

Table of Contents

Chapter One: Introduction	1
Purpose of the plan	1
Contents of the plan	2
Public involvement	2
Vision statement.....	2
Chapter Two: Background information	3
Whittier's natural setting	3
Location.....	3
Geology	3
Topography	6
Marine environment	6
Climate	6
Flora and soils.....	8
Fish and game	8
The people of Whittier	8
Population	8
Chapter Three: Infrastructure.....	11
Housing	11
Housing demand.....	14
City-owned facilities.....	14
City administration	15
City Council	15
Planning and Zoning Commission	15
Port and Harbor Commission.....	15
Municipal revenues and expenses	16
Municipal services	18
Public safety.....	18
Public Works	19
Health.....	19
Recreation.....	19
Education	20
Educational Awards	21
Other Facilities	22
Museum	22
Library	22
Nondenominational Church	23

City-Provided Utilities	23
Water.....	23
Sewer	23
Future Needs	24
Public and private utility services	24
Electric power supply	24
Telephone, Internet and cable television	25
Solid waste services	25
Natural gas.....	25
Future Needs	25
Chapter Four: Transportation.....	27
Land Transportation	27
Railroad.....	27
Roads.....	28
Road System in Whittier	31
Pedestrian/Bicycle System	35
Trails	35
Marine Transportation	36
Small Boat Harbor.....	36
Private Marina	37
Ferry System.....	37
Rail Barge Dock	37
Cruise Ship Facilities	38
Airport.....	38
Chapter Five: Current and future economy.....	39
Current economic indicators	39
Whittier Businesses	40
Recreation and tourism.....	41
Commercial fishing fleet.....	44
Marine services.....	45
Government	45
General Commercial Services	45
Future economic development opportunities	46
Economic opportunities in Whittier's core area and at the head of Passage Canal.....	46
Chapter Six: Land ownership, use and management.....	49
Land ownership	49
Federal Government.....	49

ARRC/State of Alaska.....	49
City of Whittier.....	49
Chugach Alaska Corporation.....	49
Privately owned and leased lands	49
Existing land use	52
Industrial Use	52
Residential	52
Commercial.....	52
Public	52
Open Space/Recreational Uses	52
Vacant.....	54
Future land use	54
Future land use in the Whittier core area.....	54
Future Land Use at the Head of Passage Canal	54
Future Land Use in Emerald Cove and Shotgun Cove	56
Land use regulation.....	57
Zoning Ordinance	57
Cooperative Agreements	59
Municipal Land Disposal Program	59
Land Leases.....	59
Covenants	60
Chapter Seven: Security	61
Whittier Area Maritime Security.....	61
AMHS.....	61
ARRC	62
Cruise ship facility and adjacent marina	62
Future security needs.....	62
Airport.....	62
City facilities	63
Chapter Eight: Other plans and recommendations.....	65
City of Whittier, Alaska, Local Hazards Mitigation Plan, February 2008.....	65
Sustainable Economic Development for the Prince William Sound Region, September 2005	65
Whittier Water System Master Plan, June 2005	65
Forest Service Planning Projects	65
Chugach Forest Plan	66
Prince William Sound Human Use Study	66
Whittier Creek Watershed Council, 2004	67

Alaska Railroad Master Plan for Whittier	67
State of Alaska Department of Transportation and Public Facilities.....	67
Prince Williams Sound Transportation Plan, July 2001	67
Statewide Transportation Improvement Program, STIP, FY 2010 - 2013.....	68
Whittier Airport Master Plan, 2003	68
City of Whittier Indirect Effects Planning Assistance Coordination and Implementation Planning – Final Short-term Critical Needs, 1998.....	69
City of Whittier Redevelopment and Urban Design Plan, 1994	69
Alaska Coastal Management Program, 1988	69
Chapter Nine: Community Goals, Policies and Actions	71
Transportation	72
Facilities.....	74
Municipal Government	76
Land Use	78
Recreation	80
Appearance	81
Economy	82

Figures

Figure 1: Location Map	4
Figure 2: Whittier City Limits	5
Figure 3: Community Facilities.....	12
Figure 4: Functional Classifications	32
Figure 5: Whittier area land ownership	50
Figure 6: Whittier core area land ownership	51
Figure 7: Whittier current land use.....	53
Figure 8: Future land use/zoning map	55
Figure 9: Existing zoning	58

Tables

Table 1: Average temperatures and precipitation – period of record: 10/02/1950 to 12/31/2010.....	7
Table 2: Housing data.....	11
Table 3: Number of units at each location.....	11
Table 4: Comparison of City of Whittier revenues, 2003 through 2010	17
Table 5: Comparison of City of Whittier expenses, 2003 through 2010.....	17
Table 6: Anton Anderson Memorial Tunnel Tolls, 2001 & 2011	29
Table 7: Monthly Vehicle Count, shown every two years, 2000 to 2010	30

Table 8: Whittier's Current Road Classification and Standards*	31
Table 9: 2001 Traffic Counts for Whittier	32
Table 10: Comparison of economic indicators	39
Table 11: Occupations in Whittier	40
Table 12: Employment rates	40
Table 13: Whittier businesses	41
Table 14: Zoning Acreage Comparison	57

Exhibits

Exhibit 1: 2010 Age range of Whittier residents	9
Exhibit 2: Whittier historic population	10
Exhibit 3: 2010 revenues by category	16
Exhibit 4: Monthly Vehicle Count, 2000-2010	30

Acronyms

AADT	Annual Average Daily Traffic
ADEC	Alaska Department of Environmental Conservation
ADOT&PF	Alaska Department of Transportation and Public Facilities
AMHS	Alaska Marine Highway System
ARMS	Alaska Railroad Marine Services
ARRC	Alaska Railroad Corporation
AS	Alaska Statute
BTI	Begich Towers, Incorporated
CAC	Chugach Alaska Corporation
CIRI	Cook Inlet Region, Incorporated
CMP	Coastal Management Plan
CSD	Chugach School District
CY	Calendar Year
DCED	Department of Community and Economic Development
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EPA	Environmental Protection Agency
ETT	Emergency Trauma Technician
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FTA	Federal Transit Administration
FY	Fiscal Year
GPS	Global Positioning System
GSA	General Services Administration
HB	House Bill
INTRA	International Tourism and Resort Advisors
kV	kilovolt
kW	kilowatt
MARSEC	Maritime Security
MOU	Memorandum of Understanding
NRCS	(USDA) Natural Resources Conservation Service
PAPI	Precision Approach Path Indicator
POL	Petroleum, Oil, and Lubricants
PUD	Planned Unit Development
PWS	Prince William Sound
REAA	Rural Education Attendance Area
RIC	Rural Information Center
ROD	Record of Decision
RV	Recreational Vehicle
STIP	Statewide Transportation Improvement Program
USDA	United States Department of Agriculture
USFS	United States Forest Service
USCG	United States Coast Guard
VASI	Visual Approach Slope Indicator
WAMS	Whittier Area Maritime Security

Chapter One: Introduction

Purpose of the plan

The previous Whittier Comprehensive Master Plan was completed in 2005. Since then, many changes have taken place in Whittier altering the community's infrastructure, economy and plans for the future. Some of the significant changes include:

- The hours of access through the Anton Anderson Memorial Tunnel have been extended, allowing greater access to the community.
- Plans that affect the Whittier community and vicinity were developed by the Railroad and Forest Service.
- The Watershed Council has been working to plan for all of Whittier's watersheds.
- Phases I and II of Shotgun Cove Road design are completed. Construction of the first segment of Phase I began in 2006.
- Demand for moorage in Whittier's small boat harbor increased.
- Alaska Marine Highway ferry service connects Whittier to Cordova and Valdez and other Prince William Sound communities on the Southcentral Alaska Route; while the Cross-Gulf Route connects Whittier and southcentral communities to Southeast Alaska.
- The Alaska Department of Transportation and Public Facilities may close the Whittier Airport. A new airport may be built at Emerald Cove.
- Improvements were made to cruise ship facilities and the railroad connection to Anchorage. Major cruise ships continue to dock in Whittier.
- New transmodal Alaska Marine Line (AML) Dock off-loading facilities were built.
- A marine park was developed at Smitty's Cove and at Shakespeare Creek.
- The first pre-formed artificial reef in Alaska was established in 2006, as a restoration tool for coastal waters.
- Land was designated at Shakespeare Creek to accommodate a viewing platform, fish spawning and a fishing lagoon.
- Several other infrastructure projects are in various stages of design and construction, or have been completed. These include expanded campground facilities, a marina, a large vessel dock, and additional parking.
- Planned Unit Development (PUD) is planned at the head of the bay.



Cruise Terminal and the Inn at Whittier

Because of these extensive changes, the City of Whittier recognized the need for a complete Comprehensive Plan Update to provide direction for the community's future development. Through this planning effort, the various entities within the community, including the residents, the City government, Chugach Alaska Corporation, locally active businesses and interested agencies, came together to establish common goals and strategies for their achievement.

The purpose of this plan is to update the 2005 plan by inventorying current conditions, analyzing issues and

Whittier include the convenience of living on the road system, the reasonable cost of purchasing a condominium and the low cost of living.

Purchase prices at the Begich Towers and Whittier Manor vary greatly depending upon the quality of renovations made to the unit and its location. Units in both buildings with a view of Passage Canal generally have higher resale values. Purchase prices for upscale, remodeled three-bedroom units in Begich Towers have run \$70,000 to \$75,000 in 2011. Basic one- to two-bedroom units, with original military construction have ranged in price from \$20,000 to \$30,000.⁵

Average assessed values have increased in recent years. Rental prices have also increased. Demand for rental units has increased, and it is difficult to find rental units during the summer months.

At both the Begich Towers and the Whittier Manor, condominium fees are assessed by the size of the unit. Condominium fees include all utilities, such as electricity, sewer, water and garbage.

About 25 vacant lots in the area of Whittier are presently zoned for single-family residential development. The topography of the land and high costs of providing access, sewer and water, however, discouraged homebuilding. Most of the lots are less than one-half acre. Ownership of these lots has changed very little in the last few years. In September 2011, only one lot was available for purchase.

Housing demand

Of the apartments and condominiums available for residential purposes, many are vacant in the winter. While Whittier's housing occupancy rate is high in the summer, transient workers occupy most vacant housing. Inclement weather and lack of year-round employment are factors in the high winter vacancy rate.

While the number of existing housing units in Whittier is adequate to meet the current year-round and transient needs, there is demand for single-family homes in Whittier.

High-density housing development in the core area may be the most cost-effective means of providing

housing; however, it does not seem to meet the desires of most residents.



Residents at the February 2004 Visioning Workshop illustrated their desire for single-family homes

Potential homebuyers are expected to request single-family units. Currently, the lands most suitable for development are in Subdivision Phase II along Shotgun Cove Road. Most of the lots, which are privately owned, have not been developed because utilities are not yet available in this area. As utilities are expanded following the Shotgun Cove Road project, development of the Subdivision Phase II lots should become more feasible.

The City of Whittier, Chugach Alaska Corporation and Chugach National Forest are in the process of developing a plan for subdivisions at Emerald Cove and Shotgun Cove.

With the City's receipt of management authority over 600 acres of State lands in Emerald Cove, located along the proposed Shotgun Cove Road and within Shotgun Cove, many residents are hopeful that additional single-family homes may become possible.

With additional housing at Emerald and Shotgun Coves, housing prices and property values throughout the Whittier area would likely increase to reflect the expense of development and increased demand. Property owners would see their equity increase, but property taxes would increase for homeowners, as well. Tenants would incur higher rent rates, making it difficult for lower income residents and those on fixed incomes to afford housing.

City-owned facilities

The City owns its present administrative office complex comprised of two single apartments on the first floor of Begich Towers. The City Council, and the Port and Harbor Commission meet in the City Council Chambers in Building P-12 which also houses the City

⁵ Personal conversation with Sam Gimelli, Keller Williams Realty, who handles realty in Whittier, September 29, 2011.

every several years. Sewer lines in the harbor area were installed in 1988 and sewer mains in the core area were upgraded in 1999. Additional piping was constructed around the small boat harbor in 2003 and 2004.

Future Needs

The 2004 *Whittier Water System Master Plan* states that a water main extension on Whittier Street from Dojer's Shop to the railroad crossing at Whittier Creek is needed to complete a water main loop for the western area of the Small Boat Harbor. This will ensure that there is adequate capacity for fire protection for the Small Boat Harbor as well as for cruise ship use.

The Water System Plan recommended relocation of the water wells to open up additional developable land in the core area and to move the water source away from the industrial area. This remains a need.⁸

Residential, commercial and other infrastructure development at Shotgun Cove will require a municipal water supply and distribution system for general use and fire protection. Wastewater collection, treatment and disposal alternatives will need to be explored and a system implemented. Shotgun Cove systems may support development between the Whittier core area and Shotgun Cove, although the final configuration of systems has yet to be determined. A utility trench has been blasted along the portion of Shotgun Cove Road that has been constructed to facilitate future utilities installation.

Utilities infrastructure including water and wastewater systems are needed for development at Head of Passage Canal, as well. These systems would support commercial and industrial development in Whittier.

The existing sewer treatment system in the core area is sized for a permanent (wintertime) population of 1,150 residents, and a summer visitor population of 2,430 people, for a total of 3,580 people. When Whittier's core area population starts to approach these population figures, the City's sewer treatment program will need to be reevaluated.

⁸ Phone conversation with CRW engineer, Pete Bellezza, September 21, 2011.

Public and private utility services

Electric power supply

Chugach Electric Association, Inc., a member-owned electric cooperative, supplies electric power to the City of Whittier. Serving Anchorage as well as all of the communities along the Turnagain Arm, Chugach is the largest electrical cooperative in Alaska. Chugach generates power to serve its members and wholesale customers from hydroelectric and gas turbine sources located in Southcentral Alaska.

Chugach supplies electric power to Whittier via a single 25 kilovolt (kV), three-phase power line extending from its Portage Substation approximately 11 miles to city's core 'triangle' area. The Chugach 25 kV distribution system serving Whittier can accommodate a peak electric demand of approximately 10,000 kilowatts (kW). From the Portage Substation, the 25 kV power line extends overhead to the entrance of the Anton Anderson tunnel, where it transitions to an underground circuit extending into the city. Currently, the typical peak annual electric demand of the City is between 1,000 and 1,500 kW.

The City owns several emergency backup generator units due to the remote location of the community and a 200,000-gallon bulk fuel storage facility is under construction in the core area. The portable units can supply a total of 850 kW of reserve power. Most building complexes, as well as the harbor, have their own back-up units. A few buildings, however, are not covered by emergency electrical power. The City accommodates these shortfalls by rotating power during an emergency.

Depending on the scope of community infrastructure and commercial developments, the electric supply system serving Whittier may require improvements and upgrades. Harbor expansion projects, Alaska Marine Highway ferry dock upgrades, access improvement projects (i.e., railways, roadways), potential commercial and residential developments in the Emerald Bay/Shotgun Cove vicinity, as well as community infrastructure projects such as community centers, schools, and recreational facilities may require improvements to the electric system.

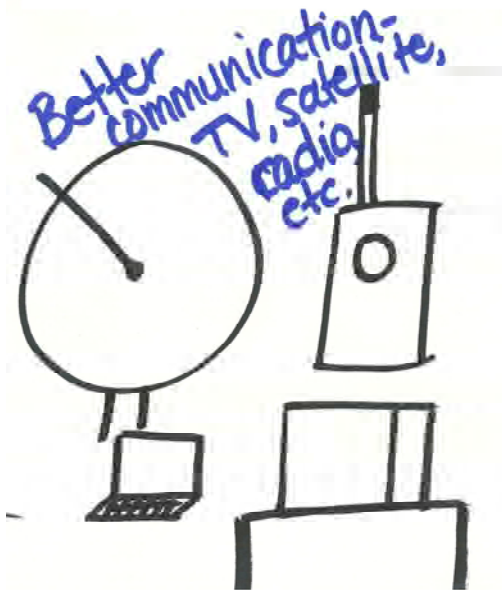
The cost of improvements or upgrades to the main Chugach Electric supply system serving the City would be borne by the entire Cooperative, therefore lessening the local economic impact. Electrical line

extensions to commercial and residential developments would be in accordance with Chugach electrical service tariffs as filed with the Regulatory Commission of Alaska. Improvements to the main electrical system required to serve major industrial customers may require a special contract with the utility.

Telephone, Internet and cable television

Services provided by Yukon Telephone and their affiliated company, Supervision Cable TV, include telephone service, Internet service and cable television.

The Whittier telephone exchange is owned by the Yukon Telephone Company. Yukon Telephone continues to modernize its equipment for the communities it serves. There are approximately 580 local phone connections in use in Whittier. For long distance calls, the exchange uses 16 long distance fiber-optic trunks routed through the small tunnel. All telephone cables within the City are located underground.



Modern communication systems are important to Whittier residents

There are currently about 260 Internet subscribers in Whittier. Begich Towers Incorporated (BTI) has a contract with Supervision Cable for services within Begich Towers and then subcontracts with Begich Towers residents. Cable television service, offering a variety of channels is available throughout the community, as well. Yukon Telephone/Supervision

receives the signal via satellite dishes and provides service through cable to subscribers.

Solid waste services

Since early 1994, the City has contracted with Waste Management of Alaska (formerly Peninsula Sanitation, Inc.) to haul refuse from Whittier to the Anchorage Landfill. Trash is deposited in dumpsters located at the harbor office, harbor east ramp, harbor store and Building P-12. During the winter season, most of these are emptied by Waste Management once every two weeks on Friday. Some are emptied on an on-call basis as needed. Beginning May 1, a summer schedule is implemented with more frequent pick-ups to accommodate the higher use rate associated with the season. Additional dumpsters are located in other areas of the community but are not a part of the City's contract with Waste Management of Alaska.

Whittier's location, regional geology, and limited land base make it difficult to envision how the community might develop a landfill that would meet state and federal requirements. As a result, the City will continue to transport solid waste to Anchorage for the foreseeable future. Future growth will result in additional solid waste generated in the community, presumably expanding the services needed from the private solid waste contractor.

Natural gas

Enstar Natural Gas Company provides natural gas to Whittier. The petroleum, oil and lubricants (POL) line that formerly transported fuel from the Department of Defense tank farm in Whittier to Anchorage along Turnagain Arm was refitted in 1997 by Enstar to make available natural gas service to the communities of Whittier, Indian, Bird Creek and Girdwood. Rates for natural gas in Whittier are similar to Anchorage rates, which compare favorably with the rest of the country.

Future Needs

Current plans for Shotgun Cove Road include a buried utility duct through which electric, telephone, and possibly cable TV wires could be run. Coordination is underway with Enstar to determine funding, placement, and other factors relating to the placement of a gas line during road development. The gas line must be at least five feet from the electrical utility lines.

Plans, at this time, call for Whittier city water to be piped to Shotgun Cove. Sewer service would only be extended as far as Cove Creek and the currently platted residential lots. These plans are still under development and are subject to change.

Road System in Whittier

Roads are generally categorized into functional classes. Functional classification is the grouping of roads, streets, and highways into integrated systems, ranked by relative importance and function served, relative to mobility and land access.

It also identifies the role each street or highway should play in channeling the flow of traffic in a logical and efficient manner. The general functional classification categories identified in Whittier's municipal code are Major, Collector and Local Roads, and Alleys. These are defined in Table 8.

The classification system designated in the municipal code does not consider traffic volumes but primarily relies on roadway width and definition. The definitions of Major and Collector Streets are very similar with the width being the primary distinction. Using width as the deciding factor, most roads would fall into the local street category. The Annual Average Daily Traffic (AADT) figures collected in 2001 (shown in Table 9) offer additional data to aid the City of Whittier in classifying its roads.

The Whittier Public Safety Director reports that the boat ramp and Triangle Road areas have the highest accident rates in Whittier.



A train enters Whittier from the Anton Anderson Memorial Tunnel as outbound vehicles wait their turns

The following inventory of Whittier roads indicates their classification based on AADT and function within the community. These roads are shown in Figure 4: Functional Classifications on the following page.

Table 8: Whittier's Current Road Classification and Standards*

Classification	Description	Right-of-Way	Surface Width
Major Roads	A street designed to move traffic between major traffic generators in the city.	60 feet	40 feet
Collectors	A street designed to move traffic from local streets to major streets	50 feet	30 feet
Local Streets	A street designated to provide traffic access to individual abutting properties	40 feet	25 feet
Alleys	A public right-of-way shown on a plat that provides secondary access to a lot, block or parcel of land	20 feet	20 feet
Driveways	City code currently being written.		

**As designated in the City of Whittier's Municipal Code*

Figure 4: Functional Classifications

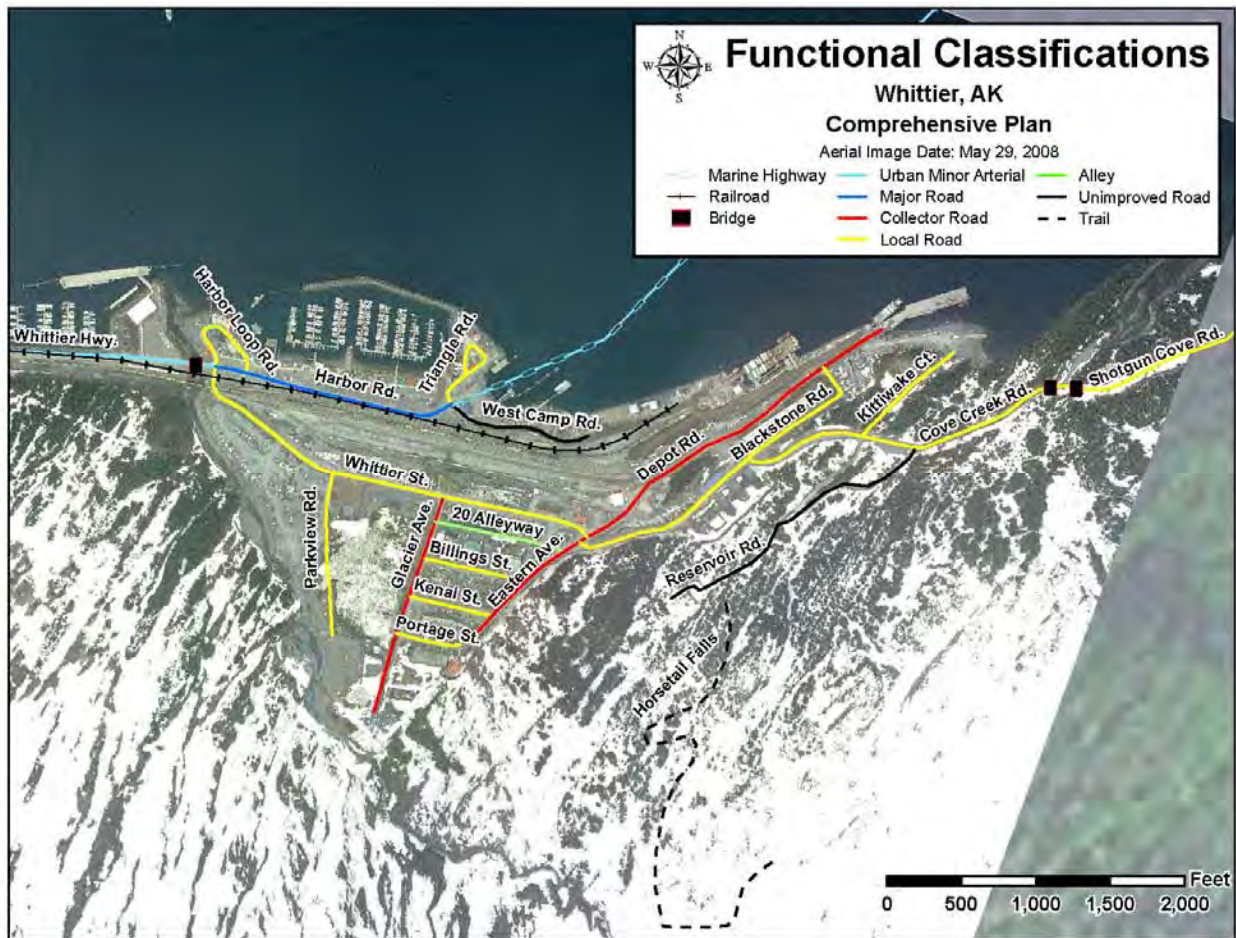


Table 9: 2001 Traffic Counts for Whittier

Road Name	Average Daily Traffic		Annual Average Daily Traffic
	May Hi/low	July Hi/low ADT	
West Camp Road	1539/587	2139/1312	1500
Whittier Street	2879/1040	2405/1361	1800
Glacier Avenue	826/469	1252/822	600
Blackstone Road	297/160	433/304	200
Depot Road	458/305	638/305	400
Cove Creek Road	88/25	196/45	50

Source: phone conversation with ADOT Central Region Planner, Joselyn Biloan, and Whittier Transportation Plan, 2001.

Major Roads

Two roads in Whittier qualify as major roads.

West Camp Road



West Camp Road leading into Whittier

West Camp Road is a major road providing access from the ferry terminal to the Anton Anderson Memorial Tunnel and the Seward Highway. Due to its significance as an access point between the Alaska Marine Highway and the Seward Highway this road is included on the National Highway System. West Camp Road also provides access to cruise ship facilities, permit parking, public harbor, railroad facilities, marine tour facilities, coast guard auxiliary station, harbor office, used oil collection facility, a variety of businesses and fee off-street parking.

Whittier Street

Whittier Street runs between West Camp Road and Eastern Avenue. Whittier Street provides important access to Begich Towers, fee parking, rail industrial area, Shoreside Petroleum tank farm and storage, boat storage, public works/city council chambers building, fish processing plant, fire department, Anchor Inn, grocery, restaurant, and the pedestrian tunnel to the waterfront. The pedestrian and bicycle amenities on this road are minimal and should be improved to meet existing need. Currently, there are only a few scattered sidewalks offering little protection from the high amount of vehicular traffic.

Collector Roads

Three roads in Whittier qualify as collector roads.

Glacier Avenue

Glacier Avenue runs from Whittier Street, past Portage Street to the new Whittier Creek levee. It provides access to Begich Towers, the school, camping/RV hook-ups, Whittier Falls, storage units, public works facility, and municipal property. Its condition is fair to poor with potholes and cracking throughout. There is erosion damage to the land on the west side of Glacier Avenue.

Eastern Avenue

Eastern Avenues lies between Portage and Whittier Streets. It provides access to the school, Begich Towers, the Kayak Place, and Anchor Inn. This paved road is in excellent condition. There is four-foot sidewalk with a curb and gutter on the west side that is in fair condition.

Depot Road

Depot Road is located between Hill and Whittier Streets, Blackstone Road, and the Eastern Avenue intersection. It provides access to the barge dock, long-term parking, bar and pizza place, and Anchor Inn. The condition of the road is good. There is a small section of road in extreme disrepair northeast of Hill Street. Depot Road lacks pedestrian facilities.

Local Roads

The majority of roads in Whittier qualify as local.

Blackstone Road

Blackstone Road runs between Eastern Avenue and Hill Street. Blackstone Road passes the Buckner Building and provides access to the Alaska West building, Smitty's Cove, and Whittier Manor. The road is in fair condition with some cracking and potholes throughout. There are a curb and gutter and four feet of sidewalk on the east side ending at the Buckner Building. The sidewalk is in very poor condition. An erosion ditch begins where the sidewalk ends.

Shotgun Cove Road

In 2011, construction was completed on Phase II of Shotgun Cove Road. Along with Phase I, which was completed in 2009, over half of an approximately 2-mile road extending from Blackstone Road to the Emerald Bay Trailhead has been built and is providing benefits to the community.

Shotgun Cove Road provides access to existing public recreational areas used by both residents and visitors to Whittier. A scenic pull-off has already been built, and a picnic area and kayak launch are part of the Phase IV design. This is an important recreational access road and it is critical that it meet current safety standards.

Hill Street

Hill Street is located between Blackstone Road and Depot Road. Hill Street provides access to Whittier Manor and the Alaska West building. The road is in generally poor condition due to narrowness, potholes, and poor visibility. There is an erosion ditch on the north side of the road.

Parkview Road

Parkview Road runs south from Whittier Street. It provides access to undeveloped municipal and private lands, the municipal park, floodplain, and a private camping park. The road is in poor condition.

Triangle Road

Triangle Road is named for its distinctive shape. It runs one way and borders the Small Boat Harbor off West Camp Road. Triangle Road is the commercial hub of the community; accessing on-street parking, the harbor, Mariners' Memorial, dock, kayak rentals, eating establishments, public restrooms, and gift shops. Triangle Road is in excellent condition. It is paved and has wide sidewalks, curbs and gutters.

Billings Street

Billings Street lies between Glacier Avenue and Eastern Avenue. It provides access to 72-hour parallel parking on the south side, off-street parking and storage, the Kayak Center, marine facilities, boat storage, and storage units. The road condition is good with minimal cracking and potholes. It has a curb and gutter and four-foot sidewalks in poor condition on both sides of the street.

Kenai Street

Kenai Street runs between Glacier and Eastern Avenues. It provides access to diagonal parking, 72-hour parallel parking, Begich Towers, which houses the majority of Whittier residents and office space, and the reindeer house. The road condition is fair to poor with numerous cracks and potholes. The drainage is poor with evidence of ponding. There is a crumbling gutter and a four-foot sidewalk on the north side of the

road. There is a curb and gutter and a four-foot sidewalk in fair condition abutting Begich Towers.

Portage Street

Portage Street is located between Glacier and Eastern Avenues. It provides access to the school and Begich Towers. The road's condition is fair with some cracks and potholes. Although this road provides access to the school, there is no bike path or sidewalk abutting the school; however, a crosswalk has been striped for safer crossing. There is also an under-street crossing connecting Begich Towers and the school. There are a curb and gutter and a four-foot sidewalk on the Begich Tower side of the street.

Harbor Loop Road

Harbor Loop Road branches off West Camp Road. It provides access to an inn and restaurant, a coffee shop, satellite dishes, parallel parking, Shoreside Petroleum, and a boarding dock. Its condition is good, with rolled curbs and six-foot sidewalks. Additional facilities for day cruise vessels and private boats, and recreational vehicles within the vicinity and on the west side of Harbor Loop Road are planned. Improvements were made to Harbor Loop Road in summer 2004.

Kittiwake Court

Kittiwake Court branches off Cove Creek Road. It provides access to Smitty's Cove, and undeveloped lots. The gravel road is in poor condition with a steep slope leading to the water. There are no pedestrian facilities.

Cove Creek Road

Cove Creek Road is classified as a local road and is constructed of gravel. It provides access to the Salmon Run picnic area, a few residential sites, Emerald Cove Trail, and Horsetail Falls Trail, which are tourist destinations. Along this road are two new bridges

O'Neil Road

O'Neil Road starts at West Camp Road. It accesses old World War II bunkers, private land, and the access road to the Portage trailhead. The road is in fair condition.

Tank Farm Road

Tank Farm Road runs between West Camp Road and the harbor. It accesses the Department of Defense tank farm, truck fill stand, mainline pumphouse, combination building, , fire pumphouse, and the

harbor. The end of the road opens to a large paved area that offers an excellent view of Passage Canal, City of Whittier, mountains, and glaciers.

Alleys

Alleyway

The Alleyway is located between Eastern and Glacier Avenues. It accesses buildings and a parking lot that abut the south side of Whittier Street, and the buildings along the north side of Billings Street. The alley is narrow and in poor condition. This is the only road in Whittier that meets the criteria for an alley.

Planned Roads

Shotgun Cove Road extension

Construction on Phase IV of this project is anticipated to begin in 2013, and upon completion, will help the City of Whittier to meet its goals of:

- Improving the safety and efficiency of the Whittier road system;
- Providing new and/or enhance existing recreational opportunities in and around Whittier; and
- Assisting in the economic development of the community.

Shotgun Cove Road provides access to existing public recreational areas used by both residents and visitors to Whittier. A scenic pull-off has already been built, and a picnic area and kayak launch are part of the Phase IV design. This is an important recreational access road and it is critical that it meet current safety standards.

Pedestrian/Bicycle System

The military installed sidewalks with rolled curbs in the core area and sidewalks were added throughout the harbor and Triangle areas in 2004; in other areas of Whittier people walk in the street. In the summer, a fence prohibits pedestrians from walking across the railroad tracks in compliance with Homeland Security regulations. A pedestrian pathway under the railroad yard provides a vital connection from the harbor area to the core area and main residential area. The pedestrian underpass, constructed by ARRC was completed in June 2002, and is a 300-foot-long crossing beneath the rail yard, from the waterfront area to the Whittier town site. A 10-foot-diameter corrugated pipe provides the underpass frame, enclosing a concrete pathway. Covered portal ramps

at each end provide access, and covered pathways lead to the tunnel openings. The tunnel has significantly improved pedestrian safety in the rail yard area.

The Whittier Subdivision Ordinance encourages sidewalks to be constructed within right of ways; however, it lacks specificity regarding placement on the road, or their accompanying improvements such as utility boxes, street trees, or driveway aprons.

ADOT&PF installed a separated bike/walkway between West Camp Road and Passage Canal. That pathway connects to a sidewalk through the harbor area to the Triangle.

Facilities are also limited for cyclists. Except for the separated pathway and wide shoulders leading into Whittier from the tunnel, bicycle facilities are minimal. It is important to preserve pathway corridors and consider wide shoulders for cyclists on all major and collector routes.

Trails

There are three major trails in Whittier: the Portage Pass Trail, the Horsetail Falls Trail, and the Emerald Cove Trail. A project is underway in 2011 to rehabilitate and improve these trails to increase user safety and to make them more accessible to hikers of various abilities.

Portage Pass Trail

The Portage Pass trailhead is on the south side of the West Camp Road across from the tank farm. The trail is steep, but still possible for even the novice hiker. The trail used to be an old mining road and can be dusty during the summer months. Due to the elevation gain, snow can persist into late spring or early summer.

The Portage Pass trail offers views of Passage Canal, the surrounding mountains, and glaciers. A good picnic site is available near Divide Lake about midway along the trail, which leads to Portage Glacier. The trail begins in low shrubs and trees and extends above the timberline.

The majority of the trail is in Chugach National Forest, and is maintained by the U.S. Forest Service (USFS) except for a parcel of land at the beginning of the trail that is privately owned. The USFS does not have a formal trailhead because the trailhead is on private property. The Forest Service is trying to obtain these unused parcels for a trailhead and parking. There are other issues with private and ARRC ownership in

resource development such as the natural gas pipeline occurs.

Great Pacific Seafood uses the ARRC dock to unload their fishing vessels.

Cruise Ship Facilities

Cruise ships currently stop several times a week at a new, floating dock and embarkation building, from May-September. The dock and building are owned by Whittier Dock Enterprises LLC. The dock and 20,000 square foot building can accommodate a single cruise ship visit each day.

Unlike a port of call, this dock provides the "turnaround" visit for these massive ships, which range up to 950 feet and 90,000 tons. They call at Whittier due to its proximity to Anchorage and tourism venues throughout Southcentral Alaska. The Alaska Railroad also provides a convenient rail terminal across the street, just steps from the cruise ship.¹⁴

ARRC constructed a special rail spur to accommodate transportation on cruise ship passengers arriving and departing from Whittier.

Passage Canal Development reports that approximately 20 Whittier residents are employed at the cruise ship facility, many as longshoremen.

Airport

Whittier Airport is located approximately one mile northwest of the Whittier core area near the Head of Passage Canal. The land is leased from the Department of Defense, which, in August 2004, began negotiations with the ARRC for an extension of the lease to move its expiration to November 2008.

The airport is a non-towered general aviation facility with one gravel 1,480-foot by 58-foot runway, which is in fair condition. The airport property plan includes a gravel apron and taxiway in addition to the runway. The airport is not maintained in the winter. There is no scheduled air service between Whittier and other locations. Travel by air is restricted by frequent adverse weather conditions. The airport functions as a landing strip for small aircraft traveling westward through Prince William Sound that, due to weather or other problems, are unable to cross the Chugach Mountains at Portage Pass. Floatplanes also infrequently land in Passage Canal.

The runway was once 500 feet longer but it was damaged by the 1964 earthquake. The runway is geographically constrained by mountainous terrain, tidal water, and by the only access road into Whittier. There is no lighting system, navigational aids, or fuel available at the airport and there are no based aircraft there.

The ADOT&PF completed a reconnaissance study that identified potential new locations for an airport in 2003. This report compared various future scenarios for the airport including closure of the current airport and airport relocation to one of eight considered sites. Closure of the airport without relocation would eliminate a landing place for wheeled aircraft in western Prince William Sound.

Potential relocation sites along Passage Canal that were considered included Billings Creek, Poe Bay, Logging Camp Bay, Pigot Bay, Point Pigot, Emerald Bay, Shotgun Cove and Tebenkof Bay. The Emerald Bay location was favored in that study for several reasons. It is located only 3.5 miles from Whittier in the direction that will be accessed by Shotgun Cove Road, currently under development. The Emerald Bay site has a relatively low percentage of Part 77 penetrations compared to the other sites considered and has two potential approach surfaces. It would have visual contact with Portage Pass and radio contact with Whittier.¹⁵

The Whittier City Council has passed a resolution in support of a joint endeavor with the ADOT&PF to pursue the Emerald Bay relocation alternative as its first choice, though not eliminating the other alternatives from consideration. This partnership between the State and the local community would entail the development of a more full-service facility with accommodations for wheeled and floatplane operations. They envision an economically self-sustaining facility with services such as transient parking, fueling, and possibly maintenance available. A facility such as this could serve as a base for flight-seeing tours and other visitor services and is a key element in Whittier's plans for economic development.

¹⁴ <http://www.whittiermarina.com/cruisedock/cruisedock.htm>

¹⁵ *Whittier Airport Master Plan Project Reports, Briefing Paper, Technical Memorandum 1 Conditions and Needs Assessment, Technical Memorandum 2 Alternatives Development and Analysis*, Prepared for Alaska Department of Transportation and Public Facilities, August 2003

There are two condominium associations in Whittier. The Begich Towers, Inc. (BTI) is operated by the Begich Towers Homeowners Association, a non-profit corporation. BTI employs maintenance staff for the upkeep of Begich Towers. The Whittier Manor Association manages the Whittier Manor. Its employees include a maintenance worker and a part-time manager.

Future economic development opportunities

While many look forward to the possibility of community expansion in, and along the proposed road toward, Shotgun Cove or other areas for economic development opportunities, there is also economic potential nearby and readily accessible in the core area, including the existing Small Boat Harbor and at the head of Passage Canal. Development in and around the core area and at the head of Passage Canal could successfully focus on Whittier's more immediate needs, while Shotgun Cove development could respond to Whittier's long-term possibilities as a residential community and tourist destination.

Many development possibilities were discussed during the public involvement process, with the Whittier Planning and Zoning Commission, the Whittier Planning Task Force, and the Shotgun Cove Development Team. Additional economic development opportunities could be explored through the development of a Community Economic Development Strategy (CEDS). Information on CEDS funding is available from the State of Alaska, Department of Commerce at www.commerce.state.ak.us/dca.

The following economic development suggestions are a synthesis of the ideas generated by these groups.

Economic opportunities in Whittier's core area and at the head of Passage Canal

The heart of Whittier is the core area where economic opportunities include the following:

Capitalize on the economic potential of increased tourism.

As shown throughout this chapter, tourism is on the rise and Whittier is uniquely positioned to benefit from this trend. Plan participants stated that when visitors come to Whittier, they should feel welcome and should be made aware of all that Whittier has to offer.

One way to welcome visitors is through an information center. There tourists can learn about Whittier's history, its businesses, and its local attractions. Maps of hiking trails and brochures advertising local eateries, recreational opportunities, and stores should be available. Improved signage could be utilized to direct visitors to areas of interest. The friendly attitude of local residents and business operators will help to make a visit to Whittier pleasurable and will encourage people to return.

As more visitors come to Whittier, demand would be created for additional visitor services. Cruise ship passengers, in town for only a limited time, would want planned tours to such destinations as the Black-footed Kittiwake rookery, the hatchery, or museum. Guided or self-guided walking tours of the town could be planned and hikes or kayak excursions could be facilitated. Additional tourists could support additional retail stores, local art sales, and additional eateries. Other possible businesses to serve tourists could include various forms of shuttle service around town or to the Begich-Boggs Visitor Center in Portage.

Research strategies for attracting new commercial development.

The City should encourage the private sector to develop businesses in Whittier. The process should be made as straightforward as possible, with requirements made clear and easy to access.

The state and federal government frequently has funding available for economic development, which should be pursued. The Rural Information Center (RIC), a joint project of the USDA Cooperative State Research, Education & Extension Service and the National Agricultural Library, is one source for information. Topics include:

- Successful strategies, models, and case studies of community development projects
- Small business attraction, retention, and expansion
- Tourism promotion and development

The RIC can be accessed at <http://www.nal.usda.gov/ric/>. This website also

includes a database of federal funding sources for rural areas.²³

The tank farm and airport lie at the head of Passage Canal.

Port of Whittier Harbor Development Project

The Port of Whittier Harbor Development Project is a regional harbor enhancement initiative that will address immediate and future commercial and recreational boating needs, boost economic development, and serve as a catalyst for transportation infrastructure improvements. The project will involve improvement of the existing Small Boat Harbor and construction of a new boat harbor at the head of Passage Canal.

It is anticipated that the project will be constructed in phases:

- Phase I – Existing Small Boat Harbor
Reconfigure and replace aging float system. Slope stabilization has been added.
- Phase II – Head of Passage Canal
Construct new, additional boat harbor.
- East boat ramp reconstruction has been completed.

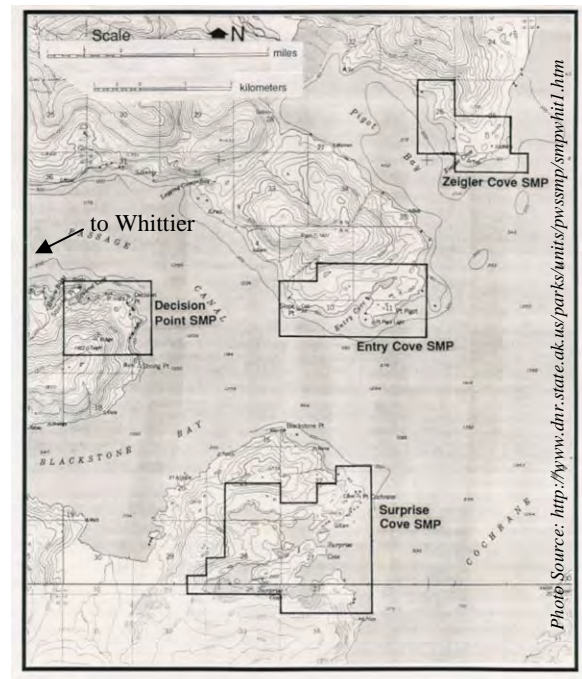
Economic opportunities at and toward Shotgun Cove

The City has been deeded 600 acres of land by the State of Alaska. The new townsite would provide a more attractive setting for visitors and would provide recreational opportunities for them. In return, this would create more employment opportunities in the community

The residents of Whittier would be the major beneficiaries if Shotgun Cove is developed into a new townsite and a center for recreational activity in Prince William Sound. At present, most Whittier residents live in the Begich Towers, Whittier Manor, or the Anchor Annex. The absence of other housing stock is an issue for many residents and discourages some people from living in the community. Development of Shotgun Cove would provide a variety of housing stock and provide more long-term, sustainable jobs in Whittier for local residents. The City's tax base would

increase and, with this additional revenue, the City would be able to improve its delivery of public services to residents. Greater numbers of visitors would also result in more businesses in the community and a wider variety of goods and services that would be available for local residents. This would include more restaurants, retail outlets, and various services.

Residents of Anchorage and other visitors to Whittier will also benefit from development of Shotgun Cove. At present, the waiting list for moorage at the Small Boat Harbor includes over 400 vessels. For vessels of certain sizes, the wait for a slip could exceed 15 years. A marina at Shotgun Cove would reduce the waiting time.



Four State Marine Parks closest to Whittier

In addition to marine-oriented activities, other recreational activities would be available for Whittier residents and visitors alike. Decision Point State Marine Park, located about two miles beyond Shotgun Cove on the point between Passage Canal and Blackstone Bay, would continue to be accessible from the water but additional trail access could be developed from the Shotgun Cove area. Increased visitors to Whittier and Prince William Sound would result in increased revenue for service providers.

Usage of the Anton Anderson Memorial Tunnel would increase, as well, resulting in higher toll revenues. With additional rail service for cruise ship passengers

²³ Contact information for the Rural Information Center: 10301 Baltimore Avenue, Room 304, Beltsville, MD 20705-2351. Phone: 1-800-633-7701. Fax (301)504-5181.

and an expected increase in vehicular traffic due to Shotgun Cove development, tunnel hours and schedules will require careful examination.

The private sector members of the Shotgun Cove Development Team will also benefit if Shotgun Cove is developed. As established in a memorandum of understanding (MOU), all contracting for professional services associated with development of City lands will be with the private sector members of the Development Team. In return for their contributions and the risk associated with developing the project, the private sector members of the Development Team will participate in the income generated from the development of Shotgun Cove and subsequent land sales and other income-generating activity.

It is essential that the remaining phases of Shotgun Cove Road be completed to fulfill the development potential this land holds for Whittier. Because of the limited land available in the core area, development of Shotgun Cove is critical to further growth for the City of Whittier.

Chapter Six: Land ownership, use and management

In this chapter, land ownership, present land use, future land use, land use regulation and land management are described.

Land ownership

Approximately 17 square miles, or almost 11,000 acres, exist within the Whittier municipal boundaries. Glaciers or water account for approximately 20 percent of that amount, leaving a total land area of less than 8,000 acres. Some of this land has grades in excess of 33 percent and therefore cannot be easily developed due to its steepness. Land ownership includes the Alaska Railroad Corporation, Federal Government, State of Alaska, City of Whittier, Chugach Alaska Corporation and privately owned and leased lands. See Figure 5: Whittier area land ownership and Figure 6: Whittier core area land ownership.

Federal Government

The federal government, once the sole landowner in Whittier, currently owns approximately 3,651 acres of lands that include acreage in the Chugach National Forest (especially at Trinity Point), the dock along the eastern waterfront in the town core area and lands at the tank farm at the Head of Passage Canal.

ARRC/State of Alaska

The State of Alaska, currently the largest landowner in Whittier, owns approximately 2,776 acres in Whittier acquired through a 1983 National Forest Community Grant Selection. State property includes land along the coastline of Passage Canal and in the Shotgun Cove area. The State received additional lands, most of which are in the Whittier core area, when it assumed ownership of the Alaska Railroad from the Federal government in January 1985. The state owns some of the tidelands and submerged lands in Passage Canal and the state-owned ARRC owns approximately 8,000 feet of waterfront in the core area, which represents about 70 percent of the total waterfront area.

City of Whittier

The City is the second largest landowner within the City Limits. In 1984, state legislation transferred 600 acres of federal lands received by the State directly to the City. Two years later, in 1986, the City received

working title to 228 acres in the Emerald Cove Subdivision (sections 8, 9, and 17). In 1994, it also obtained similar working title to 372 acres in the Shotgun Cove area (sections 10, 11, 14, 15, 16, 21 and 22). For the City to obtain patented title to these lands, the federal government must complete patent to the State, and then the City may survey the lands for ultimate and final patent to the City. The City is required to sell lands not needed for public purposes within ten years of receiving title, or by the year 2014. The City owns approximately 1,650 feet or 15 percent of the waterfront in the core area and leases about 5,000 feet of waterfront from the ARRC.

At present, the only land the City has fee simple title to is a few small parcels in the Whittier core area. The City purchased these lands through the General Services Administration (GSA) when the U.S. Army ended its Whittier operations and sold its property.

Chugach Alaska Corporation

The Chugach Alaska Corporation is the third largest landowner in Whittier with a 315-acre parcel in section 18, located just east of the Whittier core area, and another 100 acres in two locations near the site of the proposed Shotgun Cove harbor.

Privately owned and leased lands

There are a small number of parcels of land, less than 250 acres in all, owned by other private interests excluding Chugach Alaska Corporation. Most of these lands are in the Whittier core area and the Head of Passage Canal, with the remainder located along the beginning of the Shotgun Cove Road. About 15 percent of the waterfront is privately held.

Some Head of Passage Canal lands are owned by an Anchorage-based developer and were purchased through a GSA auction. Most other private lands were purchased from prior land sales by the City. The City plans to sell some of its lands at Shotgun Cove once the access road is complete.

At the Head of Passage Canal, the Alaska Railroad leases land to the State Department of Transportation and Public Facilities for an airstrip. The State is expected to decide soon whether to renew this lease. The Alaska Railroad also leases about 5000 feet of waterfront in the core area to the City.

Figure 5: Whittier area land ownership

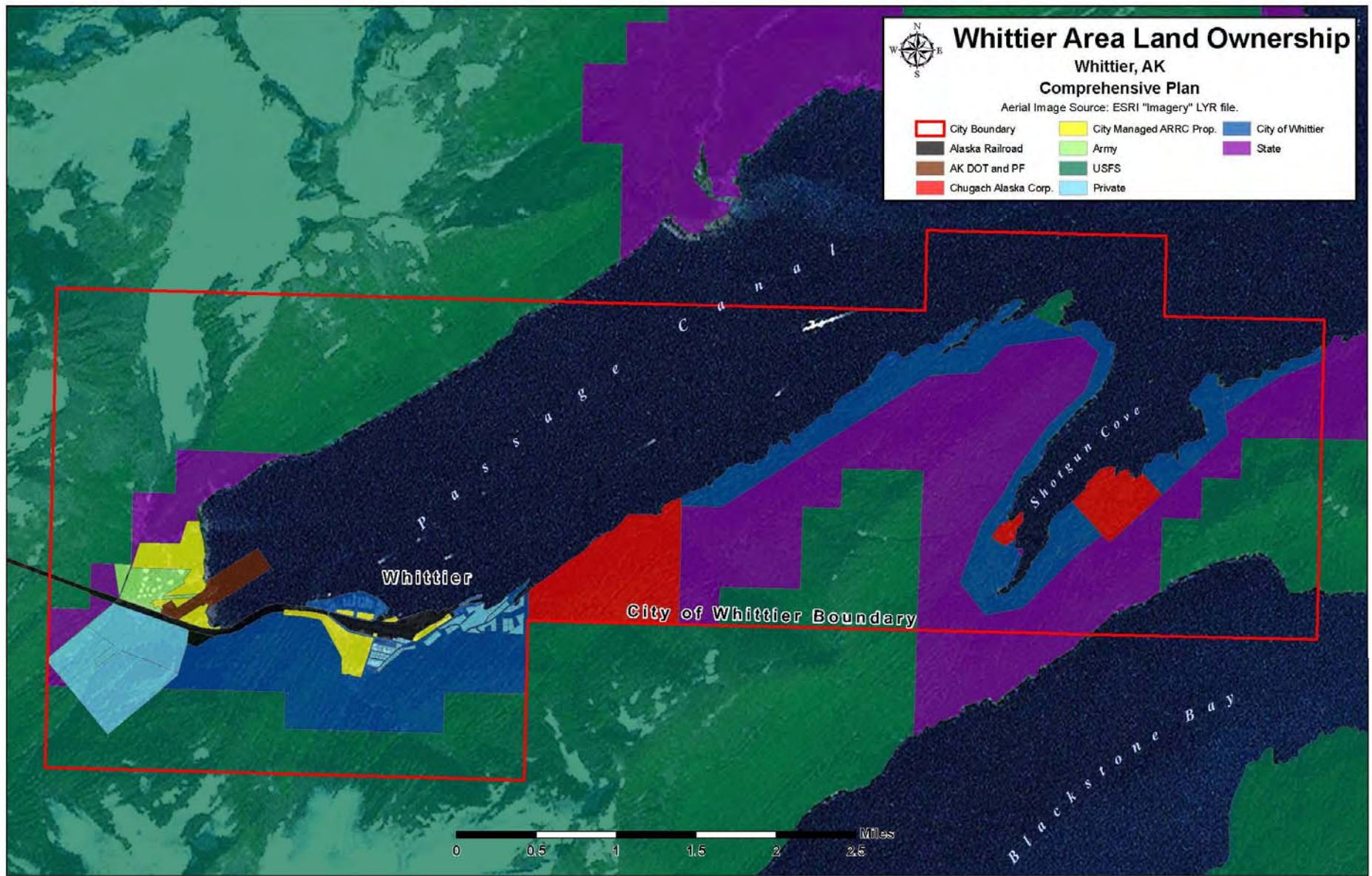
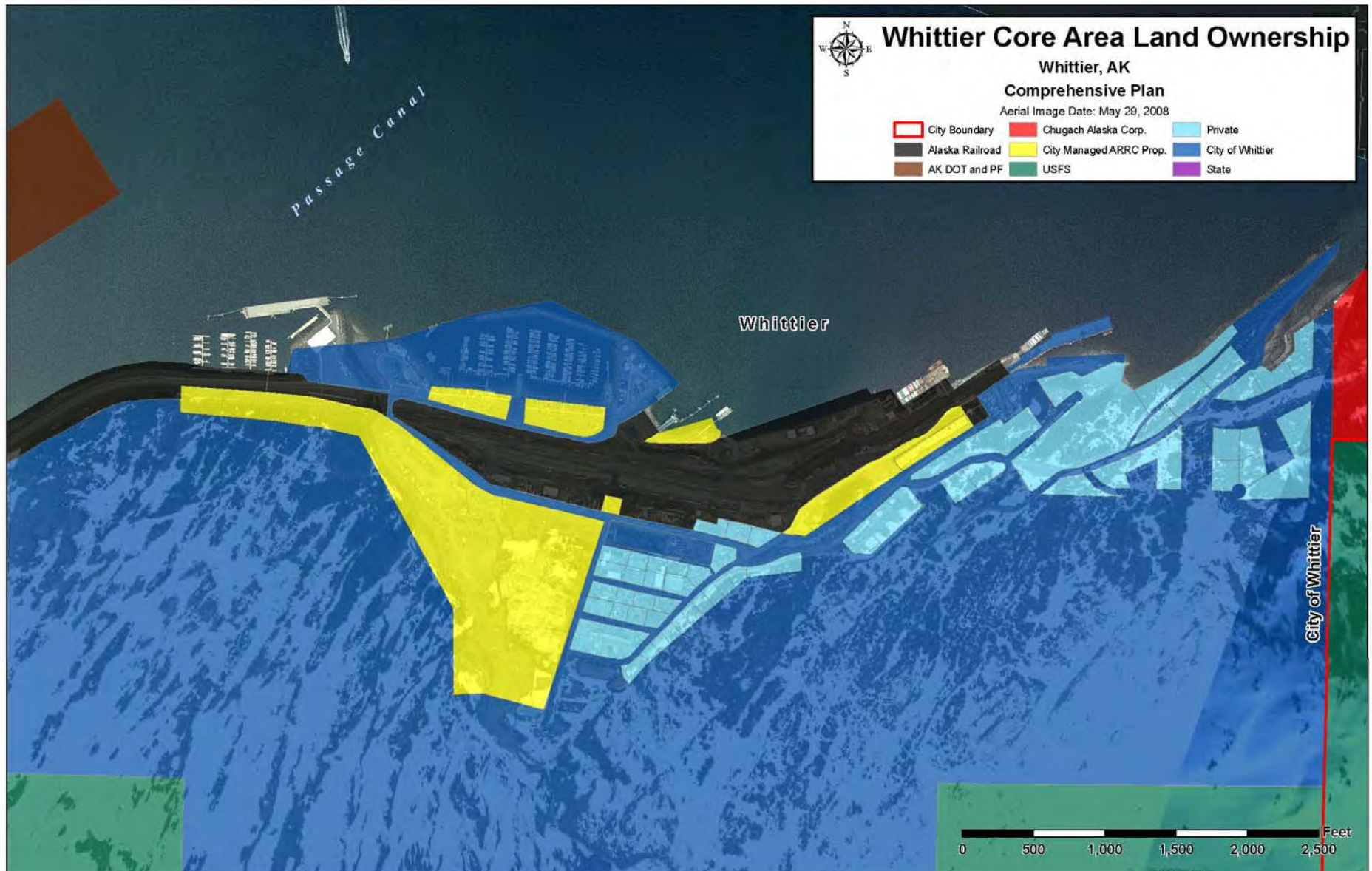


Figure 6: Whittier core area land ownership



In addition to the land leased to the City by the Alaska Railroad, the U.S. Fish and Wildlife Service leases about 38 acres at the Head of Passage Canal, adjacent to the U.S. Air Force former storage tank farm, to the City.

A parcel of approximately 6 acres, west of the school, is leased by the City to a private developer for use as a camping area.

Existing land use

The existing land uses in Whittier include industrial, commercial, public, seasonal single-family residential, multi-family residential and vacant. Park lands outside of the core area and Head of Passage Canal are vacant. See Figure 5 for a map of existing land uses within the core area.



Part of Whittier's core industrial area

Industrial Use

Approximately 58 percent of Whittier's presently developed land is used for industrial purposes. Industrial uses occur within the 212 acres of the Whittier core area or the Head of Passage Canal.

Major industrial uses include the following:

- the Alaska Railroad's industrial and passenger rail operations,
- roll-on, roll-off barge dock next to the Small Boat Harbor, and
- one seafood processing plant.

Residential

Because almost all residents live in either the Anchor Annex Apartments or the Whittier Manor or Begich Towers condominiums, the amount of land used for residential development is currently very small, about 10 acres. There are also several dwellings located on land the City subdivided and sold east side of the core area during its first years of incorporation.

Commercial

Whittier's commercial businesses are located in the Whittier core area and the harbor triangle. There is no Central Business District and commercial uses occupy a very small amount of the total land base, less than 5 acres. Commercial businesses are also located in Begich Towers.

Whittier has several new businesses. A new 25-room, 26,000 square foot hotel, a cruise ship dock, marina, and several smaller commercial ventures are all located along the waterfront. A 5-acre privately managed parking lot has been in operation on Whittier Street since 2000.

Public

The small boat harbor is the major public facility in Whittier. The small boat harbor and its adjacent parking areas, boat and trailer storage areas and support facilities, comprise much of the existing waterfront development. The waterfront area within the core area is comprised of approximately 13,000 feet.

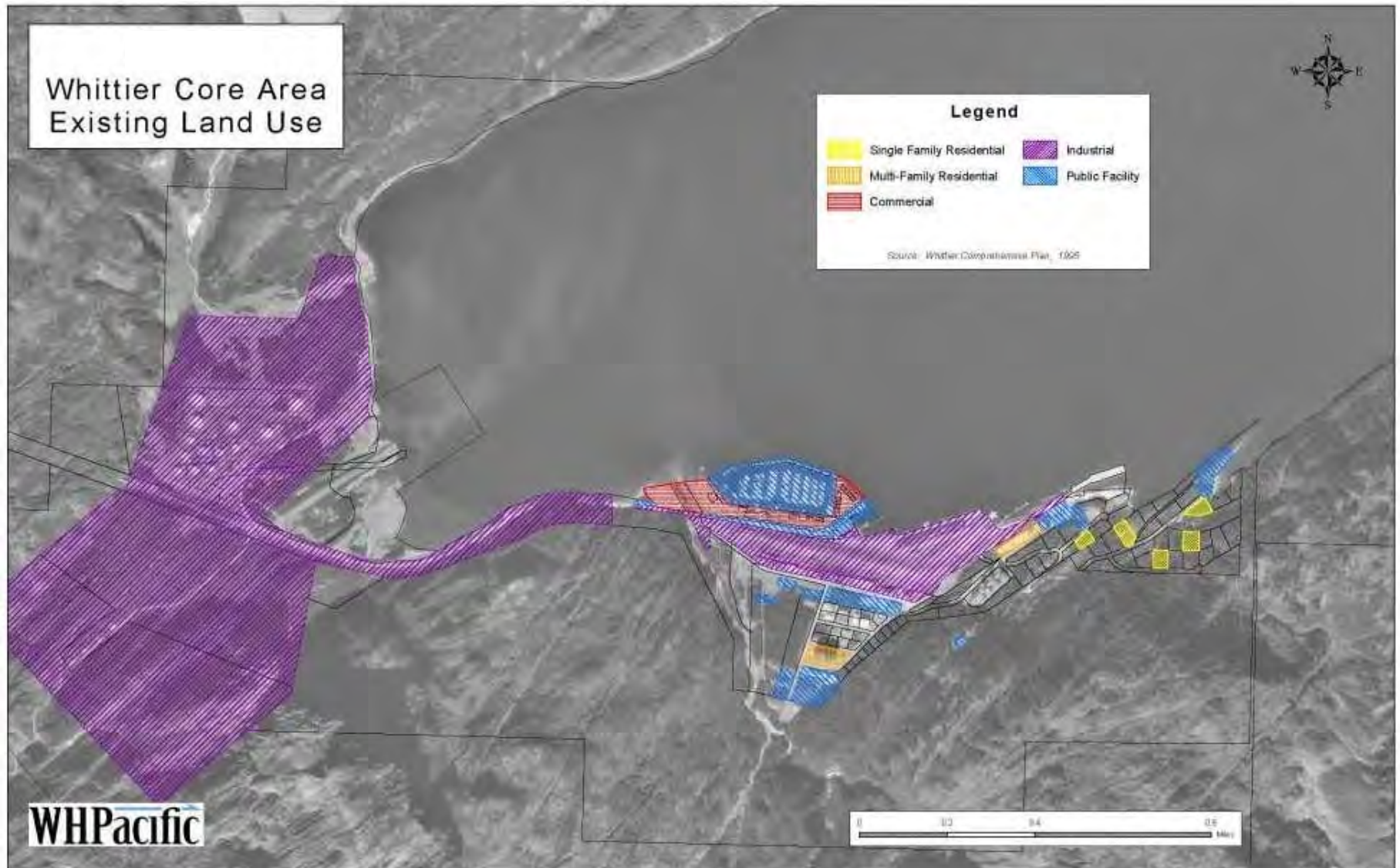
Smitty's Cove, located east of DeLong Dock, is used as a camping area, barge ramp, kayak launch and diving area. As an area with year-round water access, it is often used in diver and search and rescue certification and training.

Additional major public facilities include the school complex (about 5 acres), City offices (in Begich Towers), and the public works maintenance building. The city water wells are also located in this area. All public facilities are located in the Whittier core area and many are in former military structures. The police have also set up a firing range located at the Head of Passage Canal.

Open Space/Recreational Uses

A one-acre private campground is located west of the school. In addition, city land adjacent to Glacier Avenue and Whittier Street contains a small park.

Figure 7: Whittier current land use



Vacant

Over 900 acres of land within the city limits is vacant or open space. However, much of this land has steep slopes, heavy water run-off, or minimal amounts of top soil. Some is even glaciated. Of the 212 acres in the core area, only about 30 acres are uncommitted land suitable for development.

Future land use

In the past, all development in Whittier could easily be accommodated by the relatively small amount of lands in the Whittier core area and at the head of Passage Canal. This land base, however, is inadequate to meet the variety and extent of projected land uses. While Whittier wants to concentrate future tourism/recreation and commercial development in these areas, it also wants to encourage residential and commercial growth to the east in Emerald Bay and Shotgun Cove areas. Most of these lands are presently undeveloped and in their natural state.

The future land use section can be divided into the Whittier core area, head of Passage Canal, and the Emerald and Shotgun Cove areas. Future land uses are shown on Figure 6.

Future land use in the Whittier core area

This area presently serves as the center for all residential and commercial development and major waterfront facilities, the Small Boat Harbor and industrial port. The area supports a wide variety of mixed uses and much of the developable land base is occupied.

In the future, Whittier envisions this area continuing to support a wide variety of uses, with growth in tourism and recreational uses. The Whittier Museum needs a permanent location that will house its many exhibits in a visitor-friendly location. The U.S. Forest Service has approached the ARRC about the potential of enhancing the waterfront area, adjacent to the proposed passenger terminal, with a small visitor center. The visitor center would accommodate small groups and would include informational kiosks, outdoor viewing platforms, and restroom facilities. It would be appropriate to set land aside for these uses.

The core area serves as the center for all public services and facilities. The City offices and police, fire, school and public works facilities are located here. A goal of the City is to consolidate the City facilities and have recently pursued funding for a new

police, fire and emergency services building. With the anticipated increase in tourism, the need for expanding these services is recognized. Sites for new government facilities and a potential school site will also be reserved in the Shotgun Cove area. In the near future, the Whittier core area will continue to serve as the center for City services.

The land along Glacier Avenue is city owned and anticipated to be set aside for residential property.

At present, virtually all residents live in the Whittier core area in Whittier Manor, Anchor Inn Annex or Begich Towers. The City envisions these buildings continuing to be used for this purpose. Single-family residential development will be encouraged to be located in the Whittier core area and along the Shotgun Cove road. All of these lands have been platted and subdivided and most have been sold to private individuals.

Overall, future land use in the Whittier core area will continue to be mixed. The City, however, will guide expansion of the commercial business center in the core area and minimize use conflicts through this comprehensive plan.

Future Land Use at the Head of Passage Canal

With exception of the fuel tank storage facilities, a short airstrip and the City's former landfill area, most of the lands at the head of Passage Canal are presently undeveloped.

The preferred future use for much of the lands at the head of Passage Canal is industrial and commercial harbor expansion. Possible industrial uses include an offloading facility for fuel barges, an industrial dock and storage yards for freight passing through an industrial port at the site, and a combination of recreational boating facilities.

Public input into this comprehensive plan indicated that while industrial uses should continue in this area, it is also appropriate to encourage light commercial and recreational uses in this area, particularly near the airport. Examples of recreational uses include a campground, trail, viewing/picnic area fishing lagoon, fish viewing area and city park. Light commercial uses included a small boat repair shop and a seasonal open market or regular Whittier Fair for summer visitors.

Figure 8: Future land use/zoning map



The City could regulate business licenses for vendors to prevent excessive duplication of services or competition with established local businesses. An informational kiosk or gazebo at the head of Passage Canal, would provide information to visitors.

The City has entered into a lease with the U.S. Fish & Wildlife Service to use a 37-acre tract at the head of Passage Canal. The City Police department has developed a small rifle range in the area.

The City is currently working on a land management plan for the development of an area encompassing approximately 105 acres of ARRC lands that are managed by the City at the head of Passage Canal. *The Head of Passage Canal Land Management Plan* is intended to help facilitate small boat harbor, residential, commercial, industrial, and/or open space/recreational opportunities. The purposes of the plan are to provide a layout for future development, direction to proceed with a design study and feasibility analysis, and how to share costs among the public and private entities having an interest in its development. The plan will assess road, rail, and marine facilities, utilities, and other infrastructure needs for development.

The lease signed in 1998 between the ARRC and the City recognized that having essentially all of the developable land in the City under one management regime would “enhance development of the premises and the adjacent City-owned land (including tidelands), thereby generating needed lease revenues, and enable the City to tailor its long-term needs to its unique requirements.”

The City anticipates designating the head of Passage Canal as a Planned Unit Development (PUD) under Chapter 17 of the Whittier Municipal Code. The intent of this designation is to allow flexibility in an area where standard commercial development is balanced with a mix of open space and recreational areas. The PUD designation would encourage the preservation of trees, shorelines, natural topography and geologic features, the prevention of soil erosion, and would promote an environment of stable character in harmony with the surrounding area. A development project would have to be designed to provide both variety and diversity, so that the maximum long-range benefit would be gained and the unique features of the development site would be preserved and enhanced.

Future Land Use in Emerald Cove and Shotgun Cove

At present, most lands in the area east of the Whittier Core are undeveloped and in their natural state. Until recently, the lands were part of the Chugach National Forest and managed by the U.S. Forest Service.

The transfer of most lands in this area to the State, the City and Chugach Alaska Corporation means that these lands are one step closer to development. Whittier wants to encourage appropriate development for the Emerald Cove area that includes single-family residential, multi-family residential, limited public purposes (school, utilities, and parks) and open space. The City wants to prohibit industrial development. It is expected these lots will be developed with single-family homes with independent utilities.

The City's intent for the Shotgun Cove area is to encourage development that will support a quality living environment for year-round residents, seasonal residents and tourism/recreational users. Construction of the proposed Shotgun Cove Road and Harbor is a necessary prerequisite for full-scale development in this area. Uses that will be permitted include

- commercial (hotels, lodges, restaurants, stores);
- public purposes (boat harbor, parking);
- single and multi-family residential; and
- open space/recreational uses for lands that are unsuitable for year round development.

The City is working closely with the Chugach Alaska Corporation (CAC) and State of Alaska to encourage development of the Shotgun Cove area. The CAC is interested in establishing commercial developments, and the State may dispose of additional lands. The City encourages high to medium density developments (commercial development and condominiums to 1-acre lots) on lands located close to the Cove's waterfront to receive an adequate return on their capital investments. However, the State lands are in the higher elevations located away from the shores of the Cove, and could allow low-density development (1- to 5-acre lots).

The following table compares the approximate current and recommended future acreage of Whittier's various zoning districts.

Table 14: Zoning Acreage Comparison

Zoning District	Existing Acreage	Future Acreage
Single Family Residential	33	35
Multi-family Residential	8	32
Commercial	27	27
Planned Unit Development	23	1,107
Industrial	402	329
Small Boat Harbor	34	35
Open Space	4	13
Public Facility	4	-
Recreational	-	132

Land use regulation

Under Alaska Statutes, Title 29, the City has the option to adopt planning, platting and land use regulation powers. To carry out these powers, the City established a five member Planning Commission appointed by the City Council, and adopted zoning and subdivision ordinances.

Alaska State Statute Title 29 requires that a zoning code must be based on a land use plan in an approved Comprehensive Plan.

Title 29 of the Alaska Statutes governs the use of land in municipalities. The City of Whittier was incorporated in 1969 as a fourth-class city. The State Municipal Code (Title 29), revised in 1972, reclassified fourth-class cities as second-class cities. Whittier became and has remained a second-class city because of its population, which has always remained well below the 400 resident threshold for first-class cities. Whittier falls under AS 29.35.260, which states that a second class city may provide for planning, platting, and land use regulation as, provided by AS 29.35.180(a) for first and second-class boroughs.

Alaska Statute 29.40.030 states, in part, that the comprehensive plan is a compilation of policy statements, goals, standards and maps for guiding physical, social, and economic development, both

private and public. Comprehensive plans include a land use plan component.

Alaska Statute 29.40.040 further requires, in part, that in accordance with a comprehensive plan and in order to implement the plan the City shall adopt zoning regulations restricting the use of land and improvements by geographic districts.

Zoning Ordinance

The present zoning ordinance, adopted in October 1984, uses a multi-district zoning approach and has eight districts. These districts are: single family residential, multi-family residential, commercial, industrial, small boat harbor, open space, planned unit development and Marine Park. The ordinance is based on a system of permitted and conditional uses for each of the eight districts. Building dimensional requirement, such as minimum lot area, setbacks, building heights and number of parking spaces, are also identified as standards applying to each district. In addition, the ordinance identifies how it will be administered by the City, how nonconforming uses will be treated, the process and standard for determining variances, appeals and conditional uses, and how the City can amend it. Figure 7 shows the existing zoning.

The Whittier Coastal Management District has revised their program to meet the new regulations.

Figure 9: Existing zoning



Cooperative Agreements

The City can use cooperative agreements or memorandums of understandings (MOUs) with one or more parties to help provide effective land management. In general, an agreement describes terms two or more parties agree to meet to help better provide a mutually beneficial service.

In 1998, the City signed a Ground Lease and Management Agreement with the Alaska Railroad Corporation. In the agreement, both parties recognized the importance of the ARRC land within the city core area. This land, estimated to be 46 percent of the usable land available in the city core, is vitally important to the City's future. The agreement recognizes this fact and sets forth conditions by which the City is given the authority to manage these lands and to provide the ARRC a percentage of any sublease payments.

The Ground Lease and Management Agreement also recognizes the need to develop a mutually acceptable Land Management Plan, or updated Whittier Comprehensive Plan. The Management Plan is intended to guide development of leases on the ARRC property. The Agreement states that should the City seek to sublease or develop a portion of the leased premises in a manner that does not conform to the Comprehensive Plan, the City must first consult with ARRC. Should the ARRC object to the proposed nonconforming development, the City shall not be allowed to proceed. The agreement is effective until November 12, 2033; two additional 35-year terms of extension are a part of the agreement, taking the duration of the agreement to November 12, 2108.

At present, the City uses other cooperative agreements or MOUs with the State and Federal government to manage public facilities and provide public services. An example of a multi-party cooperative agreement is one signed for the Shotgun Cove Road Project. Participants include the City of Whittier, the Federal Highway Administration/Western Federal Lands Highway Department and Chugach Alaska Corporation. This agreement sets out the responsibilities of each party in the development of the road to Shotgun Cove.

An MOU was also signed between the City of Whittier, Chugach Alaska Corporation and several private businesses to do initial planning and future management and development of lands to the east of

the Whittier core area. The agreement focuses on lands in Shotgun Cove and development concerns such as the provision of sewer and water services.

The City should continue using cooperative agreements as a way of accomplishing desired projects and providing public services. This is particularly important in consideration of the new demands placed upon the City and its residents by visitation caused by improved road access.

Municipal Land Disposal Program

One land management tool available to the City as a landowner is the use, lease and sale of its own lands. When the City was first formed, it purchased lands in the Whittier core area from the General Service Administration. The City retained ownership of some of the parcels it purchased, but it disposed of most. To raise monies for the newly incorporated City, it had a land sale, but this restricted its ability to better influence how development would occur. For example, most of the lands sold were never developed, and at present, the City owns very little land in the core area to meet future needs.

Since the initial land sale, the City has periodically had sales to dispose of small amounts of property it considered excess. The City has not prepared a long-term land sales program but it has examined the need for the lands to be sold. The City's receipt of 600 acres in the Emerald Bay and Shotgun Cove areas emphasizes the need for it to prepare a comprehensive land development and disposal program. Terms of the conveyance from the state require the City to dispose of all lands not needed for public purposes by 2014. This is an extension from the previous 2004 conveyance. This program should identify lands needed for present and future public needs (schools, roads, watersheds, etc.), and the best means for development and disposal of lands.

Land Leases

An alternative to the sale of municipal lands is to lease them for purposes that meet public needs. The City may determine that an undeveloped parcel of municipal land may be used for a development activity for a period of years before it is needed for other purposes. Leasing, rather than disposing of lands, the City can generate revenue while retaining ownership through a lease.

An example of land that the City leases to businesses is the Triangle area with shops, charter companies,

restaurants and other businesses that lease City land and thereby bring revenue to the City.

While the City owns some small parcels in the Whittier core area that could be leased to a developer, the acreage that would be available for lease in Shotgun Cove and along the proposed road to Shotgun Cove would substantially increase the City's land available to be leased.

The City may also obtain advantage by leasing lands from other private and public parties.

Covenants

Covenants are a common method municipalities use to maintain a degree of control of land uses after disposing of municipal lands through a land sale. Covenants are requirements, restrictions or limitations the City would place on lands by including them in the terms of the deed of sale. Covenants can be used with Whittier's present form of multi-district zoning, but the City should use them cautiously, as they are conditions on the deed and difficult to change or remove.

As an example, when the City disposes of its lands, it may want to attach covenants to the sale that limit the buyer from subdividing the land or require the buyer to build a house within a specified period of time. This would help prevent the holding of land for speculation without development or improvement. The hold of unimproved property which is in the core area and served by all utilities has contributed to the lack of single family housing in the community.

Chapter Eight: Other plans and recommendations

Various government agencies and private entities, including but not limited to the Alaska Railroad Corporation, the Alaska Department of Transportation and Public Facilities, the National Wildlife Federation, the United States Department of Agriculture Forest Service and the USDA National Resource Conservation Service (NRCS), have been working with the community to develop plans that include development in Whittier and its immediate vicinity. This chapter provides an overview of other planning documents that affect Whittier.

City of Whittier, Alaska, Local Hazards Mitigation Plan, February 2008

The Whittier LHMP, adopted in 2008, describes natural hazards that threaten the community and potential actions to lessen or remove the impacts of these hazards. Identified hazards affecting Whittier include flood, wildland fire, earthquake, avalanche tsunami, severe weather, landslide, and erosion.

Community assets were identified and their vulnerability to each potential hazard was assessed. Whittier is a small community in a constrained space; therefore, most hazards impact the whole community to some degree.

Levee failure was identified as a threat, as well. The plan stated “The Whittier Creek Levee was constructed approximately 50 years ago. Over the course of time, the levee protection has eroded, and the stream channel has filled in, bringing into question the ability of the levee to provide protection to many key facilities in downtown Whittier.”

Any development or construction projects in Whittier should be screened against the LHMP to ascertain the vulnerability of the location under consideration and to see if mitigation actions are necessary to more safely develop the area.

Reviewed on a regular basis, the LHMP is scheduled for update in 2013.

Sustainable Economic Development for the Prince William Sound Region, September 2005

This document was prepared for the National Wildlife Federation, Alaska Office, by Eco-Systems: Economic and Ecological Research in collaboration with the

Institute of Social and Economic Research (ISER) and the University of Alaska Anchorage. The purpose of the document is to assist Prince William Sound communities to “capture economic opportunities afforded by improved access while maintaining control over residents’ economic future and quality of life.”²⁴

The goals of this project were to:

- Identify opportunities and challenges to diversify and grow the Prince William Sound economy while improving the quality of life for Prince William Sound residents and maintaining the exceptional natural environment.
- Help foster and strengthen partnerships for economic development.
- Consider new pathways to a prosperous economic future.

Whittier Water System Master Plan, June 2005

The purpose of this study was to update the City’s Water System Master Plan that was completed in 1990.

The updated plan reviewed the City’s existing water system; gave an analysis of water system needs related to increased cruise ship dockings, tourism activities, and overall community growth and commercial expansion; reviewed water system needs for development at Head of Passage Canal and Shotgun Cove; discussed existing water source quality and treatment requirements; and analyzed alternative water well locations.

Forest Service Planning Projects

The 5.5-million acre Chugach National Forest in Southcentral Alaska forms a great arc around Prince William Sound on the Gulf of Alaska. The Forest stretches more than 200 miles from southeast of Cordova to the eastern Kenai Peninsula. The diverse landscapes of the Forest include high altitude icefields, rugged mountain peaks, tidewater glaciers, and extensive wetlands.

²⁴ Fay, Ginny, et al. *Sustainable Economic Development for the Prince William Sound Region*, September 2005. Accessed online, January 5, 2012, http://www.nwf.org/~media/PDFs/Regional/Alaska/PRCA_PWS-Sustainable-Economic-Development.ashx

The Chugach National Forest was created by presidential proclamation in 1892 as the Afognak Forest and Fish Culture Reserve. For more than a century, the Forest has provided outstanding fish and wildlife habitat and, more recently, world-class recreation and tourism opportunities. Fish, wildlife, and recreation/ tourism continue to be the major resources and uses of the Forest and represent its greatest potential for future management.

The Chugach National Forest is the second largest in the National Forest System and has three distinct geographic areas: the Kenai Peninsula, Prince William Sound, and the Copper River Delta.

The Prince William Sound area encompasses 2,625,140 acres (48 percent of the Forest). It is an area of forested islands, intricate coastlines, and tidewater glaciers, with portions still recovering from the *Exxon Valdez* oil spill of 1989. Lands in the western portion were designated as the Nellie Juan-College Fjord Wilderness Study Area in the Alaska National Interest Lands Conservation Act of 1980. The Glacier Ranger District where Whittier is located encompasses most of western Prince William Sound.

Chugach Forest Plan

The first Chugach Forest Plan under the National Forest Management Act was completed in 1984. Revision of this plan was launched in 1997 with publication of a Notice of Intent in the Federal Register. More than 3,000 comments were received during this initial scoping.

The draft Environmental Impact Statement and Forest plan were released in September 2000 for public review and comment. During the revision effort, over 33,000 written comments were received and analyzed.

The Revised Land and Resource Management Plan may be viewed and downloaded from the following interactive websites.

Chugach National Forest Homepage:

http://www.fs.fed.us/r10/chugach/forest_plan/plan_docs1.html

Forest Plan Interactive website:

The 2002 revision of the Chugach National Forest *Revised Resources and Management Plan* may be accessed at:

http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fs8_028736.pdf

The following excerpts from the *Revised Resources and Management Plan* provide a sampling of the plan's direction regarding the Whittier area.

"Recreation and Tourism Recreation and tourism in Prince William Sound will be focused on the summer months with little activity during the winter. Within the radius of a day use zone from Whittier, along the east side of the Sound and near the community of Chenega Bay, small dispersed recreation developments will exist to accommodate increased recreation activity" p. 3-17.

"Emphasize wilderness values in western Prince William Sound. Provide recreation opportunities near Whittier to address projected increased recreation demand" p.A-2.

Public comments are reported as saying:

"A majority of respondents in 8 of the 12 communities (excepting Anchorage, Kenai, Soldotna, and Sterling) indicate that the proper Forest response to increased use of Prince William Sound due to the new Whittier Road is to develop minimal new facilities to mitigate impacts rather than more facilities to enhance use.

"Whittier, Anchorage, Cordova, Valdez and Girdwood each had a majority of respondents favoring an increase in the tourism services sector, while all other communities had a majority of respondents favoring no change in this sector in their community" p.B-12.

Prince William Sound Human Use Study

The Prince William Sound (PWS) Framework is the Chugach National Forest's (CNF) comprehensive effort to evaluate recreation in Prince William Sound. The project took place during the years from 2009 through 2011.

In the twenty years since the Exxon Valdez Oil Spill (EVOS), Prince William Sound has experienced numerous changes. The spill itself impacted and disrupted resources and human services in the Sound, but over the past decade the Sound has experienced increased human use activity, as well. With the opening of the Whittier Tunnel and the introduction of high speed ferry service, access to the Sound by independent and commercial users has increased. There is growing concern that increased competition and rapid growth in users may be threatening

resources and services – particularly those injured and still “recovering” from EVOS.²⁵

Goals of this Framework include:

- Determine the level and distribution of human use in the Sound associated with recreation, tourism, and subsistence activities.
- Ensure increasing recreation and tourism use does not adversely impact sensitive resources, including resources and services still recovering from the Exxon Valdez Oil Spill (EVOS).
- Identify strategies to manage for and support sustainable human use into the future.

Whittier Creek Watershed Council, 2004

A watershed council for the Whittier Creek Watershed was formed in April 2004. This Council is comprised of people who live or own land within the Whittier Creek Watershed boundaries and is assisted by technical and facilitation support from the USDA NRCS and other State and Federal entities. A comprehensive watershed plan for Whittier Creek is currently being developed

The biggest concern with the watershed is the dike that protects the city from flooding. Upon the completion of a watershed plan for Whittier Creek, the Whittier Comprehensive Plan in its completion should flex to accommodate the watershed plan. The watershed plan should guide development and other activities in Whittier to protect the long-term environmental integrity within the watershed boundaries.

Alaska Railroad Master Plan for Whittier

The rail yard is used to the limits of its capacity with freight and passengers train operations. Use of any of the tracks for passenger operations could only occur on days when no freight operations are planned. The rail yard is often used to store south-bound freight cars prior to barge arrival and off loading. When barges arrive, cars are unloaded onto tracks in the rail yard, then the waiting cars can be loaded for transport south. Additional land serves as a staging area where flat cars are unloaded and containers are stacked prior to being loaded onto barges for transport out of Alaska.

The rail yard and switching tracks extend the full length of the Whittier core area, which consists of residential, industrial, and commercial areas. An at-grade crossing of the railroad yards is allowed only located near the Whittier Creek Bridge. When the train switching operation occurs, trains occupy the Whittier Creek Bridge and traffic trying to enter or exit Whittier Street must wait. There is no alternative vehicular access across the railroad operations area, although a pedestrian underpass was constructed in 2001 that connects the residential part of Whittier with the waterfront. The Railroad Master Plan for Whittier includes the future recommended action:

Work with City to develop future options to reduce traffic delays at the major railroad/highway crossing adjacent to Whittier Creek.

State of Alaska Department of Transportation and Public Facilities

Prince Williams Sound Transportation Plan, July 2001

The key element of the Prince William Sound (PWS) Transportation Plan was the purchase of two new high-speed ferries, (one immediately and the second several years later), which would be deployed to serve Cordova, Whittier and Valdez with much greater frequency, capacity, and convenience than are now provided. The plan achieved these transportation service objectives without adding to present system operating costs, while dramatically improving transportation revenues. Under this proposal, the *Bartlett* and the *Tustumena* would no longer provide service within Prince William Sound. The *Tustumena* would continue to provide service between the Kenai Peninsula and Southwest Alaska. The plan was arrived at through an iterative process that considered all transportation modes, eventually narrowing its focus to marine transportation. In the final analysis, the current system configuration (Final Alternative 1) was compared with three new ferry system concepts (Final Alternatives 2, 3 and 4). Final Alternative 3 (hence referred to as the "Preferred Alternative") outperformed the other concepts.

The (PWS) Transportation Plan, begun in May 1997, focuses on linking communities within the region to each other, to the rest of the state and to outside the state. The PWS area historically has provided two natural gateways to Alaska's interior via Thompson Pass near Valdez and via the Copper River valley.

²⁵ USDA Forest Service Planning website. Accessed January 5, 2012. <http://www.fs.usda.gov>

Completion of the Whittier Access Project, which provides direct auto and rail access from Anchorage to Whittier, further strengthens the region's gateway role. While the PWS area possesses tremendous strengths, chief among which are its beauty and natural resources, it also faces numerous transportation challenges.

There exist significant differences in mobility and access among the region's communities. Seward, for example, has direct connections to highway, air, rail, and the Alaska Marine Highway System (AMHS). On the other hand, Cordova, Chenega Bay and Tatitlek are wholly dependent on AMHS and air travel. This reliance is problematic in several respects. First, residents of communities with no overland access pay higher costs for goods and for travel.

Second, existing AMHS service upon which these residents are reliant is infrequent, irregularly scheduled, insufficient to meet demand during the summer peak, and inconvenient (e.g., midnight arrivals and departures). Third, the lack of access and mobility is a barrier to economic diversification.

Constraints upon the provision of lower-cost, more convenient, faster transportation alternatives include the area's challenging weather and topography, the predominance of State and Federal land ownership, the importance of conserving subsistence resources, and the value of preserving the area's natural resources.

Proposed Plan Elements:

AMHS Improvements - The Preferred Alternative. In the Preferred Alternative, the State would initially purchase a new 32-knot, 30-vehicle highspeed ferry similar to the "Sitka class" vessel developed for Southeast Alaska service. This vessel, homeported in Cordova, would make alternating loops (one round trip per day) among the ports of Cordova, Valdez and Whittier year-round. A second identical vessel would be added 6-10 years into the plan's life. It would be homeported in Valdez and dedicated in peak season.

The entire Prince Williams Sound Transportation Plan may be viewed at the following website:

<http://www.dot.state.ak.us/stwdplng/areaplans/pwsplan.shtml>

Statewide Transportation Improvement Program, STIP, FY 2010 - 2013

The federal-aid eligible portion of Whittier Tunnel Maintenance and Operations are funded in the current

STIP, with \$2,253,300 slated for 2011, \$2,343,500 in 2012 and \$2,437,200 in 2013.

Whittier Airport Master Plan, 2003

The Alaska Department of Transportation and Public Facilities (ADOT&PF), in conjunction with the Federal Aviation Administration (FAA), has undertaken a project to evaluate the need for, and feasibility of, replacing the existing Whittier airport with a new "emergency use only" airport in the western Prince William Sound region near Portage Pass.

In August of 1998, ADOT&PF received a resolution from the City of Whittier asking to review, under public comment, the necessity of retaining airport facilities in Whittier under current capabilities. Hearings were held by ADOT&PF in Whittier and Anchorage during October of 1998 to take public testimony. The results of the hearings concluded that although the airport is no longer important in providing access and services to the community, it continues to serve an important role in the safety of the regional airport system, especially for aircraft operating between Prince William Sound and the Anchorage bowl. The ability of the existing airport to continue functioning in this role is in jeopardy given the facility's design deficiencies, topographic challenges, questionable eligibility for FAA funding, and pressure for the development of adjacent lands.

The purpose of the airport master plan is to further evaluate the need for, and feasibility of, replacing the existing Whittier airport with a new 'emergency use only' airport in the Western Prince William Sound near Portage Pass. If it is determined that a new "emergency use only" airport is not needed, the Whittier airport would be closed.

If it is determined that a new "emergency use only" airport is needed, the location and design standards to which the airport would be constructed would be determined through negotiation between ADOT&PF and FAA.

The Airport Master Plan project would consist of three phases:

Phase I: Preferred Alternative Identification. This phase includes a condition and needs assessment, public input and involvement, and alternative development analysis.

Phase II: Draft Master Plan and Environmental Assessment. Selection of the preferred alternative and a more detailed analysis of the environmental impacts associated with development options will occur during the project's second phase.

Phase III: Final Master Plan. The final phase incorporates comments on all documents and drawings into a final airport master plan submitted for FAA approval.

A briefing paper was prepared in 2003, which is a component of the first Phase. The briefing memorandum provides an overview of community characteristics, airport conditions, existing design standards, and forecasted demand.

Additionally a subsequent memorandum, Alternatives Development and Analysis, was prepared which consists of a demand capacity analysis and the development of potential alternatives.

The master plan was halted at the end of the scoping phase and has not moved forward yet, as of fall 2005.

City of Whittier Indirect Effects Planning Assistance Coordination and Implementation Planning – Final Short-term Critical Needs, 1998

This plan was prepared to assess the impact of improving access to the City of Whittier with the opening of highway through the Whittier Tunnel. Visitation to Whittier was expected to increase substantially. To deal with the expected increase in visitors, the City of Whittier, the ADOT & PF, and the ARRC embarked upon a planning process to identify capital improvements in Whittier and agency actions necessary to handle the influx. This plan purpose was to provide the means for coordinating agency planning efforts with the ultimate objective of integrating the identified capital needs and corresponding agency actions for implementation in Whittier. The planning effort was initiated through a cooperative effort of the ADOT&PF, the ARRC, and the City of Whittier.

City of Whittier Redevelopment and Urban Design Plan, 1994

This largely unimplemented document was written by International Tourism and Resort Advisors (INTRA) to assist Whittier to capitalize on the opportunities afforded by increased access when the tunnel would be converted for vehicular use. The plan addresses the potential impacts on Whittier's core area from

increased access and describes methods that the City can use to encourage private business investment in Whittier.

Alaska Coastal Management Program, 1988

The Whittier Coastal Management Plan (CMP) was written in 1988 and became effective in 1990. In May 2003, the Alaska State Legislature passed House Bill 191, which states in part that all coastal management district plans must be revised to meet certain criteria. In general, the revised district plans and enforceable policies must be revised to clearly show a connection between coastal resources and the policies.

To Comply with Alaska Statute (AS) 46.40, as amended by HB 191 (May 2003) the district plan and enforceable policies must meet the following criteria:

- Must meet the statewide standards and district plan criteria adopted under AS 46.40.040 (the new regulations)
- May not duplicate, restate, or incorporate by reference statutes and administrative regulations adopted by state or federal agencies (AS 46.40.030 (b))
- Must be clear and concise as to the activities and persons affected by the policies, and the requirements of the policies; (AS 46.40.070 (a) (2)(A))
- Must use precise, prescriptive, and enforceable language (AS 46.40.070 (a) (2)(B))
- May not address a matter regulated or authorized by state or federal law unless the enforceable policies relate specifically to a matter of local concern (AS 46.40.070 (a) (2)(C))
- Must be changed to reflect the changes to consistency review for activities subject to Department of Environmental Conservation permits, certifications, approvals and authorizations (AS 46.40.040 (b) and AS 46.40.096)
- Should be changed because the determination of the scope of a consistency review is affected by whether an activity is the subject of a district enforceable policy (AS 46.40.096(k))

The CMP sunsets if it is not revised and approved by DNR by March 1, 2007 (HB 191, Transition, Sections 46 and 47)

- Districts have 1 year after adoption of new regulations or until July 1, 2005 to submit a revised plan to DNR, whichever is later
- Existing district plan enforceable policies remain in effect until July 1, 2006, unless new ones are adopted by DNR.

The Whittier coastal district plans, at this time to retain and revise 26 policies, delete 69 policies and create at least one new area of local concern.

The resource inventory will require the producing approximately 20 maps (some of which can be combined) depicting areas and activities that relate to the enforceable policies. Accompanying narrative information and scientific evidence will also be written.

A resource analysis chapter will be written to analyze impacts of activities on coastal resources. The implementation, subject uses and proper and improper uses chapter need to be revised to meet the new requirements under 11 AAC 114.

There are no anticipated changes to the boundary of the Whittier Coastal District. The issues, goals and objectives, subject uses, proper and improper uses and implementation chapters will be rewritten during the plan amendment.

The Whittier Coastal District is on track to revise their CMP during State Fiscal Year 2005/06 and will meet the state deadline to remain in the program.

Chapter Nine: Community Goals, Policies and Actions

This chapter presents guidelines that the City and other landowners or developers can use to assist them with decision-making and long-range planning. The goals, policies, and implementation actions were developed through the public involvement process and were based on public suggestions, previous plans, and other community and consultant input. The goals, actions and policies were reviewed and updated using information gathered at a public meeting January 27, 2012. All goals, policies, and actions were reviewed and approved by the City Planning and Zoning Commission.

- Goals are general achievements that the community wishes to accomplish. Goals provide guidance for developing policies.
- Policies set the course of action that the City will take.
- Actions are task-oriented events that lead to implementation of goals and policies.

In the January 27, 2012 public meeting, participants were asked to rank their top three priorities overall, as well as their top priorities for each goal. This ranking process is the primary basis for the prioritization levels in the following table.

The rankings also reflect the City Council's annual identification of Whittier's main legislative priorities. For 2012, the top priorities identified were:

- Continued construction of Shotgun Cove Road;

- Whittier navigation improvements/Watershed study;
- Repair of the levee above the Whittier Core Area;
- Replacement of the public works/public safety building; and
- Water and wastewater system upgrades.

Additional criteria shaping the rankings included feasibility, fundability, and whether the project is necessary for continued safe city operations. High priority projects are those that the City plans to begin or achieve in the next five years; medium priority projects five to ten years, and low priority projects ten to twenty years. Actions labeled "ongoing" are those that do not conform to a timetable but must be pursued as opportunities arise.

Whittier's goals, policies, and actions were divided into seven general categories:

- Transportation
- Facilities
- Municipal Government
- Land Use
- Recreation
- Appearance
- Economy

The following pages detail the specific goals, policies, and actions developed during the planning process.

Transportation

	Description	Priority Ranking	Project Status
Goal 1	Expand and improve access into and transportation facilities within Whittier.		
Policy 1.1	Improve the Small Boat Harbor and water access to Whittier.	High	
Action 1.1.1	Establish the Port of Whittier Harbor Development Project, including the reconstruction and expansion of the existing small boat harbor and construction of a new harbor at the head of Passage Canal, as Whittier's top priority project.	High	
Action 1.1.2	Work with state and federal funding agencies and elected officials, the Denali Commission, and private sources to obtain funds to design and construct the Port of Whittier Harbor Project and development of the head of Passage Canal uplands.	Medium	
Action 1.1.3	Pursue expanded and improved Alaska Marine Highway (AMHS) service to Whittier.	Low	
Action 1.1.4	Improve navigation in Passage Canal.	High	Identified as a capital budget priority for 2012 in City of Whittier Resolution 995-11.
Policy 1.2	Improve circulation of vehicles within Whittier's core area and road access to Anchorage, other areas of the state, and outlying areas of the community.		
Action 1.2.1	Make access available to lands in Shotgun Cove critical for the community's economic development through completion of the Shotgun Cove Road project.	High	Identified as a capital budget priority for 2012 in City of Whittier Resolution 995-11.
Action 1.2.2	Submit local road projects to the Alaska Department of Transportation (ADOT) Statewide Transportation Improvement Program.	High	
Action 1.2.3	Explore the possibility of the RS2477 route over Portage Pass.	Low	
Action 1.2.4	Continue to seek funding to complete a road toward Decision Point State Marine Park.	High	
Action 1.2.5	Provide shuttle service within Whittier.	Medium	
Action 1.2.6	Provide shuttle service between Portage and Whittier.	Medium	

Policy 1.3	Improve pedestrian circulation within Whittier's core area.	Medium	
Action 1.3.1	Improve pedestrian crossing at Whittier Creek.	Medium	
Action 1.3.2	Integrate ADA compliant pedestrian trails and/or sidewalks with ongoing highway improvements.	Medium	
Policy 1.4	Provide adequate and convenient residential and transient parking.		
Action 1.4.1	Develop a multi-level parking facility that could also serve as boat storage in the off-season.	Low	
Action 1.4.2	Construct paved parking lots.	Low	
Policy 1.5	Develop plans for improved transportation within Whittier.		
Action 1.5.1	Develop a circulation plan to improve access to, and safe circulation within, the core area, to include needs of both vehicles and pedestrians.	High	
Action 1.5.2	Develop a parking plan with recommendations for walkway, street crossing, and beach access as well as shared parking where feasible.	Medium	
Policy: 1.6	Expand vehicular tunnel access to Whittier.		
Action 1.6.1	Improve tunnel access into Whittier by increasing the hours of operations in both summer and winter.	Medium	Tunnel hours have been extended, particularly in winter.
Action 1.6.2	Promote the construction of a new tunnel facility.	Low	
Policy 1.7	Pursue continued and improved air access to Whittier.		
Action 1.7.1	Coordinate with the State of Alaska and the FAA to secure funding for improved airport facilities and infrastructure.	Medium	
Action 1.7.2	Promote the design and construction of a helicopter pad to serve the Whittier community.	Medium	

Policy 1.8	Improve quality of road system for sustainability.		
Action 1.8.1	Institute a program to rebuild the roads to appropriate standards.	Medium	
Action 1.8.2	Develop programs to pave gravel streets and reduce erosion areas.	Medium	

Facilities

Goal 2.	Expand and improve facilities to meet current and future needs in Whittier.		
Policy 2.1	Improve public buildings and services.		
Action 2.1.1	Design, seek funding for, and construct new harbor office – part of the Port of Whittier Harbor Development Project – in the Harbor District.	High	
Action 2.1.2	Research funding opportunities to repair or replace the public works facility.	High	Identified as a capital budget priority for 2012 in City of Whittier Resolution 995-11.
Action 2.1.3	Pursue funding for a central City Services building to house all city services which may include but be not limited to public safety; fire and EMS; city, state and federal administrative facilities; library; health and recreational facilities.	High	
Action 2.1.4	Provide modern, maintained public restrooms and shower facilities.	Low	
Action 2.1.5	Establish a major maintenance and repair fund and a major equipment fund for replacement of public works equipment when necessary.	Medium	
Policy 2.2	Improve the quality and availability of emergency medical services in Whittier.		
Action 2.2.1	Provide in the City budget for financial support for emergency medical services and physician sponsorship of EMS.	High	
Action 2.2.2	Continue to expand and upgrade the existing Emergency Medical Technician (EMT) program, including the addition of an EMT III or Paramedic to support community health care. Work to qualify as many residents as possible for these positions.	Medium	

Action 2.2.3	Document and publicize the importance of Whittier as an emergency medical center for western Prince William Sound.	Low	
Action 2.2.4	Support the efforts of agencies responding to waterborne emergencies.	Ongoing	
Policy 2.3	Encourages State and Federal agencies and private sector vendors to enhance and expand access to scheduled health and social services for Whittier residents and visitors.		
Action 2.3.1	Create favorable conditions to encourage agencies and vendors to provide scheduled specialized health and social services in Whittier.	High	
Action 2.3.2	Encourage retrofitting historical buildings for ADA compliance.	High	New action - 2012
Policy 2.4	Provide safe and adequate public facilities and utilities to support existing needs, seasonal population fluctuation, and community growth.		
Action 2.4.1	Provide municipal lands for public school facility needs and reserve a site for a public school in the Shotgun Cove/Emerald Cove Subdivision.	Medium	
Action 2.4.2	Repair and expand the existing sewer and water systems as needed.	High	Identified as a capital budget priority for 2012 in City of Whittier Resolution 995-11.
Action 2.4.3	Explore effective sewer and water system alternatives in areas of the municipality where connection to the central system is not practicable.	Low	
Action 2.4.4	Develop and implement a storm drain management plan.	Medium	
Action 2.4.5	Explore and encourage the use of alternative energy sources.	Medium	
Action 2.4.6	Research solid waste alternatives and develop and implement a solid waste management plan.	Low	
Action 2.4.7	Encourage additional internet/cable providers to serve Whittier's residents.	Ongoing	

Municipal Government

Goal 3	The municipal government will serve its citizens through a strategy of responsible stewardship of its environmental, economic and human resources.	Medium	
Policy 3.1	Expand the local government corporate boundary.		
Action 3.1.1	The City will seek to annex areas that are planned for sale or development by the state and are deemed by the City to be beneficial to its economic development.	Medium	
Policy 3.2	Improve relations between city government and businesses for the economic and social welfare of the community.		
Action 3.2.1	Develop a strategy to foster a team/cooperative spirit between city officials, business owners and the public.	High	
Policy 3.3	Research methods to generate revenue other than taxes to pay for services and facilities.		
Action 3.3.1	Pursue bonds, local improvement districts, grants and Capital Improvement Program projects.	High	
Action 3.3.2	Attend statewide meetings to stay involved with other agencies.	High	
Action 3.3.3	Examine alternative means of service delivery, such as privatization of services and contracting existing city services.	Medium	
Policy 3.4	Protect and enhance the natural features, environment, and scenic beauty of the area around Whittier.		
Action 3.4.1	Encourage consideration of and compliance with Whittier Comprehensive Plan, Hazards Mitigation Plan, Coastal Zone Management Plan, and subdivision and zoning ordinances.	High	
Action 3.4.2	Coordinate with state and federal agencies for environmental protection and permitting.	Medium	

Action 3.4.3	Develop a checklist of agencies and resources to provide guidance for responsible development.	Medium	
Policy 3.5	Coordinate hazard mitigation and response in Whittier.		
Action 3.5.1	Train local personnel and provide equipment in Whittier to control and respond to life threatening industrial accidents.	Medium	
Action 3.5.2	Develop a schedule to review and update and practice emergency evacuation plan for Whittier area.	Ongoing	
Action 3.5.3	Work with industrial users and transporters of hazardous materials to develop an improved public awareness of existing capabilities to respond to emergency situations.		Completed
Action 3.5.4	Develop a plan to deal with potential hazards such as fire, earthquake, flood, hazardous material spills, etc.		Completed
Action 3.5.5	Develop web-based GIS and provide for public viewing of security cameras throughout the community.	Medium	New – 2012
Action 3.5.6	Repair levee above Whittier Core Area.	High	New – 2012. Identified as a capital budget priority for 2012 in City of Whittier Resolution 995-11.
Action 3.5.7	Review and update Hazard Mitigation Plan according to schedule.	Ongoing	New – 2012
Policy 3.6	Support recreational opportunities by providing local governmental assistance.		
Action 3.6.1	Develop a land use plan for parks and trails.	Medium	
Action 3.6.2	Provide support for agencies and groups for pass through grants.	Medium	
Action 3.6.3	Review and upgrade the recreational area map and designate use areas.	Medium	Initial map created.
Action 3.6.4	Establish a volunteer and community work service program to provide recreational enhancement labor.	Ongoing	

Land Use

Goal 4	Guide the Use of Land in a Manner that Provides for Orderly and Efficient Community Growth.		
Policy 4.1	Develop a land use plan for the head of Passage Canal		
Action 4.1.1	Pursue grant funding for economic development planning, programming and feasibility.	Ongoing	
Action 4.1.2	Work with stakeholders to produce a complete land use plan for development of small boat harbor, residential, open space/recreational, commercial, industrial, conservation, and/or enhancement areas.	High	
Policy 4.2	Update the core area land use plan.		
Action 4.2.1	Determine the appropriate land use for properties in the core area.	High	
Action 4.2.2	Identify City owned properties and designate uses in a City Land Use Plan.	Medium	
Policy 4.3:	Develop a land use plan for Shotgun Cove.		
Action 4.3.1	Pursue economic development grant funding for economic development feasibility study.	Ongoing	
Action 4.3.2	Prepare an economic development feasibility study for Shotgun Cove development.	Medium	
Action 4.3.3	Zone available areas for land development.	Medium	
Action 4.3.4	Finish Phase II & III of Shotgun Cove Road to facilitate future growth in the area.	High	
Policy 4.4:	Ensure that the public has access to designated public use land and beach areas.		
Action 4.4.1	Plat rights of way and easements to the water.	Medium	
Action 4.4.2	Designate and provide ADA compliant access to areas for public use.	High	
Action 4.4.3	Designate potential recreational sites in the Passage Canal area.	Medium	

Policy 4.5:	Provide land for use by the private sector.		
Action 4.5.1	Coordinate with state and federal agencies to facilitate the construction of affordable residences.	High	
Action 4.5.2	Encourages the State Department of Natural Resources to dispose of State lands in Passage Canal that are suitable for private development.	Medium	
Action 4.5.3	The City will offer residential, commercial and industrial land with covenants that require development for the intended use within a specified timeframe.	Medium	
Action 4.5.4	Explore opportunities to acquire publicly held lands for development by City of Whittier or for private development.	Medium	
Policy 4.6	Develop a strategy for the tank farm.		
Action 4.6.1	Acquire the tank farm property.	High	
Action 4.6.2	Develop a land use plan for the tank farm property.	High	
Policy 4.7	Ensure land use practices are consistent with responsible watershed management.		
Action 4.7.1	Develop a watershed study.	High	Identified as a capital budget priority for 2012 in City of Whittier Resolution 995-11.

Recreation

Goal 5	Create recreational opportunities and activities for residents and visitors.		
Policy 5.1	Increase recreational facilities for residents and visitors of all ages.		
Action 5.1.1	<p>Improve Whittier's trail system using but not limited to the following means:</p> <ul style="list-style-type: none"> * Work with relevant state and federal agencies to identify and sign hiking trails in Whittier; * Improve trailhead and kayak launching facilities at the end of the second segment of the Shotgun Cove Road project; * Improve Lu Young Park recreational facilities; * Create more hiking, skiing, snowboarding, and snow machine trails; * Install a tow rope at the Whittier Creek waterfall to facilitate skiing; and * Connect existing trails. 	High	
Action 5.1.2	<p>Work to provide increased marine recreational facilities and activities including but not limited to the following:</p> <ul style="list-style-type: none"> * Establish a kayak launch area and ramp; * Construct an ADA accessible creek- and salmon-viewing platform at Shakespeare Creek; * Designate fishing areas for non-boaters 	Medium	
Action 5.1.3	<p>Seek funding for and construct an indoor recreation facility and adjoining park area to include but not be limited to the following facilities:</p> <ul style="list-style-type: none"> * Community swimming pool; * Sports and recreation facility * Ice skating rink: 	Low	
Action 5.1.4	Set aside areas to provide for recreation use.	High	
Action 5.1.5	Work with state and federal agencies to assist in constructing the Shotgun Cove small boat harbor.	Medium	
Action 5.1.6	Promote Whittier as a shore-based recreational center for hiking, camping, berry picking and sightseeing.	Medium	
Action 5.1.7	Encourage the development of camping and day-use facilities.	Ongoing	

Action 5.1.8	Pursue funding to design and construct a youth center for Whittier residents.	Medium	
Action 5.1.9	Promote winter activities in the Whittier area.	Ongoing	
Policy 5.2	Promote regional recreational events and competitions.		
Action 5.2.1	Coordinate with various groups to encourage events in Whittier.	Ongoing	
Action 5.2.2	Encourage guided walking tours and facilities for self-guided tours.	Ongoing	

Appearance

Goal 6	Capitalize on Whittier's Natural Beauty and Visual Appeal.		
Policy 6.1	Encourage coordinated clean up and enhancement projects.		
Action 6.1.1	Develop and implement a plan to require new construction to include beautification elements.	Medium	
Action 6.1.2	Enhance downtown boardwalk system, especially along the waterfront.	Ongoing	
Action 6.1.3	Install interpretive and informational signs to enhance visitors' experience in Whittier.	Medium	
Action 6.1.4	Promote annual community clean-up kick-off days and on-going clean-up efforts.	High	
Action 6.1.5	Create architectural standards.	Medium	
Action 6.1.6	Continue to pursue a solution to derelict structures such as the Buckner Building and USFS Building (near Anchor Inn).	Low	

Policy 6.2:	Research grants for art and other aesthetic improvement projects.		
Action 6.2.1	Provide support to agencies and groups for pass through grants.	Ongoing	
Action 6.2.2	Research and apply for grants.	Ongoing	
Action 6.2.2	Research incentive programs for landscaping and beautification projects.	Ongoing	
Action 6.2.3	Encourage recycling efforts throughout the community.	Ongoing	

Economy

Goal 7.	Create Economic Opportunities for Residents and Businesses throughout the Whittier community.		
Policy 7.1	Establish a strategy for local hire.		
Action 7.1.1	Promote the utilization of local residents to the maximum extent possible for local jobs.	Ongoing	
Policy 7.2	Capitalize on the economic potential of increased tourism.		
Action 7.2.1	Create a tourist information center.	Medium	
Action 7.2.2	Promote growth of small business tourist industry.	High	
Action 7.2.3	Foster a friendly and inviting attitude towards visitors.	Ongoing	
Policy 7.3	Research strategies for attracting new commercial developments.		
Action 7.3.1	Work with the private sector in attracting more businesses to Whittier.	High	
Action 7.3.2	Pursue obtaining economic development grants from the state and federal governments.	Ongoing	

Action 7.3.3	Ensure that there are adequate land use areas for commercial and economic development.	High	
Policy 7.4	Maintain and encourage expanding Whittier's use as a major marine center for Southcentral Alaska.		
Action 7.4.1	Encourage expansion of Whittier's economy based on commercial fishing, marine industrial and tourism/recreation activities.	Ongoing	
Action 7.4.2	Construct new harbor facilities at Shotgun Cove.	Medium	
Policy 7.5	Maintain and encourage developing Whittier as a deep-water port.		
Action 7.5.1	Support the continuation of a fuel and product storage and transshipment depot in Whittier.	Medium	
Action 7.5.2	Research the feasibility of and, if feasible, support the development of natural gas liquefaction at the Head of Passage Canal.	Low	
Policy 7.6	Encourage expansion of commercial business and service industry development in Whittier.		
Action 7.6.1	Support and encourage renovation of existing structures for commercial business, warehouses and fish processing in the Whittier core area.	Ongoing	
Action 7.6.2	Attract commercial development that serves local community needs.	Ongoing	
Action 7.6.3	Pursue grant funding for infrastructure development, such as utilities, transportation/access improvements, recreational and other public facilities.	Ongoing	

Appendix C:

Preliminary Geotechnical Engineering Report

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PRELIMINARY GEOTECHNICAL ENGINEERING REPORT
Shotgun Cove Road Extension
WHITTIER, ALASKA

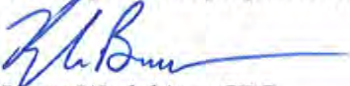


Shotgun Cove Road Extension
Whittier, Alaska

Preliminary Geotechnical Engineering Report

Shannon & Wilson participated in this project as a subconsultant to CRW Engineering Group, LLC (CRW). Our scope of services was specified in a contract signed by Mr. Pete Bellezza, Principal on December 7, 2017.

This report was prepared and reviewed by:


Katra Wedeking, CPG
Senior Geologist
Role: Primary author



Kyle Brennan, PE
Vice President
Role: Supervision and review

1	INTRODUCTION	1
2	SITE AND PROJECT DESCRIPTION	1
3	FIELD RECONNAISSANCE	1
4	OBSERVATIONS	2
5	CONCLUSIONS AND RECOMMENDATIONS.....	3
5.1	Site Preparation and Subgrade Development.....	4
5.2	Embankment Development.....	4
5.3	Site Drainage.....	5
5.4	Roadway Structural Section	6
5.5	Embankment Settlement	7
5.6	Geotextile Separation/Reinforcement Fabric.....	7
5.7	Structural Fills and Compaction	8
6	CLOSURE AND LIMITATIONS.....	9
Exhibits		
	Exhibit 4-1: Field Observations	2
	Exhibit 5-6: Woven Geotextile	7
Figures		
1	Site Plan	
2	Gradation Requirements	
Appendices		
A	Important Information About Your Geotechnical/Environmental Report	

1 INTRODUCTION

This revised report documents the results of reconnaissance studies by Shannon & Wilson, Inc. for the Shotgun Cove Road extension project in Whittier, Alaska. The revision to this report incorporates March 29, 2018 comments provided by CRW. The project includes extension of the existing road to provide access for future development. The purpose of this study was to conduct reconnaissance services and provide preliminary recommendations for the proposed new road extension. Presented in this report are descriptions of the site and project, a description of our reconnaissance efforts and field observations, and our preliminary geotechnical engineering recommendations for design and construction of the proposed improvements. Note that additional explorations and engineering analysis will be needed to support the final design of the project.

2 SITE AND PROJECT DESCRIPTION

We understand that the City of Whittier plans to extend Shotgun Cove Road approximately 2.5 miles from its current constructed location at Mile 2.0. The new road is expected to be a two-lane, gravel surfaced roadway with drainage provisions. At the time of our site visit, we traversed the approximate proposed corridor provided by CRW using ArcGIS and the collector app for location control. We understand that the new roadway alignment will be established to complement planned development and that a final alignment has not been selected at this point in the project planning.

A site map is included as Figure 1 which provides an overview of the project area including observation points and probe depths.

3 FIELD RECONNAISSANCE

The reconnaissance effort took place on December 12, 2017, and was conducted on-foot by Katra Wedeking and Kyle Brennan, from our Anchorage office. Our field explorations included surface observations and hand-pushed probing along the potential project corridor. Probing was conducted using a 5-foot long, ½ inch diameter steel rod that was pushed into the ground by hand. We made observations along the project corridor at discrete locations (observation points) that were recorded using a handheld Global Positioning System (GPS) unit. Additionally, generalized bedrock reconnaissance was conducted at two locations where outcrops were exposed, one in a creek bed, and one along the beach. Approximate locations of the observation stations are shown on the site plan

included as Figure 1. Note that as of the date of this letter, we understand that the final road alignment has not been selected. Our location control was gained through a potential corridor provided by CRW and generally followed using ArcGIS and the collector app on a mobile device.

4 OBSERVATIONS

The project area generally includes treed areas, muskegs, and several major water crossings. The treed areas typically contain mature trees, underbrush, and likely have an average of 2 feet of overburden (consisting predominately of moss and roots) over bedrock. The muskeg surficial organics ranged from 2 to 7.5 feet based on probing, and had an average of about 4 feet. Additionally, occasional sloping muskegs were observed. It is likely that the bedrock is also sloping in these areas. Within the major stream crossings, soil was thin and localized. It is not likely that there will be a substantial amount of soil within the project area. In addition to the major stream crossings, numerous small creeks were observed along the entire project area with the majority noted cross cutting the muskegs. These small drainages appeared to be well established and were flowing swiftly during our reconnaissance. Exposed bedrock consists of meta-shale or slate with bedding and joints that were recorded and are presented on Figure 1. The following exhibit provides an overview of the observations noted during our reconnaissance.

Exhibit 4-1: Field Observations

Point Identification	Observation Noted
OP-01	Stream crossing, 2 to 5 feet of surface organics over shallow bedrock
OP-02	Stream crossing, 1 to 2 feet moss over bedrock
OP-03	Stream crossing, less than 2 feet moss over bedrock
OP-04	Small creek through muskeg, organics likely less than 3 feet thick, gravel alluvium in creek bed
OP-05	Sloping muskeg, recommend alignment stay high or low
OP-06	Small creek, rock less than 2 feet below ground surface
OP-07	Small creek, less than 5 feet soil over rock
OP-08	Creek, rock less than 3 feet below ground surface
OP-09	Muskeg, sloping above, recommend alignment stay low here
OP-10	Steep slope, exposed rock, less than 1 foot soil over rock
OP-11	Trail creek crossing, very steep rock slopes, gets steeper and higher upstream

NOTES:

¹ See site plan presented as Figure 1 for approximate locations of Observation Points.

5 CONCLUSIONS AND RECOMMENDATIONS

The sections below present preliminary, generalized geotechnical recommendations for site preparation and subgrade development, embankment development, and structural section recommendations. We also provide discussion of issues related to drainage, structural fill, compaction, and the availability of local borrow materials.

Our reconnaissance revealed conditions that generally consisted of mature treed areas, open, grassy muskegs, and several significant drainage features. In addition to the major drainage features, frequent small, streams were observed, especially cross cutting the muskegs. We generally observed organic material overlying bedrock across the project area. The organic material was an average of 2 feet thick in the treed areas and an average of 4 feet thick in the muskegs. In addition, several sloping muskegs were observed within the project area. It is our opinion that muskegs on slopes of approximately 6 horizontal (H) to 1 vertical (V) or steeper should be avoided during alignment selection if possible. These features can be problematic if the new roadway cuts across the slope where the muskegs lie. If the roadway must traverse these areas, special attention will need to be given to designing the embankments across these features. Stability issues may be experienced related to uneven consolidation of organic soils under the embankment and potential soil creep and horizontal displacements in the embankment over time.

Substantial amounts of soil were not observed during our reconnaissance except for the occasional alluvial deposits that were localized within the small cross cutting streams. Development of the new roadway will need to consider the extensive organic material, the steep slopes, the shallow bedrock, and the drainage provisions. Ideally, all organic material will be removed prior to development of the roadway structural section. However, development of the new roadway may be accomplished across the muskegs over the organic material if differential settlement is planned for and can be accommodated.

Based on our observations, shallow bedrock could be encountered along the entire corridor. It is likely that several areas will require cuts into the bedrock depending on the final alignment selection. Bedrock observed within outcrops generally consisted of meta-shale or slate which may vary in strength and ripability characteristics. Based on our observations, we believe that the bedrock may be rippable to several feet or more below the soil/rock horizon, depending on the degree of weathering and the orientation of the bedding and jointing. We recommend that bedrock cut slopes be established at 1/3 H to 1 V for

preliminary planning purposes. The actual steepness of rock cut slopes will need to be determined through final design (and verified through inspection during construction) and will be dependent on the orientation of the cut slope and actual rock structure orientation along the project corridor.

5.1 Site Preparation and Subgrade Development

We anticipate that the proposed road will be constructed with portions at or above the existing ground surface and other areas that require cuts. Our reconnaissance indicates general conditions consist of an organic layer of variable thickness overlying bedrock. Ideally, cut areas and surfaces that will receive fill need to be stripped of vegetation (grass, shrubs, trees, etc.), and the upper layer of organics (organic silt, peat, etc.). Based on probing and observations, we believe that the average thickness of surface organics (muskegs and treed areas) within in the corridor is likely approximately 3 feet. After grubbing, the exposed grade should be probed and closely observed to look for unsuitable soils, such as loose or soft sand and silt, soils with a high water content, or soils susceptible to long term settlements. We believe that the presence of unsuitable soil under the surface organics is likely limited to isolated areas. In areas to be filled, these soils should be excavated and replaced with compacted Selected Material Type B or shot rock. Excavations to remove unsuitable soils should extend out laterally so that the embankment side slopes can be developed at the angle recommended in Section 5.2. The material should be removed until firm, native, mineral soils or bedrock is exposed over the entire excavation bottom. The structural section may be developed over native granular materials or bedrock as recommended in Section 5.4. The embankments and structural section should be developed on firm native, unyielding ground in order to withstand loading from construction equipment.

If excavating the thick areas of peat within the muskegs is cost prohibitive, the organic material (peat, organic soil, etc.) may be left in place with the understanding that the roadway surface may require additional maintenance or repair. If this option is selected, we recommend that the upper vegetation within the new embankment footprint be cut to within 6 inches of the ground surface with the root matter left intact. A woven geofabric (like that described in Section 5.6) should be placed on top of the prepared peat surface prior to placement of embankment fills.

5.2 Embankment Development

New embankments may include fill placed on the native subgrade up to (but not including) the road structural section and should provide stable support for the roadway structural section. Elements that will contribute to this overall goal include proper site preparation,

appropriate embankment slopes, and utilizing good construction controls (compaction and material gradation).

Since our explorations indicate that bedrock is shallow within the project limits, we assume that much of the fill material to construct the embankments will be constructed of rock removed in cut areas, most likely unprocessed shot rock. Developing consistent and stable embankments with unprocessed shot rock can be difficult in some cases. It is our opinion that side slopes in shot rock can be established at 2H to 1V. We do not recommend applying a surface topsoil layer as the relatively free draining nature of the fill will likely cause topsoil to be washed away on surface pop outs during periods of high rain. Care should be taken to place and compact shot rock fill in such a manner that voids are not allowed to form around larger diameter particles. Shot rock placement recommendations are included in Section 5.7.

5.3 Site Drainage

Several major creeks and numerous small drainage features were observed across the project area. Additionally, although frozen during our field reconnaissance, it is likely that the muskegs will be saturated and very soft when thawed.

In general, excavation and backfill work should be closely coordinated such that seepage and surface runoff is not allowed to collect and stand in open trenches for long time periods. The ground surface around excavations should be contoured to drain away from the excavation and the excavation bottoms should be graded to drain to a sump or topographic low.

We recommend that the new road grade, after improvements, should be at least 12 inches above the surrounding ground surface. This is intended to provide vertical separation of the road surface and the surrounding ground for drainage purposes. The surface of the roadway should be crowned and or sloped a minimum of 3 to 4 percent to allow for surface drainage of the driving surface and into ditches.

Drainage ditches should be constructed along the road to control surface water infiltration into the road section and to reduce the effects of seasonal frost. The project area experiences a high volume of rainfall which will saturate the material below the roadway and may cause strength loss. In order to mitigate adverse effects of saturated soils within and around the roadway, we recommend that surface water be intercepted and redirected away from the roadway structural section. Drainage ditches with frequent culverts on the uphill side of the roadway would serve this purpose.

Permanent ditch side slopes should be constructed with 3H to 1V gradients. Ditches in the areas near the sloping muskegs should be constructed wider (5 feet wide, with a flat bottom). Rock lining may be required to maintain the side slopes.

5.4 Roadway Structural Section

Design of the structural section requires consideration of the density of soils, site drainage, frost susceptibility of subgrade soils, load requirements, and grade requirements. We assume that the critical loading on the proposed road are the anticipated loads from heavy equipment during construction. After construction, the road will likely be traveled by lightly loaded vehicular traffic.

We recommend the structural section for the new road consist of a minimum of 6 inches of E-1 surface course over 20 inches of Selected Material Type A structural fill as defined by the Alaska Department of Transportation (ADOT) standard specifications. Gradation requirements are provided in Figure 2, and structural fill should be placed in accordance with the recommendations included in Section 5.7. This section may experience some vertical displacement during freezing and thawing cycles and minor subgrade strength loss during the spring thawing cycle. Careful preparation of the subgrade prior to construction of the structural section will directly correlate with roadway performance. If the organic material (peat within muskegs, moss and surface material within the treed areas, roots, woody material, any other organic-rich soil) is not completely removed beneath the structural section, the performance of the roadway may be negatively impacted which could include, but not be limited to, difficulties supporting construction equipment, increased maintenance costs, strength loss during spring due to thaw weakening, and more frequent grading to remediate differential settlement that may occur over time. In order to reduce these risks, all organic material should be removed beneath the footprint of the proposed roadway and replaced with compacted structural fill.

The performance of the section is controlled by the details of construction and will depend on the quality (gradation characteristics) of the materials used to develop the needed structural section, drainage details, and the extent to which seasonal frost action causes softening of the subgrade during breakup. This section assumes that site improvements will be designed with appropriate drainage to direct surface waters away from the area and not into the structural section. Likewise, the subgrade (native soil or bedrock) surface below the structural section should be sloped such that water drains away from the structural section soils.

5.5 Embankment Settlement

If the new embankments are constructed on top of peat (such as within the muskegs where it is thickest), there will likely be measurable consolidation of the soft, native material which will cause differential settlement. The actual magnitude of settlement of peat is difficult to estimate due to material variability and is dependent on the preloaded degree of consolidation, nature of the peat, and the amount of fill placed over the peat. For rough estimating purposes, the total settlement of new embankments over peat (within the muskegs) can be estimated at 20 to 40 percent of the original peat thickness under the fill. Additional settlement of existing embankments that are increased in height can be estimated at 10 to 30 percent of the original peat thickness. Consolidation will take place over the life of the roadway, but the rate of consolidation will be highest within approximately six months of construction, such that long term differential settlement will be relatively minor. New embankments constructed over compact mineral soil or bedrock are unlikely to experience settlement.

5.6 Geotextile Separation/Reinforcement Fabric

We have included recommendations for incorporation of a geotextile fabric to provide reinforcement and separation purposes between the organic (or silty soil if encountered) and fill material if the organics (within the muskegs) are not removed from beneath the structural section. Geofabric used for this project should consist of a woven geotextile material such as Mirafi RS380i or equivalent. This geofabric layer will increase the stability or strength of the subgrade and should prevent intermixing of the native soils with structural fill thereby maintaining the fill quality and improving fill placement/compaction efficiency. We recommend the following minimum material properties when selecting an equivalent geofabric for this application in the project based on Minimum Average Roll Values (MARV).

Exhibit 5-6: Woven Geotextile

Apparent Opening Size by ASTM D4751	US Sieve 40
Permittivity by ASTM D4491	0.9 sec ⁻¹
Flow Rate by ASTM D4491	75 gal/min/ft ²
Interaction Coefficient by ASTM D5321	0.9
Tensile Modulus by ASTM D4595	51,000 lbs/ft at 2 percent strain
Factory Seam Strength by ASTM D4355	80 percent strength retained

The manufacturer's recommendations should be used for placement of geofabric. In the absence of manufacturer recommendations, the recommendations below should be followed. To minimize the impact of horizontal unconformities due to seams, seams should be sewn on roll side and end seams. Joining of the geofabric should be in accordance with guidelines presented by the Federal Highway Administration (FHWA), *Geosynthetic Design and Construction Guidelines, Publication No. FHWA-HI-95-038*, as applicable. End seams should also be staggered by a distance equal to the roll width.

5.7 Structural Fills and Compaction

Structural fill will be needed to construct embankments, in the structural section of the new roadway, and to replace unsuitable soils. Structural fill that is placed in the structural section of the new roadway should be clean, well-graded, granular soil to provide drainage and frost protection. These soils should contain less than about six percent (by weight, based on the minus 3-inch portion) passing the No. 200 sieve. Generally, Selected Material Type A as specified by the ADOT meets these requirements and may be placed in both wet and dry conditions. Selected Material Type B as specified by the ADOT or shot rock can be used to construct embankments below the structural section. Gradation requirements for Selected Type A and B are included as Figure 2.

Soil fills in the new embankment and for the structural section should be placed in lifts not to exceed 10 to 12 inches loose thickness, and compacted to at least 95 percent of the maximum dry density as determined by the Modified Proctor compaction procedure (ASTM D-1557). During soil fill placement, we recommend that large cobbles or boulders with dimensions in excess of 8 inches be removed.

We understand that it is likely that shot rock will be used in the development of embankments during the construction of project. It is our opinion that this may be done as long as several provisions be made in the final design drawings. The greatest risk of instability associated with the use of shot rock in embankment fills is the development of large voids resulting from the use of potentially large, angular cobbles and boulders. If shot rock is to be used in the development of embankments, we recommend that the rock be spread in loose lifts not to exceed 2 feet in depth. Due to the angular nature of shot rock, it will be difficult to test the effectiveness of compaction techniques as the fills are placed. Rock fills should therefore be placed and worked with a blade so that voids caused by larger particles would be minimized. We recommend that maximum particle size be limited to 2 feet in shot rock fill embankments at depths greater than 5 feet below the design grade of the roadway. Between 5 and 2 feet below the final roadway grade, the maximum particle size should be limited to 1-foot. We do not recommend developing structural sections with shot rock.

6 CLOSURE AND LIMITATIONS

This report was prepared for the exclusive use of our client and their representatives for evaluating the site as it relates to the geotechnical aspects discussed herein. The conclusions and recommendations contained in this report are based on information provided from the observed site conditions and other conditions described herein. The analyses, conclusions and recommendations contained in this report are based on site conditions as they presently exist. It is assumed that the exploratory hand probes are representative of the subsurface conditions throughout the site, i.e., the subsurface conditions everywhere are not significantly different from those disclosed by the explorations.

If, during construction, subsurface conditions different from those encountered in these and prior explorations are observed or appear to be present, Shannon & Wilson, Inc. should be advised at once so that these conditions can be reviewed and recommendations can be reconsidered where necessary. If there is a substantial lapse of time between the submittal of this report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, it is recommended that this report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

We recommend that we be retained to review those portions of the plans and specifications pertaining to earthwork to determine if they are consistent with our recommendations. In addition, we should be retained to observe construction, particularly the compaction of structural fill and site excavations, and also to make field measurements of ground displacements and such other field observations as may be necessary.

Unanticipated soil conditions are commonly encountered and cannot fully be determined by merely conducting the surface reconnaissance. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs. Shannon & Wilson has prepared the attachments in Appendix A *Important Information About Your Geotechnical/Environmental Report* to assist you and others in understanding the use and limitations of the reports.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report please contact

signatory at the beginning of this report. We appreciate this opportunity to be of service. Please contact us at (907) 561-2120 with questions or comments concerning the contents of this report.

APPENDIX A: IMPORTANT INFORMATION

Appendix A

IMPORTANT INFORMATION

About Your Geotechnical/Environmental Report



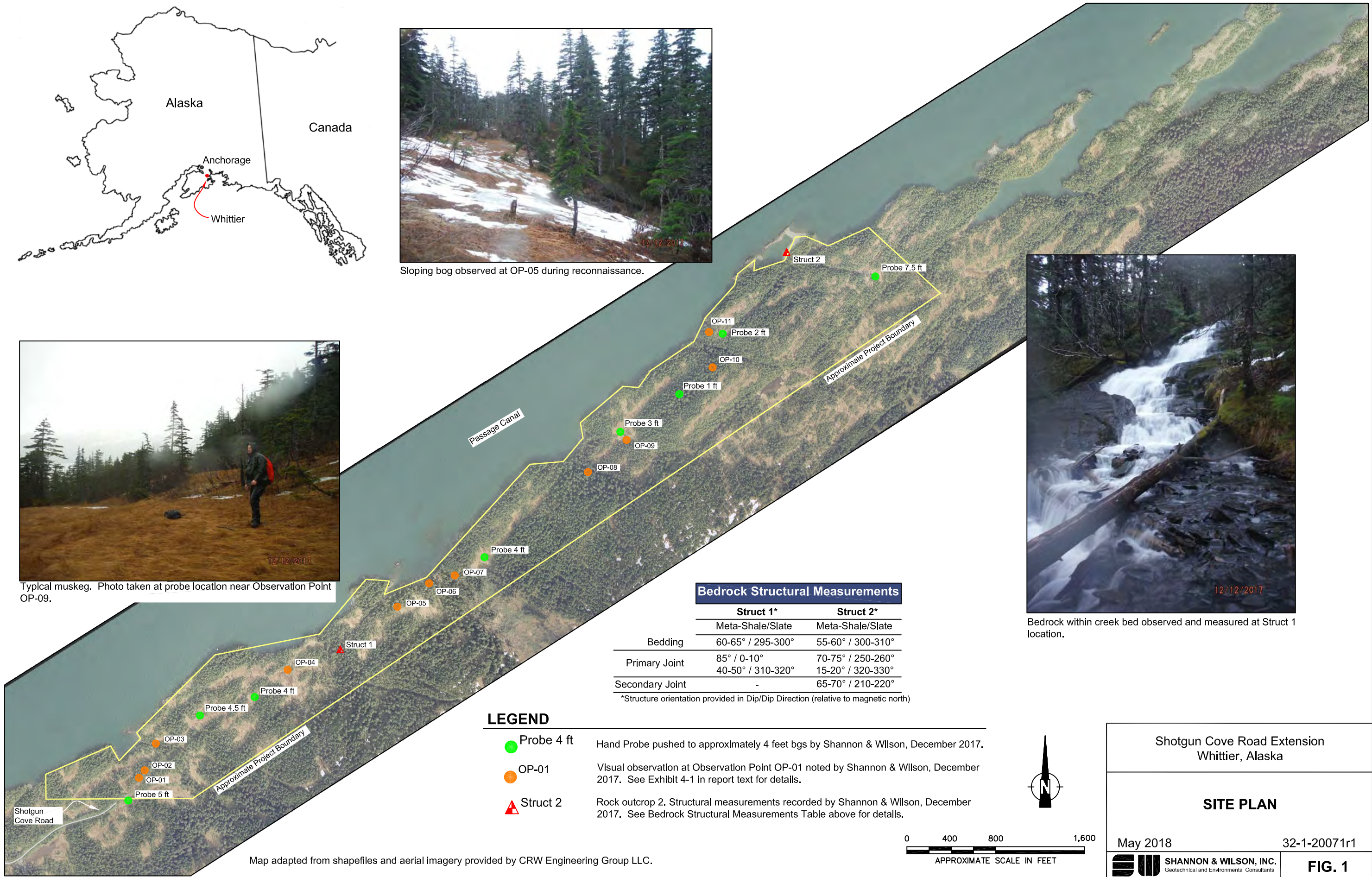
Sloping bog observed at OP-05 during reconnaissance.



Typical muskeg. Photo taken at probe location near Observation Point OP-09.



Bedrock within creek bed observed and measured at Struct 1 location.



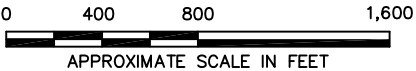
Bedrock Structural Measurements

	Struct 1*	Struct 2*
	Meta-Shale/Slate	Meta-Shale/Slate
Bedding	60-65° / 295-300°	55-60° / 300-310°
Primary Joint	85° / 0-10° 40-50° / 310-320°	70-75° / 250-260° 15-20° / 320-330°
Secondary Joint	-	65-70° / 210-220°

*Structure orientation provided in Dip/Dip Direction (relative to magnetic north)

LEGEND

- Probe 4 ft Hand Probe pushed to approximately 4 feet bgs by Shannon & Wilson, December 2017.
- OP-01 Visual observation at Observation Point OP-01 noted by Shannon & Wilson, December 2017. See Exhibit 4-1 in report text for details.
- ▲ Struct 2 Rock outcrop 2. Structural measurements recorded by Shannon & Wilson, December 2017. See Bedrock Structural Measurements Table above for details.



Map adapted from shapefiles and aerial imagery provided by CRW Engineering Group LLC.

Shotgun Cove Road Extension
Whittier, Alaska

SITE PLAN

May 2018

32-1-20071r1

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 1

GRADATION AND DURABILITY REQUIREMENTS

After: Alaska Department of Transportation
Standard Specifications for Highway Construction (2015)

E-1 Surface Course

U.S. STANDARD SIEVE SIZE		PERCENT PASSING BY WEIGHT
English	Metric	
1 in.	25 mm	100
3/4 in.	19 mm	70 - 100
3/8 in.	9.5 mm	50 - 85
No. 4	4.75 mm	35 - 65
No. 8	2.36 mm	20 - 50
No. 50	0.300 mm	15 - 30
No. 200	0.075 mm	8 - 15

Selected Material Type A

U.S. STANDARD SIEVE SIZE		PERCENT PASSING BY WEIGHT
English	Metric	
No. 4	4.75 mm	20 - 60
No. 200	0.075 mm	6 Max. on minus 3-in. portion

Aggregate containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as tested by ATM 204 and ATM 205. Meet the gradation as tested by ATM 304.

Selected Material Type B

U.S. STANDARD SIEVE SIZE		PERCENT PASSING BY WEIGHT
English	Metric	
No. 200	0.075 mm	10 Max. on minus 3-in. portion

Aggregate containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as tested by ATM 204 and ATM 205. Meet the gradation as tested by ATM 304.

Shotgun Cove Road Extension
Whittier, Alaska

GRADATION REQUIREMENTS

May 2018

32-1-20071r1



SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. 2

APPENDIX A: IMPORTANT INFORMATION

Appendix A

IMPORTANT INFORMATION

About Your Geotechnical/Environmental Report



Date: May 2018
To: CRW Engineering Group, LLC
Shotgun Cove Road Extension, Whittier,
Alaska

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

Appendix D:

Environmental Data Gap Analysis

SHOTGUN COVE ROAD EXTENSION DATA GAP ANALYSIS

June 2018

Prepared by

Solstice Alaska Consulting, Inc
2607 Fairbanks Street, Suite B
Anchorage, Alaska 99503



Prepared for

City of Whittier
P.O. Box 608
Whittier, Alaska 99693



Contents

1.0 Background	1
1.1 Introduction	1
1.2 Data Gathering	1
2.0 Resources and Issues	1
2.1 Historic Properties, Archeological and Cultural Resources.....	1
2.2 Right-of-Way	2
2.3 Wetlands and Waters of the U.S.....	3
2.4 Floodplain and Regulatory Floodway.....	3
2.5 Water Quality	4
2.6 Threatened and Endangered Species	4
2.7 State Refuges, National Wildlife Refuges, Critical Habitat Areas and Sanctuaries.....	5
2.8 Essential Fish Habitat and Fish Streams.....	5
2.9 Wildlife, Migratory Birds, and Eagles’ Nest	7
2.10 Invasive Species	9
2.11 Section 4(f)/6(f) Resources	10
2.12 Hazardous Materials, Pollution Prevention, Solid Waste, and Material Disposal Sites	10
2.13 Wild and Scenic Rivers	11
2.14 Air Quality	11
2.15 Social and Economic Issues.....	12
2.16 Noise	12
2.17 Navigable Waters.....	13
2.18 Land Use and Transportation Plans	13
2.19 Indirect and Cumulative Impacts	14
3.0 Conclusions	14
3.1 Recommendations for Analysis and Authorizations	14
3.2 NEPA Documentation	16
References	17

1.0 Background

1.1 Introduction

The City of Whittier has proposed the Shotgun Cove Road Extension to extend the existing Shotgun Cove Road for approximately 2.5 miles from the current terminus of Shotgun Cove Road (near Second Salmon Run), to the U.S. Department of Agriculture Forest Service (Forest Service) land at Trinity Point. The road design is proposed to be approximately 30 feet (ft) wide with a maximum grade of 10 percent, designed for 30 miles per hour traffic. Currently, a low road option and a high road option have been proposed.

1.2 Data Gathering

In order to identify environmental and social resources relevant to the proposed project before a National Environmental Policy Act (NEPA) review and approval from the Federal Highway Administration (FHWA), Western Federal Lands (WFL), the Shotgun Cove Road Extension project team gathered existing data, reports, and information and prepared a Preliminary Environmental Research document. The document was distributed to agencies on March 15, 2018. A public open house was held on April 11, 2018 to gather input on the environment, the project, and its potential impacts. On April 24, 2018, a pre-NEPA agency scoping meeting was held in Anchorage, and the project team met with the Alaska Department of Fish and Game (ADF&G) on April 26, 2018. Comments and information gathered through preliminary environmental research and the aforementioned pre-NEPA scoping meetings have been incorporated into this data gap analysis.

This data gap analysis includes a summary of resources that should be considered during the NEPA documentation phase of the Shotgun Cove Road Extension Project; it summarizes existing data and information gathered from agencies and the public; and it presents recommendations for additional data and consultation needs based on environmental regulations and agency representative comments.

2.0 Resources and Issues

2.1 Historic Properties, Archeological and Cultural Resources

Applicable Regulations: Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of their activities on historic properties. The Section 106 process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the Agency Official and other interested parties. To implement this regulation, federal agencies must make reasonable and good faith efforts to identify any cultural resources within a project area that may be affected by their undertakings and identify and evaluate eligibility of these resources for listing on the National Register of Historic Places.

Contact: Alaska Department of Natural Resources (ADNR), Office of History and Archaeology, Judith Bittner, State Historic Preservation Officer (SHPO), judy.bittner@alaska.gov, 907-269-8715.

Existing information: There are no known Alaska Heritage Resources Survey (AHRs) sites in the project area. A preliminary historic and cultural resources desktop study was completed on February 19, 2018, and according to the AHRs, the Leschi Shipwreck (SEW-01614) is located northeast of the proposed project on the eastern side of Shotgun Cove (CRC 2018), and it would not be impacted by this project.

There have been no previous cultural resource surveys in the project area. However, it is understood that Prince William Sound has been important historically for indigenous peoples and Whittier saw development during World War II. In addition, in 2002 and 2003, archaeologists surveyed an adjacent 2.59-mile Shotgun Cove Road corridor (from the Eastern Avenue and Blackstone Road intersection to

the end of Shotgun Cove Road) and identified a cluster of drowned and living culturally modified trees at Second Salmon Run cove (CRC 2018).

During the April 24, 2018 pre-NEPA agency scoping meeting for this project, the SHPO representative stated that SHPO generally recommends a field survey in order to document cultural and historic resources (SolsticeAK 2018). The SHPO also noted that the project vicinity has potential for petroglyphs and shipwrecks on its coastline (SolsticeAK 2018).

Recommendation: A field survey led by an accredited cultural and historic resources professional should be completed. The field survey could entail accessing the project area by walking the road alignment options on foot and/or accessing some areas via boat, documenting cultural historical resources, and preparing a report that summarizes survey results. If surveys are conducted along the shoreline where the State has ownership, an ADNR, Office of History and Archeology Alaska Cultural Resource Permit would be needed. Following field survey results, a NHPA Section 106 consultation with SHPO should be conducted.

2.2 Right-of-Way

Applicable Regulations: According to the State of Alaska Submerged Lands Act, lands that are located between the mean high tide and three miles offshore are owned by the State. The Alaska National Interest Lands Conservation Act (ANILCA) enforces special protection to national parks, national wildlife refuges, national monuments, wild and scenic rivers, recreational areas, national forests, and conservation areas. The ANILCA Implementation Program coordinates Alaska state agency development, regulation, policy review, and implementation. In addition, access to the Chugach National Forest land, specifically, is authorized through Special Use and Special Recreation Use permits depending on the type of land access that is needed.

Contacts: In addition to the City of Whittier, there are three property owners near the project area, and ADNR, Office of Project Management and Permitting (OPMP) oversees ANILCA implementation.

- ADNR, Division of Mining, Land, and Water (MLW), Samantha Carroll, Easement Unit Manager, samantha.carroll@alaska.gov, 907-269-8548.
- Chugach Alaska Corporation, David Phillips, Land and Resources Manager, dphillips@chugach.com, 907-563-8866.
- Forest Service, Chugach National Forest/Glacier Ranger District, Tim Charnon, Glacier District Ranger, tcharnon@fs.fed.us, 907-783-3242.
- ADNR, OPMP, Susan Magee, State ANILCA Program Coordinator, susan.magee@alaska.gov, 907-269-7529.

Existing information: The proposed project is located within City of Whittier-owned land. This land was transferred from the State of Alaska to the City by deed. A primary purpose of the proposed project is to access the adjacent Forest Service-owned land (north and east of the project area). Additional adjacent land owners include the Chugach Native Inc. (west of the project area), and the State of Alaska owns adjacent tidelands and retains a 50-foot (ft.) public use easement buffer along the coast (north of the project area).

Recommendation: No authorizations should be needed because the road options are within City-owned land. The City should refrain from accessing Forest Service land during project construction; if Forest Service land access is needed, the project should consult with the Chugach National Forest Service to obtain necessary access authorizations and to participate in the ANILCA process.

2.3 Wetlands and Waters of the U.S.

Applicable Regulations: Executive Order (EO) 11990 minimizes the destruction, loss, or degradation of wetlands and preserves the natural and beneficial values of wetlands. Section 404 of the Clean Water Act (CWA) establishes a regulation program to discharge dredge or fill material into waters of the U.S. including wetlands and requires a permit to do so, unless the activity is exempt from Section 404.

Contact: U.S. Army Corps of Engineers (USACE), Alaska District, Roberta Budnik, roberta.k.budnik@usace.army.mil, 907-753-2785.

Existing information: It is unlikely that the proposed project could completely avoid the placement of fill within wetlands. According to a January 24, 2018 review of the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), there are approximately 150 acres of freshwater forested/shrub wetland (PF04/EM1B) and approximately six acres of freshwater emergent wetlands (PEM1B) within the study area (USFWS 2018c). A 2011 field-based effort of the area also identifies freshwater forested/shrub and freshwater emergent wetlands in the project area (Stantec 2011).

During the April 24, 2018 Shotgun Cove Road Extension pre-NEPA agency scoping meeting, a USACE representative stated that USACE could provide a Preliminary Jurisdictional Determination (PJD) based on existing NWI and supplemental information including the abovementioned field survey (SolsticeAK 2018). A PJD is not appealable, and to obtain a formally appealable Approved Jurisdictional Determination (AJD), it was stated that USACE generally requires fieldwork. A wetlands permit would be needed for the road. Understanding that FHWA would be the lead agency on the environmental document, USACE would likely adopt FHWA's decision during USACE's permitting process (SolsticeAK 2018).

The USACE permitted the existing Shotgun Cove Road under permit #POA-2003-764-4. The USACE stated that the proposed project will likely be authorized by modifying this permit (SolsticeAK 2018).

Recommendation: Additional research, including a review of wetland delineation efforts completed by Stantec in 2011, should be conducted. Because a PJD remains valid for five years, the City of Whittier should submit a request during the middle of the environmental documentation process to lessen the likelihood of needing to repeat the process. Consultation with USACE should be completed, and a PJD should be requested from USACE. The environmental document should include information on wetland impacts and how impacts have been minimized and mitigated. Once the environmental document is completed, a modification to permit POA-2003-764-4 should be sought.

2.4 Floodplain and Regulatory Floodway

Applicable Regulations: EO 11988 requires federal agency avoidance of occupancy and modification of floodplains wherever there is a practicable alternative. Section 2(a) of the EO requires an eight-step process for agencies to carry out as part of the decision-making process for projects that have potential impacts to or within a floodplain.

Contact: Alaska Department of Commerce, Community and Economic Development (ADCCED), Division of Community and Regional Affairs, Floodplain Management, Taunnie Boothby, Certified Floodplain Manager, Taunnie.Boothby@alaska.gov, 907-269-4583.

Existing Information: An October 3, 2017 review of the Federal Emergency Management Agency Flood Map Service Center revealed that a flood hazard study has not been completed for the City of Whittier

or the project area (FEMA 2018), and there are no Flood Insurance Rate Maps or critical facilities maps available for the area (City of Whittier 2008).

Whittier is prone to storm surge, rainfall, snowmelt, and glacier melt flooding (City of Whittier 2008); however, the proposed low and high road alignment options both have components of the roadway at a minimum elevation of approximately 80 ft. from marine waters, which is likely outside the floodplain.

Recommendation: The project should consult with the ADCED Floodplain Manager to obtain concurrence that there are no floodplains or potential for flooding within the project area. The consultation should include a summary of the proposed project's potential area of impact, elevation, area, and mapped streams. Consultation results should be documented in the environmental document.

2.5 Water Quality

Applicable Regulations: Section 404 of the CWA establishes the basic structure for regulating pollutant discharges into waters of the U.S., gives the Environmental Protection Agency authority to implement pollution control, set surface water contaminant water quality standards, makes discharging point source pollution into navigable waters unlawful, unless permitted, funds sewage treatment, and addresses nonpoint source pollution. The Safe Drinking Water Act (SDWA) protects public drinking water, sets standards for drinking water quality, and implements technical and financial programs to ensure drinking water safety.

Contact: The Alaska Department of Environmental Conservation (ADEC) is responsible for implementation of the CWA and SDWA in Alaska.

- ADEC, Division of Water, Andrew Sayers-Fay, Division Director, andrew.sayers-fay@alaska.gov, 907-269-6281.

Existing information: The project area is located approximately 2.3 miles northeast of the City of Whittier's drinking water source that originates from three groundwater wells located near 100 West Whittier Road, and the proposed project would not impact this area. According to a January 25, 2018 review of the ADEC Alaska Water Quality Map, there are no impaired waterbodies in or near the project area (ADEC 2018). There are approximately fifteen existing streams and drainages that have potential to intersect the proposed low and/or high road options. As detailed in the Wetlands section of this data gap analysis, there are approximately 156 acres of wetlands that were mapped within the study area and proposed project's general area (USFWS 2018c).

Recommendation: All drainages should be surveyed and mapped. Because the project could result in discharges to streams, drainages, and wetlands in the area, consultation with ADEC should be conducted to discuss potential water quality impacts from road construction activities to adjacent or crossed streams and wetlands. A Section 404 Water Quality Certification should be sought prior to construction.

2.6 Threatened and Endangered Species

Applicable Regulations: The Endangered Species Act (ESA) mandates conservation of listed threatened and endangered (T&E) species and their critical habitat. Section 7 of the ESA requires interagency cooperation and consultation to ensure that an action authorized, funded, or carried out is not likely to jeopardize the continued existence of any T&E species or result in the destruction or adverse modification of their habitat.

Contact: USFWS, Anchorage Fish and Wildlife Conservation Office, Jennifer Spegon, Ecological Services Biologist, jennifer_j_spegon@fws.gov, 907-271-2768. (Note the NMFS has jurisdiction over most ESA-listed marine species; however, because this project doesn't impact the marine environment, consultation with them is likely unnecessary.)

Existing information: A February 14, 2018 USFWS Information for Planning and Consultation (IPaC) report generated for the project indicates that there are no T&E species within the project area (USFWS 2018a). Through project email correspondence on March 20, 2018 and May 23, 2018, USFWS indicated that the agency had reviewed the proposed project preliminary environmental research and pre-NEPA agency scoping meeting summary; noted that the IPaC had been consulted and incorporated into project planning; and had no further comments (USFWS 2018e; USFWS 2018f).

Recommendation: An informal consultation with USFWS should be conducted to obtain written concurrence regarding the lack of T&E species and their critical habitat in the project area. Results of the consultation should be included in the environmental document.

2.7 State Refuges, National Wildlife Refuges, Critical Habitat Areas and Sanctuaries

Applicable Regulations: Under Alaska Statute Title 16, State of Alaska legislature designated 32 state game refuges, critical habitat areas, and wildlife sanctuaries in the state. ANILCA created or expanded conservation units in Alaska including National Parks and National Wildlife Refuges, and Alaska's State ANILCA Program Coordinator is positioned at ADNR.

Contacts: This section's contacts include ADF&G's Division of Habitat and ADNR's State ANILCA Program Coordinator.

- ADF&G, Division of Habitat, Megan Marie, megan.marie@alaska.gov, 907-267-2446.
- ADNR, OPMP, Susan Magee, State ANILCA Program Coordinator, susan.magee@alaska.gov, 907-269-7529.

Existing information: A February 15, 2018 search of the USFWS Critical Habitat mapper, USFWS Land Status within the National Wildlife Refuges of Alaska mapper, and ADF&G Land Designation Maps determined that there are no refuges, sanctuaries, or critical habitat in the proposed project's vicinity (USFWS 2018; USFWS 2018b; ADF&G 2018). The USFWS IPaC report prepared for the project also showed no critical habitats or refuges within or near the project area (USFWS 2018a). As described above, through March and May 2018 email correspondence, USFWS had reviewed proposed project materials to date, noted that USFWS resources had been documented, and indicated that the agency had no further comments (USFWS 2018e; USFWS 2018f).

Recommendation: No impacts to refuges, critical habitat, or sanctuaries are anticipated. No further work on is needed other than to document this resource as a non-issue in the environmental document.

2.8 Essential Fish Habitat and Fish Streams

Applicable Regulations: The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) governs U.S. marine fisheries management and requires federal agencies to consult with National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) on actions or proposed actions that may adversely affect Essential Fish Habitat (EFH). Federal agencies comply by submitting an EFH Assessment, detailing the proposed federal action's effects on EFH, to NMFS. If EFH may be adversely affected, NMFS makes conservation recommendations to avoid, minimize, mitigate, or otherwise offset these effects to federal and state agencies. Alaska's Anadromous Fish Act (AS

16.05.871- .901) requires notification to and approval from ADF&G before impacting anadromous fish waterbodies or streams. The Fishway Act (AS 16.05.841), requires notification to and authorization from ADF&G for activities within a stream if they impede passage of resident or anadromous fish.

Contacts: NMFS enforces the MSFCA, and ADF&G enforces the Anadromous Fish Act.

- NMFS, Alaska Region, Habitat Conservation Division, Matthew Eagleton, Supervisory Fishery Biologist, matthew.eagleton@noaa.gov, 907-271-6354.
- ADF&G, Division of Habitat, William Frost, Habitat Biologist, william.frost@alaska.gov, 907-267-2813.

Existing information: The NMFS EFH mapper and the ADF&G's Fish Resource Monitor were consulted to identify EFH in the project area.

A January 2018 review of the NMFS EFH mapping tool indicated that marine waters in the project vicinity are EFH (NOAA 2018). Seine dives were completed by NMFS in Passage Canal, which is a minimum of approximately 250 to 350 ft. northwest of the proposed road options, and eelgrass beds were identified during these dives, primarily in the Shotgun Cove area (SolsticeAK 2018). Passage Canal supports a variety of fish, but the proposed project would avoid impacts to marine waters.

An October 3, 2017 review of the Fish Resource Monitor, ADF&G's mapping tool for The Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes, identified five anadromous fish streams, which are EFH, in close proximity to the project area and one anadromous fish stream, Trinity Creek, that will likely intersect the project (Table 1) (ADF&G 2017). However, ADF&G stated that Trinity Creek may have been mapped in an incorrect location, and there may be additional unmapped streams containing anadromous fish species within the project area (ADF&G 2018a).

Table 1 – Anadromous Fish Streams Within or in Proximity to the Project Area

Stream Name	AWC Code	Location	Anadromous Species and Use
No Name	224-10-14418	1.3 miles southwest of Emerald Cove trailhead, flowing into Passage Canal at 60.7771, -148.6618	Coho salmon (spawning)
Cove Creek and Cove Creek tributary	224-10-14420 and 224-10-14420-2010 (tributary)	1.3 miles southwest of Emerald Cove trailhead, flowing into Passage Canal at 60.7775, -148.6603	Pink salmon (present), coho salmon (spawning, present)
Second Salmon Run Creek	224-10-14424	0.3 miles southwest of Emerald Cove trailhead, flowing into Passage Canal at 60.7861, -148.6317	Chum salmon (spawning), pink salmon (spawning)
Trinity Creek	224-10-14430	0.5 miles southwest of Trinity Point, flowing into Emerald Bay at 60.8019, -148.5774	Pink salmon (spawning)
Clean Creek	224-10-14440	1.2 miles southeast of Trinity Point, flowing into Shotgun Cove at 60.7901, -148.5665	Chum salmon (present), pink salmon (present)
Barge Creek	224-10-14450	1.6 southeast of Trinity Point, flowing into Shotgun Cove at 60.7839, -148.5677	Chum salmon (present), pink salmon (present)
Shotgun Creek	224-10-14460	1.9 miles southeast of Trinity Point, flowing into Shotgun Cove at 60.7795, -148.5713	Chum salmon (present), pink salmon (present)

Recommendation: ADF&G, Division of Habitat indicated that additional information regarding the potential for anadromous fish waterbodies in the project area is needed. ADF&G will conduct fieldwork and sampling to determine the presence of fish in drainages crossed by the project options, and this fieldwork should be supported by the project by providing needed information to the agency, including, e.g., road option coordinates. The project should consult with ADF&G regarding the Anadromous Fish Act and with ADF&G. If anadromous streams are found in the project area, prepare an EFH Assessment

and consult with NMFS under the MSFCMA. The project should obtain a Fish Habitat permit from ADF&G prior to work involving anadromous or resident fish streams.

2.9 Wildlife, Migratory Birds, and Eagles' Nest

Applicable Regulations: The Marine Mammal Protection Act (MMPA) protects marine mammals within U.S. waters and prohibits take of marine mammals. The Migratory Bird Treaty Act (MBTA) protects migratory birds and makes it illegal to for anyone without a permit to take, possess, import, export, transport, sell, purchase, or barter migratory birds, their parts, nests, or eggs. The Bald and Golden Eagle Protection Act prohibits the take of Bald Eagles including their nests without a permit.

Contact: USFWS and NMFS share jurisdiction for MMPA enforcement, and USFWS is the acting agency for MBTA and Bald and Golden Eagle Protection Act enforcement.

- NMFS, Alaska Region, Protected Species Division, Greg Balogh, Anchorage Office Supervisor, greg.balogh@noaa.gov, 907-271-3023.
- USFWS, Anchorage Fish & Wildlife Field Office, Jennifer Spegon, Ecological Services Biologist, jennifer_j_spegon@fws.gov, 907-271-2768.

Existing information: The proposed project would develop a road in an area that supports birds, fish, and wildlife and could increase human and wildlife interactions. Black bears, coyotes, and mountain goats are predominant large land animals near Whittier, and moose and wolves are occasionally seen (City of Whittier 2012; ADF&G 2017a). Common small mammals that are present include snowshoe hares, porcupines, beavers, river otters, mink, marmots, squirrels, and weasels (City of Whittier 2012; ADF&G 2017a). The proposed project would avoid impacts to the adjacent Passage Canal marine environment. Birds frequent the Whittier area including geese, ducks, cranes, Bald Eagles, ptarmigan, and hummingbirds (City of Whittier 2012), and suitable nesting habitat, such as mature trees, exists in and adjacent to the proposed project corridor.

The USFWS IPaC report for this project identifies 42 migratory bird species (Table 2) that may be present within the project area (USFWS 2018a). According to a May 21, 2018 review of the Wetland Ecosystems Services Protocol for Southeast Alaska mapper, there are no Bald Eagle nests within the project area (USFWS et al. 2018). There is one nest located approximately 2,087 ft. west of the project area at latitude 60.7764, longitude -148.6935, and other nests are more than 20,000 ft. away from the project area (Table 3).

Table 2 – Migratory Bird Species with Range in Project Area

Species	Breeds	Importance
Aleutian Tern (<i>Sterna aleutica</i>)	May 1 – August 31	Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
Arctic Tern (<i>Sterna paradisaea</i>)	May 20 – August 15	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	January 1 – Sept. 30	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Black Oystercatcher (<i>Haematopus bachmani</i>)	April 15 – October 31	BCC throughout its range in the continental USA and Alaska.
Black Scoter (<i>Melanitta nigra</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Black Turnstone (<i>Arenaria melanocephala</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.
Black-footed Albatross (<i>Phoebastria nigripes</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.

Species	Breeds	Importance
Black-legged Kittiwake (<i>Rissa tridactyla</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Bonaparte's Gull (<i>Chroicocephalus philadelphia</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Common Eider (<i>Somateria mollissima</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Common Loon (<i>Gavia immer</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Common Murre (<i>Uria aalge</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Double-crested Cormorant (<i>Phalacrocorax auratus</i>)	April 20 – August 31	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Golden Eagle (<i>Aquila chrysaetos</i>)	January 1 – August 31	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Great Shearwater (<i>Puffinus gravis</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Herring Gull (<i>Larus argentatus</i>)	April 20 – August 31	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Kittlitz's Murrelet (<i>Brachyramphus brevirostris</i>)	May 15 – August 31	BCC throughout its range in the continental USA and Alaska.
Laysan Albatross (<i>Phoebastria immutabilis</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.
Lesser Yellowlegs (<i>Tringa flavepipres</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.
Long-tailed Duck (<i>Clangula hyemalis</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Manx Shearwater (<i>Puffinus puffinus</i>)	April 15 – October 31	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Marbled Godwit (<i>Mimosa fedoa</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.
Northern Fulmar (<i>Fulmarus glacialis</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	May 20 – August 31	BCC throughout its range in the continental USA and Alaska.
Parasitic Jaeger (<i>Stercorarius parasiticus</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Pink-footed Shearwater (<i>Puffinus creatopus</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.
Pomarine Jaeger (<i>Stercorarius pomarinus</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Red Phalarope (<i>Phalaropus fulicarius</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Red-breasted Merganser (<i>Mergus serrator</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Red-faced Cormorant (<i>Phalacrocorax urile</i>)	April 15 – July 31	BCC throughout its range in the continental USA and Alaska
Red-legged Kittiwake (<i>Rissa brevirostris</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.
Red-necked Phalarope (<i>Phalaropus lobatus</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Red-throated Loon (<i>Gavia stellata</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.
Rufous Hummingbird (<i>Selasphorus rufus</i>)	April 15 – July 15	BCC throughout its range in the continental USA and Alaska.
Semipalmated Sandpiper (<i>Calidris pusilla</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.

Species	Breeds	Importance
Short-billed Dowitcher (<i>Limnodromus griseus</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.
South Polar Skua (<i>Stercorarius maccormicki</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Surf Scoter (<i>Melanitta perspicillata</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Thick-billed Murre (<i>Uria lomvia</i>)	May 20 – July 31	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Whimbrel (<i>Numenius phaeopus</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.
White-winged Scoter (<i>Melanitta fusca</i>)	Elsewhere	Not a BCC in this area but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from development or activities.
Yellow-billed Loon (<i>Gavia adamsii</i>)	Elsewhere	BCC throughout its range in the continental USA and Alaska.

Table 3 – Documented Eagle Nests in Proximity to the Project Area

Nest Object ID	Documented Survey Date	Approximate Distance from Project Area
2056	07/22/05	11,341 ft. west
32508	04/27/09	21,420 ft. southeast (Across Blackstone Bay)
32158	04/08/05	21,610 ft. southeast (Across Blackstone Bay)
32504	04/27/09	28,700 ft. south (on Willard Island)

Through a March 20, 2018 email correspondence, USFWS concurred that the proposed project’s preliminary environmental research was reviewed and included IPaC information and vegetation clearing timing windows; USFWS indicated that the agency had no additional comments at that time (USFWS 2018e). A May 23, 2018 email from USFWS reiterated that the agency had no further comments after reviewing the pre-NEPA agency scoping meeting summary (USFWS 2018f).

Recommendation: Although not requested by agencies, it may be warranted to determine Bald Eagle nests in the proposed project area. During other fieldwork activities, if Bald Eagle nests are discovered, the nest locations should be documented by recording their latitudes and longitudes. The locations should be provided to USFWS and cited in the environmental document. Additional consultation with USFWS should be conducted if it is needed, as determined through correspondence with USFWS.

2.10 Invasive Species

Applicable Regulations: EO 13112 calls for the prevention, control, and minimization of invasive species impacts. It restricts introduction of exotic species into the natural ecosystems of U.S. lands and waters; encourages States, local governments, and private citizens to prevent exotic species introduction; restricts exotic species importation and introduction into natural U.S. ecosystems; and restricts the use of Federal funds, programs, or authorities to export native species for introduction into ecosystems outside the U.S. where they do not occur naturally.

Contacts: ADF&G is responsible for invasive fisheries, wildlife, and habitats management, and ADNR is responsible for invasive terrestrial and freshwater plants.

- ADF&G, Invasive Species Program, Tammy Davis, Coordinator, tammy.davis@alaska.gov, 907-465-6183
- ADNR, Agriculture Plant Materials Center, Daniel Coleman, Natural Resource Specialist III, daniel.coleman@alaska.gov, 907-745-8721

Existing information: A January 24, 2018 search of the Alaska Exotic Plants Information Clearinghouse showed that there is one invasive plant species present within the project area (UAA 2018). The alsike

clover (*Trifolium hybridum* L.) was identified at latitude 60.777, longitude -148.662 and infests an area of 0.0117 acres. During the April 24, 2018 Shotgun Cove Road Extension pre-NEPA agency scoping meeting, it was noted by the Chugach National Forest and City of Whittier representatives that European black slugs (*Arion ater*) have been observed in the project area's vicinity, and an adjacent area was treated for noxious weeds (SolsticeAK 2018).

Recommendation: No additional analysis or actions should be required. The presence of invasive species in the project area should be documented in the environmental document.

2.11 Section 4(f)/6(f) Resources

Applicable Regulations: The U.S. Department of Transportation Act established the federal Cabinet department of the U.S. concerned with transportation, and Section 4(f) of the Transportation Act prohibits agencies from using land from publicly owned parks, recreation areas (including recreational trails), wildlife and water fowl refuges, or public and private historic properties, unless there is no feasible and prudent alternative and the action includes all possible minimization of harm to the property. The Land and Water Conservation Fund Act (LWCF) established a program to assist in preserving, developing, and assuring outdoor recreation resources. Under Section 6(f) of the LWCF, property acquired or developed with LWCF grant money that is converted to a non-recreational purpose, must coordinate with the Department of Interior to address other requirements.

Contact: FHWA, WFL, Stephen Morrow, Environmental Protection Specialist, stephen.morrow@dot.gov, 360-619-7811.

Existing information: A potential 4(f) property (Shotgun Cove/Emerald Cove Trail) is located within the project area, and the trailhead is located at the southwest end of the proposed roadway (ADF&G 2017a). Shotgun Cove/Emerald Cove Trail is located on land owned by the City of Whittier and runs parallel to the coastline to Shotgun Cove. The trail was built and is maintained by ADNR, Division of Parks and Outdoor Recreation. The road options would parallel Shotgun Cove/Emerald Cove Trail, and depending on the road option that is chosen, the road would intersect the trail between one and six times.

A January and February 2018 review of the USFWS National Wild and Scenic Rivers System, ADNR, Division of Parks & Outdoor Recreation, and National Park Service (NPS) websites indicated that no additional 4(f) properties, parks, wildlife management areas, or refuges exist within the project area (USFWS 2018d; ADNR-DPOR 2018; NPS 2018).

No 6(f) properties are within the project area.

Recommendation: A 4(f) assessment should be prepared. The assessment should describe the trails; detail 4(f) applicability; describe the 4(f) properties' use (perhaps by permanent incorporation and constructive use) by the road project; and avoidance and minimization measures that would be incorporated into the project.

2.12 Hazardous Materials, Pollution Prevention, Solid Waste, and Material Disposal Sites

Applicable Regulations: A number of federal and state laws apply. The Resource Conservation and Recovery Act governs the management and disposal of solid and hazardous wastes. The Toxic Substance Control Act governs the removal and disposal of a few specific substances, and soil, water, or other

substances that have been contaminated with these substances. ADEC solid waste regulations (18 AAC 60) govern the accumulation, storage, and disposal of solid wastes.

Contact: ADEC, Division of Spill Prevention and Response, Contaminated Sites Program, John Halverson, Program Manager, john.halverson@alaska.gov, 907-269-7545.

Existing information: A January 24, 2017 search of the ADEC Contaminated Sites Database determined that there are no contaminated sites within the project area (ADEC 2018a), and the proposed project would avoid impacting the nearest contaminated sites, one informational and one active ADEC contaminated site located almost two miles from the project area (Table 4).

Table 4 – ADEC Contaminated Sites

Site	File No.	Hazard ID	Status	Location	Description
Buckner Building	2114.57.003	4151	Active	1.8 miles southwest of the Shotgun Cove trailhead at 60.774722, -148.675000	Surface soil contamination (cleaned up lead and asbestos, current Diesel Range Organics). Groundwater contamination (cleaned up arsenic, barium, cadmium).
Block 11, Lots 1, 2, 3 (Whittier)	2114.57.001	4149	Informational	1.6 miles southwest of the Shotgun Cove trailhead at 60.777222, -148.670833	Contaminated brownfield (former stockpile area, incinerator and impound yard, and waste oil tank site).

Recommendation: No impacts to contaminated sites are expected. Other than to summarize the known sites in the environmental document, no additional analysis or actions should be required.

2.13 Wild and Scenic Rivers

Applicable Regulations: Administered by a council with representatives from the Bureau of Land Management, NPS, USFWS, and Forest Service, the Wild and Scenic Rivers Act intends to preserve rivers with outstanding natural, cultural, and recreational values in a free-flowing condition.

Contact: NPS, Alaska Region, Paul Schrooten, Transportation Manager, paul_schrooten@nps.gov, 907-644-3388.

Existing information: A January 25, 2018 review of the National Wild and Scenic Rivers System indicated that there are no wild and scenic rivers within the project area (USFWS 2018d).

Recommendation: No impacts to wild and scenic rivers are expected from the proposed project. Other than to summarize the known sites in the environmental document, no further analysis or actions should be required.

2.14 Air Quality

Applicable Regulations: The Clean Air Act controls air pollution at the national level. In Alaska, ADEC is responsible for managing non-point and mobile sources of air pollution, managing stationary out-of-stack air pollution discharges through a permit and compliance program, and monitoring field air to measure progress and understand problems.

Contact: ADEC, Division of Air Quality, Denise Koch, Division Director, denise.koch@alaska.gov, 907-465-5105.

Existing information: The proposed project is not in a nonattainment zone and does not currently or potentially have degraded air quality (City of Whittier 1994; ADEC 2018b; EPA 2017).

Recommendation: No impacts are anticipated. Other than to summarize the known sites in the environmental document, no further air quality analysis or actions should be required.

2.15 Social and Economic Issues

Applicable Regulations: EO 12898 directs federal agencies to identify and address disproportionate adverse impacts of federal actions to environmental and human health for minority and low-income populations. EO 13175 reaffirms the Federal government commitment to tribal sovereignty, self-determination, and self-government through requiring consultation and coordination with Indian tribes and tribal governments regarding issues that impact their communities.

Contacts: FHWA is the lead agency overseeing the environmental process for the proposed project and is responsible for environmental justice impacts as addressed by EO 12898. The Native Villages of Chenega and Tatitlek are federally-recognized tribes near the proposed project.

- FHWA, WFL, Stephen Morrow, Environmental Protection Specialist, stephen.morrow@dot.gov, 360-619-7811.
- Native Village of Chenega, Larry Evanoff, Chairman, brian.pillars@chenegafuture.com, 907-569-5688.
- Native Village of Tatitlek, David Totemoff, President, davidtotemoff@rocketmail.com, 907-325-2311.
- Native Village of Eyak, Kerin Kramer, Executive Director, kerin@eyak-nsn.gov, 907-424-7738.

Existing information: About 208 people live in Whittier (U.S. Census Bureau 2017). Minority populations make up about 35% of Whittier's demographics, and approximately 12% of the population lives below the poverty level. There are no federally-recognized tribes in Whittier. The geographically-closest tribes to the project area are the Native Village of Tatitlek (located about 60 miles west of Whittier), the Native Village of Chenega (located 42 miles southwest of Whittier in Chenega Bay), and the Native Village of Eyak (located about 100 miles west of Whittier in Cordova).

Recommendation: To meet the intent of EO 12898, the project should consult with FHWA, WFL regarding environmental justice populations to ensure that they are not disproportionately impacted by the project. Government-to-government consultation with tribes (Native Villages of Chenega, Tatitlek, and Eyak) should be conducted to meet the intent of EO 13175.

2.16 Noise

Applicable Regulations: The 23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise regulation requires the investigation of traffic noise impacts in areas adjacent to federally-aided highways for proposed construction of a highway on a new location. If the highway agency identifies impacts, it must consider and incorporate all feasible and reasonable noise abatement into the project design.

Contact: FHWA, WFL, Stephen Morrow, Environmental Protection Specialist, stephen.morrow@dot.gov, 360-619-7811.

Existing information: The proposed project is approximately two miles from sensitive sound receptors, including Whittier residences. The project area is located on undisturbed, natural land.

Recommendation: Correspondence with the FHWA, WFL should be conducted to determine whether a noise impact assessment would be needed.

2.17 Navigable Waters

Applicable Regulations: Section 10 of the Rivers and Harbors Appropriation Act requires approval prior to work in, over, or under navigable waters of the U.S., or waters which affect the course, location, condition or capacity of such waters. State ownership of navigable water beds is an attribute of state sovereignty, and Alaska Statute (AS 38.04.062) maintains that ADNR manages Alaska navigable waters. Determining title navigability is dependent upon waterbody use resulting from physical characteristics and transportation methods.

Contact: ADNR-MLW, Southcentral Regional Land Office, Samantha Carroll, Easement Unit Manager, samantha.carroll@alaska.gov, 907-269-8548.

Existing information: According to a review of the ADNR Navigable Waters mapper on May 18, 2018, there are no navigable waters within the project area (ADNR-MLW 2018). The three nearest navigable waters are located approximately 250 ft. (at its nearest point), five miles, and seven miles from the project area (ADNR-MLW 2018; Table 3).

Table 3 – Navigable Waters

Geographic Names Information System (GNIS) ID, Name	Navigable Waters Length/Area	Approximate Location
Passage Canal	Prince William Sound is a navigable sound that is approximately 100 miles.	250 ft. northwest of the project area
01424612, Portage Creek	Navigable for 7.33 miles	7.07 miles west of the project area
01424615, Portage Lake	1,325.80 acres	5.17 miles southwest of the project area

Recommendation: Impacts to navigable waters are not anticipated. Other than to summarize the known waterbodies in the environmental document, no additional analysis or action should be required.

2.18 Land Use and Transportation Plans

Applicable Regulations: The applicable local plans include the City of Whittier 2012 Comprehensive Plan Update and the Prince William Sound Economic Development District (PWSEDD) Prince William Sound 2011-2016 Comprehensive Economic Development Strategy.

Contacts: The City of Whittier manages implementation of its Comprehensive Plan Update, and the PWSEDD manages implementation of its Economic Development Strategy.

- City of Whittier, Annie Reeves, City Manager, asstmanager@whittieralaska.gov, 907-336-1490.
- PWSEDD, Wanetta Ayers, Interim Executive Director, pwsedd@gmail.com, 907-222-2440.

Existing information: The proposed project is consistent with the City of Whittier's 2012 Comprehensive Plan Update that identified construction of the Shotgun Cove Road Extension as the Chapter Nine: Community Goals, Policies and Actions first top priority (City of Whittier 2012). The project also supports the Comprehensive Plan goals regarding Whittier transportation facilities (Goal 1); expanded and improved facilities to meet Whittier's needs (Goal 2); land use and community growth (Goal 4); recreational opportunities (Goal 5); natural beauty capitalization (Goal 6); and economic opportunities (Goal 7). The project is also consistent with the economic and transportation goals of PWSEDD's Prince

William Sound 2011-2016 Comprehensive Economic Development Strategy (PWSEDD 2011). The project is not listed in the 2018-2021 Alaska Statewide Transportation Improvement Program.

Recommendation: Other than to summarize consistency with existing plans in the environmental document, no further analysis or actions should be required.

2.19 Indirect and Cumulative Impacts

Applicable Regulations: NEPA outlines general principles for considering cumulative and indirect effects to assist federal agencies with analyzing these effects during the NEPA process. The FHWA, WFL is the lead agency overseeing the environmental document for the proposed project.

Contact: FHWA, WFL, Stephen Morrow, Environmental Protection Specialist, stephen.morrow@dot.gov, 360-619-7811.

Existing Information: At the April 24, 2018 pre-NEPA agency scoping meeting, the City of Whittier discussed potential for future development, all of which was indicative of expressed and not planned development. The City of Whittier noted that it would like to eventually extend the roadway to Shotgun Cove, though it would not happen in the near-term (ten years or more) (SolsticeAK 2018). The City noted that the Forest Service is interested in creating a facility on its land at Trinity Point, the Alaska Marine Highway System ferry is interested in a possible relocation, there is interest in residential development, and there is interest in a Whittier airport relocation. Initially, these impacts may be minimized because the proposed project's initial approach would consist of the Shotgun Cove Road Extension serving as a summer road without year-round snow removal and maintenance (SolsticeAK 2018).

Recommendation: During the NEPA documentation phase, indirect and cumulative development impacts to all resources, and especially to applicable resource categories, (e.g., wetlands, water quality, EFH and fish streams, wildlife and migratory birds, air quality, social and economic issues, noise), should be documented and analyzed within the environmental document.

3.0 Conclusions

3.1 Recommendations for Analysis and Authorizations

The following additional information should be obtained and necessary analyses should be conducted, and the following permits and authorizations are anticipated (Table 4) for the proposed Shotgun Cove Road Extension project.

All information learned from surveys and additional research, consultations, permits and authorizations obtained should be summarized in the environmental document.

Table 4 – Recommendations Summary

Issue	Recommended Survey/ Additional Information	Recommended Consultation	Recommended Permit/ Authorization
Historic Properties, Archeological and Cultural Resources	Complete a cultural and historic resources field survey.	Consult with SHPO under NHPA Section 106.	If needed, obtain an ADNR Alaska Cultural Resource Permit for the survey. Other authorizations N/A; document Section 106 consultation in the environmental document.

Issue	Recommended Survey/ Additional Information	Recommended Consultation	Recommended Permit/ Authorization
Right-of-Way	N/A ; summarize in the environmental document.	If Forest Service land access is needed, consult with Chugach National Forest for authorizations and to participate in the ANILCA process.	N/A ; unless Forest Service land access is needed, then obtain necessary authorizations.
Wetlands and Waters of the U.S.	Conduct additional office-level wetland research.	Consult with USACE, Alaska District.	Obtain a USACE PJD. If fill is to be placed in waters of the U.S., modify permit POA-2003-764-4
Floodplain and Regulatory Floodway	N/A ; summarize in the environmental document.	Consult with ADCED, Floodplain Manager for concurrence that there are no floodplains or potential flooding within the project area.	N/A
Water Quality	Survey and map drainages.	Consult with ADEC, Division of Water to obtain information regarding water quality impacts.	Obtain an ADEC Section 401 Water Quality Certification.
T&E Species	N/A ; summarize in the environmental document.	Informally consult with USFWS, Anchorage Fish and Wildlife Conservation Office under ESA Section 7 to document and obtain concurrence of no listed species or critical habitat in the project area.	N/A
State Refuges, National Wildlife Refuges, Critical Habitat Areas and Sanctuaries	N/A ; summarize in the environmental document.	N/A	N/A
EFH and Fish Streams	Support ADF&G's drainages and streams fish survey.	Consult with ADF&G, Division of Habitat regarding the Anadromous Fish Act and with ADF&G and NMFS regarding the MSFCMA.	Obtain an ADF&G Fish Habitat permit.
Wildlife, Migratory Birds, and Eagles' Nests	Document Bald Eagle Nests during other fieldwork efforts.	If warranted through direct USFWS correspondence, consult with USFWS, Anchorage Fish and Wildlife Conservation Office.	N/A .
Invasive Species	N/A ; summarize in the environmental document.	N/A	N/A .
Section 4(f)/ 6(f) Resources	Prepare a Section 4(f) assessment.	Consult FHWA, WFL regarding potential impacts to Section 4(f) resources and Section 4(f) assessment. Consult with 4(f) property owners, including the City of Whittier.	N/A .
Hazardous Materials, etc.	N/A ; summarize in the environmental document.	N/A	N/A
Wild and Scenic Rivers	N/A ; summarize in the environmental document.	N/A	N/A
Air Quality	N/A ; summarize in the environmental document.	N/A	N/A
Social and Economic Issues	N/A ; summarize in the environmental document.	Consult FHWA, WFL regarding potential impacts to environmental justice populations. Consult with the Native Villages of Chenega, Tatitlek, and Eyak.	N/A
Noise	FHWA may determine that a noise assessment is needed.	Consult FHWA, WFL to determine whether a noise impact assessment would be needed.	N/A
Navigable Waters	N/A ; summarize in the environmental document.	N/A	N/A

Issue	Recommended Survey/ Additional Information	Recommended Consultation	Recommended Permit/ Authorization
Land Use and Transportation Plans	N/A; summarize in the environmental document.	N/A	N/A
Indirect and Cumulative Impacts	N/A; summarize in the environmental document.	N/A	N/A

3.2 NEPA Documentation

All details obtained through additional information and analyses, consultations, and permits and authorizations, as described within this document and in the data gap analysis summary, should be documented in the proposed project's environmental document.

The environmental document type for the Shotgun Cove Road Extension will be determined during the environmental process and will be informed by the recommendations presented in this document, consultations with agencies, and the NEPA documentation phase. In 2003, an EA was completed for a similar and adjacent project consisting of the current extent of Shotgun Cove Road ending at Second Salmon Run. The proposed project should require a NEPA review and approval, which is likely to be an EA and Finding of No Significant Impact.

References

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- Alaska Department of Fish and Game (ADF&G). 2018. Land Designation Maps. Accessed at <www.adfg.alaska.gov/index.cfm?adfg=maps.gallery&category=landdesignations> on February 15, 2018.
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Appendix E:

Conceptual Engineer's Estimate

Shotgun Cove Road Extension
Mile 2.0 to 4.5
Conceptual Engineer's Estimate
Low Option

ITEM NO.	ITEM DESCRIPTION	PAY UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL COST
201(3B)	CLEARING AND GRUBBING	LUMP SUM	ALL REQUIRED	\$ 600,000	\$ 600,000
203(3)	UNCLASSIFIED EXCAVATION	CUBIC YARD	156,000	\$ 20	\$ 3,120,000
203(11)	DITCHLINE/SUBGRADE BLASTING	SQUARE YARD	95,000	\$ 15	\$ 1,425,000
203(17A)	ROCKFALL MITIGATION - WIRE MESH	CONTINGENT SUM	ALL REQUIRED	\$ 50,000	\$ 50,000
203(19)	TRENCH BLASTING FOR SEWER/WATER UTILITIES	LINEAR FOOT	13,500	\$ 15	\$ 202,500
301(2)	AGGREGATE BASE COURSE, GRADING D-1	CUBIC YARD	8,500	\$ 40	\$ 340,000
602(3)	STRUCTURAL PLATE ARCH 12'-0" SPAN, 5'-0" RISE, 12 GAGE	LINEAR FOOT	240	\$ 1,100	\$ 264,000
602(3)	STRUCTURAL PLATE ARCH 50'-0" SPAN	LUMP SUM	ALL REQUIRED	\$ 550,000	\$ 550,000
603(1-72)	72-INCH CORRUGATED STEEL PIPE	LINEAR FOOT	550	\$ 500	\$ 275,000
603(17-36)	36-INCH PIPE	LINEAR FOOT	1,530	\$ 100	\$ 153,000
603(20-36)	END SECTION FOR 36-INCH PIPE	EACH	110	\$ 800	\$ 88,000
603(20-72)	END SECTION FOR 72-INCH PIPE	EACH	22	\$ 3,300	\$ 72,600
606(1)	W-BEAM GUARDRAIL	LINEAR FOOT	5,700	\$ 30	\$ 171,000
606(13)	PARALLEL GUARDRAIL TERMINAL	EACH	44	\$ 5,500	\$ 242,000
611(1A)	RIPRAP, CLASS I	CUBIC YARD	5,200	\$ 100	\$ 520,000
615(1)	STANDARD SIGN	SQUARE FOOT	270	\$ 160	\$ 43,200
618(1)	SEEDING	ACRE	6	\$ 7,500	\$ 45,000
620(1)	TOPSOIL	SQUARE YARD	28,000	\$ 6	\$ 168,000
630(1)	GEOTEXTILE, SEPARATION	SQUARE YARD	6,900	\$ 3	\$ 20,700
636(1)	GABION RETAINING WALLS	CUBIC YARD	17,500	\$ 200	\$ 3,500,000
639(1)	RESIDENCE DRIVEWAY	EACH	60	\$ 4,000	\$ 240,000
639(3)	PUBLIC APPROACH	EACH	10	\$ 8,000	\$ 80,000
640(1)	MOBILIZATION AND DEMOBILIZATION	LUMP SUM	ALL REQUIRED	\$ 800,000	\$ 800,000
641(1)	EROSION AND POLLUTION CONTROL ADMINISTRATION	LUMP SUM	ALL REQUIRED	\$ 50,000	\$ 50,000
641(3)	TEMPORARY EROSION AND POLLUTION CONTROL	LUMP SUM	ALL REQUIRED	\$ 150,000	\$ 150,000
643(2)	TRAFFIC MAINTENANCE	LUMP SUM	ALL REQUIRED	\$ 1,500	\$ 1,500
643(3)	PERMANENT CONSTRUCTION SIGNS	LUMP SUM	ALL REQUIRED	\$ 1,500	\$ 1,500
643(15)	FLAGGING	CONTINGENT SUM	ALL REQUIRED	\$ 1,500	\$ 1,500
643(25)	TRAFFIC CONTROL	CONTINGENT SUM	ALL REQUIRED	\$ 1,500	\$ 1,500
644(1)	FIELD OFFICE	LUMP SUM	ALL REQUIRED	\$ 50,000	\$ 50,000
CONSTRUCTION SUBTOTAL:				\$	13,200,000
DESIGN CONTINGENCY, CONSTRUCTION CONTINGENCY, CONSTRUCTION MANAGEMENT (50%)				\$	6,600,000
CONSTRUCTION TOTAL:				\$	19,800,000

PLANNING: \$ 1,250,000
 COMPLIANCE: \$ 750,000
 PERMITTING: \$ 625,000
 DESIGN AND PRELIMINARY WORK: \$ 1,875,000

TOTAL ESTIMATED PROJECT COST: \$ 24,300,000

Shotgun Cove Road Extension
Mile 2.0 to 4.5
Conceptual Engineer's Estimate
High Option

ITEM NO.	ITEM DESCRIPTION	PAY UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL COST
201(3B)	CLEARING AND GRUBBING	LUMP SUM	ALL REQUIRED	\$ 600,000	\$ 600,000
203(3)	UNCLASSIFIED EXCAVATION	CUBIC YARD	161,000	\$ 20	\$ 3,220,000
203(11)	DITCHLINE/SUBGRADE BLASTING	SQUARE YARD	95,000	\$ 15	\$ 1,425,000
203(17A)	ROCKFALL MITIGATION - WIRE MESH	CONTINGENT SUM	ALL REQUIRED	\$ 50,000	\$ 50,000
203(19)	TRENCH BLASTING FOR SEWER/WATER UTILITIES	LINEAR FOOT	13,000	\$ 15	\$ 195,000
301(2)	AGGREGATE BASE COURSE, GRADING D-1	CUBIC YARD	8,200	\$ 40	\$ 328,000
602(3)	STRUCTURAL PLATE ARCH 12'-0" SPAN, 5'-0" RISE, 12 GAGE	LINEAR FOOT	260	\$ 1,100	\$ 286,000
602(3)	STRUCTURAL PLATE ARCH 30'-0" SPAN	LUMP SUM	ALL REQUIRED	\$ 400,000	\$ 400,000
603(1-72)	72-INCH CORRUGATED STEEL PIPE	LINEAR FOOT	330	\$ 500	\$ 165,000
603(17-36)	36-INCH PIPE	LINEAR FOOT	1,620	\$ 100	\$ 162,000
603(20-36)	END SECTION FOR 36-INCH PIPE	EACH	116	\$ 800	\$ 92,800
603(20-72)	END SECTION FOR 72-INCH PIPE	EACH	14	\$ 3,300	\$ 46,200
606(1)	W-BEAM GUARDRAIL	LINEAR FOOT	7,000	\$ 30	\$ 210,000
606(13)	PARALLEL GUARDRAIL TERMINAL	EACH	28	\$ 5,500	\$ 154,000
611(1A)	RIPRAP, CLASS I	CUBIC YARD	3,800	\$ 100	\$ 380,000
615(1)	STANDARD SIGN	SQUARE FOOT	260	\$ 160	\$ 41,600
618(1)	SEEDING	ACRE	7	\$ 7,500	\$ 52,500
620(1)	TOPSOIL	SQUARE YARD	32,000	\$ 6	\$ 192,000
630(1)	GEOTEXTILE, SEPARATION	SQUARE YARD	9,100	\$ 3	\$ 27,300
636(1)	GABION RETAINING WALLS	CUBIC YARD	23,100	\$ 200	\$ 4,620,000
639(1)	RESIDENCE DRIVEWAY	EACH	33	\$ 4,000	\$ 132,000
639(3)	PUBLIC APPROACH	EACH	10	\$ 8,000	\$ 80,000
640(1)	MOBILIZATION AND DEMOBILIZATION	LUMP SUM	ALL REQUIRED	\$ 800,000	\$ 800,000
641(1)	EROSION AND POLLUTION CONTROL ADMINISTRATION	LUMP SUM	ALL REQUIRED	\$ 50,000	\$ 50,000
641(3)	TEMPORARY EROSION AND POLLUTION CONTROL	LUMP SUM	ALL REQUIRED	\$ 150,000	\$ 150,000
643(2)	TRAFFIC MAINTENANCE	LUMP SUM	ALL REQUIRED	\$ 1,500	\$ 1,500
643(3)	PERMANENT CONSTRUCTION SIGNS	LUMP SUM	ALL REQUIRED	\$ 1,500	\$ 1,500
643(15)	FLAGGING	CONTINGENT SUM	ALL REQUIRED	\$ 1,500	\$ 1,500
643(25)	TRAFFIC CONTROL	CONTINGENT SUM	ALL REQUIRED	\$ 1,500	\$ 1,500
644(1)	FIELD OFFICE	LUMP SUM	ALL REQUIRED	\$ 50,000	\$ 50,000
CONSTRUCTION SUBTOTAL:				\$	13,900,000
DESIGN CONTINGENCY, CONSTRUCTION CONTINGENCY, CONSTRUCTION MANAGEMENT (50%)				\$	7,000,000
CONSTRUCTION TOTAL:				\$	20,900,000

PLANNING: \$ 1,250,000
 COMPLIANCE: \$ 750,000
 PERMITTING: \$ 625,000
 DESIGN AND PRELIMINARY WORK: \$ 1,875,000

TOTAL ESTIMATED PROJECT COST: \$ 25,400,000