regenerate; however, in the near future many historically limited views will become much more open.

The light-colored gravel roads that run to and throughout Pedro Bay village contrast sharply against the dark green spruce forest (Photo 24-15). The road network consists of a 2-mile road from the community's school to Pedro Creek, a 1.7-mile road from Pedro Bay airport (Photo 24-14) to Knutson Mountain, and a 2.3-mile road from the school to a boat yard. These light brown cuts contrast greatly with the darker greens of the surrounding forest, borrowing little from the landscape, but the roads are narrow enough that they appear intermittent through the surrounding dense vegetation. Blue-roofed buildings also borrow little from the landscape colors (Photo 24-17). The most dominant landscape element viewed from the air is the airport, which is located further to the west and south of the foothills in an open area, cleared of vegetation. The roads, runway, and the community of Pedro Bay disrupt a generally undisturbed landscape, making it semi-intact.

Pedro Bay's current use areas sit between Iliamna Lake and quickly rising hills with rounded summits that line the lake's edge. Structures are spread out around the bay in small groups, making their presence less intrusive than the structures in the Iliamna area. They are also nestled among taller spruce trees, making them less visible from all viewpoints. The islands that enclose this bay provide variety, yet unify this landscape.

The Knutson Mountain uplands are at the terminus of the Chigmit Mountains, which extend northeast along the greater Aleutian Range. The lower ridgelines and hills frame long, broad valleys with meandering streams that flow from the north to Iliamna Lake. The background ridgelines and peaks in this area are more jagged and serrated than mountains farther south. The hills, ridgelines, and valleys themselves provide little variety, with mostly light-colored, barren, lichen and shrub tundra and other shrubs at higher elevations and mixed forest at lower elevations. Small streams and lakes are found in the valleys and lower elevations of these uplands, providing some variety and limited vegetative patterns. Knutson Mountain is the tallest peak in this area at approximately 4,000 feet and strongly contrasts with Iliamna Lake below.

Scenic Inventory Summary

Because of the complexity of the unit and its coastline, small settlement areas, and variability in terrain, a discussion of scenic characteristics by subunits is provided below:

Subunit 1: A fish camp located at Hedlunds, on an inlet that feeds into Chekok Bay (Photo 24-11), is the only notable indication of the presence of humans in an otherwise untouched landscape. A road cut is similar in color to a beach located a few hundred feet away, but its straight cut and location away from the shoreline contrasts with the native contours. Chekok Fish Camp at Mink Creek (Photo 24-13) includes three structures located along the northwest shore of Knutson Bay and contrasts with the moderately dense, mixed vegetation. Though noticeable because of its location and small footprint, it deters little from the flat, varied landscape. The landscape in this subunit is considered of high visual quality and very high scenic integrity, with a scenic class of 1 owing to the mix of strong hydrologic features including inlets, streams, and a complex shoreline.

Subunits 2, 3, and 6: These subunits have a fully intact landscape of strong contrasts varying from shoreline to forested hillsides and deep valleys that lead to high snow-capped peaks. It features clear streams and many lakes. These subunits are of distinctive scenic attractiveness (Class A) and scenic class of 1.

Subunit 4: The gravel landing strip west of Pedro Bay (Photo 24-14) is used by small aircraft to give residents and tourists access to this small community. A seasonal roadway also provides access to the community, which is nestled at the base of foothills that rise to approximately 2,500 feet above mean sea level on the shore of picturesque Pedro Bay. This area has distinctive scenic attractiveness (Class A) and high scenic integrity. Small aircraft transiting this area generally travel along the Iliamna Lake coastline at low altitudes of 1,000 to 1,500 feet and sometimes lower because of winds. This area is considered foreground to viewers aboard those aircraft, and has a scenic class of 1, or high public value.

Subunits 5 and 7: Pile Bay village and Old Iliamna have few inhabited structures, which are not obvious from the air and have limited visibility from the ground or water. In the offshore area is an archipelago that is a highly complex collection of islands and peninsulas with some cabins visible along the shoreline. These subunits are unique, with a scenic attractiveness of A, or distinct, and a scenic class of 1, or of high public value.

24.6.4.5 Unit 5, Chigmit Mountains

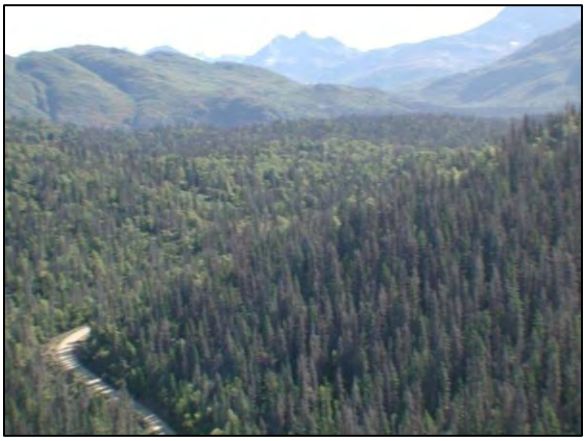

PHOTO 24-18, Lower Chinkelyes Creek Valley and Williamsport-Pile Bay Road, looking eastward.

PHOTO 24-19, Upper Chinkelyes Creek and Williamsport-Pile Bay Road, looking eastward.

PHOTO 24-20, Summit Lakes, looking eastward toward Chinkelyes Pass (which is beyond the middle right edge of the photo).

Description

This unit is located east of Pile Bay and consists of the Chinkelyes Creek valley with Summit Lakes and Chinkelyes Pass, portions of the Chigmit Mountains, and the Iliamna River valley. The unit's eastern border is the boundary between the Bristol Bay and Cook Inlet drainages. The unit is divided into five subunits based on variations in scenic characteristics (Figure 24-8).

Viewer Exposure and Concern Level

Viewers travel through this unit by aircraft and by the Williamsport-Pile Bay Road through Chinkelyes Pass. Areas north of the pass, including the Iliamna River valley, are seldom seen and are viewed primarily by those in aircraft. The number of scheduled air-carrier flights is less than 15 per day, and the exposure period of passengers is short, with views limited to primarily background views. The area is not used frequently by small aircraft either, typically even less than by scheduled flights. Viewer exposure and concern level for each applicable viewer group are summarized in Table 24-11.

TABLE 24-11
Unit 5, Chigmit Mountains, Viewer Exposure and Concern Level

	Aircraft	Motorized Vehicles
Exposure Period	Scheduled Carriers: 5 min or less BG, 30 sec MG Small Aircraft: 5 min or more BG, 2 min MG, 30 sec FG	Glimpses or seconds in closed forest, minutes in open tundra and on hillsides
Concern Level	High	Varies depending on user

Aircraft: Under favorable conditions, this area can be viewed by aircraft traveling from Anchorage to southwest Alaska. Small aircraft transit this area at low altitudes (1,000 to 5,000 feet) when traveling between the Kenai Peninsula and the Iliamna Lake area, though not in substantial numbers.

Motorized Vehicles: The Williamsport-Pile Bay Road is located in Chinkelyes Creek valley. This 15-mile-long road is used to transport boats between Cook Inlet and Iliamna Lake and, when the road is open, carries an average of 10 vehicles per day according to the Alaska Department of Transportation and Public Facilities (ADOT&PF, 2009). However, this traffic is highly seasonal, and for much of the year the road is closed, carrying no traffic whatsoever. The road is used by some recreationists (bikers, hikers, and sightseers), and there is some use for hunting as well. Two fishing lodges use the road for access to halibut fishing on Cook Inlet (Williams, pers. comm., 2008).

Landscape Character

Chinkelyes Creek drains into Iliamna Lake from the east via a broad plain that is fed from a U-shaped valley. The grey-brown, sandy riverbed is a distinct landscape feature and meanders through the flats, adding variety and vividness to the landscape. The Williamsport-Pile Bay Road also is visible from the air. The valley bottom is lush with deciduous and coniferous trees, especially surrounding the creek.

As a result of substantial amounts of beetle-kill, the coniferous forest is in transition to deciduous forest with an understory of young spruce. Currently, much of the forest is characterized by standing dead trees

(Photo 24-18). Other than the road and a short gravel airstrip, there is little evidence of human presence in the landscape. Outside of the valley, the area is considered to be seldom seen, with mostly middle and background views from the air.

Chinkelyes Creek valley (Subunit 1) contains short stretches of straight streambed and then tight turns as it passes from higher to lower elevations. A waterfall rolls down a terraced hillside from the south, adding vividness and complexity to the landscape at the upper end of the valley. The steeper slopes are less vegetated and are marked with more rock, scree, and grassy tundra near the peaks. The north-facing slopes are dotted with deciduous trees, while vegetation on the south-facing slopes consists of grasses and shrubs. Though this end of the valley is more closed and mildly patterned, the landscape is consistent and fully intact. Landform, water, and vegetation provide a collection of highly scenic patterns, with distinguishing hydrologic and topographical characteristics such as valley headwalls, dramatic topographic change, braided streams, and scenic rivers that contribute strong positive attributes of distinctive value.

As the road travels from west to east in this unit, the Chigmit Mountains become more prominent. The Chigmit Mountains are a mix of U-shaped river valleys within a complex of mountains with serrated peaks that maintain remnant snow year-round. The vegetation is a complex mix of shrubs, grasses, and groundcovers typical of U-shaped glacial valleys. The shoulders of the mountains that frame the valleys have a combination of vegetation, scree, and exposed rock. Ridgelines are moderately complex and generally rounded in form. Distant background peaks are highly complex with persistent snow late into the summer and fall. Braided streams meander through the valley bottoms (Photo 24-19).

Mixed and coniferous forests line the lower north-facing slopes of Chinkelyes Valley, while grasses cover the upper south-facing slopes. The smoothly rounded shorelines of the Summit Lakes (Photo 24-20), in the upper reaches of the valley, provide interest and add harmony and vividness to the landscape. These lakes, coupled with the meandering Chinkelyes Creek, contribute to the area's hydrologic complexity. The combination of the stream, lakes, and middle-ground and background peaks creates a particularly vivid and memorable landscape.

The only land use that is apparent in this area is the Williamsport-Pile Bay Road, which follows the Chinkelyes Valley bottom in lower areas and traverses hillsides in the upper portions of the valley. This is the only road between Cook Inlet and Iliamna Lake. The road is light in color, and in the lower areas, it borrows the color from the sandy banks of Chinkelyes Creek, providing a strong contrast to the green forest. Its meandering pattern is somewhat complementary to the river's patterns however. In upper reaches of the valley, the road is more a straight line that is of high contrast to the natural patterns of the valley. The roadway, when viewed from the air, is also very apparent on hillsides where cut and fill were required (Photo 24-20), and the straight line provides further strong contrast to the valley's natural forms.

Scenic Inventory Summary

The entire study area is considered to have a high concern level as previously explained. The scenic attractiveness is generally considered to be distinctive, or Class A, with landform, water, and vegetation that provide complex yet orderly patterns, and distinguishing hydrologic and topographical characteristics such as dramatic rises, scenic rivers, unique trees, or small lakes that contribute to the strong positive attributes of variety and unity. The unit has very high scenic integrity except Subunit 1 where the road or the gravel airstrip is present. The scenic class is generally 1, or high scenic value.

24.7 Summary

The study area is a mix of contrasting landscapes, some of striking visual quality, others quite muted. Of particular note is that much of the landscape is undisturbed and much is little used or seen by people.

24.7.1 Landscape Character

The landscape of the western end of the study area is characterized by low landforms with heavily patterned vegetation that ranges from low shrubs and lichen to sparse stands of spruce. This is in marked contrast to the eastern portion of the study area which is characterized by incised valleys and complex serrated peaks, as well as rounded valley bottoms with winding clear-water streams.

24.7.2 Scenic Attractiveness

Scenic attractiveness is a measure of the scenic importance of a landscape based on human perceptions of the intrinsic beauty of landform, water characteristics, vegetation patterns, and cultural land use. The landscape in the study area covers the full range of classes for scenic attractiveness, varying from the common landscape of muted hills among tundra that extends for hundreds of miles to the west to the distinctive peaks, valleys, and water forms in the eastern portion of the study area.

24.7.3 Scenic Integrity

Scenic integrity is a measure of the completeness of a landscape based on the amount of deviation from or disturbance of an existing landscape (generally, but not always, the natural landscape). Almost all areas of the study area are intact and whole. Exceptions include the areas of the communities of Iliamna, Newhalen, Nondalton, and Pedro Bay and some camps in remote locations along creeks and the Iliamna Lake shoreline. Also, the Newhalen River Road and the Williamsport-Pile Bay Road are generally intrusions in what is otherwise a fully intact landscape.

24.7.4 Viewer Groups

Viewers comprise residents of the communities in the area and tourists and recreationists that visit Lake Clark National Park and Preserve or the fish camps, lodges, and hunting camps that are located in the study area. The area is also used for subsistence purposes, thus hunters and gatherers are also a constituent group. Aircraft fly over the study area, and aircraft passengers are a user group as well. Portions of the study area are visible to motor-vehicle traffic on the Williamsport-Pile Bay Road—which includes freight haulers, hunters, fishermen, and sightseers—and to boats and float planes on Iliamna Lake.

24.7.5 Landscape Visibility

The study area is viewed by the constituents from all distance zones; however, most views are middle to background, primarily owing to the lack of a developed road system, although views are possible from aircraft or from boats on Iliamna Lake. Some areas are seldom seen except from aircraft at high altitude, while others are close to communities or routes used by recreationists.

24.7.6 Concern Levels

The concern level for the entire study area is high. Residents are typically sensitive to the quality of the environment, particularly in rural areas. Visitors also are a particularly sensitive group, especially when they have traveled great distances for a "wilderness" experience. Subsistence users, though their level of use is currently undefined, also have a high concern regarding disturbance, and their landscape preferences correspond to areas of hunting and gathering, instead of complex visual landscapes of high peaks and river valleys.

24.7.7 Scenic Class

Scenic class is a measure the scenic attractiveness of an area, considered in conjunction with an evaluation of the public value of the scenery and its distance from the viewer. The ratings in the study area vary, although all are in the high range.

24.8 References

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24.9 Glossary

Following are definitions used in this report and based on the U.S. Forest Service document *Landscape Aesthetics, A Handbook for Scenery Management* (USFS, 1995).

Concern level—a measure of the degree of the public importance placed on a landscape and a landscape's visibility from travelways and use areas.

Constituents—those who may view a landscape and their expectations, desires, preferences, acceptable levels of quality, behaviors, and values.

Distance zones—the distance of potential viewers from a landscape, usually measured as foreground (0 to 0.5 miles), middle ground (0.5 to 4 miles), background (4 miles to horizon), or seldom seen.

Landscape analysis units—geographical areas that can be distinguished by common characteristics of landform, vegetation, and hydrology and cultural elements, where present. These are often based on ecological units that have been defined by land managers and ecologists (see Section 24.5.2).

Landscape character—a description of key attributes found to be consistent throughout a mapped landscape analysis unit; the description conveys an image of the landscape based on landform patterns, water characteristics, vegetation patterns, and cultural elements.

Landscape visibility—a function of the context of the viewer, the number of viewers, the duration of view, the degree of discernible detail, and any seasonal variations.

Scenic attractiveness—a primary measurement of the intrinsic scenic beauty of a landscape and of the positive responses it evokes in people; based on commonly held perceptions of the beauty of landform, vegetation patterns, composition, surface-water characteristics, land-use patterns, and cultural features.

Scenic class—a measure of the relative importance (public value) of discrete landscape areas with similar characteristics with regard to scenic attractiveness and landscape visibility.

Scenic integrity—an indication of the degree of intactness and wholeness of a landscape's character.

FIGURES

1,300,000 1,350,000 1,400,000 1,450,000 1,500,000 1,550,000 1,600,000 1,650,000 1,700,000

2,300,000 2,250,000 2,200,000 2,150,000 2,100,000 2,050,000 2,000,000

Lake Clark

Port Alsworth

Ghulitna River

Nondalton

Tazimina River

Kaskanak Creek

Newhalen River

Iliamna

Newhalen

Pedro Bay

Pile Bay

Williamsport

Iliamna Lake

Cook Inlet

Kokhanok

Bristol Bay Drainages Studies

Cook Inlet Drainages Studies

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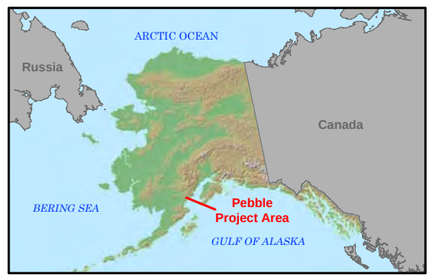
Figure 24-1
Bristol Bay Drainages, Visual Analysis Study Area

Legend

- Communities
- Existing Roads
- Bristol Bay/Cook Inlet Drainages Boundary
- General Deposit Location
- Study Area



0 2 4 6 8 Miles

0 4 8 12 16 Kilometers

N

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Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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Version: 6	**Author: LDN**

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2,300,000 2,250,000 2,200,000 2,150,000 2,100,000 2,050,000 2,000,000

Lake Clark

Unit 2
Groundhog and
Sharp Mountain

Unit 3
Iliamna

Unit 4
Pedro Bay

Unit 5
Chigmit
Mountains

Unit 1
Talarik Creeks

Iliamna Lake

Cook Inlet

Bristol Bay
Drainages Studies

Cook Inlet
Drainages Studies

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Figure 24-2
Bristol Bay Drainages, Visual Analysis Landscape Units

Legend

- Bristol Bay/Cook Inlet Drainages Boundary
- Existing Roads
- General Deposit Location
- Landscape Analysis Units

0 3 6 9 12 Miles

0 6 12 18 24 Kilometers

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Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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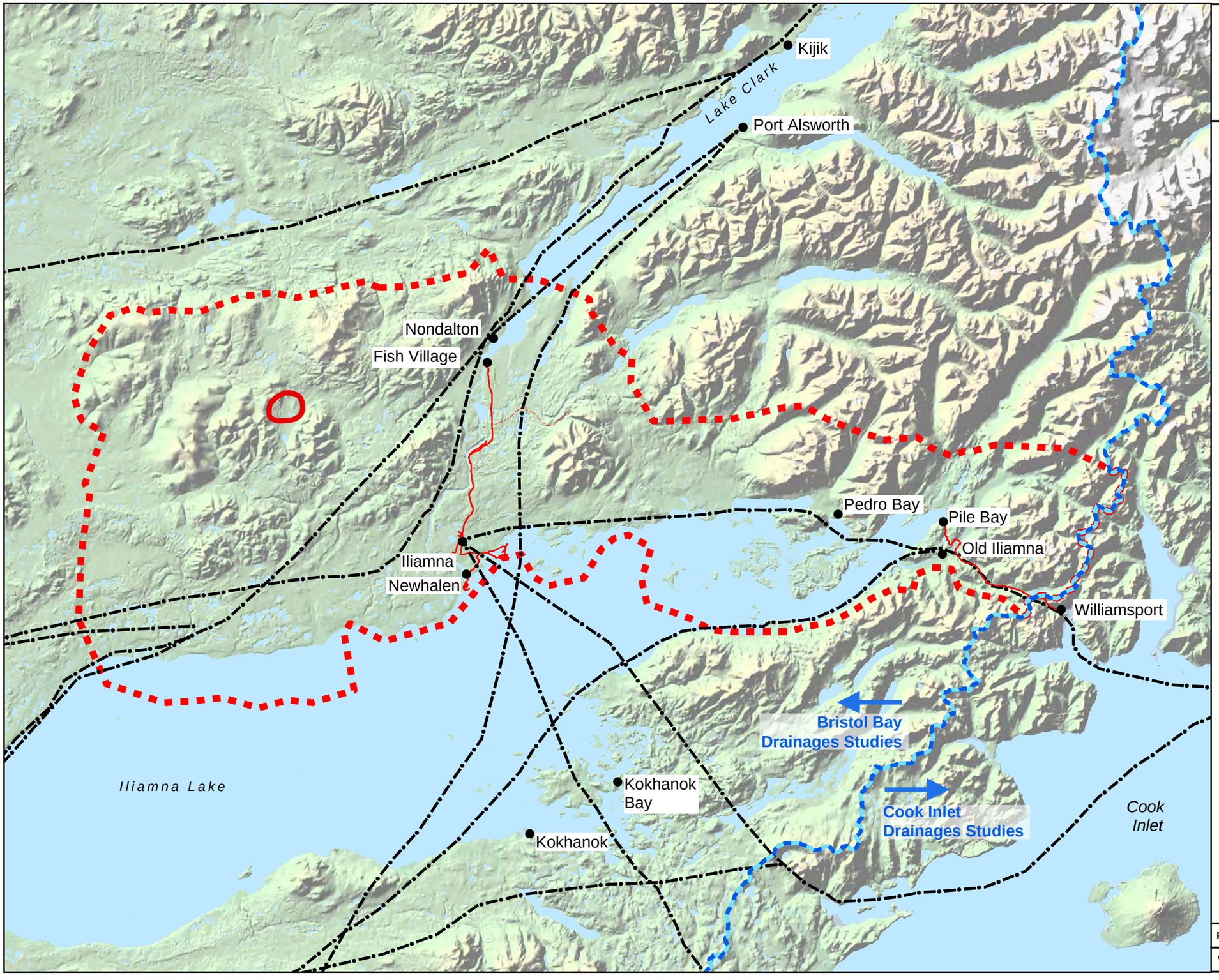

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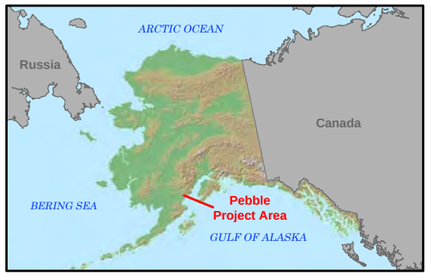
Figure 24-3
Bristol Bay Drainages Study Area,
Aircraft Flight Patterns

Legend

- Communities
- Flight Paths
- Existing Roads
- Study Area
- Bristol Bay/Cook Inlet Drainages Boundary
- General Deposit Location



Miles 0 4 8 12 16

Kilometers 0 2.5 5 10 15 20

N

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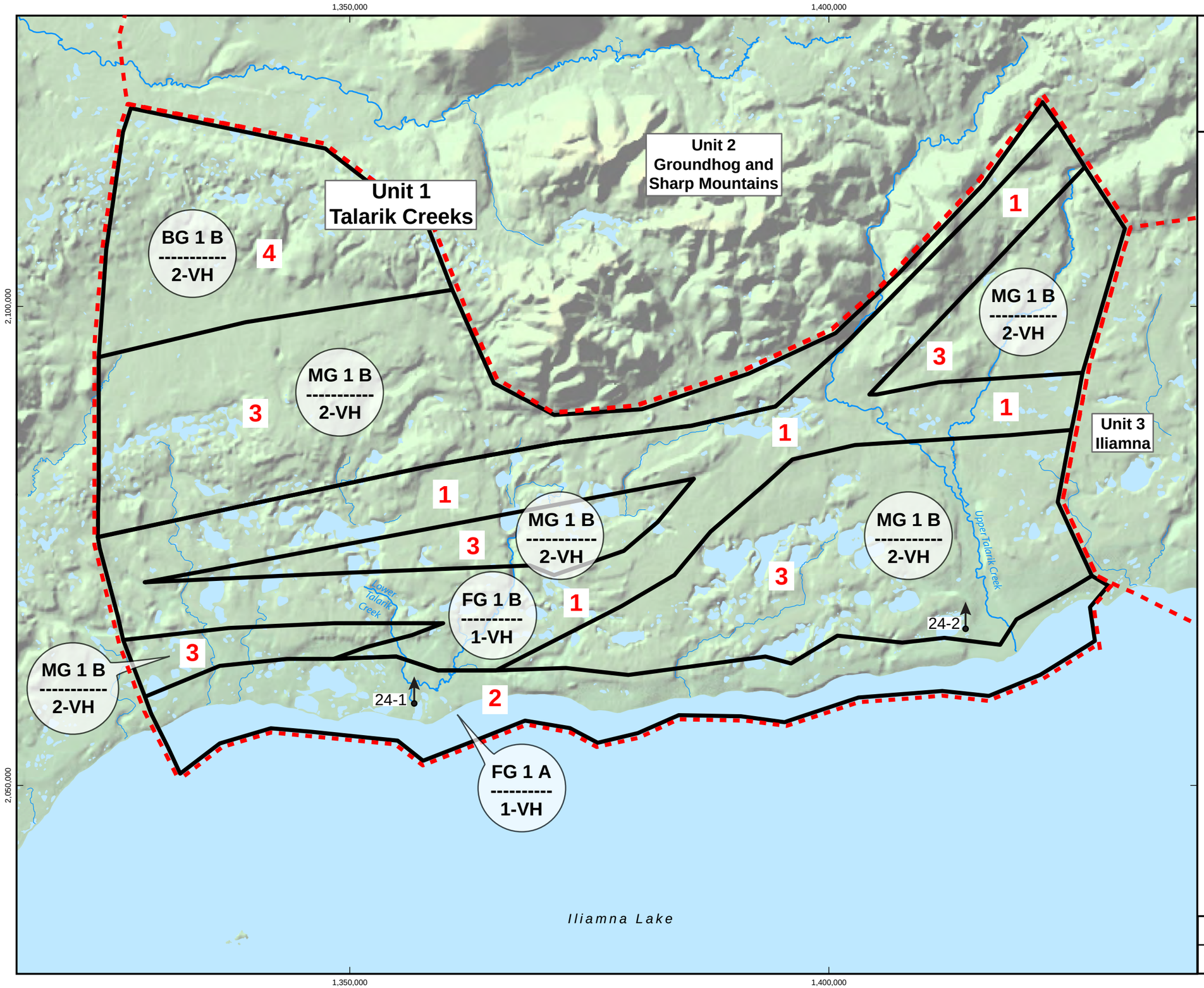

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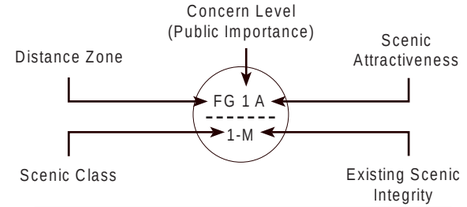
Figure 24-4
Bristol Bay Drainages, Scenic Inventory,
Unit 1, Talarik Creeks

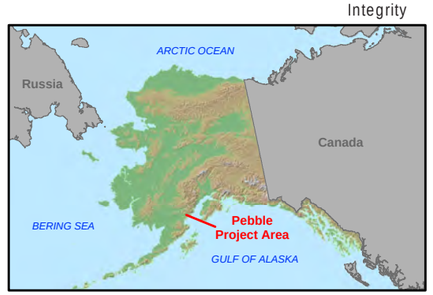
Legend

- Landscape Unit Boundary
- 1 Scenic Inventory Subunits
- 1 Direction of Photograph & Photograph Reference Number

Key
Viewer Exposure/Scenic Class

The codes shown here are explained in section 24.5 Methods





Miles 0 1 2 3 4

Kilometers 0 1 2 3 4

N

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Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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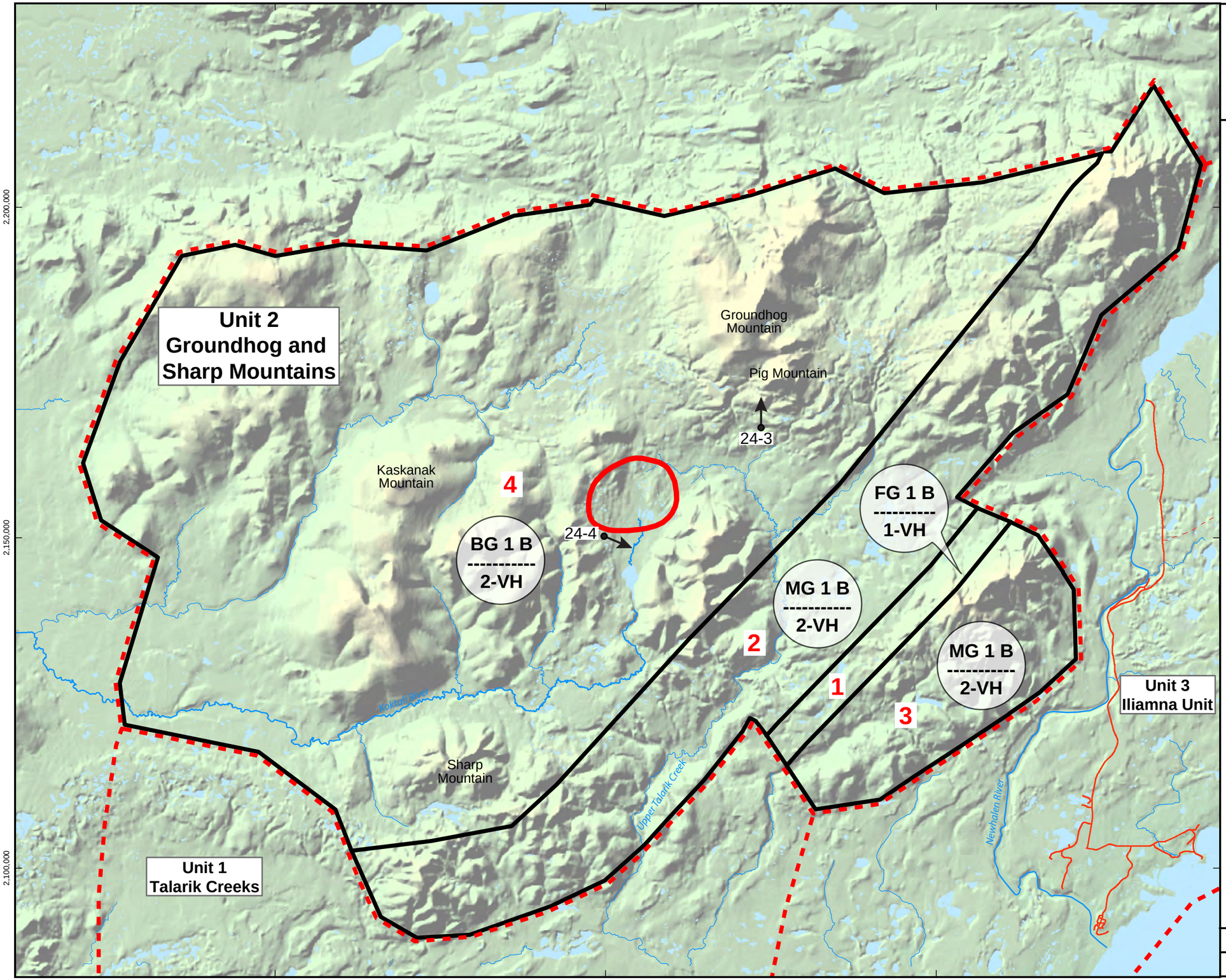

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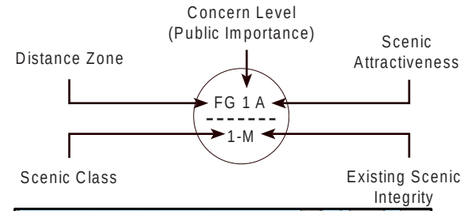
Figure 24-5
Bristol Bay Drainages Scenic Inventory, Unit 2, Groundhog and Sharp Mountains

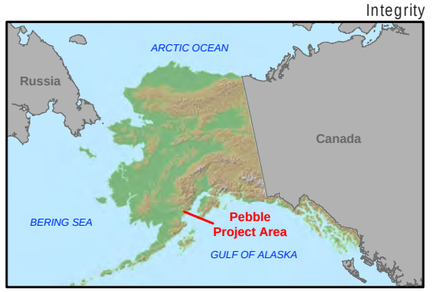
Legend

- Landscape Unit Boundary
- 1 — Scenic Inventory Subunits
- General Deposit Location
- Existing Roads
- 1 — Direction of Photograph & Photograph Reference Number

Viewer Exposure Key

The codes shown here are explained in section 24.5 Methods





Miles
0 1 2 3 4

Kilometers
0 2.5 5 7.5 10

N

Scale 1:175,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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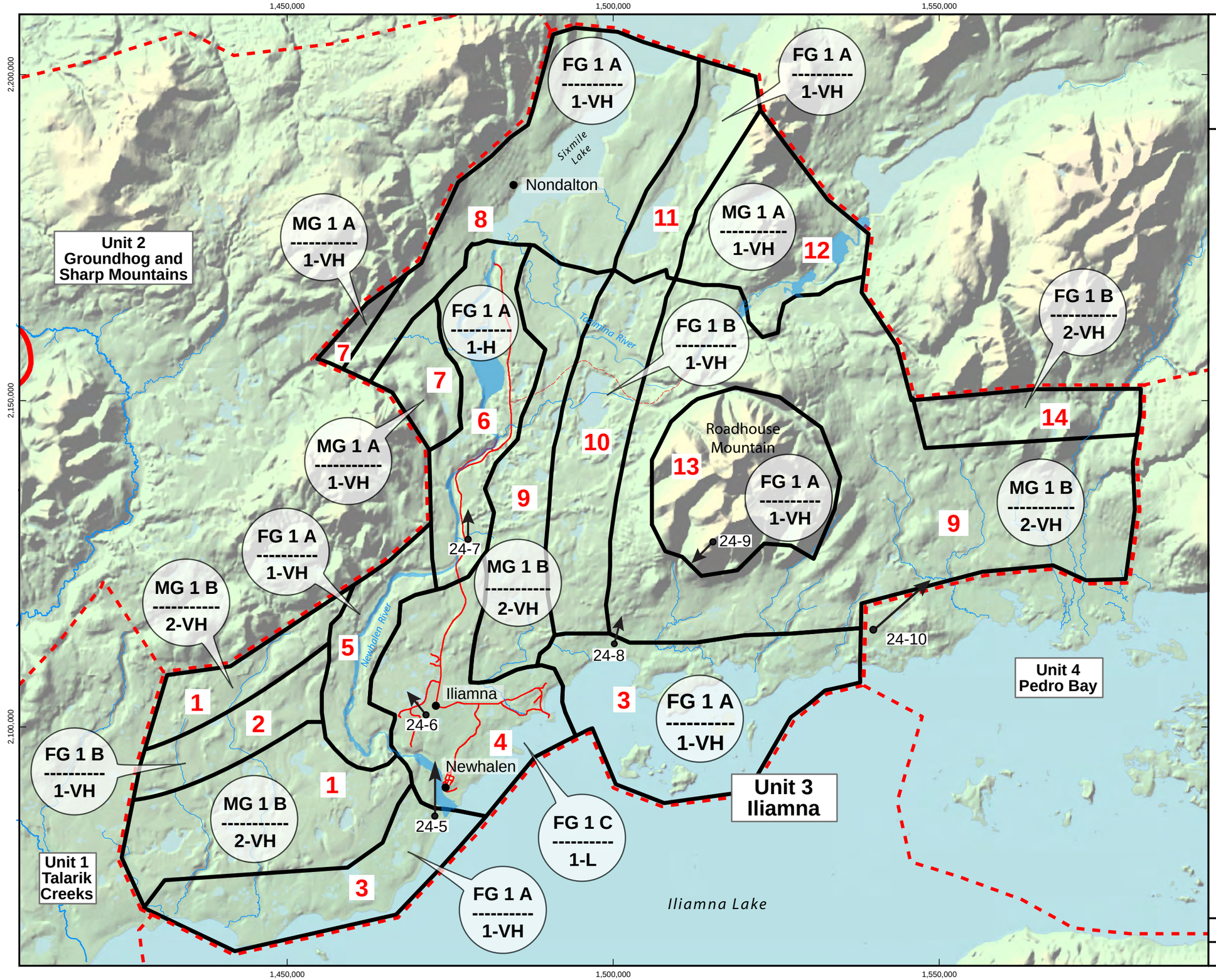

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Figure 24-6
Bristol Bay Drainages Scenic Inventory,
Unit 3, Iliamna

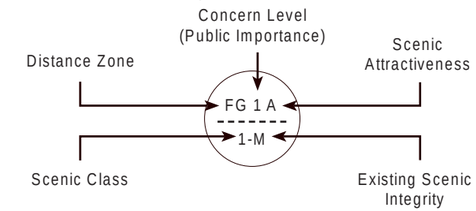
Legend

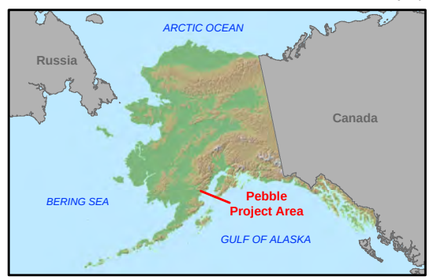
- Landscape Unit Boundary
- 1 — Scenic Inventory Subunits
- Existing Roads
- General Deposit Location
- 1 — Direction of Photograph & Photograph Referrence Number

Key

Viewer Exposure/Scenic Class

The codes shown here are explained in section 24.5 Methods





Miles
0 0.5 1 2 3 4

Kilometers
0 1.25 2.5 5 7.5 10

N

Scale 1:175,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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Version: 6	**Author: LDN**

1,550,000 1,600,000 1,650,000

2,150,000 2,100,000

Unit 3
Iliamna

Unit 4
Pedro Bay

Unit 5
Chigmit
Mountains

BG 1 A
1-VH

FG 1 A
1-VH

FG 1 A
1-H

MG 1 A
1-VH

MG 1 A
1-VH

FG 1 A
1-VH

1 2 3 4 5 6 7

Chekok Creek
Canyon Creek
Knutson Creek
Pile River
Knutson Mountain
Chekok
Knutson Bay
Pedro Bay
Pile Bay
Iliamna River
Iliamna Lake

24-11 24-12 24-13 24-14 24-15 24-16 24-17

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Figure 24-7
Bristol Bay Drainages Scenic Inventory, Unit 4, Pedro Bay

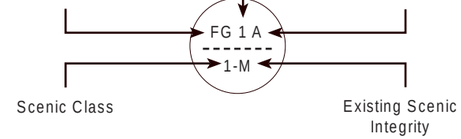
Legend

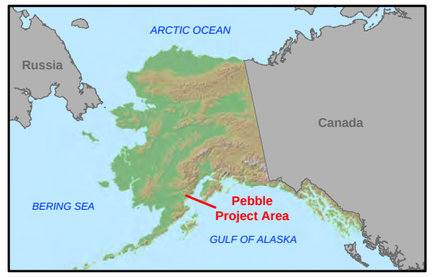
- Landscape Unit Boundary
- 1 Scenic Inventory Subunits
- Existing Roads
- 1 Direction of Photograph & Photograph Reference Number
- Seasonal Trail

Key

Viewer Exposure/Scenic Class

The codes shown here are explained in section 24.5 Methods





Miles
0 0.5 1 2 3 4

Kilometers
0 1 2 4 6 8

N

Scale 1:140,000

Alaska State Plane Zone 5 (units feet)
1983 North American Datum

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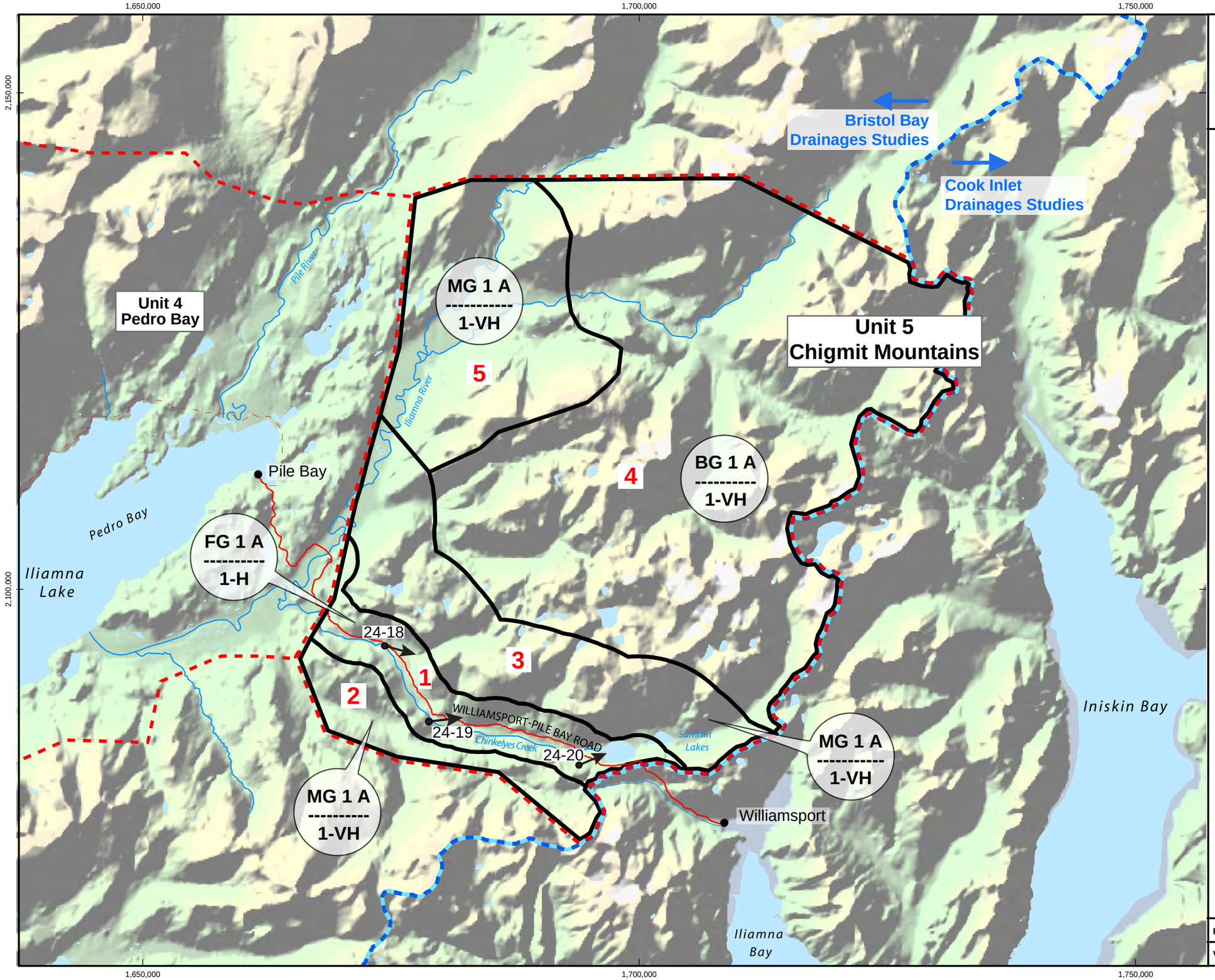

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Figure 24-8
Bristol Bay Drainages Scenic Inventory, Unit 5, Chigmit Mountains

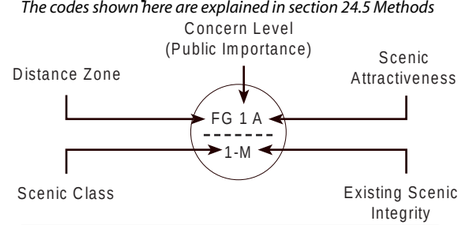
Legend

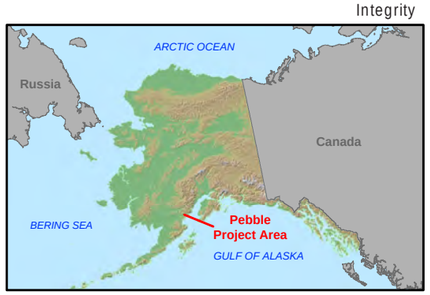
- Landscape Unit Boundary
- 1 — Scenic Inventory Subunits
- Bristol Bay / Cook Inlet Drainages Boundary
- Existing Roads
- 1 — Direction of Photograph & Photograph Reference Number

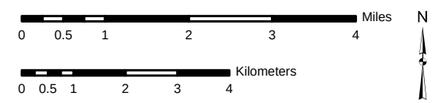
Key

Viewer Exposure/Scenic Class

The codes shown here are explained in section 24.5 Methods







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1983 North American Datum

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