Agency: Commerce, Community and Economic Development

Grants to Municipalities (AS 37.05.315)

Grant Recipient: Bethel **Federal Tax ID:** 926001644

Project Title: **Project Type:** Remodel, Reconstruction and Upgrades

Bethel - Harbor Dredging

State Funding Requested: $4,000,000 **House District:** 38 / S

One-Time Need

Brief Project Description:

Dredge Bethel Small Boat Harbor

Funding Plan:

Total Project Cost:	$4,000,000
Funding Already Secured:	($0)
FY2013 State Funding Request:	($4,000,000)
Project Deficit:	$0

Funding Details:

In spring 2011, the Corps of Engineers-Alaska District was given $500,000 from Denali Commission on City of Bethel's behalf to design and plan for dredging, launch ramp replacement, and bank stabilization.

Detailed Project Description and Justification:

Dredging the Bethel Small Boat Harbor entails a wintertime excavation project, whereby excavator and loader will be used to pull frozen water and mud from the harbor and deposit to dump trucks. Material will be taken to the landfill or another approved environmentally safe disposal location. Winter time excavation is the preferred Corps of Engineers method for the Bethel harbor. The last time the harbor was excated was in 1997, fourteen years ago.

Dredging the Bethel Small Boat Harbor will help keep boaters safe - eliminating boat groundings, propeller and vessel body damage, and reducing the need for unsafe boat exit attempts in the muddy harbor.

The Corps of Engineers considers the Bethel Small Boat Harbor a "harbor of refuge" for boaters on the Kuskokwim River. It cannot live up to this reputation if harbor users continue to ground, injure themselves, and damage their property. The Bethel harbor is used by villagers from up and down the Kuskokwim River. Bethel is the largest rural community in Alaska, a Southwest hub and will always be a destination for villagers. People come to Bethel to shop, travel by plane to other villages/towns, educate themselves, work, bank, and seek government and health-related services.

Project Timeline:

The City of Bethel hopes to obtain funding to dredge the Bethel Small Boat Harbor from the State Legislature by Summer 2012. After the State Legislative grant paperwork is completed, the City will issue a Request for Proposals to hire a contractor to dredge the small boat harbor. The City will contract with a construction company by October 2012 and work will commence in February 2013 and end in March 2013.

Contact Name: Liz Clement
Contact Number: 465-6576

For use by Co-chair Staff Only:

$4,000,000 Approved

3:19 PM 5/2/2012

Entity Responsible for the Ongoing Operation and Maintenance of this Project:

City of Bethel

Grant Recipient Contact Information:

Name:	John Sargent
Title:	Grant Manager
Address:	300 State Highway
	Bethel, Alaska 99559
Phone Number:	(907)543-1386
Email:	jsargent@cityofbethel.net

Has this project been through a public review process at the local level and is it a community priority? [X] Yes [ ] No

For use by Co-chair Staff Only:

3:19 PM 5/2/2012

Contact Name: Liz Clement
Contact Number: 465-6576

CITY OF BETHEL

P.O. Box 1388 • Bethel, Alaska 99559-1388
907-543-2047
Fax # 543-4171
Website: www.cityofbethel.org

October 5, 2011

Governor Sean Parnell
Office of the Governor
P.O. Box 110001
Juneau, Alaska 99811-0001

Dear Governor Parnell:

Please find the City of Bethel's legislative request packets enclosed for your review. The City of Bethel requests that you add the City's three capital project amounts to the Capital Budget that you will submit to the Legislature this year. Bethel City Council evaluated the projects and determined the priorities at their September 13, 2011 meeting. Please see Resolution #11-30 enclosed.

The first priority capital funding request is $4,000,000 to cover the cost to dredge the Bethel Small Boat Harbor and Entrance Channel and to construct a new south boat launch ramp. This project also includes applying two gravel scour aprons at each boat launch ramp and purchasing one excavator.

Bethel City Council considers this project the number one priority because local and regional residents cannot use the harbor regularly due to the mud infiltration. The City will have full dredging design specifications from the U.S. Army Corps of Engineers—Alaska District in December 2011. All environmental permits will be obtained by the Corps in January 2012 on the City's behalf as the Corps completes the City's $500,000 grant award from the Denali Commission.

The City's second priority is to $1,500,000 to cover the cost to repair the City Shop Floor inside the City's Public Works Building. The steel sheets on the floor surface and wood 2 x 8s and glue laminated beams need to be repaired in order to support the weight of the City's water/sewer trucks, garbage trucks, and heavy equipment. Four drains also need to be replaced. The fear is that a truck and driver will punch through the rotten floor and injure himself, damage a vehicle, and worsen the floor condition.

The City's third priority is the request of $350,000 to purchase one new pumper/tender fire engine. The City's 39-year old pumper/tender will be replaced by the new vehicle. The City's Fire Department must have a new pumper/tender in order to safely protect lives, reduce injuries by stabilizing fire incidents, and reduce property damage. The City experiences 16 structure fires a year.

You may contact me if you need additional information. My direct line is 907-543-1386 and my email address is jsargent@cityofbethel.net.

Sincerely,

John Sargent
Grant Manager

"Deep Sea and Transportation Center of the Kuskokwim"

City of Bethel

Dredging Bethel Small Boat Harbor and Ramp Replacement

FY 2013 State of Alaska Capital Budget Request

Contact Person
John Sargent, Grant Manager
City of Bethel
P.O. Box 1388
Bethel, AK 99559
907-543-1386 tel. / 907-543-1388 fax
jsargent@cityofbethel.net

1. Summary Statement

As its number one priority, the City of Bethel requests that $4,000,000 be put in the FY 2013 State Capital Budget to fund the cost of dredging the Bethel Small Boat Harbor and Entrance Channel, adding scour aprons on the toe of the north and south boat launch ramps, replacing the south boat launch ramp, and purchasing a hydraulic excavator. See City of Bethel Resolution #11-30 given as Attachment A.

Cost estimates for dredging, scour aprons, and the ramp were provided by the United States Corps of Engineers—Alaska District. The cost estimate for the excavator was provided by Port of Bethel Director Peter Williams after he consulted several vendors.

The U.S. Army Corps of Engineer—Alaska District expects to complete preliminary design and pre-construction work in December 2011. The pre-construction portion includes permitting, National Environment Protection Agency compliance, and development of bid specifications.

The dredging will be done in the winter time with an excavator, which makes this project really an excavation project, but the word "dredging" will be used throughout this request because of its familiarity. The U.S. Army Corps of Engineers and Port of Bethel discovered the benefits of removing ice/snow and frozen river material in 1997, the last time the small boat harbor was dredged.

2. Brief Community Profile

Physical Environment

The community of Bethel is located four hundred air miles from Anchorage and forty air miles from the Bering Sea. Isolated from the road network of Alaska, the city is encompasses 44 square miles in Southwest Alaska, including six miles of Kuskokwim River shoreline.

The average annual snowfall in Bethel is 53 inches. The average annual precipitation is 16 inches. The mean summer temperature is 53°F and typically fluctuates between 42°F and 62°F. The mean winter temperature is 11° and typically fluctuates between -2°F and 19°F.

Bethel is located in treeless sub-arctic tundra that remains moist in the summertime and frozen in the wintertime. The land in and around Bethel is nearly all permafrost, except for some land surrounding lakes and ponds. The Kuskokwim River becomes a frozen road in the winter, connecting Bethel to many villages along the river.

Regional Hub

Bethel is a hub community for 56 Yukon-Kuskokwim villages in the region. Bethel is home to the third busiest airport in the state of Alaska, due largely to its cargo shipments, and home to the largest medium draft port in the state in terms of tonnage off-loaded. Goods destined for Kuskokwim River villages land in Bethel first and then are repackaged and taken to villages by plane, river barge, automobile, four-wheeler, boat, or snowmobile. Petroleum products are handled the same way, off-loaded in Bethel to smaller river fuel barges that transport the fuel to villages upriver and downriver.

Many of the 26,000 residents who live in the 55 villages around Bethel come to Bethel to shop, access government services, satisfy health care needs, attend college or trade school courses, visit friends and relatives, and work. Bethel attracts a continual influx of people because it typically has 100 or more available jobs, private property for sale, businesses for sale, and a variety of places to spend money, including restaurants, hotels, grocery stores, and specialty shops (e.g., hardware, auto parts, party supplies, sporting goods). Village residents also travel to Bethel to reconnect with family members.

Government

The City of Bethel was incorporated in 1957 while Alaska was still a territory and has since evolved to become a second-class city with a Council/Manager form of government. The seven elected City Council members hire and direct the City Manager, who oversees nine departments: Administration, Finance, Fire, Police, Port, Planning, Parks and Recreation, Technology, and Public Works. Bethel is a municipal government in the unorganized borough area of western Alaska and contains no other cities within its boundaries.

The Bethel City Council develops its annual budget by June 15 for the following fiscal year, which runs from July 1 to June 30. The total budget is approximately $14 million.

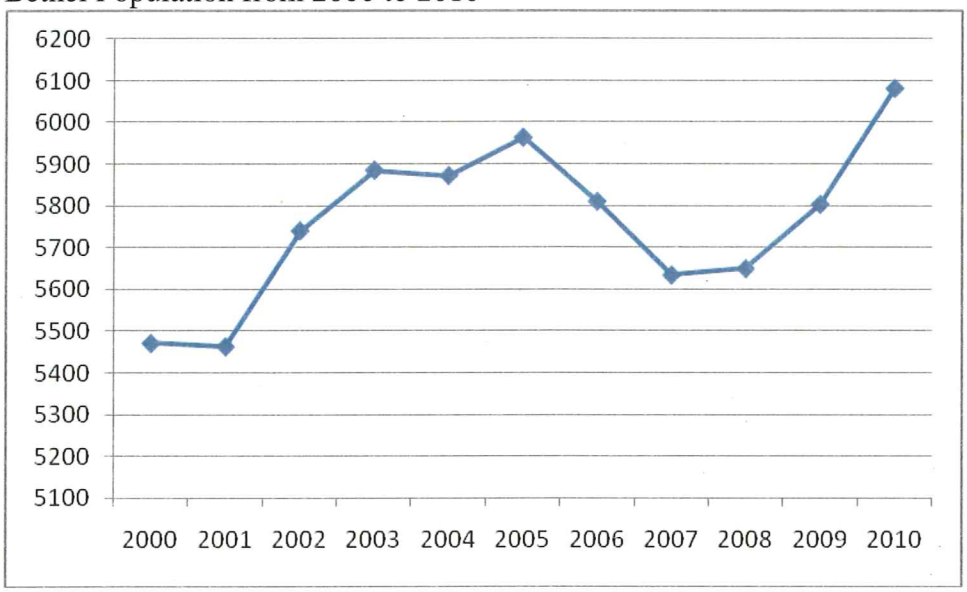
Population

Bethel is the eighth largest town in Alaska with a population of 6,080 (Alaska Department of Community and Economic Development website, 2011).

The average annual rate of increase for Bethel's population between 1990 and 2000 was 1.6% (U.S. Census 1990; U.S. Census 2000). The Alaska Department of Labor reported that the rate of increase in Bethel's population between 2000 and 2002 was 2.1%. After two years of population decline (2007-2008) totaling 5.2%, the population leveled off in 2009 and then rose 2.4% in

2010. See chart below. Bethel's population is likely to stabilize or increase as a result of recent improvements in the U.S. and Alaska economy coupled with the advent of several major capital projects taking place in Bethel (e.g., new U.S. Army National Guard Readiness Center, addition of Child Advocacy Center to Tundra Women's Coalition building).

Bethel Population from 2000 to 2010



Need for Financial Resources

According to the Alaska Department of Commerce, Community and Economic Development (2004), 67.4% of residents in Bethel Census Area villages are in the low to moderate income category. A substantial percent of people living in Bethel are in the low to moderate income category (42.2%). According to the September 2011 edition of the *Alaska Economic Trends* publication put out by the Alaska Department of Labor and Workforce Development, the current unemployment rate in the Bethel Census Area is 15.3%. This figure really hurts the City because more than 50% of its revenues come from sales taxes and there is a strong correlation between employment rates and sales.

The City has $8 million in "due to" and "due from" accounts between departments on its books. This money is recorded as long-term receivables that must be reimbursed. The Port of Bethel is one of the departments in the City that generates more revenue than it spends, but the money goes to the General Fund and is reallocated to other departments.

The City provides water and sewer service to 451 households on the piped system and 1,260 households on the hauled system. Despite collecting $350 per month per household on average in water and sewer fees, the City had to subsidize the program with $667,000 last year and expects to need $623,000 during FY 2012. The following types of annual cost increases make it difficult for the City to break even on its water/sewer operations: fuel prices for its delivery/evacuation trucks, heating oil for its two water treatment plants, and the cost of diesel-generated electricity. The cost of water treatment chemicals, plant and truck parts, and supplies/materials have increased because the cost to transport them to Bethel has increased.

The City is working with the United States Department of Agriculture – Rural Development (USDA-RD) on two grant-funded projects for the improvement of the water and sewer system. The USDA is demanding that the City set aside $200,000 a year in a reserve account to be used to repair or replace water and sewer infrastructure and as a condition for future grant funding. The City does not have this amount of money to appropriate every year. As a consequence, the City jeopardizes losing the use of future USDA-RD grant funds to make improvements in the water and sewer system—improvements that can lead to operational efficiencies and long-term cost reductions.

The City of Bethel needs $4,000,000 in State Capital funds to hire a contractor to dredge the Bethel Small Boat Harbor and Entrance Channel, add a scour aprong to the base of both boat launch ramps, replace the south boat launch ramp, and purchase one hydraulic excavator.

The Port of Bethel has no capital funds in its City budget to pay for the dredging project. Proceeds from port operations go into the general fund, like all City departments that generate revenue.

3. Justification and Level of Need

Dredging (Excavating in Winter)

The Bethel Small Boat Harbor and Entrance Channel must be dredged (excavated) in order to allow boaters to enter, exit, and moor their boats without hitting their prop and lower unit on the bottom. Boaters have been hitting the bottom and getting stuck in the mud for years. Risk of injury occurs when individuals in the boat get jolted forward when forward motion stops suddenly or when someone steps out of the boat in an effort to get it unstuck.

A hydrographic survey completed by WH Pacific in 2010 revealed a zero footage depth at the deepest part of the Bethel Small Boat Harbor at the mean low low water mark. This result is scientific evidence of the need to dredge the harbor because navigability is nearly impossible. A host of different users are affected: subsistence hunters, fishers, and gatherers; commercial fishers; commercial tour boat operators; federal and state agency wildlife managers; university hydrographic researchers; birders; and inter-village commuters and visitors.

The harbor and entrance channel is supposed to be maintenance dredged every five years. It was last dredged in 1997, fourteen years ago. Bethel's harbor is so overdue for a deep dredging that it is no longer a maintenance issue, it is a new capital project.

According to Tab E in *Coastal Engineering Manual*, written by the Pacific Ocean Division of the U.S. Army Corps of Engineers on November 18, 2002,

> The Bethel Harbor is the only protected harbor in the Kuskokwim River Delta area and provides beach moorage for about 1,200 small boats. It requires maintenance dredging approximately every 5 years.

The Bethel Small Boat Harbor Dredging Project should extend the life of the harbor basin by seven to ten years.

Scour Aprons at Launch Ramp Toes

When boaters use the north or south boat launch ramp, they typically start up their motor and scoot away from the ramp in rapid succession. The fast blast of the propeller scours the mud from around the toe of the ramp, causing a depression. These deep holes at the toe are wheel traps for boat trailers. One gravel scour apron 50 ft. by 50 ft. by 2 ft. is recommended by the Corps of Engineers for each ramp to eliminate scour damage. See Attachment B: Design Analysis, Page 5.

New South Boat Launch Ramp

The north and south cement boat launch ramps at the harbor are crumbling, pulling apart, and failing to achieve the purpose for which they were designed and constructed. The 32 ft. long cement slabs are chipped, cracked, with chunks broken off in places. The south ramp is in the worse condition. Therefore, the south launch ramp will be replaced as part of this project.

Excavator

The Port of Bethel needs to purchase one 145+ hp hydraulic excavator with grapple attachment that provides the capability to excavate harbor material during the winter. The Port needs a thumb attachment to pick up and move large type "A" rocks and other objects for the ongoing harbor bank stabilization effort. This new excavator will allow the City to maintain a five-year maintenance dredging schedule and bank improvements without additional State funding.

4. Project Description

Dredging

The City applied for and was awarded $500,000 from the Denali Commission to complete the dredging design and pre-construction work necessary for this proposed construction project to proceed. The U.S. Army Corps of Engineers is managing the project and the funds on behalf of the City. Corps engineers conducted all planned site visits and expect to have a final report draft done and to the City of Bethel by December 2011. See Design Analysis as Attachment B.

The final design and preconstruction work will reveal how much material must be removed from the small boat harbor and where it can safely be deposited. The effort being undertaken by the Corps of Engineers includes permitting, completion of environmental compliance documents, and bidding specifications. Once dredging construction funding is obtained by the City, this project can begin immediately.

The dredging will take place in December or January, when the ground is frozen, and is technically, therefore, an excavation project. Heavy equipment will be used to remove frozen water in the basin and channel approach and to remove the bottom material. The material removed will be loaded into dump trucks, and deposited at an environmentally-appropriate site, like the City's landfill.

Scour Apron Application

The U.S. Army Corps of Engineers recommends that one gravel scour apron be placed at the toe of each boat launch ramp to remedy the problem of mud holes caused by motor rev-ups. Boaters typically rev up their motors upon launch and outtake, causing scour of the mud at the ramp toe.

The scour creates holes that pose risks to trailer wheels and boaters who step on trailers to release or secure their boat to the trailer.

Replace South Boat Launch Ramp
The City of Bethel contracted PND Engineers, Inc. three years ago to design a set of specifications for the construction of the north and south boat launch ramps. The detailed specifications and drawings are sufficient to allow the City to use them to go out to bid on the purchase and installation of the south ramp. The ramps will be made out of cement slabs.

The cement slabs will be poured according to design specifications outside of Bethel and brought in by barge. The cement ramps will be assembled on-site by a contractor. The new ramp will be built and installed to so that more ramp is under water than the current south ramp. The goal is to eliminate boaters from running off the toe with their trailer wheels during launch. The new ramp will be safer for individuals in the boat, in the vehicle, and greatly reduce the chance of boat, vehicle, and ramp damage resulting from putting boats in and out of the water.

Excavator
The Port of Bethel plans to purchase one large excavator with a grapple attachment and a thumb attachment as part of this project. The City will use the competitive bidding process to purchase this piece of heavy equipment. The excavator will be shipped to Bethel by barge during the summer months.

5. Budget

The construction portion of the budget for this project stems from the work done by the U.S. Army Corps of Engineers—Alaska District as a result of their design and preconstruction work on the Bethel Small Boat Harbor. See Attachment C (*MS Project Template*) generated by the Corps of Engineers. The template is a spreadsheet containing all costs for the project. The costs highlighted in yellow are the costs given in the table below.

Item	Cost	Source for Cost Estimate
Dredging of Entrance and Maneuvering Channels	$1,372,416	U.S. Army Corps of Engineers
Dredging of Mooring Basin	$1,174,230	U.S. Army Corps of Engineers
Bid, Performance, Payment Bond	$18,527	U.S. Army Corps of Engineers
Mobilization and Demobilization	$199,982	U.S. Army Corps of Engineers
Scour apron at north launch ramp toe	$184,665	U.S. Army Corps of Engineers
Scour apron at south launch ramp toe	$184,665	U.S. Army Corps of Engineers
South Boat Launch Ramp	$661,502	U.S. Army Corps of Engineers
Excavator (145+ horsepower) with grapple and thumb attachments	$204,013	Peter Williams, City Port Director
Total	**$4,000,000**	

The City of Bethel is purposely requesting funds for the most essential elements of the total project ($10,175,283). The City's proposed $4 million request is also considered an affordable amount for a State of Alaska request.

The Bid, Performance, and Payment Bond cost was determined by prorating the dredging portion of the project from the total project cost. The two dredging amounts added together ($1,372,416 + $1,174,230) were divided by the total amount given for Dredging & Stabilization Base Items ($10,175,283) and then multiplied by the total Bid, Performance & Payment Bond amount ($74,025) to get $18,527.

The Mobilization and Demobilization cost in the table was determined by prorating the dredging portion of the project from the total project cost. The two dredging amounts added together ($1,372,416 + $1,174,230) were divided by the total amount given for Dredging & Stabilization Base Items ($10,175,283) and then multiplied by the total Mobilization & Demobilization amount ($799,040) to get $199,982.

Excavator
City Port Director Peter Williams contacted vendors of excavators and feels confident that one 145+ horsepower hydraulic excavator can be purchased and shipped to Bethel for $204,013.

6. Operation and Maintenance

Maintenance Dredging
The three portions of the Bethel Small Boat Harbor (Entrance Channel, Maneuvering Channel, and Mooring Basin) have not been dredged in 14 years. The U.S. Army Corps of Engineers typically initiates a dredging project with funding in its federal budget to dredge the Entrance Channel and Maneuvering Channel. The City of Bethel has followed the Corps' lead by collaborating with the Corps to have the contractor dredge the Mooring Basin at the same time. This was done successfully in 1997, the last year the entire harbor was dredged.

In its desperation to dredge the harbor and entrance channel, the City of Bethel applied for and obtained a permit in fall 2010 from the U.S. Army Corps of Engineers to dredge the Entrance Channel. The City aimed the permit at the entrance channel because it is the shallowest harbor-related area that impacts all harbor users. The "emergency" City dredging permit is valid for five years.

The Port of Bethel partially excavated the Entrance Channel in early 2011 in an emergency effort to make it passable for boaters. In the process, the City damaged its 148 hp Hitachi 200 excavator. The Hitachi was not made to get wet or to operate in extreme cold temperatures, dig ice, or scrape frozen ground. Port Director Peter Williams considers the Hitachi 200 "worn out." It is currently in the City's automotive repair shop undergoing a $13,000 repair. The City needs a new, heavy duty excavator that can operate in extreme cold weather.

The City of Bethel, Port Department, is responsible for maintaining the completed dredging project. The Port of Bethel has an annual budget from which maintenance funds are available to continue to dredge the basin every five years. Owning a hydraulic excavator is essential to the City's ongoing maintenance plan.

Scour Aprons
The City of Bethel purchases gravel in bulk quantities and stores them in two giant piles, one on the Public Works property and one on Port of Bethel property. The gravel the City buys can and will be used to maintain the scour aprons, as needed.

7. What if no State Capital Funds are provided?

The community of Bethel has been suffering with a low bottom harbor and entrance channel for ten years. Complaints to the City have increased each succeeding summer. Boaters tell stories of running aground, bending propellers, and damaging lower units. Most say that it is impossible to get in and out of the harbor within hours of low tide. Without State funding, people will experience a mud-filled harbor and entrance channel and not be able to use the harbor at all.

The U.S. Army Corps of Engineers considers the Bethel Small Boat Harbor a "harbor of refuge" for boaters caught on the Kuskokwim River during storms, natural disasters, or other life-threatening events. The harbor will FAIL to live up to this Corps designation if people coming into the harbor get stuck and cannot take advantage of the refuge.

Without State funding, the community of Bethel and Alaska Natives from villages around Bethel will not be able to use the Bethel Small Boat Harbor and Entrance Channel. The harbor closure will affect a host of user types: subsistence hunters, fishers, and gatherers; commercial fishers; commercial guide services; birders; State and Federal departments/agencies; recreational boaters; wave runner users; and marine services.

8. What if State Capital Funds are provided?

State funding will allow the City of Bethel to dredge the Bethel Small Boat Harbor and Channel Approach, add scour aprons at each boat launch ramp, construct a new south boat launch ramp, and purchase one excavator and attachments. The project will yield the following benefits for users:

- Improved access from harbor to river and from river to harbor float space or embankment.
- Approximately 1,200 boats moored on floats and on the embankments will not suffer damage to lower units, propellers, and engines.
- The Port of Bethel will use the excavator to maintain the harbor depths in compliance with U.S. Army Corps of Engineers permits and use the thumb drive to place Type "A" rock on banks.
- Boaters, including regional village residents, will be able to go in and out of harbor at all tide levels and not have to wait until high tide.
- Boaters will be able to safely launch their boats on the south ramp without injury/damage.
- Subsistence hunting and fishing will increase because hunters and fishermen will have easier river access.
- AK Dept. of Fish and Game will be able to conduct their salmon test-fishing program with greater ease and less difficulty.
- U.S. Fish and Wildlife personnel will be able to get boats out to sample moose, caribou, and wild birds and perform enforcement activities.

- Commercial fishers will be able to access the Kuskokwim River with greater ease and less damage to their props to go fishing during commercial openings. More money from commercial fishing will go in their pockets and not have to be used to cover prop and engine damage.
- Kuskokwim Wilderness Adventures, a private company operating out of the harbor, will be able to better serve its clients with fewer delays and less costly repairs on their five boat fleet.

According to *Coastal Engineering Manual*, Tab E, "National Economic Development benefits identified for this alternative include demurrage and storage savings, reduced moorage and dockage fees, increased worker productivity, reduced stevesdores labor costs, and reduced vessel damages." The total benefits were estimated by the U.S. Army Corps of Engineers to be $250,000 to $600,000 annually.

Residents who live along the Kuskokwim River depend on the Bethel Small Boat Harbor to moor their boats in order to visit Bethel and purchase goods, access government, educational, and medical opportunities, meet family members and friends, engage in subsistence activities, and return home to their village. Individuals in the wood-cutting industry and those who pick and sell berries will also have improved performance in and out of the harbor.

List of Attachments

FY 2013 Capital Budget Request

Bethel Small Boat Harbor Dredging and Ramp Replacement

City of Bethel

Letter	Document	Pages
A	City of Bethel Resolution #11-30: City of Bethel Priorities for the FY 2013 State of Alaska Capital Budget	5
B	Design Analysis, Bethel Small Boat Harbor Dredging, Prelim, U.S. Army Corps of Engineer District, Alaska, June 16, 2011	10
C	MS Project Cost Template (Project Cost Summary Report), Project: Bethel Dredge & Bank Stabilization, U.S. Army Corps of Engineers, August 1, 2011	6
D	Application for Department of the Army Permit, Bethel Harbor Bank Stabilization and Dredging	9
E	District Trip Report, Bethel Small Boat Harbor Dredging and Bank Stabilization, September 9, 2010	8

Attachment A

City of Bethel Resolution #11-30: City of Bethel Priorities for the FY 2013 State of Alaska Capital Budget

Introduced by: Lee Foley, City Manager
Date: September 13, 2011
Action: Passed
Passed: 5-2

CITY OF BETHEL

Resolution # 11-30

CITY OF BETHEL PRIORITIES FOR THE FY 2013 STATE OF ALASKA CAPITAL BUDGET

WHEREAS, the Bethel City Council is a seven-member body elected by resident voters of Bethel to act in the best interest of the community;

WHEREAS, the City intends to exhibit transparency, oversight, and accountability for all funds awarded through this request;

WHEREAS, the priorities established herein are rank-ordered and vital to the well-being of the community and municipality of Bethel;

WHEREAS, a summary of the City of Bethel's priorities and requested funding amounts are listed in the following table:

Top Three Priorities	Request
1. Bethel Small Boat Harbor Dredging and Ramp Replacement	$4,000,000
2. New Public Works Building Floor	$1,500,000
3. Pumper/Tender Fire Engine	$350,000
Total	$5,850,000

#1 Bethel Small Boat Harbor Dredging and Ramp Replacement

WHEREAS, residents who live along the Kuskokwim River depend on the Bethel Small Boat Harbor to moor their boats in order to visit Bethel and purchase goods, access government, educational, and medical opportunities, meet family members and friends, engage in subsistence activities, and return home to their village;

WHEREAS, the Bethel Small Boat Harbor is used extensively by subsistence hunters and fishers as they exercise their rights to harvest fish and wildlife from the Kuskokwim River and adjoining streams, rivers, ponds, and riverbank access points;

Introduced by: Lee Foley, City Manager
Date: September 13, 2011
Action: Passed
Passed: 5-2

WHEREAS, the U.S. Army Corps of Engineers considers the Bethel Small Boat Harbor a "harbor of refuge" for boaters caught on the Kuskokwim River during storms, natural disasters, or other life-threatening events;

WHEREAS, the City of Bethel sells boat slip permits annually in the small boat harbor in an effort to provide sufficient space for personal watercraft on its eight floating docks;

WHEREAS, the north and south cement boat launch ramps at the harbor are crumbling, pulling apart, and failing to achieve the purpose for which they were designed and constructed;

WHEREAS, a hydrographic survey completed by WH Pacific in 2010 revealed a zero footage depth at the deepest part of the Bethel Small Boat Harbor at the mean low low water mark, representing scientific evidence of the need to dredge the harbor because navigability is nearly impossible;

WHEREAS, over the last thirteen years, the small boat harbor and channel approach have experienced severe bank destabilization and infilling through runoff and river current deposits;

WHEREAS, the U.S. Army Corps of Engineers, Alaska District, is administering a $500,000 grant from the Denali Commission on behalf of the City of Bethel to design the needed dredging, ramps, and bank stabilization project at the Bethel Small Boat Harbor;

WHEREAS, completion of the dredging design, permitting, and right-of-way acquisitions will prepare the City for construction dredging, making this State legislative funding request timely and appropriate;

WHEREAS, the lack of maintenance dredging by the U.S. Army Corps of Engineers in the last 13 years has created a situation in which the amount of material to be removed from the Bethel Small Boat Harbor basin and entrance channel qualify this project as a capital construction project;

WHEREAS, dredging of the Small Boat Harbor in its entirety, scouring the north and south ramps, and replacement of the south ramp will cost approximately $4,000,000 and this amount should be included in the FY 2013 State Capital Budget so the City of Bethel can complete this important project;

NOW, THEREFORE, BE IT RESOLVED that the Bethel City Council, as elected representatives of the community and city of Bethel, Alaska, do hereby formally request that the State of Alaska provide $4,000,000 in the FY2013 Alaska Capital Budget for Bethel Small Boat Harbor dredging, ramp scouring, and ramp replacement.

Introduced by: Lee Foley, City Manager
Date: September 13, 2011
Action: Passed
Passed: 5-2

#2 New Public Works Building Floor

WHEREAS, the Public Works building is an invaluable asset to the City, providing a two-story building that accommodates nearly all Public Works divisions and the Planning Office;

WHEREAS, the utility maintenance division, located in the Public Works building, fills a valuable health and safety need by providing water deliveries and sewer evacuations as needed to 1,260 buildings six days per week;

WHEREAS, certified mechanics work in the Public Works building to maintain and service emergency response vehicles for the police and fire departments, water and sewer trucks for the utility maintenance division, heavy equipment and dump trucks used for road work, transit system buses, and cars and trucks for City staff;

WHEREAS, the City's Property Maintenance Division uses a wood/metal workshop, offices, and store room in the Public Works building to help them maintain 30 City structures, boilers, generators, parks, boardwalks, and special projects;

WHEREAS, leaks in the steel floor and drain failures over the last 29 years contributed to the dry-rot and wholesale decay of floor supports;

WHEREAS, four drains in the floor are inoperable, allowing water to run out onto the sand pad below and cold air to enter the building unabated;

WHEREAS, the City needs to remove and replace 90% of the Public Works building floor, including the steel sheets forming the top, and underneath: floor joists, insulation, sheathing, and weather guard;

WHEREAS, the City needs to replace all drains and associated plumbing to ensure proper water drainage;

WHEREAS, the City of Bethel funded the repair and replacement of 10% of the floor in 2008, but needs the State to fund the repair and replacement of the other 90%;

WHEREAS, funding for a new floor will allow the City to remove and replace the existing floor and associated drains with a new floor using half-inch steel sheets, treated floor joists, insulation and outer envelope, and new drains and pipes;

NOW, THEREFORE, BE IT RESOLVED that the Bethel City Council, as elected representatives of the community and City of Bethel, do hereby formally request that the State of Alaska provide $1,500,000 in its FY 2013 Capital Budget for removal and replacement of the existing Public Works building floor and construction of a new floor with new drains and pipes;

Introduced by: Lee Foley, City Manager
Date: September 13, 2011
Action: Passed
Passed: 5-2

#3 Pumper/Tender Fire Engine

WHEREAS, the Bethel Fire Department is comprised of seven full-time paid Firefighter/EMTs and 20 volunteer Firefighter/EMTs;

WHEREAS, the Bethel Fire Department serves the 6,080 residents of Bethel and has assisted neighboring villages in need (e.g., Hooper Bay in 2006) by protecting lives, reducing injuries, and safeguarding property or minimizing property damage from fire, flood, and other forms of destruction;

WHEREAS, the Bethel Fire Department has a 39-year old first-line pumper/tanker this is unsafe to operate, unreliable, and in need of a new engine;

WHEREAS, the Fire Department's pumper/tender was out of commission during 2010 due to mechanical breakdowns and the associated time needed to diagnose problems, find parts, and make repairs;

WHEREAS, the pumper/tender has an open cab, which is no longer manufactured because it is less safe than an enclosed cab;

WHEREAS, the pumper/tanker's stick-shift transmission slows its response time and its tank capacity and pump rate are increasingly inadequate for Bethel's size, frequency of fires, and lack of fire hydrants;

WHEREAS, the Bethel Fire Chief and Fire Captain have determined that the safety and well-being of Bethel residents require a new pumper/tender with an automatic transmission capable of carrying 120% more water and pumping 50% faster;

WHEREAS, the new pumper/tender would meet all National Fire Protection Association standards for safety, reliability, and use;

NOW, THEREFORE, BE IT RESOLVED that the Bethel City Council, as elected representatives of the community and City of Bethel, do hereby formally request that the State of Alaska provide $350,000.00 in its FY 2013 Capital Budget for the purchase of a new pumper/tender that will be placed in service by the Bethel Fire Department;

THEREFORE, BE IT FURTHER RESOLVED that the Bethel City Council, as elected representatives of the community and City of Bethel, hereby set and affirm the three funding priorities for the FY 2013 State of Alaska Capital Budget as: 1) Bethel Small Boat Harbor Dredging and Ramp Replacement, 2) New Public Works Building Floor, and 3) Pumper/Tender Fire Engine.

Introduced by: Lee Foley, City Manager
Date: September 13, 2011
Action: Passed
Passed: 5-2

ENACTED THIS 13th DAY OF SEPTEMBER 2011 BY A VOTE OF 5 IN FAVOR AND 2 OPPOSED.

Eric Middlebrook, Mayor

ATTEST:

Lori Strickler, City Clerk

Attachment B

Design Analysis, Bethel Small Boat Harbor Dredging, Prelim, U.S. Army Corps of Engineer District, Alaska, June 16, 2011

DESIGN ANALYSIS

BET007

BETHEL SMALL BOAT HARBOR DREDGING

BETHEL, ALASKA

PRELIM

16 JUN 2011

Prepared by:
U.S. Army Engineer District, Alaska
Corps of Engineers
Anchorage, Alaska

A

GENERAL

Table of Contents

Subject	Page No.
A. GENERAL	
1. Scope	3
a). Major Construction	4
b). Dredging	4
c). Slope Protection	4
d). Classified Fill	4
e). Boat Launch Ramps	5
2. Value Engineering	5
3. Review/Design Issues	5
4. Design Criteria	5
5. Design Constraints	5
B. CIVIL (HYDRAULICS)	6
1. Criteria	7
2. Quantities	8
3. Dredging Design	8
4. Slope Protection Design	8
5. Tidal Information	8
6. Water Level	9
7. Survey Information	9
8. Wind Data	9
9. Design Wave	9
10. Geotechnical Data	9
11. Chemical Data	10
12. References	10
13. Attachments	10
a). Quantitiy Take-off	10
b). Geocell Data sheets	
C. STRUCTURAL	
1. Criteria	11
2. Boat Launch Replacement	12
3. Load Data	12
4. References	12
	12

A. General

1. Scope:

a). Major Construction: Items include dredging of the Federal entrance channel and maneuvering channel, dredging of the Local mooring basin, construction of slope protection around the perimeter banks of the harbor, reconstruction of the existing rock revetment slope protection along the north side of the entrance channel at the parking area, and replacement of the two existing boat launch ramps.

b). Dredging: The entrance channel, maneuvering channel, and mooring basin will all be dredged to a required depth of -5' MLLW with a maximum pay line of -6' MLLW. Side slope will be 1V:5H in the entrance channel and 1V:4H in the maneuvering channel and mooring basin. The entrance channel width will be dredged to 51 feet (ten feet wider on either side of centerline from the authorized channel width is 31 feet). The additional ten feet on either side was approved by North Pacific Division prior to the 1997 maintenance dredging project at Bethel as "horizontal advanced maintenance". This has been recommended for this project again by Operations Branch. Materials to be dredged are anticipated to be primarily silt with some sand. Dredging will take place in the winter months. Ice and snow will first be removed by ripping and removing with a dozer. Dredging will be performed in the mooring basin and maneuvering channel by excavating frozen material silt using a dozer and then hauled by truck to the disposal area. This work will essentially be done "in the dry". Following post-dredge surveys, snow and ice that had been temporarily stockpiled will be replaced back into the harbor. The entrance channel will be dredged using an excavator sitting on and cutting through the ice to excavate material. There will likely be water encountered under the ice due to the influence of the main channel of the Kuskokwim River. Material will be removed and hauled by truck to the disposal area.

c). Slope Protection: The perimeter banks of the small boat harbor are used extensively by local users to pull up skiffs for loading and unloading, and also mooring to the shoreline. Slope protection will be provided by placing Geotextile filter fabric, Geocell grid slope stabilization material, and gravel ("Classified Fill"). The Geocell system will be pinned in place using J-hooks. Bank slope areas to be protected include the east bank, a portion of the north bank, and the west bank of the harbor. A side slope of 1V:4H, crest elevation of +10' MLLW, and an excavated toe to -3' MLLW will be used for the Geocell stabilized slope protection east bank area. For the north and west bank areas, side slope of 1V:4H, crest elevation of +9.5' MLLW, and an excavated toe to -5' MLLW will be used. The existing rock slope protection along the north and south banks will be replaced by removing and salvaging the existing rock and constructing a new rock revetment with a "B" rock outer layer. The revetments will be constructed on a side slope of 1V:3H with a crest elevation of +9' MLLW and a rock toe at -2' MLLW. The existing rock revetment along the north bank of the entrance channel will be replaced by removing and salvaging the existing rock and

constructing a new rock revetment with an "A" rock outer layer. The revetment will be constructed on a side slope of 1V:3H with a crest elevation of +10' MLLW and a rock toe at +2' MLLW. It will protect the existing parking along the entrance channel to the harbor.

d). Classified Fill: Classified Fill (gravel) will be placed along the entrance and maneuvering channel harbor side slope in place of existing muck at the request of the City of Bethel. The material will be placed by excavating 1' of muck from the +1' to +4' MLLW contour and replaced with gravel. The purpose to is to provide better material for pulling up skiffs at lower water levels.

e). Boat Launch Ramps: The existing two boat launch ramps will be removed and replaced with pre-cast concrete plank launch ramps. An A-E for the City of Bethel has provided the plan view and typical section drawing for the launch ramps replacement. The slope for each ramp will be 13% with a top elevation of +12' MLLW and a toe elevation of -3.3' MLLW. Specifications for the launch ramps were not available from the City of Bethel or their A-E. Therefore, the Designer for this project prepared a draft specification (Section 35 51 13.00 20) for the launch ramps and it references the A-E's plan and typical section drawing as an attachment to the spec. Gravel scour aprons will be placed at the toe of each launch ramp with dimensions of 50'x50'x2'.

2. Value Engineering: At this time, a value engineering study has not been conducted for this project.

3. Review/Design Issues: District Quality Control Review (DQC) has been completed with all comments annotated and resolved. The Denali Commission and the City of Bethel were included in the review. A Bidability/Constructability/Operability/ Environmental (BCOE) review will not be performed at this time. Should the project move forward with preparation of a complete set of contract documents with front end specs and contract clauses, a BCOE may be conducted at that time.

4. Design Criteria: The design criteria for this project are: (a). Dredge the entrance and maneuvering channel and mooring area to adequate depths for safe and efficient navigation in the small boat harbor. The minimum depth for such is -5' MLLW, preferably to -6' MLLW according to the City of Bethel. The authorized depth for the Federal entrance and maneuvering channels is -4' MLLW. Operations Branch recommends one foot of advanced maintenance and one foot of over depth for constructability, therefore -6' MLLW. (b). Provide for "horizontal advanced maintenance" by increasing the channel width by 20' beyond the authorized channel width of 31' to 51'. (c). Repair the existing east bank Geocell and gravel slope previously constructed in 2008 by the City and constructed new Geocell and gravel slope protection around the remaining perimeter of the harbor. Side slope must be stable under the current and anticipated use by local boat operators. Skiffs must be able to be pulled up for loading and unloading while maintaining a stable "soft" side slope surface for such use. (d). Provide rock slope protection for the north and south banks of the harbor which are exposed to wave heights of approximately 1 to 2 feet under strong southerly and northerly winds

respectively. (e). Provide rock scour protection at the outlets of the existing culverts which collect adjacent drainage and discharge into the harbor. Assume that the existing culverts will remain in place and are fully flowing at capacity. (f). Replace existing rock revetment along the north side of the entrance channel. Size armor rock to be stable under wave conditions and ice forces similar to downstream Bethel Bank Stabilization project.

5. Design Constraints: The design constraints for this project include: (a). Construction of new project features will be within the existing harbor footprint of the original construction. (b). The project will not encroach on privately owned lands along the south side of the entrance channel or at the south corner of the east bank slope. (c). Existing utilities such as power poles, culverts, and float approach piers shall not be disturbed.

B

CIVIL (HYDRAULICS)

B. Civil (Hydraulics)

1. Criteria: The basis for the civil (hydraulic) design of the project is contained in the "Bank Stabilization General Design Memorandum" (GDM) report and "Bethel Small Boat Harbor" report prepared by the Corps of Engineers in 1988 and 1982 respectively. This information has not been repeated in this Design Analysis. Both the 1988 and 1982 reports are available in the Civil Works Branch report archive library.

2. Quantities: The basis for bid schedule volumes for the construction of the project is included in the attached calculation sheets in PDF format. Estimated quantities were determined by defining digital terrain model surfaces for the various dredging and gravel and rock layers in AutoCAD. Volume routines were performed in AutoCAD with Land Development Desktop Companion (LDD) by using section and composite method comparisons to original ground. In addition, individual cross-sections were plotted at 25-foot stations with existing ground and the "templates" drawn on the same axes. Average end areas were taken manually for each station and entered into the Excel spreadsheet for total volume comparisons. Both methods yielded results that were consistent within less than three percent. Quantities were then checked independently by Soils and Geology Section.

3. Dredging design: The dredging design is based on the authorized Federal entrance and maneuvering channel and the Local mooring basin limits and depths. The Federal areas have an authorized depth of -4' MLLW. Advanced maintenance of 1' plus a dredge tolerance of an additional 1' resulted in a required depth of -5' MLLW and a maximum pay line of -6' MLLW being specified on the drawings. The entrance channel width is authorized at 31', however for the 1997 O&M dredging project the channel was dredged to 51' wide. This additional 20' of width (10' on either side of centerline) was approved as "horizontal advanced maintenance" by North Pacific Division. For purposes of this project, horizontal advanced maintenance is again specified per Construction Operations Branch. The Local mooring basin will have a required depth of -5' MLLW with a maximum pay line to -6' MLLW at the request of the City of Bethel. Disposal of dredged material will take place in the previously used City owned site just east of the small boat harbor. Winter access by construction of an ice road will necessary by a designated City owned corridor that does not encroach on adjacent private property. The dredged material is characterized as "clean" and is suitable for upland disposal.

4. Slope Protection Design. The proposed slope protection layout for the inner harbor was based on the existing side slope limits and use of the banks for skiff haul out around the perimeter. Existing gravel and Geocell slope protection was designed by the City of Bethel's A-E and constructed in 2008. It has performed well although it was not completed entirely due to funding shortfalls. The final 6 inches of gravel was not placed over the filled Geocell, therefore leaving exposed Geocell material in some areas. Also, filter fabric and gravel was placed in some areas but covered with Geocell material and more gravel. This project uses a similar Geocell design however a 1V:4H side slope was selected to provide better stability. An additional 6 inches of Classified Fill (gravel) will be placed over the filled Geocells to provide better performance and durability. Rock slope protection along the north and south banks of the harbor was designed based on the localized wave exposure along

these particular reaches. Rock layer thicknesses and gradations were based on the existing "B" rock previously placed by the City of Bethel. However, for this project a Classified Fill filter layer will be placed on prepared slopes followed by a well key-in "B" rock layer on a 1V:3H side slope. Rock slope protection design for the entrance channel was based on the existing "A" rock layer previously placed and also the downstream bank stabilization project. Similar wave and ice exposure to this section of bank requires "A" rock armor for stability. For this project, a Classified Fill filter layer and "B" rock layer will underlay the "A" rock armor. This design has performed well for the downstream bank stabilization project since its construction in 1995. The "A" rock will be keyed-in with stone to stone contact on all sides to maximum interlocking of stone. For this project, the cross-section was modified to include an excavated toe for scour protection and stability of the upper slope. The primary purpose of the entrance channel slope protection is to stabilize the upper bank slope and protect the parking area for the harbor from erosion.

5. Tidal Information: Tidal datum is mean lower low water (MLLW). All elevations shown are referenced to MLLW. The tidal datum for the City of Bethel was derived from NOAA's Tides and Currents website. A recent update of the tidal datum at Bethel was performed by NOAA during the fall of 2010 and published in 2011. Conversion of tidal elevations reported in meters to feet was used as the basis for the tidal data table shown on drawing sheet V-101.

6. Water Level. Storm surge and atmospheric effects on water surface elevations on the Kuskokwim River in the Bethel area are significant. The tidal data table on drawing sheet V-101 does not include water level elevation effects from storm surge and atmospheric pressure variations. Kuskokwim River stage and ice jam events can also significantly affect water levels at the small boat harbor.

7. Survey Information: The Corps of Engineers contracted with Hughes and Associates to conduct a hydrographic/topographic survey of the existing small boat harbor during October 15-19, 2010. This survey was used as the basis for purposes of dredging and slope protection layout and quantity estimates. Contours shown on the drawings are based on major intervals of 5 feet and minor intervals of 1 foot. All elevations are referenced to 0.0 ft MLLW datum. Existing monuments were located and used as the basis for horizontal control. Recent (2010) NOAA tidal benchmark data was used as the basis for vertical control.

8. Wind Data: A detailed wind analysis was not conducted for use on this project. The summary of winds in the 1988 GDM was used for this project. Based on a frequency analysis of 1-hour duration winds from the southeast direction taken at the Bethel Airport, a 50-year winds speed of 54 miles per hour was derived.

9. Design Wave: A detailed wave analysis was not conducted for this project. The wave climate for the small boat harbor entrance channel is similar to that for the Bank Stabilization project area just down river to the west. Using an effective straight line fetch distance of 3.2 miles and the design wind speed above, a 50-year design wave of height of 4.2 feet with a period of 3.7 seconds was derived. A breaking wave height of 4.7 feet on the proposed entrance channel revetment slope exposed to the Kuskokwim River fetch was used. The small boat harbor mooring basin itself was analyzed for local fetch limitations. The longest fetch

distance oriented south southeast to north northwest is approximately 700 feet. An estimated wave height of approximately 2 feet was selected for the design condition for the inner harbor basin side slopes at the northern and southern perimeters.

10. Geotechnical Data: No geotechnical field investigation was conducted for this project. It is assumed that the material to be excavated/dredged for the entrance and maneuvering channels and mooring basin is primarily silt with some sand. The majority of this material is likely to be frozen during the dredging period. However, there could be considerable amounts of material to be dredged in the entrance channel that will be thawed to some degree. It is anticipated that there will be miscellaneous metal and other debris from harbor operations encountered during dredging. It is estimated that there will be little to no foundation displacement or settlement that will occur from the gravel, Geocell, and rock placement for the slope protection. Likewise, little to no settlement is anticipated for the launch ramps replacement.

11. Chemical Data: Chemical sampling was performed by the Corps of Engineers in October of 2010. Based on lab test results, the material is suitable for disposal in the disposal area identified on the drawings. See attachments for Chemical Data Report.

12. References:

U.S. Army Corps of Engineers (USACE), Alaska District. May 1988. "Bank Stabilization, Bethel, Alaska, General Design Memorandum".

USACE. June 1982. "Detailed Project Report and Final Environmental Impact Statement, Bethel Small Boat Harbor Report".

USACE. 1986. "Engineering and design, design of breakwaters and jetties," EM 1110-2-2904.

USACE, Coastal Engineering Research Center. 1984. *Shore Protection Manual.*

USACE, 2002. "Coastal Engineering Manual," EM1110-2-1100.

13. Attachments: Please see the following attachments for detailed information.

Attachment C

MS Project Cost Template
(Project Cost Summary Report), Project: Bethel Dredge & Bank Stabilization, U.S. Army Corps of Engineers, August 1, 2011

Bethel Dredge & Bank Stabilization
BET007 (333271) Bethel Small Boat Harbor Dredging

The project is to design the dredging, disposal, bank stabilization, and launch ramp improvements for the existing small boat harbor at Bethel, Alaska. The Denali Commission authorized preparation of the design to be ready for construction, should construction funds become available in the future. The design will include plans, technical specifications, and a cost estimate as well as all approved local, state, and federal permits and applicable construction bid documents for the existing small boat harbor project at Bethel. The documents will include, if requested by the City of Bethel, the launch ramp improvements already designed by the City. The design will not include detailed hydrologic and erosion studies, soil testing and boring typical for projects designed to be constructed. Existing studies and field information will be used.

Estimated by	POA-EN-CE
Designed by	POA-EN-CW-HH
Prepared by	Al Arruda
Preparation Date	5/13/2011
Effective Date of Pricing	6/1/2011
Estimated Construction Time	300 Days

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Designed by
POA-EN-CW-HH
Estimated by
POA-EN-CE
Prepared by
Al Arruda

Design Document	BETHEL SBH DREDGING
Document Date	4/18/2011
District	Alaska District
Contact	Karl Harvey, POA-EN-CE
Budget Year	2011
UOM System	Original

Direct Costs
LaborCost
EQCost
MatlCost
SubBidCost
UserCost1

Timeline/Currency

Preparation Date	5/13/2011
Escalation Date	9/1/2010
Eff. Pricing Date	6/1/2011
Estimated Duration	300 Day(s)
Currency	US dollars
Exchange Rate	1.000000

Costbook CB10EB: MII English Cost Book 2010

Labor : Alaska Labor May 2011
Note: Based on Davis Bacon wage decision & AKDOL Pam 600 dated 4/1/2011

Labor Rates
LaborCost1
LaborCost2
LaborCost3
LaborCost4

Equipment EP07R09: MII Equipment Region 9D 2011
Note: BASED ON EP1110-1-8 VOL9, 30NOV09. Updated 5 May 2011-AA. Fuel prices adjusted for remote regions.

09 ALASKA

Sales Tax	1.25
Working Hours per Year	1,040
Labor Adjustment Factor	1.19
Cost of Money	2.63
Cost of Money Discount	25.00
Tire Recap Cost Factor	1.50
Tire Recap Wear Factor	1.80
Tire Repair Factor	0.15
Equipment Cost Factor	1.10
Standby Depreciation Factor	0.50

Fuel

Electricity	0.132
Gas	4.450
Diesel Off-Road	4.350
Diesel On-Road	4.550

Shipping Rates

Over 0 CWT	44.02
Over 240 CWT	41.59
Over 300 CWT	38.40
Over 400 CWT	35.48
Over 500 CWT	27.35
Over 700 CWT	25.43
Over 800 CWT	22.10

Date	Author	Note
7/13/2011	Arruda	Design Documents: BETHEL SMALL BOAT HARBOR DREDGING, BETHEL, ALASKA, PRELIM, 18 APR 2011, BET007, PN 333271, DENALI COMMISSION PROJECT Specifications: PRELIM TECHNICAL SPECIFICATIONS, BET007 BETHEL SMALL BOAT HARBOR, BETHEL, ALASKA, Dated 21 APR 2011Assumptions: Full and Open Competitive Contract, Award NLT 1 Sep 2011, NTP NLT 15 Sep 2011, Harbor Dredging Complete NLT 1 Apr 2012, Construction Complete NLT 1 Aug 2012.. If construction award not able to be made in time for dredging during winter of 2011-2012, then additional costs will have to be computed.

Description	Quantity	UOM	ContractCost	Escalation	Contingency	SIOH	ProjectCost
Project Cost Summary Report			**7,985,874**	**156,724**	**407,130**	**678,056**	**9,227,784**
Dredging & Stabilization Base Items	**1.00**	**EA**	*8,805,187.95* **8,805,188**	**172,947**	**448,907**	**748,241**	*10,175,282.83* **10,175,283**
Bid, Performance & Payment Bond	**1.00**	**EA**	*70,500.00* **70,500**	**0**	**3,525**	**0**	*74,025.00* **74,025**
Mobilization & Demobilization	**1.00**	**EA**	*690,939.82* **690,940**	**13,681**	**35,231**	**59,188**	*799,039.57* **799,040**
Equipment Mobilization	**1.00**	**EA**	*398,167.95* **398,168**	**7,884**	**20,303**	**34,108**	*460,462.60* **460,463**
Personnel Mobilization	**1.00**	**EA**	*12,057.78* **12,058**	**239**	**615**	**1,033**	*13,944.26* **13,944**
Surveys - Control & Boundary	**1.00**	**EA**	*60,861.17* **60,861**	**1,205**	**3,103**	**5,214**	*70,383.09* **70,383**
Equipment Standby	**140.00**	**DAY**	*998.43* **139,780**	**2,768**	**7,127**	**11,974**	*1,154.63* **161,649**
Safety Fencing	**4,500.00**	**EA**	*17.17* **77,279**	**1,530**	**3,940**	**6,620**	*19.86* **89,370**
Project Sign	**1.00**	**EA**	*2,793.88* **2,794**	**55**	**142**	**239**	*3,230.99* **3,231**
Dredge Entrance & Maneuver Ch	**4.71**	**ACR**	*251,963.04* **1,186,746**	**23,498**	**60,512**	**101,660**	*291,383.46* **1,372,416**
Dredging & Disposal	**17,800.00**	**CY**	*64.23* **1,143,270**	**22,637**	**58,295**	**97,936**	*74.28* **1,322,138**
Snow & Ice Removal	**205,168.00**	**SF**	*2.40* **491,626**	**9,734**	**25,068**	**42,114**	*2.77* **568,542**
Dredge Excavation	**17,857.00**	**BCY**	*9.34* **166,799**	**3,303**	**8,505**	**14,289**	*10.80* **192,895**
Dredge Disposal	**27,901.25**	**LCY**	*9.82* **274,086**	**5,427**	**13,976**	**23,479**	*11.36* **316,968**
Snow & Ice Return to Basin	**205,168.00**	**SF**	*1.03* **210,759**	**4,173**	**10,747**	**18,054**	*1.19* **243,733**
Provide Hydrographic Surveys	**2.00**	**EA**	*21,738.17* **43,476**	**861**	**2,217**	**3,724**	*25,139.18* **50,278**

Description	Quantity	UOM	ContractCost	Escalation	Contingency	SIOH	ProjectCost
			212,866.29				*246,169.90*
Dredge Mooring Basin	**4.77**	**ACR**	**1,015,372**	**20,104**	**51,774**	**86,980**	**1,174,230**
			94.32				*109.08*
Dredging & Disposal	**10,300.00**	**CY**	**971,491**	**19,236**	**49,536**	**83,221**	**1,123,484**
			2.50				*2.89*
Snow & Ice Removal	**207,781.00**	**SF**	**518,439**	**10,265**	**26,435**	**44,411**	**599,551**
			10.96				*12.67*
Dredge Excavation	**10,312.00**	**EA**	**112,986**	**2,237**	**5,761**	**9,679**	**130,663**
			9.82				*11.36*
Dredge Disposal	**12,890.00**	**LCY**	**126,624**	**2,507**	**6,457**	**10,847**	**146,435**
			1.03				*1.19*
Snow & Ice Return to Basin	**207,781.00**	**SF**	**213,442**	**4,226**	**10,883**	**18,284**	**246,836**
			21,940.40				*25,373.04*
Provide Hydrographic Surveys	**2.00**	**EA**	**43,881**	**869**	**2,237**	**3,759**	**50,746**
Bank Stabilization	**1.00**	**LS**	**5,841,630**	**115,664**	**297,865**	**500,413**	**6,755,572**
			493.98				*571.26*
Entrance Channel Slope Prot - B	**3,100.00**	**SY**	**1,531,333**	**30,320**	**78,083**	**131,179**	**1,770,915**
			337.94				*390.81*
A Rock	**2,350.00**	**CY**	**794,162**	**15,724**	**40,494**	**68,030**	**918,411**
			321.00				*371.22*
B Rock	**1,700.00**	**CY**	**545,692**	**10,805**	**27,825**	**46,746**	**631,068**
			330.72				*382.46*
Classified Material	**500.00**	**CY**	**165,359**	**3,274**	**8,432**	**14,165**	**191,230**
			4.02				*4.65*
Excavation	**6,500.00**	**CY**	**26,120**	**517**	**1,332**	**2,238**	**30,207**
			42.87				*49.58*
Entrance Channel Slope Prot - B' & C	**3,100.00**	**SY**	**132,905**	**2,632**	**6,777**	**11,385**	**153,699**
			331.91				*383.84*
Classified Material	**375.00**	**CY**	**124,466**	**2,464**	**6,347**	**10,662**	**143,939**
			22.51				*26.03*
Excavation	**375.00**	**CY**	**8,440**	**167**	**430**	**723**	**9,760**
			599,444.84				*693,229.90*
East Bank Slope Prot - D	**1.00**	**EA**	**599,445**	**11,869**	**30,566**	**51,350**	**693,230**

Description	Quantity	UOM	ContractCost	Escalation	Contingency	SIOH	ProjectCost
			328.38				*379.75*
Classified Material - Sta 27+35 to 29+60	**135.00**	**CY**	**44,331**	**878**	**2,260**	**3,798**	**51,267**
			328.36				*379.73*
Classified Material - Sta 29+60 to 32+00	**817.00**	**CY**	**268,269**	**5,312**	**13,679**	**22,981**	**310,241**
			60.74				*70.24*
Geocell Grid	**1,725.00**	**SY**	**104,779**	**2,075**	**5,343**	**8,976**	**121,172**
			328.36				*379.73*
Classified Material - Sta 32+00 to Launch Ramp	**363.00**	**CY**	**119,195**	**2,360**	**6,078**	**10,211**	**137,844**
			60.74				*70.24*
Geocell Grid	**768.00**	**SY**	**46,649**	**924**	**2,379**	**3,996**	**53,948**
			6.16				*7.12*
Excavation	**557.00**	**CY**	**3,431**	**68**	**175**	**294**	**3,967**
			16.65				*19.26*
Geotextile Fabric	**768.00**	**SY**	**12,791**	**253**	**652**	**1,096**	**14,792**
			677,568.98				*783,576.82*
North Bank Slope Prot - E	**1.00**	**EA**	**677,569**	**13,416**	**34,549**	**58,043**	**783,577**
			321.00				*371.22*
B Rock	**1,600.00**	**CY**	**513,593**	**10,169**	**26,188**	**43,996**	**593,946**
			328.36				*379.73*
Classified Material	**475.00**	**CY**	**155,970**	**3,088**	**7,953**	**13,361**	**180,372**
			35.58				*41.15*
Excavation	**225.00**	**CY**	**8,007**	**159**	**408**	**686**	**9,259**
			212.97				*246.29*
North & West Bank Slope Prot - F	**5,475.00**	**SY**	**1,166,000**	**23,087**	**59,454**	**99,883**	**1,348,425**
			327.35				*378.57*
Classified Material	**2,189.00**	**CY**	**716,577**	**14,188**	**36,538**	**61,384**	**828,688**
			60.74				*70.24*
Geocell Grid	**5,475.00**	**SY**	**332,560**	**6,585**	**16,957**	**28,488**	**384,590**
			5.84				*6.75*
Excavation	**4,400.00**	**CY**	**25,695**	**509**	**1,310**	**2,201**	**29,715**
			16.65				*19.26*
Geotextile Fabric	**5,475.00**	**SY**	**91,169**	**1,805**	**4,649**	**7,810**	**105,432**
			569.44				*658.53*
South Bank Slope Prot - G	**475.00**	**SY**	**270,483**	**5,356**	**13,792**	**23,170**	**312,801**

Description	Quantity	UOM	ContractCost	Escalation	Contingency	SIOH	ProjectCost
			321.00				*371.22*
B Rock	**650.00**	**CY**	**208,647**	**4,131**	**10,639**	**17,873**	**241,291**
			328.35				*379.72*
Classified Material	**175.00**	**CY**	**57,462**	**1,138**	**2,930**	**4,922**	**66,452**
			3.89				*4.50*
Excavation	**1,125.00**	**CY**	**4,375**	**87**	**223**	**375**	**5,059**
			50,485.98				*58,384.68*
Rock Aprons at Culvert Outlets	**3.00**	**EA**	**151,458**	**2,999**	**7,723**	**12,974**	**175,154**
			330.57				*382.29*
Classified Material	**84.00**	**CY**	**27,768**	**550**	**1,416**	**2,379**	**32,113**
			321.00				*371.22*
B Rock	**336.00**	**CY**	**107,854**	**2,136**	**5,499**	**9,239**	**124,729**
			232.79				*269.22*
Excavation	**32.00**	**CY**	**7,449**	**147**	**380**	**638**	**8,615**
			16.64				*19.24*
Geotextile Fabric	**504.00**	**CY**	**8,386**	**166**	**428**	**718**	**9,698**
			79,841.04				*92,332.42*
Scour Aprons at Launch Ramp Toes	**2.00**	**EA**	**159,682**	**3,162**	**8,142**	**13,679**	**184,665**
			330.60				*382.33*
Classified Material	**483.00**	**CY**	**159,682**	**3,162**	**8,142**	**13,679**	**184,665**
			572,009.50				*661,502.22*
North Lanuch Ramp Improvements	**1.00**	**EA**	**572,009**	**11,326**	**29,167**	**49,000**	**661,502**
			572,009.50				*661,502.22*
South Lanuch Ramp Improvements	**1.00**	**EA**	**572,009**	**11,326**	**29,167**	**49,000**	**661,502**
			8,735.16				*10,101.81*
Provide Topographic Surveys	**1.00**	**EA**	**8,735**	**173**	**445**	**748**	**10,102**
			819,314.26-				*947,498.60-*
Option Items	**1.00**	**EA**	**819,314-**	**16,222-**	**41,777-**	**70,185-**	**947,499-**
			819,314.26-				*947,498.60-*
Don't Haul Ice & Snow	**1.00**	**EA**	**819,314-**	**16,222-**	**41,777-**	**70,185-**	**947,499-**
			1,123,671.22-				*1,299,473.18-*
Delete Items	**1.00**	**EA**	**1,123,671-**	**22,249-**	**57,296-**	**96,257-**	**1,299,473-**
			1.59-				*1.84-*
Snow & Ice Removal - Ent & Manv Area	**205,167.60**	**SF**	**326,747-**	**6,470-**	**16,661-**	**27,990-**	**377,868-**

Description	Quantity	UOM	ContractCost	Escalation	Contingency	SIOH	ProjectCost
Snow & Ice Removal - Mooring Basin	207,781.00	SF	*1.79-* 372,721-	7,380-	19,005-	31,928-	*2.07-* 431,034-
Ent & Manv Area Snow & Ice Return to Basin	205,168.00	SF	*1.03-* 210,761-	4,173-	10,747-	18,054-	*1.19-* 243,735-
Mooring Basin Snow & Ice Return to Basin	207,781.00	SF	*1.03-* 213,442-	4,226-	10,883-	18,284-	*1.19-* 246,836-
Add Items	1.00	EA	*304,356.96* 304,357	6,026	15,519	26,072	*351,974.58* 351,975
Ice Removal - Ent & Manv Area	205,167.60	EA	*0.20* 40,858	809	2,083	3,500	*0.23* 47,250
ce Removal - Mooring Basin	207,781.20	EA	*0.27* 56,108	1,111	2,861	4,806	*0.31* 64,886
Ent & Manv Area Snow & Ice Push into Excavation	205,167.60	SF	*0.52* 106,397	2,107	5,425	9,114	*0.60* 123,043
Mooring Basin Snow & Ice Push into Excavation	207,781.20	SF	*0.49* 100,994	2,000	5,150	8,651	*0.56* 116,795

Description	Page
Library Properties	**v**
Project Notes	**vi**
Project Cost Summary Report	**1**
Dredging & Stabilization Base Items	1
Bid, Performance & Payment Bond	1
Mobilization & Demobilization	1
Dredge Entrance & Maneuver Ch	1
Dredge Mooring Basin	2
Bank Stabilization	2
Option Items	4
Don't Haul Ice & Snow	4

Attachment D

Application for Department of the Army Permit, Bethel Harbor Bank Stabilization and Dredging

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 EXPIRES: 31 August 2012

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This Information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME:	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
First - Middle - Last –	First - Guy Middle - Last – McConnell
Company – City of Bethel	Company – U.S. Army Corps of Engineers
E-mail Address –	E-mail Address – Guy.R.McConnell@usace.army.mil
6. APPLICANT'S ADDRESS. Address - P.O. Box 1388	9. AGENT'S ADDRESS Address - P.O. Box 6898
City – Bethel State – Alaska Zip – Country – USA	City – JBER State – Alaska Zip – 99506-0898 Country – USA
7. APPLICANT'S PHONE NOs. W/AREA CODE	10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence b. Business 907-543-2047 c. Fax 907-543-4171	a. Residence b. Business 907-753-2614 c. Fax 907-753-2625

STATEMENT OF AUTHORIZATION

11. I hereby authorize, CEPOA-EN-CW-ER McConnell to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

Peter A Williams — APPLICANT'S SIGNATURE

8/16/11 — DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

Bethel Harbor Bank Stabilization and Dredging.

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Kuskokwim River	Address Bethel Harbor
15. LOCATION OF PROJECT	City - Bethel State – Alaska Zip -
Latitude: °N 60 Deg 47 min, 35.05 sec's Longitude: °W 161 deg, 44 min, 15.40 sec's	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality Bethel, Alaska

Section – 9 SE SE NW Township – 8N Range – 71W

17. DIRECTIONS TO THE SITE

Depart Bethel Airport via Chief Eddie Hoffman Highway, proceed east and north on the highway, turn right onto 3rd Avenue which becomes Tundra Way, turn left onto 2nd Avenue, turn left onto Bridge Avenue, turn left onto Hanger Lake Road, turn right onto North Harbor Road and continue to harbor.

18. Nature of Activity (Description of project, include all features)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres

Or

Liner Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? Yes ☐ No ☑ IF YES, DESCRIBE THE COMPLETED WORK

None of the work to be completed has been initiated. The structures to be maintained or replaced of course exist.

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Address –

City – State – Zip –

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
Ak Fish & Game	Fish HabitatPermit	FH 10-II-0188		9/17/2010	

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Peter A Williams 8/16/11

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

ENG 4345

Supplemental Information

(Application for Authorization of Section 10 work in navigable waters and 404 Fill Permit Application)

BOX 18 Nature of Activity-

a). Major Construction: Items include dredging of the Federal entrance channel and maneuvering channel, dredging of the Local mooring basin, construction of slope protection around the perimeter banks of the harbor, reconstruction of the existing rock revetment slope protection along the north side of the entrance channel at the parking area, and replacement of the two existing boat launch ramps.

b). Dredging: The entrance channel, maneuvering channel, and mooring basin will all be dredged to a required depth of -5' MLLW with a maximum pay line of -6' MLLW. Side slope will be 1V:5H in the entrance channel and 1V:4H in the maneuvering channel and mooring basin. The entrance channel width will be dredged to 51 feet (ten feet wider on either side of centerline from the authorized channel width is 31 feet). The additional ten feet on either side was approved by North Pacific Division prior to the 1997 maintenance dredging project at Bethel as "horizontal advanced maintenance". This has been recommended for this project again by Operations Branch. Materials to be dredged are anticipated to be primarily silt with some sand. Dredging will take place in the winter months. Ice and snow will first be removed by ripping and removing with a dozer. Dredging will be performed in the mooring basin and maneuvering channel by excavating frozen material silt using a dozer and then hauled by truck to the disposal area. This work will essentially be done "in the dry". Following post-dredge surveys, snow and ice removed to allow dredging that had been temporarily stockpiled will be replaced back into the harbor. The entrance channel will be dredged using an excavator sitting on and cutting through the ice to excavate material. There will likely be water encountered under the ice due to the influence of the main channel of the Kuskokwim River. Material will be removed and hauled by truck to the disposal area. There will be no staging, stock piling, etc of dredge spoils outside the dredge footprint. In other words some dredge spoils may be stockpiled within the portion of the harbor to be dredged on top of the ice. And, as previously noted, excavated ice removed to accomplish dredging will be stockpiled on ice within the harbor or channels until the dredging is complete.

c). Slope Protection: The perimeter banks of the small boat harbor are used extensively by local users to pull up skiffs for loading and unloading, and also mooring to the shoreline. Slope protection will be provided by placing Geo-textile filter fabric, Geo-cell grid slope stabilization material, and gravel ("Classified Fill"). The Geo-cell system will be pinned in place using J-hooks. Bank slope areas to be protected include the east bank, a portion of the north bank, and the west bank of the harbor. A side slope of 1V:4H, crest elevation of +10' MLLW, and an excavated toe to -3' MLLW will be used for the Geo-cell stabilized slope protection east bank area. For the north and west bank areas, side slope of 1V:4H, crest elevation of +9.5' MLLW, and an excavated toe to -5' MLLW will be used. The existing rock slope protection along the north and south banks will be replaced by removing and salvaging the existing rock and constructing a new rock revetment with a "B" rock outer layer. The revetments will be constructed on a side slope of 1V:3H with a crest elevation of +9' MLLW and a rock toe at -2' MLLW.

The existing rock revetment along the north bank of the entrance channel will be replaced by removing and salvaging the existing rock and constructing a new rock revetment with an "A" rock outer layer. The revetment will be constructed on a side slope of 1V:3H with a crest elevation of +10' MLLW and a rock toe at +2' MLLW. It will protect the existing parking along the entrance channel to the harbor.

d). Classified Fill: Classified Fill (gravel) will be placed along the entrance and maneuvering channel harbor side slope in place of existing muck at the request of the City of Bethel. The material will be placed by excavating 1' of muck from the +1' to +4' MLLW contour and replaced with gravel. The purpose is to provide a substrate suitable for landing and mooring skiffs (small boats) which will ground-out at lower water levels.

e). Boat Launch Ramps: The existing two boat launch ramps will be removed and replaced with pre-cast concrete plank launch ramps. An Architect/Engineer (A/E's) firm working for the City of Bethel has provided the plan view and typical section drawing for the launch ramps replacement. The slope for each ramp will be 13% with a top elevation of +12' MLLW and a toe elevation of -3.3' MLLW. Specifications for the launch ramps were not available from the City of Bethel or their A-E. Therefore, the Designer for this project prepared a draft specification (Section 35 51 13.00 20) for the launch ramps and it references the A-E's plan and typical section drawing as an attachment to the spec. Gravel scour aprons will be placed at the toe of each launch ramp with dimensions of 50'x50'x2'.

-Not all fill described in the narrative for items 1 – 13 immediately below is expected to occur within jurisdictional waters. The 2nd (subsequent) breakdown of work for items 1 -13 below defines fill believed to fall within jurisdictional waters.

-All excavated material (excavated not dredged material) will be re-used to work slopes, ramps and culvert aprons This is in-situ material, some of which will be replaced below the line of jurisdiction and some above it. See Drawings –V-101 to C-102.

-The disposal access road depicted on Drawings C-101 and C-102 will be constructed as a temporary ice road and left to melt with spring break-up. Only the temporary effect of in-place ice is expected (i.e. no change to topography or post break-up hydrologic flow patterns) as a result of ice road construction and use.

-Only dredge material will be disposed of in the dredge disposal area.

-No temporary, intermediate or stockpiling of dredge material will take place outside the footprint of the area being dredged.

Section 404 Total Quantities of Dredge/Fill Material. Because the High Tide line at Bethel is +4.1 feet and therefore encompasses very close to 100% of the cy's of material to be placed the following list of 404 jurisdictional fill represents all fill quantities including those broken out below under Section 10 jurisdiction. As previously noted excavation represents in-situ material at or below the +4.1 foot contour that will be excavated and backfilled

1. Dredge 17,800 cubic yards of accumulated substrate from the entrance and maneuvering channels of Bethel Harbor and dispose of in upland disposal site (see Drawings C-101, V-101 & 102). Assume's excavation to max pay line.

2. Dredge 10,300 cubic yards (cy's) of accumulated substrate from the Bethel Harbor Mooring basin and dispose of in upland disposal site (see Drawings C-101 & C-301, V-101 & V-102). Assume's excavation to max pay line.

3. Install Entrance Channel slope protection (Section B, Drawings C-101 & C-302) comprised of 4,423 cy's of excavation, installation of 1,110 cy's of "A" rock, 1,032 cy's of "B" rock, 445 cy's of "Classified Fill".

4. Install Entrance Channel and Maneuvering Channel slope protection (Section B' and Section C, Drawings C-101 & C-302) comprised of 327 cy's of excavation, installation of 327 cy's of Classified Fill.

5. Install East Bank slope protection (Drawings C-101 & C-303) comprised of 610 cy's of excavation, 747 cy's of Classified Fill and installation of 2493 square yards (sy's) of Geocell Grid and 768 sy's of geotextile fabric.

6. Install North Bank slope protection (Section E, Drawings C-101 & C-303) comprised of 1,575 cy's of excavation, 895 cy's of "B" rock and 315 cy's of classified fill. Excavation includes removal of existing Geocell grid, filter fabric, and approximately 250 cy's of "B" rock which may be reused.

7. Install North Bank slope protection (Section F, Drawings C-101 & C-304) and West bank slope protection comprised of 2,875 cy's of excavation, 1,475 cy's of Classified Fill and installation of 5,475 sy's of Geocell Grid and 5,475 sy's of geotextile fabric.

8. Install South Bank slope protection (Section G, Drawings C-101 & C-307) comprised of 750 cy's of excavation, 112 cy's of Classified Fill and installation of 348 cy's of "B" rock. Excavation includes removal of approximately 400 cy's of existing "B" rock which may be reused.

9. Install Rock Apron at culvert outfalls (3 locations, Drawings C-101, C-305 & C-306) comprised of 418 cy's of excavation, 78 cy's of Classified Fill material, 233 cy's of "B" rock and installation of 504 sy's of geotextile fabric.

10. Install Scour Apron at launch ramp toes (2 locations, Drawings C-101 and C-307) comprised of 483 cy's of excavation and 483 cy's of classified fill.

11. Remove existing and install replacement concrete North launch ramp planks (Drawings C-101 & C-307) comprised of 124 cy's of concrete planks and 136 cy's of classified fill.

12. Remove existing and install replacement concrete South launch ramp planks (Drawings C-101 & C-307) comprised of 124 cy's of concrete planks and 136 cy's of classified fill.

Snow and ice over the area to be dredged will be scraped prior to dredging to assure that the contractor is dredging materials they are paid to dredge versus snow and ice; which they would not be paid to dredge. As the snow and ice will not contain entrained sediments it will be stockpiled on ice in the

harbor and returned to the dredged area after dredging or be left in place to melt. The contractor may if necessary construct an ice road (winter access corridor) to access the disposal site. This feature will overlay the ground surface therefore involving no earthwork nor modification of flowage/drainage patterns after it melts in the spring.

The City will provide the dredging contractor a staging area in either the north or south harbor parking lot (i.e. a developed area).

Dredging in winter after harbor ice without entrained material is removed is expected to consist of a ripper, dozer and excavator excavating and loading dredge materials into water tight trucks for transport to and dumping into the disposal area. No temporary, intermediate placement or stockpiling of dredge spoils will take place.

Rock sources for "A Material" (gravel) and "A" and "B" rock are existing quarries up or down river from Bethel. No new materials source will be opened for this project.

The attached excerpts from the USACE Alaska Districts 2009 Project & Index Book are provided as reference. The drawings depicting the general layout of the harbor project are representative of the configuration of primary elements and facilities. The quantities listed represent past not currently proposed or potential future maintenance work. The drawings are not necessarily representative of the proposed work. Nor are the excerpted drawings provided in the format for, nor intended to be used as, public notice drawings.

Section 10 Jurisdictional work Below Mean High Water (+2.7'). (All cy's listed below are the same as or are incorporated in the above 404 quantities).

1. 17,800 cy's of dredging and dredge spoil disposal (see Drawings C-101, V-101 & 102).

2. 10,300 cy's of dredging and dredge spoil disposal (see Drawings C-101 & C-301, V-101 & V-102).

3. "A" Rock 960 cy's, "B" Rock 975 cy's, Classified fill 420 cy's, Excavation 3,695 cy's (all to be re-used on-site via grading/backfilling) (Section B, Drawings C-101 & C-302).

4. Classified fill 175 cy's, excavation 175 cy's (all to be re-used on-site via grading/backfilling) (Section B' and Section C, Drawings C-101 & C-302).

5. Classified fill 546 cy's, excavation 445 cy's (all to be re-used on-site via grading/backfilling) (Drawings C-101 & C-303).

6."B" rock 825 cy's, classified fill 270 cy's, excavation 1,520 cy's (all to be re-used on-site via grading/backfilling) (Section E, Drawings C-101 & C-303).

7. Classified fill 1,140 cy's, excavation 2,810 cy's (all to be re-used on-site via grading/backfilling) (Section F, Drawings C-101 & C-304).

8. "B" Rock 630 cy's, classified fill 175 cy's, excavation 1,000 cy's (all to be re-used on-site via grading/backfilling) (Section G, Drawings C-101 & C-307).

9. Classified fill 50 cy's, "B" Rock 200 cy's, excavation 19 cy's (all to be re-used on-site via grading/backfilling) (3 locations, Drawings C-101, C-305 & C-306).

10. Classified fill 483 cy's, excavation 483 cy's (all to be re-used on-site via grading/backfilling) (2 locations, Drawings C-101 and C-307).

11. Classified Fill 85 cy's and concrete planks 71 cy's (Drawings C-101 & C-307).

12. Classified Fill 85 cy's and concrete planks 71 cy's (Drawings C-101 & C-307).

The attached excerpts from the USACE Alaska Districts 2009 Project & Index Book are provided as reference. The drawings depicting the general layout of the harbor project are representative of the configuration of primary elements and facilities. The quantities listed represent past not currently proposed or potential future maintenance work. The drawings are not necessarily representative of the proposed work. Nor are the excerpted drawings provided in the format for, nor intended to be used as, public notice drawings.

Box 19 Project Purpose-

The purpose for maintenance dredging and related disposal is maintenance of navigational servitude. The purpose for shoreline protection, scour aprons at launch ramp toes and rock apron installations is erosion prevention and/or repair. The purpose for replacement of the boat ramp planks is maintenance of access to navigable waters. The purpose for temporary fills for project related survey work is construction quality assurance. The need for the above activities is transportation corridor access maintenance, access to subsistence harvest areas and maintenance of re-supply routes. Bethel is a transportation hub for 56 surrounding communities. Summer access is by boat or plane only. Sedimentation in the entrance channel and harbor is restricting design levels of navigational access.

Box 20 Reason(s) for Discharge-

Placement of dredge spoils into wetlands is necessary to facilitate the dredge action. Placement of gravel, rock, geo-cell (erosion) grid and geo-textile fabric in part below the high tide line is necessary for erosion control. Placement of concrete ramp planks below high tide line is necessary for access to navigable waters.

Box 21 Types of Material Being Discharged and the Amount of each and Type in Cubic Yards-

Dredge Spoils (sediments) -28,100 cy's jurisdictional and total (i.e. 28,100 dredged and 28,100 disposal) Entrance Channel 3% sand, 97% silt, Maneuvering Channel 5% sand, 95% silt, Mooring Basin 14% sand, 86% silt.

"A" & "B" Rock – 3,618 cy's jurisdictional, 7,761 cy's total

Classified Fill (Gravel) – 4,254 cy's jurisdictional, 5,292 cy's total

Concrete – 248 cy's jurisdictional and total

Excavation & Backfill -11,461 cy's jurisdictional, 15,697 cy's total

Box 22 Surface Area in Acres of Wetlands or Other Waters Filled-

Surface acres of wetlands filled – 4.5 acres (Drawing C-102).While the drawing depicts a 14.13 acre dredge disposal area the placement of dredged spoils in winter is expected to impact only 4.5 acres with fill somewhere within the 14.13 acre area.

Linear feet of Riverbank filled – 450 LF. (Drawing C-101).

Linear feet of Harbor perimeter to be worked/filled - 2,700 LF. (Drawing C-101).

Sub-surface acres of dredge impacts - Entrance channel 2.9 acres maximum. Maneuvering Channel 3.4 acres maximum. Mooring Basin 4.3 acres maximum. (Drawing C-101).

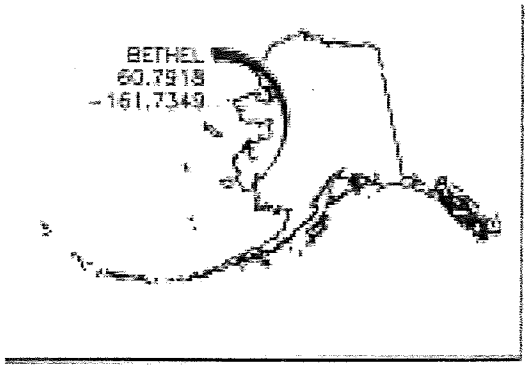
Box 23 Description of Avoidance, Minimization and Compensation-

Impacts are avoided to the degree possibly by selecting a proposed dredge disposal site that was previously authorized and used for disposal of dredged material from this same area. Material previously disposed in this area has been overgrown by indigenous vegetation. Dredge quantities are limited to authorized depths (over dredging by 2 feet has been authorized to minimize dredge intervals) therefore limiting spoils quantities. The dredge methodology is the optimal methodology for conditions therefore limiting incidental fallback. All erosion prevention related fill (rock, gravel) will be minimized to the quantity required for the required engineered design. The placement of erosion prevention material is intended to in part reduce the need for future dredging. Ramp plank size and number are the minimum necessary for conditions and use. Timing (winter construction) was selected to minimize turbidity, incidental fallback, transportation loss, disturbance to fish and wildlife, subsistence activities and navigational use.

Box 25 Addresses of Adjoining Property Owners-

Bethel Native Corporation, PO Box 719, Bethel, Alaska 99559

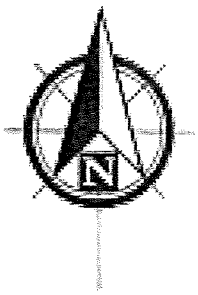
City of Bethel, P.O. Box 1388, Bethel, Alaska 99559

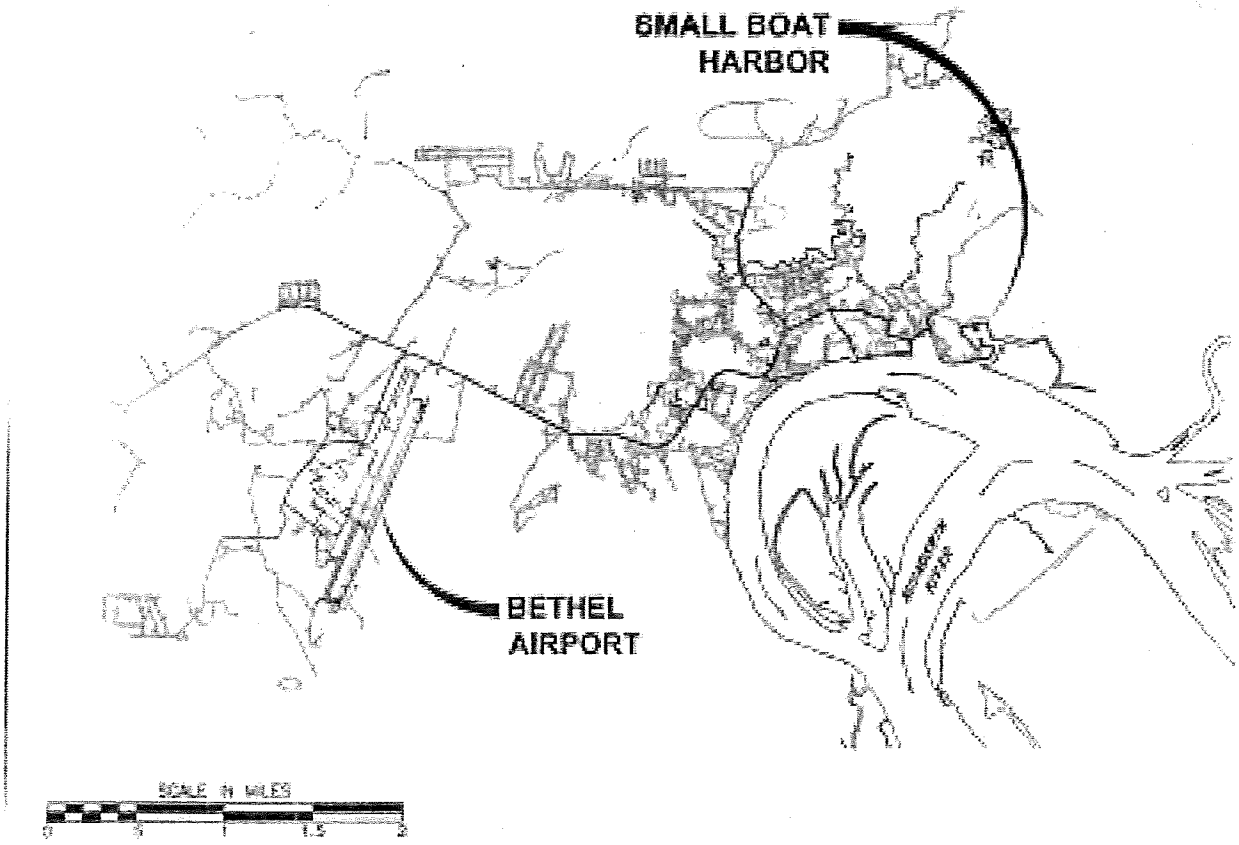


LOCATION MAP

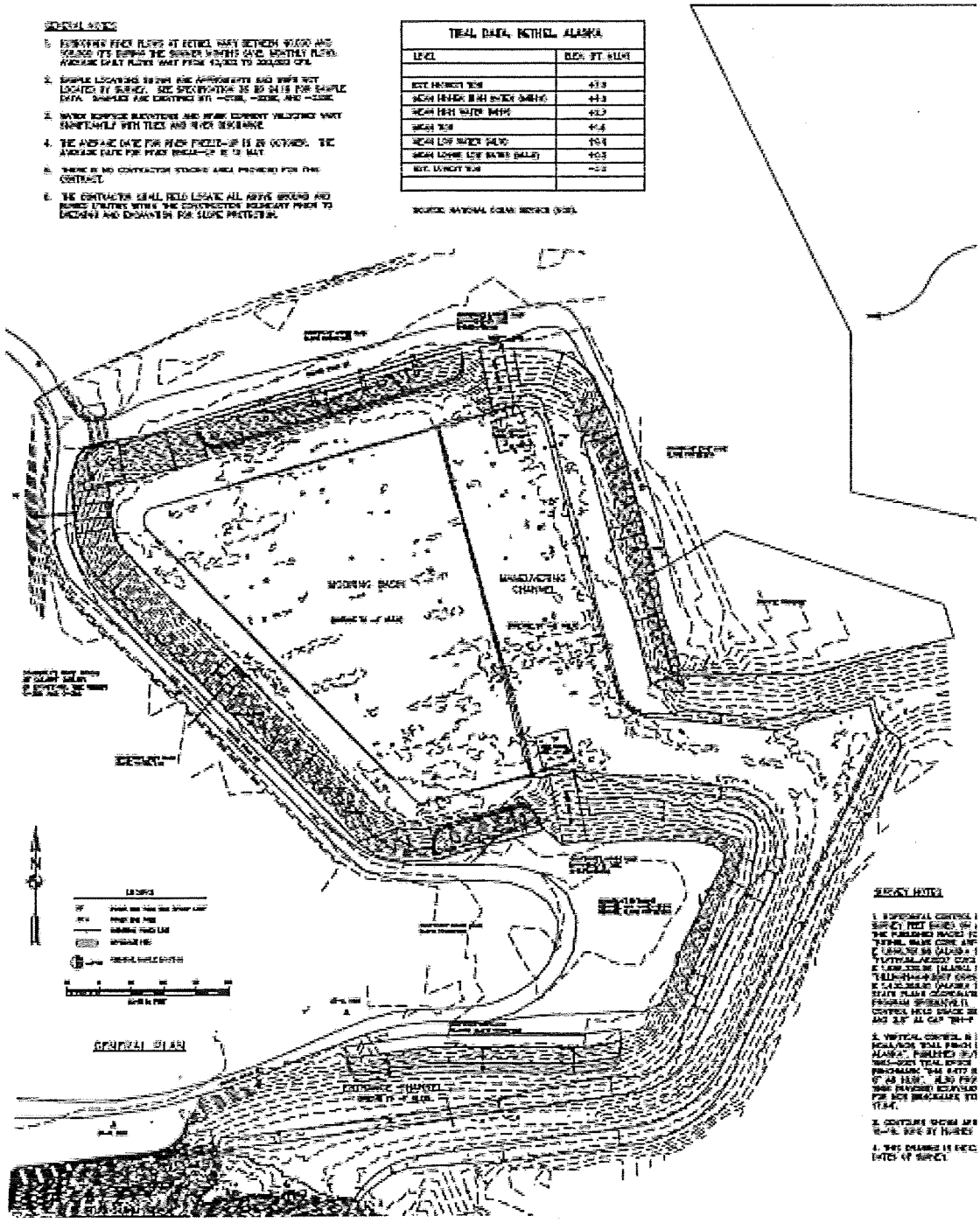
BETHEL TIDES

HTL..... +4.1
MHW..... +2.7
MLLW..... +0.0

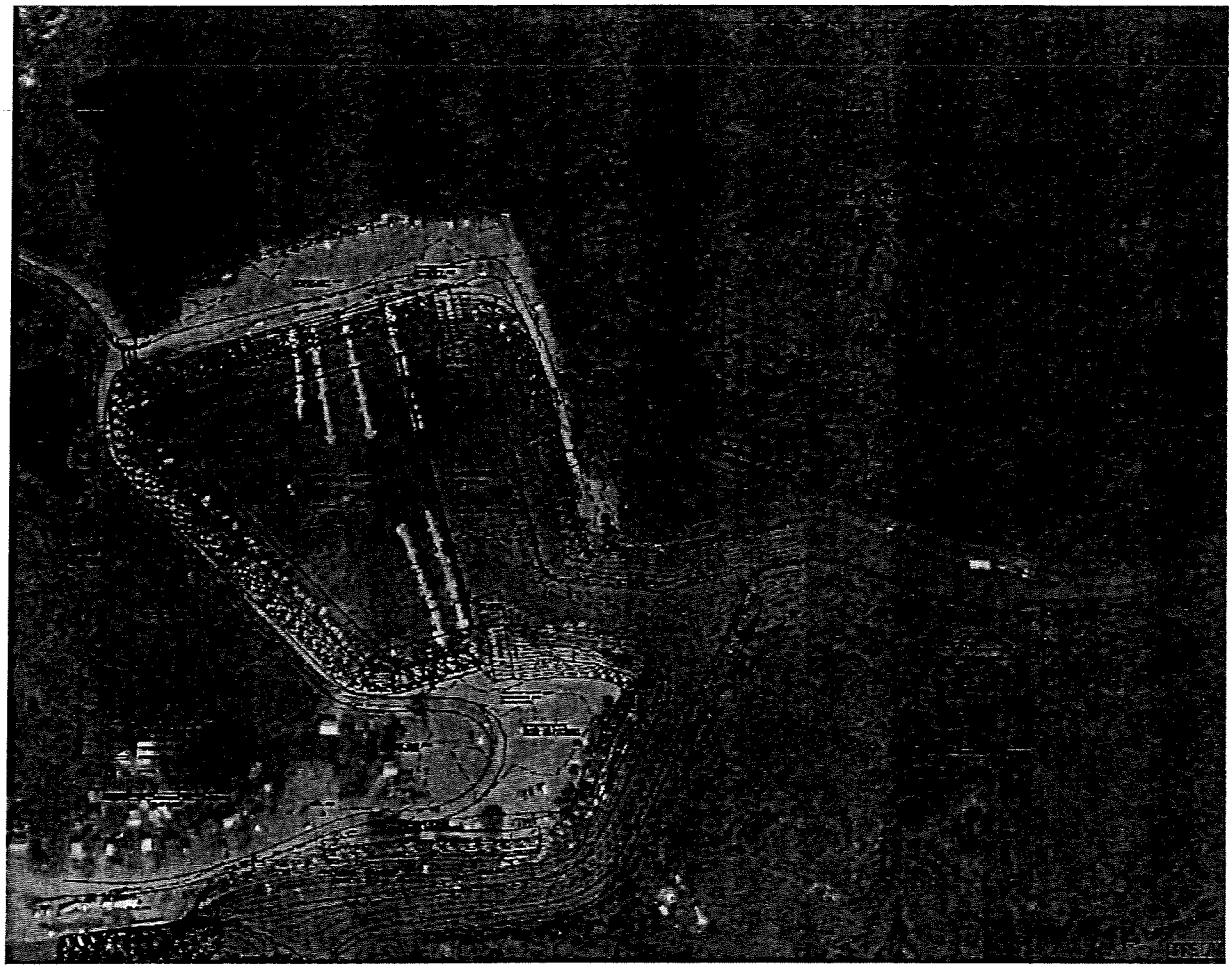




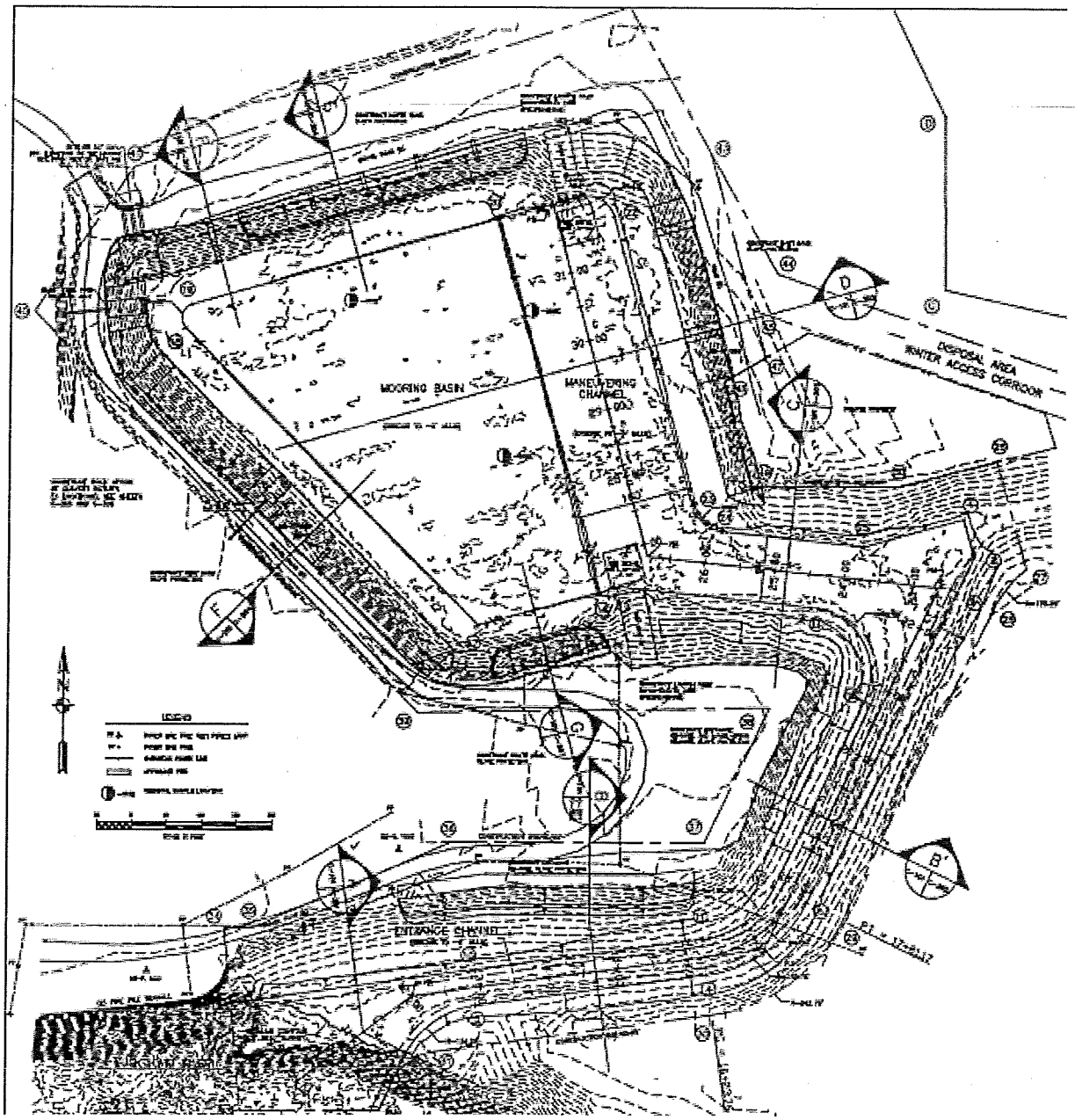
PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**LOCATION MAP** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 1 of 13



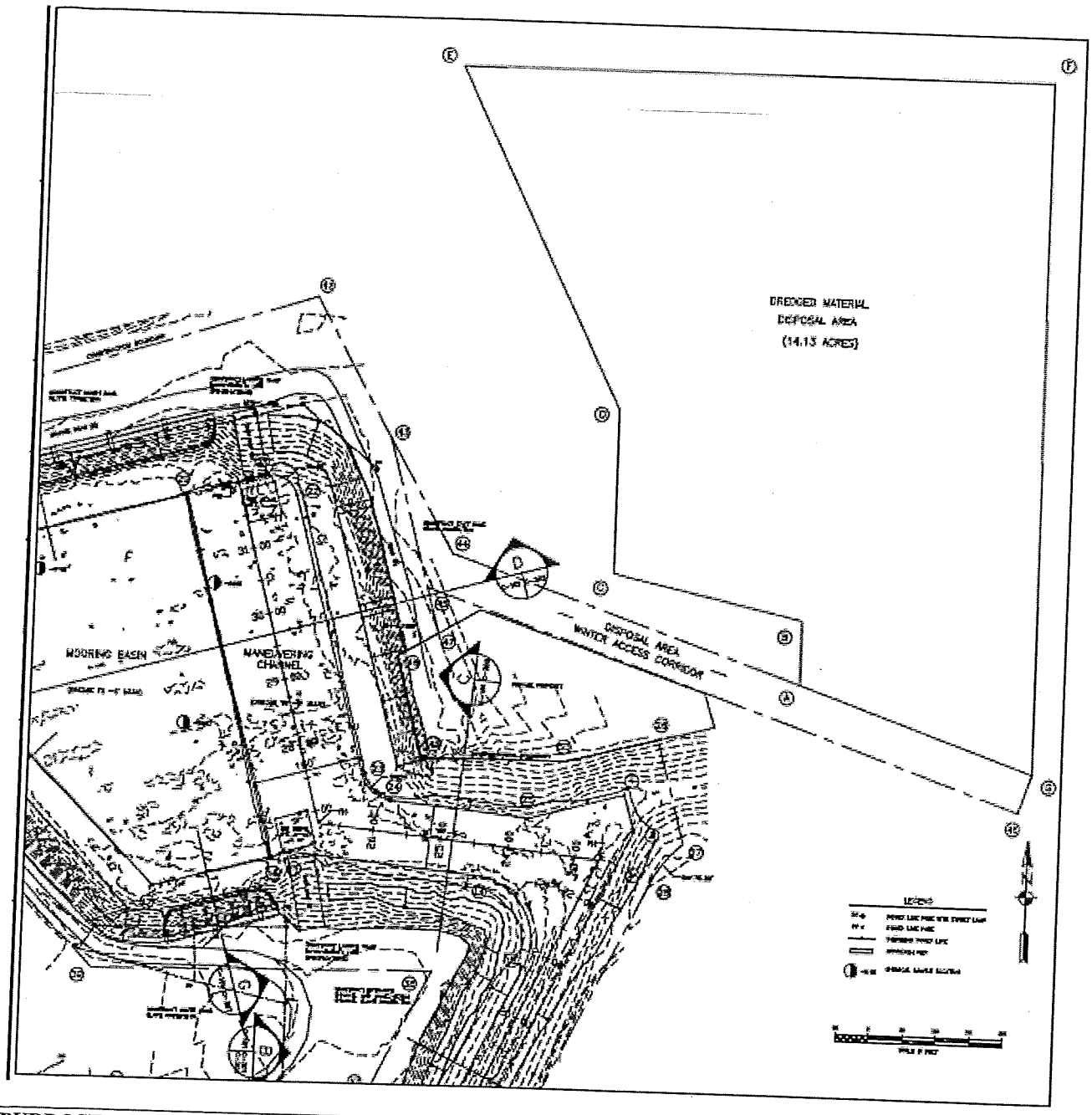
PURPOSE: Dredge to restore design depth and install bank protection.	SURVEY GENERAL PLAN AND SURVEY CONTROL	CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION
DATUM: MLLW = Elev. 0.0	City of Bethel P.O. Box 1388 Bethel, AK 99559	IN: Kuskokwim River
ADJACENT PROPERTY OWNERS: City of Bethel & Bethel Native Corporation.		AT: City of Bethel
		August 2011 Sheet 2 of 13



PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**SURVEY GENERAL PLAN WITH PHOTO BACKGROUND** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 3 of 13



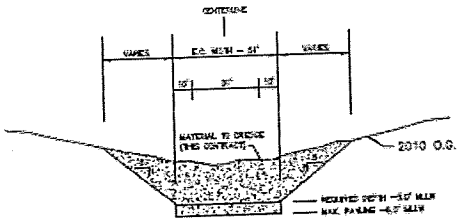
PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**SITE PALN 1** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 4 of 13



PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**SITE PLAN 2** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 5 of 13

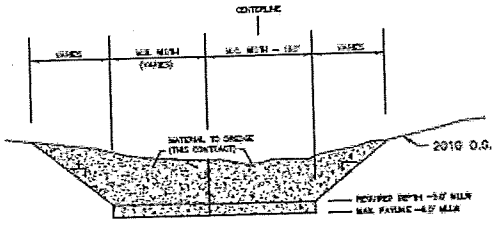
NOTES

1. SEE PLAN SHEET C-101 FOR DREDGING LIMITS AND TRANSITIONS BETWEEN THE ENTRANCE CHANNEL, MANEUVERING CHANNEL AND MOORING BASIN AREAS PROVIDE SMOOTH AND UNIFORM TRANSITIONS BETWEEN THE DREDGING LIMITS FOR THESE AREAS AS SHOWN.
2. THE REQUIRED ENTRANCE CHANNEL FLARE DREDGING WIDTH FOR THIS CONTRACT IS AS SHOWN. THE AUTHORIZED FEDERAL ENTRANCE CHANNEL FLARE WIDTH VARIES. INCLUDED IN THE DREDGING REQUIREMENT FOR THIS CONTRACT IS HORIZONTAL ADVANCED MAINTENANCE OF AN ADDITIONAL 10' ON EACH SIDE FOR A TOTAL FLARE WIDTH AS SHOWN.
3. THE REQUIRED ENTRANCE CHANNEL DREDGING WIDTH FOR THIS CONTRACT IS 51'. THE AUTHORIZED FEDERAL ENTRANCE CHANNEL WIDTH IS 51'. INCLUDED IN THE DREDGING REQUIREMENT FOR THIS CONTRACT IS HORIZONTAL ADVANCED MAINTENANCE OF AN ADDITIONAL 10' ON EACH SIDE FOR A TOTAL WIDTH OF 51'.



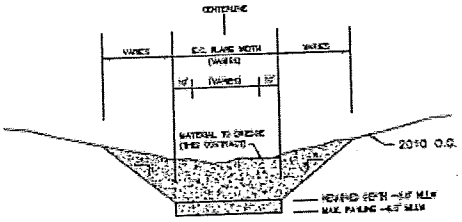
B TYPICAL SECTION: DREDGING – ENTRANCE CHANNEL
NOT TO SCALE

STA. 12+89.29 TO 20+71.11, E.C. WIDTH = 51'
STA. 20+71.11 TO 22+53.49, E.C. WIDTH VARIES



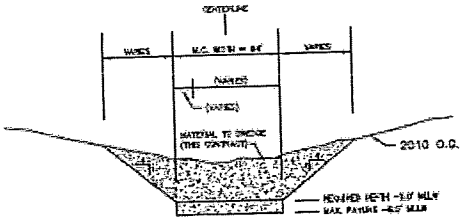
C TYPICAL SECTION: DREDGING – MANEUVERING CHANNEL AND MOORING BASIN
NOT TO SCALE

STA. 27+35.43 TO 32+00.58, M.C. WIDTH =160', M.B. WIDTH VARIES



A TYPICAL SECTION: DREDGING – ENTRANCE CHANNEL FLARE
NOT TO SCALE

STA. 16+00 TO 12+89.29



D TYPICAL SECTION: DREDGING – MANEUVERING CHANNEL
NOT TO SCALE

STA. 22+53.49 TO 24+32.83, M.C. WIDTH VARIES
STA. 24+32.83 TO 25+80.11, M.C. WIDTH = 84'
STA. 25+80.11 TO 27+35.43, M.C. WIDTH VARIES

TYPICAL SECTIONS: DREDGING

NOT FOR CONSTRUCTION
PRELIM

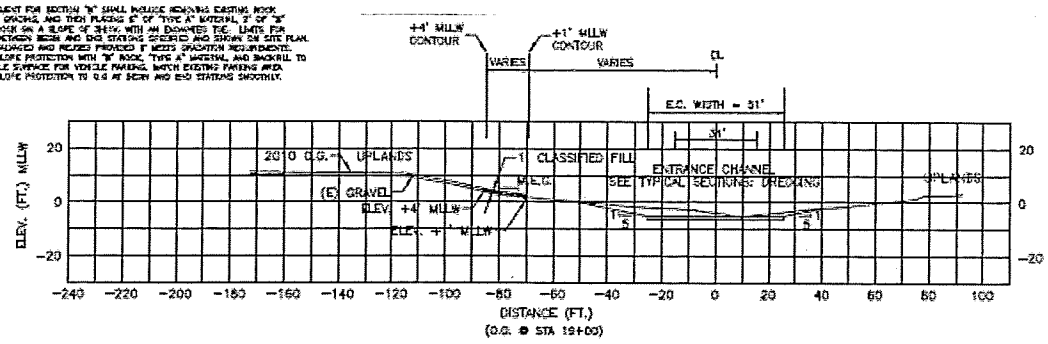
PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**TYPICAL SECTION AND DETAILS 1** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 6 of 13

NOTES

1. SEE PLAN SHEET G-101 FOR SLOPE PROTECTION LIMITS AND TRANSITIONS BETWEEN THE VARIOUS REACHES ALONG THE PERIMETER BANKS OF THE SMALL BOAT HARBOR. PROVIDE SMOOTH AND UNIFORM TRANSITIONS BETWEEN THE SLOPE PROTECTION LIMITS FOR THESE REACHES AS SHOWN.

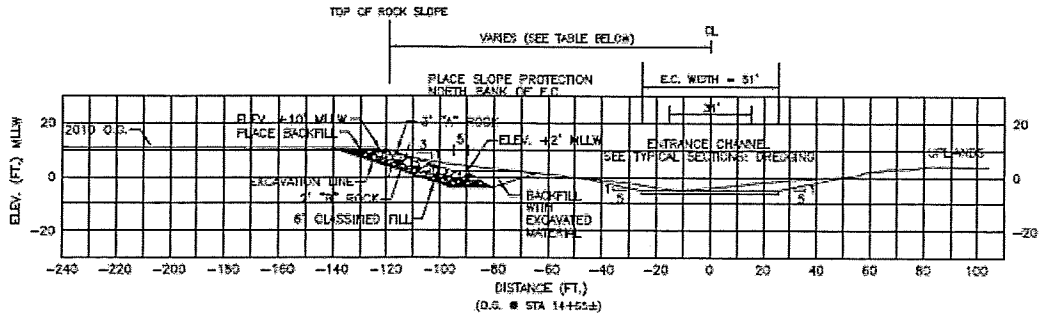
2. SLOPE PROTECTION PLACEMENT FOR SECTION "B" SHALL INCLUDE REMOVING EXISTING ROCK AND DEBRIS, EXCAVATION, GRADING, AND THEN PLACING 6" OF "TYPE A" MATERIAL, 2' OF "B" ROCK, AND 2.5' OF "A" ROCK ON A SLOPE OF 3H:1V, WITH AN EXCHANGES TOE. LIMITS FOR SLOPE PROTECTION ARE BETWEEN BEGIN AND END STATIONS SPECIFIED AND SHOWN ON SITE PLAN. EXISTING ROCK MAY BE SALVAGED AND REUSED PROVIDED IT MEETS GRADATION REQUIREMENTS. BACKFILL OVER TOP OF SLOPE PROTECTION WITH "B" ROCK, TYPE A" MATERIAL, AND BACKFILL TO PROVIDE LEVEL AND STABLE SURFACE FOR VEHICLE PARKING, MATCH EXISTING PARKING AREA ELEVATION. TRANSITION SLOPE PROTECTION TO 0.0 AT BEGIN AND END STATIONS SMOOTHLY.

3. SLOPE PROTECTION FOR SECTION "B" SHALL INCLUDE CLEARING, EXCAVATION, AND REMOVAL OF 12" OF ORGANIC MATERIAL AND METAL DEBRIS FROM BANK PRIOR TO PLACEMENT OF "TYPE A" MATERIAL. PLACEMENT OF 12" OF "TYPE A" MATERIAL SMOOTHES AND COMPACTED, WITH EXISTING GRADE (M.L.L.W.). LIMITS FOR SLOPE PROTECTION ARE FROM STA 18+50± TO STA 21+70± LEFT OF CENTERLINE.



B' TYPICAL SECTION: SLOPE PROTECTION – ENTRANCE CHANNEL

BEGIN STA 18+50±
END STA 21+70±

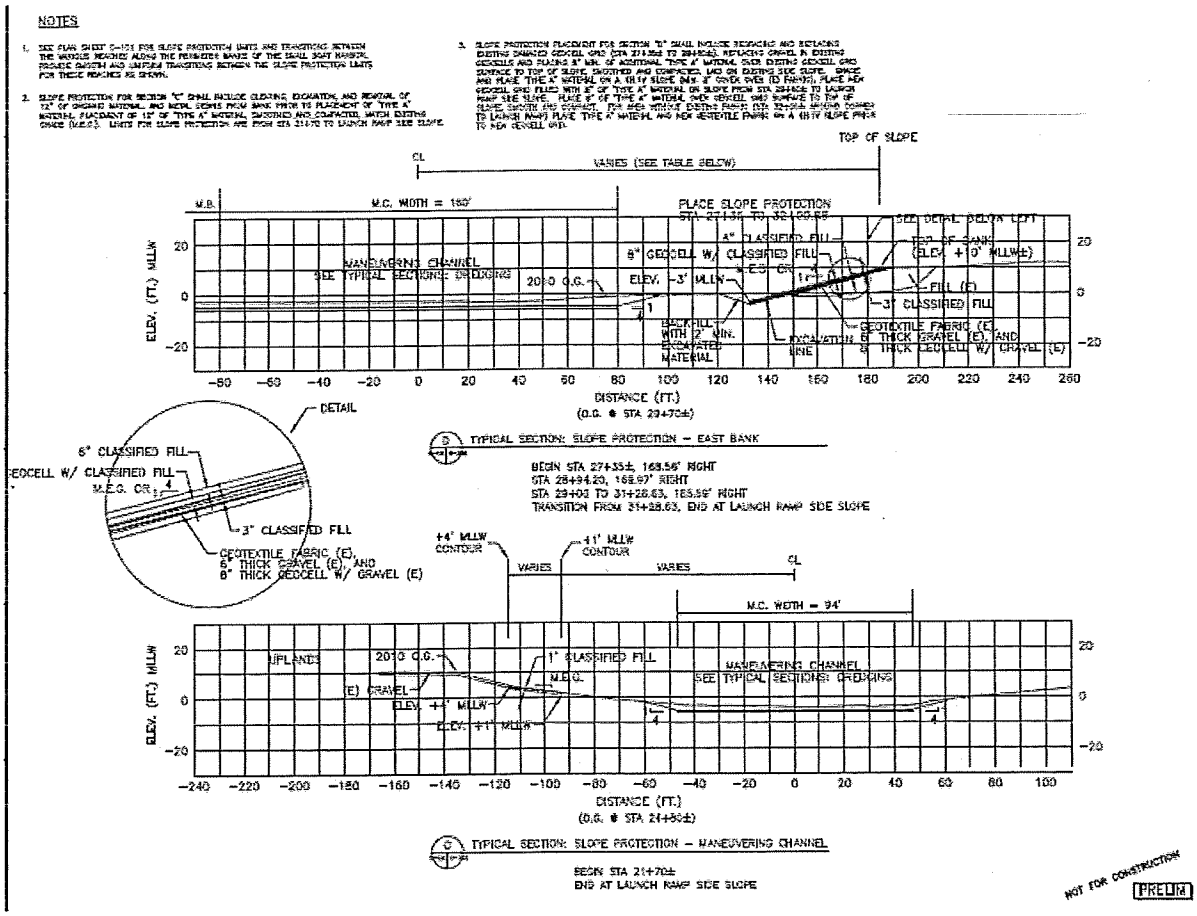


B TYPICAL SECTION: SLOPE PROTECTION – ENTRANCE CHANNEL

BEGIN STA 12+01.52, 138.53' LEFT
ANGLE POINT STA 13+29.86, 138.14' LEFT
ANGLE POINT STA 15+61.41, 105.66' LEFT
END STA 16+23.76, 105.66' LEFT

NOT FOR CONSTRUCTION
PRELIM

PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**TYPICAL SECTION AND DETAILS 2** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 7 of 13



PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**TYPICAL SECTION AND DETAILS 3** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 8 of 13

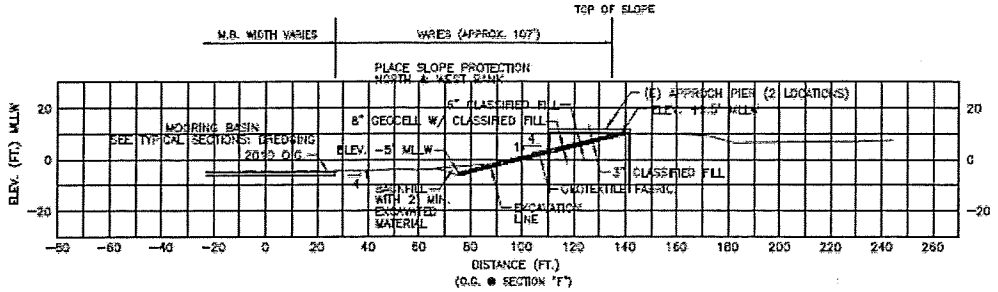
NOTES

1. SEE PLAN SHEET C-101 FOR SLOPE PROTECTION LIMITS AND TRANSITIONS BETWEEN THE VARIOUS REACHES ALONG THE PERIMETER BANKS OF THE SMALL BOAT HARBOR. PROVIDE SMOOTH AND UNIFORM TRANSITIONS BETWEEN THE SLOPE PROTECTION LIMITS FOR THESE REACHES AS SHOWN.

2. SLOPE PROTECTION PLACEMENT FOR SECTION "E" SHALL INCLUDE REMOVING EXISTING ENERGY, GEOCELL GRID, AND ROCK, EXCAVATION, GRADING, AND THEN PLACING 6" OF "TYPE A" MATERIAL AND 3" OF "B" ROCK ON A SLOPE OF 3H:1V, WITH AN EXCAVATED TOE. LIMITS FOR SLOPE PROTECTION ARE BETWEEN POWER POLES SHOWN ON SITE PLAN. PROVIDE SMOOTH TRANSITION TO O.G. 10' ON OUTBOARD SIDE OF POWER POLES, WITH ENDS AS SO EXISTING ROCK MAY BE SALVAGED AND REUSED PROVIDED IT MEETS GRADATION REQUIREMENTS.

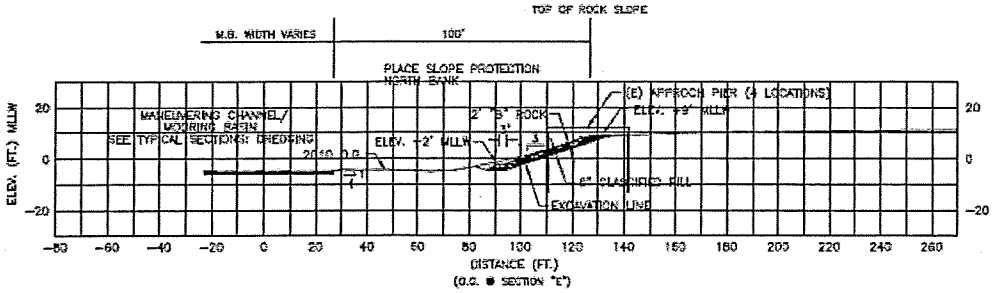
3. SLOPE PROTECTION PLACEMENT FOR SECTION "F" SHALL INCLUDE REMOVING APPROXIMATELY 3' OF EXISTING VEGETATION AND BEGINNING MATERIAL, REGRADING, AND THEN PLACING GEOTEXTILE FABRIC, 3" OF "TYPE A" MATERIAL, 8" THICK GEOCELL GRID FILLED WITH "TYPE A" MATERIAL, AND 6" OF "TYPE A" MATERIAL, OVER GEOCELL GRID SURFACE TO TOP OF SLOPE, SMOOTHED AND COMPACTED ON A 4H:1V SLOPE. EXHIBIT TOE OF SLOPE TO THE -5' MLLW ELEVATION SHOWN, AND BACKFILL A MINIMUM OF 2' COVER OVER TOE. LIMITS FOR SLOPE PROTECTION ARE THE WESTERN END OF SECTION "E" SLOPE PROTECTION, ALONG WEST BANK OF HARBOR, AND TO THE WESTERN END OF BETWEEN THE TWO SECTIONS.

* APPROCH PIERS (8 EA) WILL REMAIN IN PLACE AND SHALL EQUIPMENT TO ENSURE THAT EXCAVATION, WRAVEL AND ROCK PLACEMENT CAN BE PERFORMED AS SHOWN WITH THE APPROACH PIERS IN PLACE.



F TYPICAL SECTION: SLOPE PROTECTION – NORTH & WEST BANKS

BEGIN 3RD POWER POLE WEST OF LAUNCH RAMP
END WEST END OF SECTION "G"



E TYPICAL SECTION: SLOPE PROTECTION – NORTH BANK

BEGIN 1ST POWER POLE WEST OF LAUNCH RAMP
END 3RD POWER POLE WEST OF LAUNCH RAMP

NOT FOR CONSTRUCTION

PRELIM

PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**TYPICAL SECTION AND DETAILS 4** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 9 of 13

NOTES

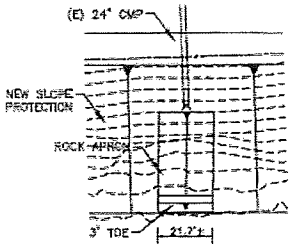
1. SEE PLAN SHEET C-121 FOR SLOPE PROTECTION LIMITS AND TRANSITIONS BETWEEN THE VARIOUS REACHES ALONG THE PERIMETER BANKS OF THE SMALL BOAT HARBOR. PROVIDE SMOOTH AND UNIFORM TRANSITIONS BETWEEN THE SLOPE PROTECTION LIMITS FOR THESE REACHES AS SHOWN.

2. ROCK APRON PLACEMENT SHALL INCLUDE REMOVING APPROXIMATELY 6" OF EXISTING VEGETATION, DEBRIS, ORGANIC MATERIAL, SANDY SILT, AND ROCK, REGRADING AND THEN PLACING GEOTEXTILE FABRIC, 6" OF "TYPE A" MATERIAL, AND 2' OF 18" ROCK, SMOOTHED AND KEYED-IN ON A 1H:1V SLOPE FROM UNDER THE CULVERT END SECTION TO THE TOE OF THE BANK AS SHOWN. EXISTING ROCK MAY BE SALVAGED AND REUSED PROVIDED IT MEETS GRADATION REQUIREMENTS.

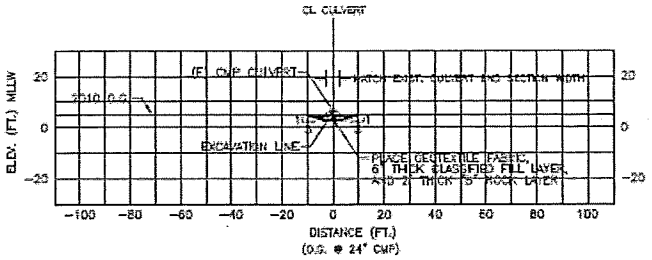
3. CLEANING THOSE 45° CULVERT INLETS SHALL INCLUDE EXCAVATING AND REMOVING APPROXIMATELY 1 FOOT OF EXISTING VEGETATION, ORGANIC MATERIAL AND DEBRIS BELOW/IN THE CULVERT INLETS. REMOVE OBSTRUCTIONS AND RESTORE CLEAR FLOW PATH AT CULVERT INLETS FOR A WIDTH OF APPROXIMATELY 25± FEET CENTERED ON THE CENTER CULVERT.

4. PROVIDE A SMOOTH AND UNIFORM TRANSITION BETWEEN ROCK APRON PLACEMENT AND THE ADJACENT PROTECTION SECTIONS ON BOTH SIDES.

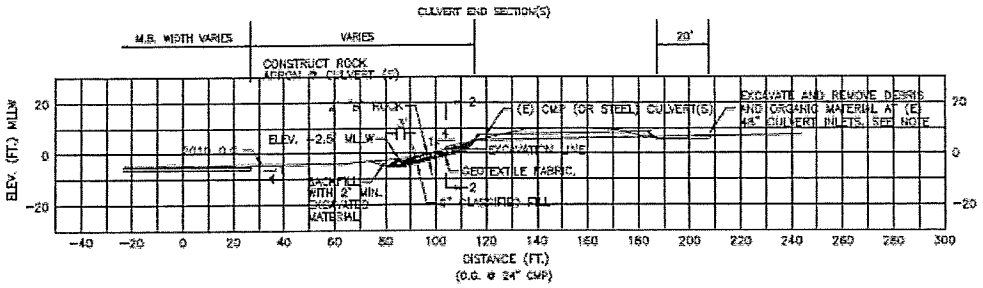
5. EXISTING CULVERTS AND END SECTIONS SHALL REMAIN IN PLACE AND SHALL NOT BE DISTURBED. THE CONTRACTOR SHALL USE METHODS AND EQUIPMENT TO ENSURE THAT EXCAVATION, TYPE A MATERIAL AND ROCK PLACEMENT CAN BE PERFORMED AS SHOWN WITH THE CULVERTS IN PLACE.



PLAN VIEW DETAIL: ROCK APRON @ 24" CULVERT OUTLET
SEE SITE PLAN FOR CULVERT LOCATION



TYPICAL SECTION: ROCK APRON @ 24" CULVERT OUTLET
SEE SITE PLAN FOR CULVERT LOCATION



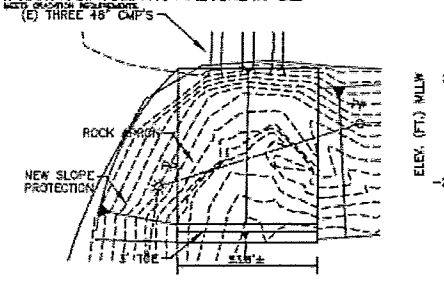
TYPICAL SECTION: ROCK APRON @ CULVERT OUTLET(S)
SEE SITE PLAN FOR CULVERT LOCATIONS

NOT FOR CONSTRUCTION
PRELIM

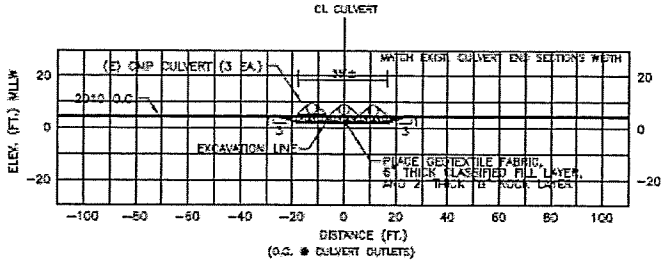
PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**TYPICAL SECTION AND DETAILS 5** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 10 of 13

NOTES

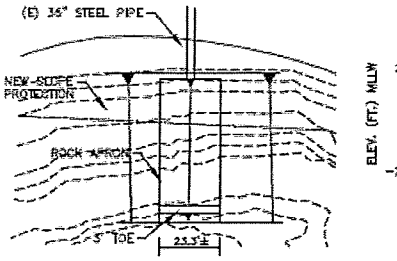
1. SEE SHEET C-101 FOR SLOPE PROTECTION LIMITS AND TRANSITIONS BETWEEN THE VARIOUS REACHES ALONG THE FED-WATER SHORE OF THE SMALL BOAT HARBOR. PROVIDE SMOOTH AND UNIFORM TRANSITIONS BETWEEN THE SLOPE PROTECTION LIMITS FOR THREE REACHES AS SHOWN.
2. ROCK APRON PLACEMENT SHALL INCLUDE REMOVING APPROXIMATELY 3' OF EXISTING VEGETATION, DEBRIS, ORGANIC MATERIAL, SANDY SILT, AND ROCK, REGRADING AND THEN PLACING GEOTEXTILE FABRIC, 6" OF TYPE A" MATERIAL, AND 2' OF "B" ROCK, SMOOTHED AND KEYED-IN ON A GENTLY SLOPE FROM UNDER THE CULVERT END SECTION TO THE TOE OF THE BANK AS SHOWN. EXISTING ROCK MAY BE SALVAGED AND REUSED PROVIDED IT MEETS GRADATION REQUIREMENTS.
3. CLEARING THREE 48" CULVERT INLETS SHALL INCLUDE EXCAVATING AND REMOVING APPROXIMATELY 1 FOOT OF EXISTING VEGETATION, ORGANIC MATERIAL, AND DEBRIS BLOCKING THE CULVERT INLETS. REMOVE OBSTRUCTIONS AND RESTORE CLEAR FLOW PATH AT CULVERT INLETS FOR A WIDTH OF APPROXIMATELY 20± FEET CENTERED ON THE CENTER CULVERT.
4. PROVIDE A SMOOTH AND UNIFORM TRANSITION BETWEEN ROCK APRON PLACEMENT AND THE ADJACENT PROTECTION SECTIONS ON BOTH SIDES.
5. EXISTING CULVERTS AND END SECTIONS WILL REMAIN IN PLACE AND SHALL NOT BE DISTURBED. THE CONTRACTOR SHALL USE METHODS AND EQUIPMENT TO ENSURE THAT EXCAVATION, TYPE 'A' MATERIAL AND ROCK PLACEMENT CAN BE PERFORMED AS SHOWN WITH THE CULVERTS IN PLACE.



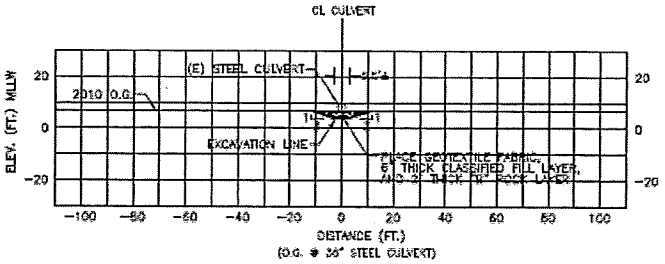
PLAN VIEW DETAIL: ROCK APRON @ 48" CULVERT OUTLETS
SEE SITE PLAN FOR CULVERTS LOCATION



2' TYPICAL SECTION: ROCK APRON @ 48" CULVERT OUTLETS
SEE SITE PLAN FOR CULVERTS LOCATION



PLAN VIEW DETAIL: ROCK APRON @ STEEL CULVERT OUTLET
SEE SITE PLAN FOR CULVERT LOCATION



2' TYPICAL SECTION: ROCK APRON @ 36" CULVERT OUTLET
SEE SITE PLAN FOR CULVERT LOCATION

MISC. SECTIONS: ROCK APRON DETAILS

NOT FOR CONSTRUCTION
PRELIM

PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**TYPICAL SECTION AND DETAILS 6** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 11 of 13

NOTES

1. SEE PLAN SHEET C-101 FOR SLOPE PROTECTION LIMITS AND TRANSITIONS BETWEEN THE HARBOR REACHES ALONG THE PERIMETER BANKS OF THE SMALL BOAT HARBOR. PROVIDE SMOOTH AND UNIFORM TRANSITIONS BETWEEN THE SLOPE PROTECTION LIMITS FOR THESE REACHES AS SHOWN.

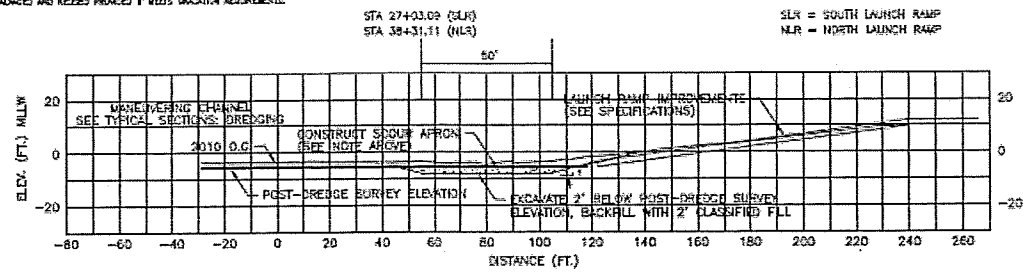
2. SLOPE PROTECTION PLACEMENT FOR SECTION "G" SHALL INCLUDE REMOVING EXISTING ROCK EXCAVATION, GRADING, AND THEN PLACING 1' OF "TYPE A" MATERIAL AND 2' OF "B" ROCK ON OR A SLOPE OF 2H:1V, WITH AN EXCAVATED TOE. LIMITS FOR SLOPE PROTECTION ARE BETWEEN THE WEST END PERPENDICULAR TO POINT 17 AND THE LAUNCH RAMP SIDE SLOPE AS SHOWN. TRANSITION TO O.G. 12' ON OUTBOARD SIDE. BOTH EXISTING ROCK MAY BE SALVAGED AND RELOCATED PROVIDED IT MEETS GRADATION REQUIREMENTS.

3. FOR SOUTH BANKS PLACE SECTION "A" SLOPE PROTECTION PRIOR TO SECTION "G" SLOPE PROTECTION. PROVIDE A SMOOTH OVERLAP BETWEEN THE TWO SECTIONS.

4. EXISTING APPROACH PIERS (8 EA) ARE TO REMAIN IN PLACE AND SHALL NOT BE DISTURBED. THE CONTRACTOR SHALL USE METHODS AND EQUIPMENT TO ENSURE THAT EXCAVATION, TYPE A MATERIAL AND ROCK PLACEMENT CAN BE PERFORMED AS SHOWN WITH THE APPROACH PIERS IN PLACE.

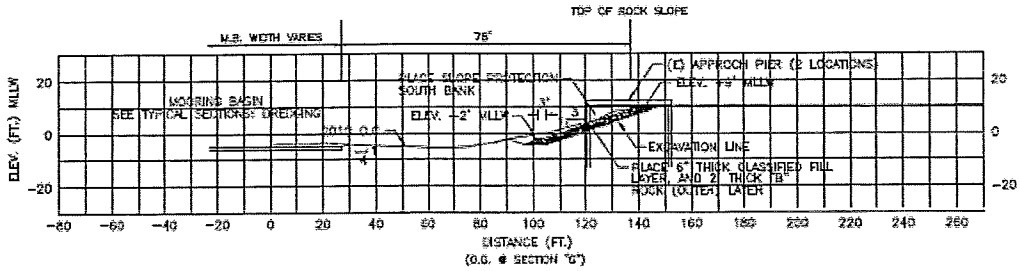
5. SCOUR APRON EXCAVATION AND PLACEMENT SHALL BE CONSTRUCTED IMMEDIATELY FOLLOWING DREDGING AND PRIOR TO CONSTRUCTING LAUNCH RAMP IMPROVEMENTS.

6. SCOUR APRON DIMENSIONS SHALL BE 50' LONG BY 50' WIDE.



DETAIL: SCOUR APRON @ LAUNCH RAMP TOE (2 LOCATIONS)

(SEE SITE PLAN SHT. C-101)



TYPICAL SECTION: SLOPE PROTECTION – SOUTH BANK

SEGN PERPENDICULAR TO POINT 17
END AT LAUNCH RAMP SIDE SLOPE

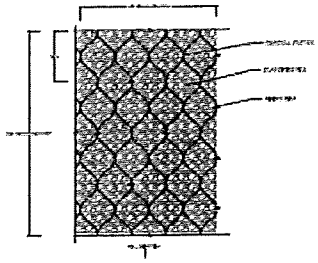
NOT FOR CONSTRUCTION

PRELIM

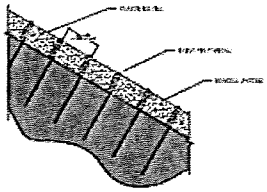
PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**TYPICAL SECTION AND DETAILS 7** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 12 of 13

NOTES

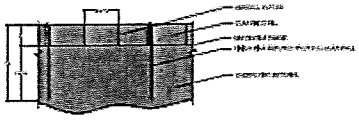
1. SEE PLAN SHEET C-101 FOR GEOCELL SYSTEM PLACEMENT LIMITS. GEOCELL SYSTEM SHALL BE PLACED ON A SMOOTH, UNIFORM UNDISTURBED RISK SLOPE SURFACE.
2. FIXING PINS SHALL BE SPACED TO FIX EACH GEOCELL PANEL ALONG ITS PERIMETER FOR THE MANUFACTURER. EACH FIXING PIN SHALL BE SECURED TO THE CELLULAR WALL BY ASSURING THE HOOKED END OVER THE CELL.
3. THE CONTRACTOR SHALL USE METHODS OF PLACEMENT AND COMPACTION OF CLASSIFIED FILL THAT WILL NOT DAMAGE OR COMPROMISE THE GEOCELL SYSTEM.



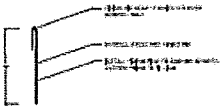
1 TYPICAL GEOCELL PLAN VIEW



3 TYPICAL GEOCELL SLOPE SECTION



2 TYPICAL GEOCELL PROFILE



4 TYPICAL FIXING PIN DETAIL

PLAN AND TYPICAL SECTIONS: GEOCELL SYSTEM

NOT FOR CONSTRUCTION
PREDM

PURPOSE: Dredge to restore design depth and install bank protection. **DATUM:** MLLW = Elev. 0.0 **ADJACENT PROPERTY OWNERS:** City of Bethel & Bethel Native Corporation.	**TYPICAL SECTION AND DETAILS 8** City of Bethel P.O. Box 1388 Bethel, AK 99559	**CITY OF BETHEL SMALL BOAT HARBOR DREDGING AND BANK STABILIZATION** IN: Kuskokwim River AT: City of Bethel August 2011 Sheet 13 of 13

Attachment E

District Trip Report, Bethel Small Boat Harbor Dredging and Bank Stabilization, September 9, 2010

DISTRICT TRIP REPORT

Project: Bethel Small Boat Harbor Dredging and Bank Stabilization

Description: Bethel Trip Report

Prepared by: Alan Jeffries and Melanie Peterson

Date: 9 September 2010

Site Visit
The site visit was held on Thursday, September 9, 2010 with the Bethel Port Director, Peter Williams. The purpose of our visit was to assess the area and to verify the scope of the project. We arrived in Bethel at 0815 and proceeded to the Port Office to meet with Mr. Williams. We then proceeded to the small boat harbor and walked the site from 0930 to 1130.

Meeting Attendees
Peter Williams – Bethel Port Director
Alan Jeffries EN-CW-HH
Melanie Peterson ESP-PM

Existing Conditions
The weather was overcast, winds calm, temperature of about 50 degrees F, and the tide level was about +2.5' MLLW. The Kuskokwim River had been very high all summer due to persistent rains occurring during the months of July and August. It had also rained for most of the first week of September and stopped just as we had arrived.

The Bethel Small Boat Harbor is located at the eastern edge of town. Its entrance channel connects to the main channel of the Kuskokwim River just upstream on the east addition seawall bulkhead. See Figure 1 for an aerial view of the harbor.

Figure 1. Aerial view of small boat harbor.

The banks around the perimeter of the small boat harbor are composed of fine grain sand/silt found throughout the Bethel area. Some recent improvements have been made, particularly along the east bank from the Bethel Native Corporation (BNC) land at the entrance back to the north launch ramp. The City's consultant had designed a gravel and geoweb treatment of the bank that had been recently constructed. The improved side slope was 1:V3H. Mr. Williams reported that the geoweb was placed for the southern half of the east bank and that the final 6-inches of gravel over the geoweb had not been placed due to funding limitations. We could see the geoweb exposed in several locations along the east bank. Gravel that had been placed came from Platinum. See Photo 1.

Photo 1. East bank of harbor with exposed geoweb.

Mr. Williams explained that the north launch ramp has experienced some erosion at its toe due to the concrete planks not extending to the south far enough under water. Boats are launched, and when engines are started scour of the unprotected sands/silts in the bottom of the harbor are disturbed. This has led to a scour hole at the toe of the launch ramp creating difficulty for harbor users during launching. Mr. Williams reported that the concrete planks were not extended far enough into the harbor due to funding constraints. The existing launch ramp width is 40 feet, but could be reduced to 32 feet or possibly even 20 feet with future improvements. See Photo 2.

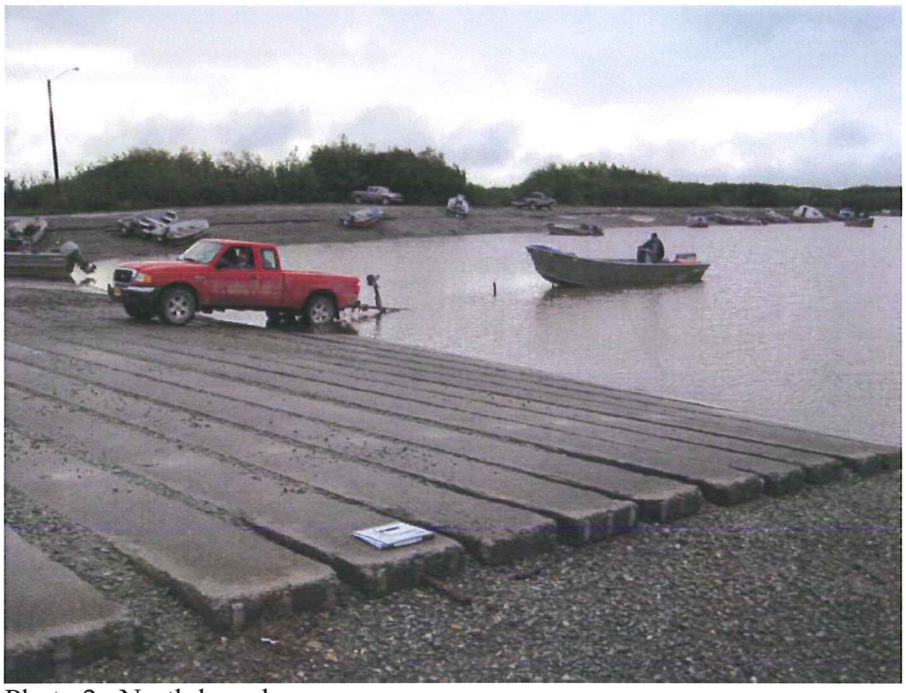


Photo 2. North launch ramp

The north bank of the harbor has experienced severe erosion due to its exposure to wave action in the harbor under southerly winds. Some "B" rock had been placed several years ago by the previous Port Director, mainly fronting the power poles but also in front of the float approaches. It appears that no filter fabric or filter rock layer was used and that the "B" rock was not keyed in. Some remnants of geoweb and fabric were evident at the toe and in the upper sections in one area. Rock slope failure is indicated over most of the length of the north bank. See Photos 3 and 4.

Photo 3. North bank erosion.

Photo 4. North bank "B" rock and exposed geoweb.

The west bank appears to be in much better condition, however a near vertical cut was noted at the tide line where vessels were nosed in. Most of the upper bank is vegetated with local grass and appears to be at a 1V:3H side slope. See Photos 5 and 6. Two culverts drain across the road and their outlets are through the west bank. Three large culverts drain the pond to the north of the harbor however; these are plugged and not functioning. Two new float approaches were constructed along the west bank but to date no floats have been installed. Skiffs are nosed into the bank all along this side.

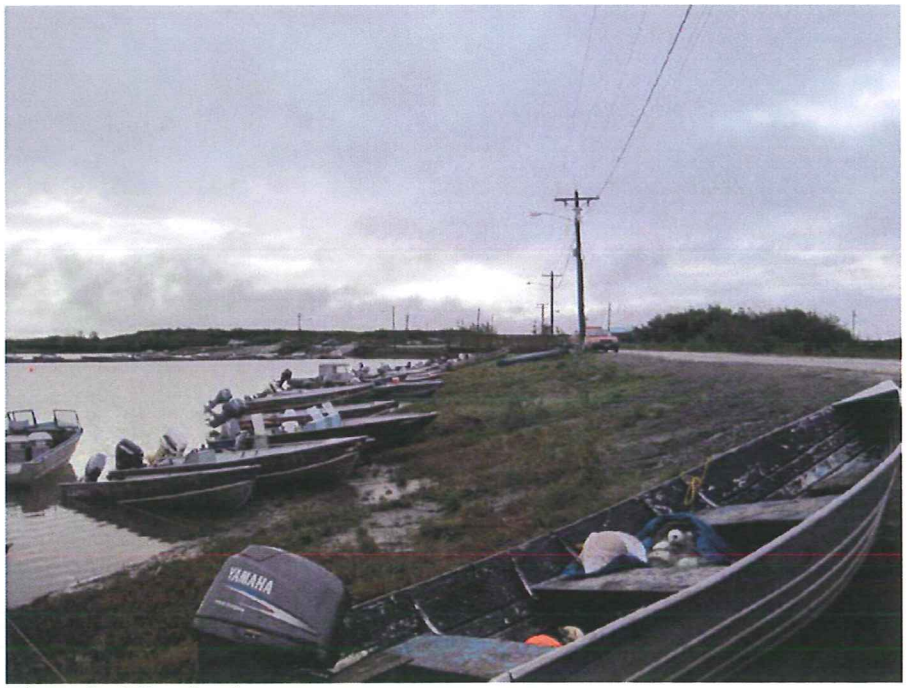


Photo 5. West bank.

Photo 6. Three large culverts drain the pond to the north of the harbor.

The south bank has "B" rock placed on the bank from the southwest corner over to the first float approach. This portion of the bank appears stable, probably due to its minimal exposure to wave action in the harbor. The side slope appears to be about 1V:2H. See Photo 7.

Photo 7. South bank with "B" rock along the southwest corner.

The south launch ramp consists of an articulated concrete block section and an adjacent concrete plank section alongside each other. The articulated block section has an uneven surface and is reported to have large scour holes at its toe below the tide line similar to that of the north ramp. See Photo 8.

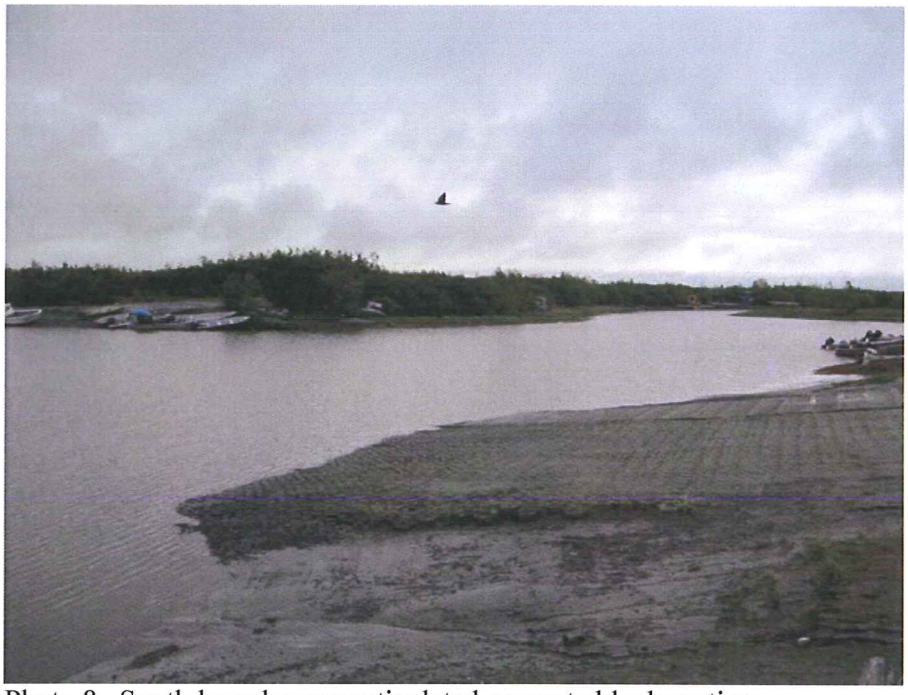


Photo 8. South launch ramp articulated concrete block section.

Along the entrance channel to the harbor, the town-side bank has been improved with Platinum gravel on a prepared slope of about 1V:3H. The improvements extend from the top of the bank at the parking area down to about +4' MLLW. From there, the slope flattens and is vegetated down into the water where the boats are pulled up. See Photos 11 and 12. Some sloughing is reported by Mr. Williams below the water level we observed at the time of our site visit. Proceeding around the corner to where the channel daylights into the River, "A" and "B" rock has been placed by the City to address erosion of the parking area. The rock placement appears randomly dumped and not underlain by filter rock or fabric. Some rock slope failure is indicated although it appears that the bank is somewhat stabilized particularly proceeding to the west toward the pipe pile seawall. See Photo 9.

Photo 9. Entrance channel town side bank with "B" rock slope protection.

The upland parking areas around the harbor have been improved by the City with placement of courser gravel from Kalskag. This has provided a more stable driving surface with better drainage than the in-situ sands and silts.

Recommendations Discussed with Port Director

Bethel Small Boat Harbor

The banks surrounding the perimeter of the small boat harbor are in need of improvements. A design similar to that previously prepared by the City's Architect-Engineer (A-E) (PND Engineers) will likely be the recommendation for this project. Side slopes should be prepared and armored to account for toe stability, wave action in the harbor, moorage of skiffs pulled up on the bank, foot traffic, and loading and offloading of gear and fish by boat owners. Gravel is not available locally in Bethel, however Knik Construction is an established supplier of gravel from source located in Platinum and Kalskag.

Proposed north launch ramp improvements will likely include removal of the existing concrete planks, regarding the subgrade, placement of gravel fill out into the water, and resetting the planks and/or placing new planks. The south launch ramp improvements would be similar however, it may be recommended to replace the articulated concrete block section with planks.

Mr. Williams pointed out that locally procured concrete in Bethel is reported to be able to achieve strength of 4500 psi. It has been proposed that this local source could possibly provide some cost savings for the launch ramp improvements. However, the City's A-E has previously recommended that the concrete for launch ramp planks have 5500 psi strength to handle the vehicle loads.

In the interior harbor and entrance channel areas where "B" and "A" rock has been placed, it may be recommended to remove this rock, rebuild the slopes, place filter rock and/or fabric, and replace the existing rock and possibly some additional rock. The entrance channel bank opposite from appears to be relatively stable. It is unknown how much sloughing or erosion of the

underwater side slopes have occurred. Due to potentially complex real estate issues with the property on the opposite bank, the City recommends that improvements along this bank be deferred.

Mr. Williams said the City owns all the property and the tidelands for the areas of concern. The only real estate the City does not own or have rights to is the opposite (east) side of the entrance channel and the north corner (BNC land) of the entrance channel right before entering the harbor basin.

Supplemental Discussion

Dredging

Mr. Williams said the City desires a dredged depth of -6' MLLW in both the harbor mooring area and in the entrance channel. The Authorized project depth for the Federal area (entrance channel and maneuvering area) is -4' MLLW. The dredging would likely be done in the winter as previously done in 1997. A D-8 Caterpillar was used to rip the ice and stockpile it in the north parking area. The Cat was then used to rip and excavate the material to depth and then load it into trucks for haul to the disposal area. The stockpiled ice and snow was then placed back in the harbor mooring basin. It is very likely that a similar scenario will be specified for the proposed dredging project. The material will likely be silts and sands. The City has obtained a permit for dredged disposal to be placed at the landfill. The landfill is about 3.6 miles from the small boat harbor.

Bank Stabilization

Side slopes around the interior perimeter of the harbor mooring area will be stabilized. Laying back the slopes to 1V:3H including treatment with gravel and geoweb is anticipated. The entrance channel banks and interior bank slopes exposed to wave action will be reinforced with armor rock. It is anticipated that the entrance channel bank opposite from town would require complex real estate acquisitions and therefore will not be include in the scope of this project. Bank slopes should be stabilized to ensure that material does not slough off into the dredged areas and that they are resilient enough for boat mooring and harbor usage. The bank stabilization work would likely be done in the summer following the dredging work. An excavator with thumb attachment would be necessary for shaping the bank, placement of armor rock, and placement of gravel fill.