ALASKA ENERGY AND ENGINEERING, INC.
NEWTOK BULK FUEL DELIVERY REVIEW
TRIP REPORT

TO:	Mr. David Lockard, AEA/AIDEA Rural Energy Group
FROM:	Steve Stassel, Alaska Energy & Engineering, Inc.
DATE:	June 7, 2007
SUBJECT:	Trip Report for Newtok site visit 6/1/2007
CONTACTS:	Mr. Phillip Carl – Newtok Corporation Member Mr. Tony Tommy – Tom's Store Mr. Gary Hanson – LKSD, Plant Facilities Manager Mr. Walt Tague – Crowley, Director of Marine Operations Mr. Wilfred Ryan – ATS, President Native Council & Corporation Members (see attached meeting list)

Ray Kase (Welder/Foreman), David Lockard (AEA Project Mgr), and Steve Stassel (AE&E Engineer) traveled to Newtok for a site visit on June 1, 2007. We departed Anchorage for Bethel on Alaska Airlines at 6:45 a.m., and transferred to Grant Aviation in Bethel arriving in Newtok at approximately 9:30 a.m. We departed Newtok for Bethel on Grant Aviation at about 5:30 pm, transferring to Alaska Airlines and arrived back in Anchorage at about 9:45 p.m.

We met Phillip Carl at the Council Office who took us on a tour of the five community tank farm facilities: LKSD High School, LKSD BIA school (closed), Tom's Store, Newtok Native Corporation (NNC), and Ungusraq Power Company (UPC). After reviewing the facilities and the eroding bank of the Ninglick River, we met with Corporation and Council members to discuss their fuel concerns.

Fuel Delivery Issues

Historically, fuel barges have accessed the tank farm facilites from the mouth of the Newtok River, located west of the village. However, due to severe erosion and loss of land along the north bank of the Ninglick River, the mouth of the Newtok River has relocated east of the village and the Newtok river adjacent to the community is now a slough. Due to the loss of river current, the slough has silted-in and is not navigable at low tide (refer to photo of fuel barge delivery summer of 2006).

The loss of river current and resulting riverbed silting has resulted in a logistical impediment to continued fuel barge deliveries into the Newtok River. Walt Tague with Crowley expressed his concern with the difficulty of accessing the existing tank farms, including the need for a limited availability shallow draft tug, and favorable tides and winds. Barge fuel deliveries in recent years have taken between 2 and 5 days due to frequent groundings and the difficulty of moving the tug and barge between the multiple fuel delivery sites.

Fuel Delivery Methods

Annual fuel deliveries to Newtok are on the order of 125,000-gallons of heating fuel and 45,000-gallons of unleaded gasoline. Newtok presently gets its fuel from three primary sources: Barge bulk fuel deliveries, air charter fuel deliveries, and individual fuel purchases from neighboring villages via snowmachine during the winter and boat during the summer.

Barge fuel delivery is the most economical method which results in the lowest cost of delivered fuel. However, sustained barge deliveries to the existing bulk fuel facilities up the slough (Newtok River) are at risk due to continued riverbed siltation. Air charter deliveries are limited to CASA, Skyvan and smaller single engine aircraft. The CASA is the largest aircraft capable of landing on the existing 2200-foot airstrip. The CASA is capable of carrying 12-drums of heating fuel from Bethel to Newtok, which adds roughly $3.75/gallon to the already high cost of fuel. Air delivery in smaller aircraft further increases the delivered cost of fuel. Fuel purchases from neighboring communities is common, but large-scale purchases would likely create fuel shortages in those communities should Newtok not receive barge fuel delivery.

Long-term Solution:

A long term solution for fuel storage and delivery is to construct a new code compliant, consolidated fuel facility with separate gasoline and heating fuel marine pipelines that extend to near the Ninglick River. The Newtok Bulk Fuel Upgrade report prepared by LCMF, LLC, dated November 26, 2003, presents a plan for such a facility. The estimated cost in 2003 was roughly $2.4-million dollars. Current estimates in 2008 dollars escalate that cost to closer to $3-million. However, due to the community's desire and need to relocate the village away from the eroding shoreline to a new village site, it is not practical to make such a long-term infrastructure investment at the present Newtok village location.

Recommendation:

The near term solution to ensure continued reliable barge fuel delivery is to construct a dual product fuel pipeline from near the Ninglick River shoreline to the five tank farms. A single 3-inch diameter, Schedule 40, welded and flanged steel pipeline would start approximately 250 to 300-feet from the present location of the Ninglick River and extend approximately 3200-feet to all five community tank farms. The fill point would be held back from the Ninglick River due to the fast eroding shoreline. Additionally, the first 500-feet of pipeline would be flanged every 100-feet so that as the shoreline advances toward the community, the fill point can be relocated closer to the community and away from the eroding river bank.

To simplify construction and minimize cost, the pipeline would be laid at grade and limited treated timber would be used for support, where necessary. The selected alignment routes the pipeline away from most existing community infrastructure (buildings and boardwalks), but also keeps to high ground to the extent practicable to keep above potential flood waters. The pipeline would be equipped with Tees at each tank farm, with isolation valving and pressure relieving devices. The LKSD high school tank farm manifold would be hard-pipe connected to the pipeline. A blind flange would be installed at the BIA school tee in the event that the BIA tank farm facility is put back into service. At Tom's Store a short section of marine fuel hose would be used to connect each of the tanks to the fill pipeline during fueling. A combination of hard-pipe connections and fuel rated hose would be used to fill the UPC and NNC fuel tanks at the end of the pipeline.

The distance from the Ninglick River to the LKSD high school tank farm is about 1000-feet. The estimated pumping rate to the high school at 80 psi is in excess of 250 GPM. The pumping rates available to the BIA and community tank farms will decrease as distance from the river increases. The estimated pumping rate for the UPC tank farm at the end of the pipeline is approximately 150 GPM at 80+/- psi. The estimated time to pump 170,000-gallons of fuel to the five tank farms, not including time to blow down the lines between product deliveries or time to relocate the fuel hose between tanks at Tom's Store and at the NNC gasoline tanks, is less than 16-hours.

The design life of the pipeline is expected to be a minimum of 5-years, with an anticipated useful life of at least 10-years. This proposed project does not include any upgrades to the existing non-code compliant tank farms; rather the purpose is limited strictly to providing a reliable cost effective means of ensuring fuel deliveries to the existing tank farms.

The community meeting supported this limited scope pipeline project. Subsequent follow-up with Gary Hanson (LKSD) and Walt Tague (Crowley) also indicated support for a shared use pipeline project.

Construction Plan:

The project would be constructed using a "modified" force-account basis; where local labor works directly with an experienced foreman/welder to complete the project. An experienced construction manager recruits the necessary skilled labor, coordinates the construction team, and oversees procurement and project logistics. The design engineer provides quality control through communication with the construction manager and periodic on-site inspections.

Due to coastal erosion and river silting, Newtok does not have scheduled barge service. Several Bethel air taxi services provide scheduled and charter service between Bethel and Newtok. Alaska Transport Service (ATS) and Arctic Circle Air provide charter air cargo service between Bethel and Newtok. For planning purposes all piping and bulk materials will be delivered by barge to Bethel and all tools and miscellaneous items will be flown on scheduled freight carriers from Anchorage to Bethel. All tools and materials will be flown from Bethel to Newtok via ATS CASA charter. The cost estimate and schedule has been developed on this basis. The Construction Manager will also investigate additional freight options during the design phase.

The only heavy equipment in Newtok is a grader and dozer at the airport. Use of heavy equipment in Newtok during summer months is not practical due to the wet soil conditions. Therefore, this project has been designed around using piping and materials that can be handled using locally available four wheelers and local labor

Schedule and Cost Estimate:

The estimated time frame to complete the pipeline installation is approximately 2-weeks. In order for the pipeline to be constructed in time for the last available fuel barge of the year in September, piping and materials would need to be ordered in time to make the July 13th sailing from Seattle to Bethel. Materials would be mobilized from Bethel to

Newtok the first part of August, and construction would be complete and ready for fuel delivery by the end of August.

A construction cost estimate has been developed based on Force Account construction using local labor with an experienced Foreman/Welder. Since this is a "pipe-welding" project, it is imperative that the Foreman/Welder be a highly productive and competent welder capable of directing local labor and performing all fit-up and welding. A detailed cost estimate is attached. The total project cost including a 20% contingency is $173,254.

Permitting:

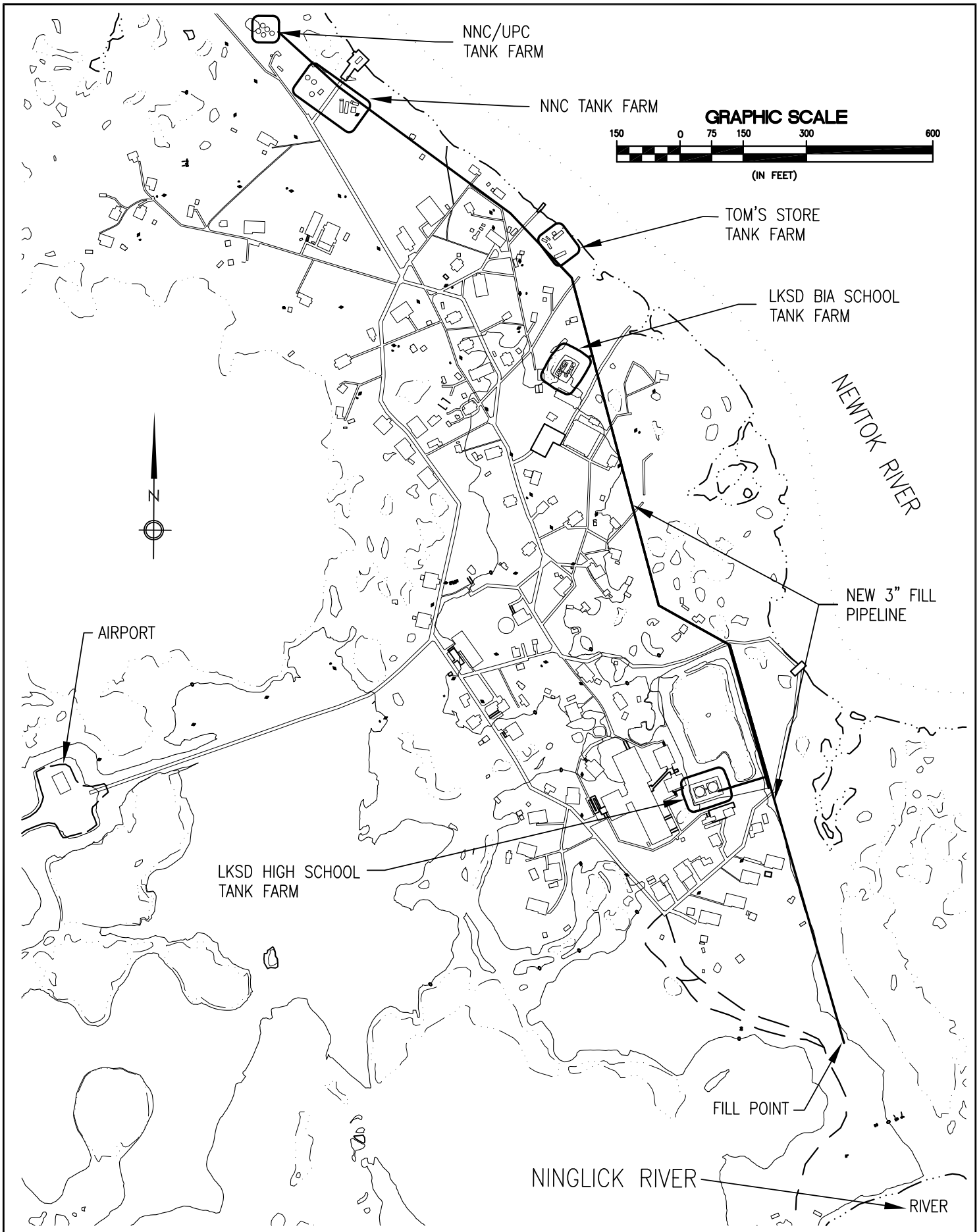
Historically, limited scope pipeline repair projects such as this have not required extensive NEPA project permitting or State Fire Marshal review.

The majority of the pipeline route appears to be within Newtok Native Corporation lands. A small portion of the route crosses the BIA school property. Easement agreements from NNC and LKSD are required to meet the pipeline project site control requirements.

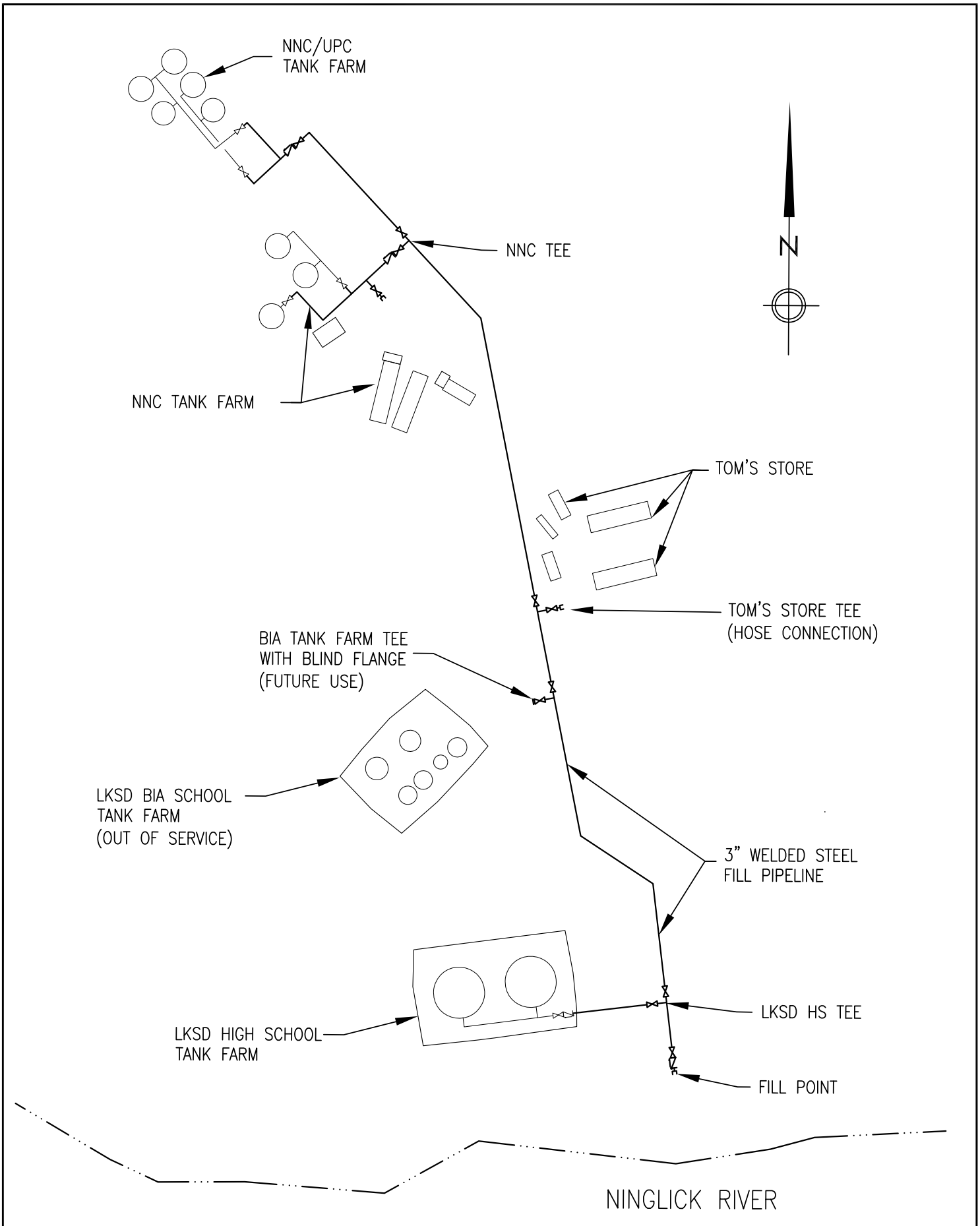
A shared-use pipeline agreement that defines each parties rights and responsibilities should be reviewed and signed by all parties prior to pipeline construction.

Summary:

Due to severe coastal erosion and continued changing river conditions, fuel barge deliveries to the community of Newtok have been impeded and there is the possibility that future barge deliveries up the Newtok River may not be feasible. Community leaders are actively seeking relocation of the village away from the failing permafrost and eroding coastline. In the near term a reliable method of continued fuel barge deliveries is required. A limited scope, shared use fill pipeline project appears to be the most feasible solution to the community's needs. To complete the pipeline project in time for the final September fuel barge delivery, materials will need to be ordered and shipped on the mid-July sailing out of Seattle. The estimated construction cost is slightly less than $175,000. Should the barge be unable to fuel the community tanks, the cost of flying in 50,000-gallons of fuel (less than 30% of the communities needs) will exceed the cost of the proposed pipeline project.



PROJECT: NEWTOK BFR PIPELINE PROJECT	DRAWN BY: SJS	SCALE: 1"=300'+/-	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: SJS	DATE: 6-08-07	
TITLE: SITE PLAN	FILE NAME NEW-SITE	SHEET M1 OF 2	



PROJECT: NEWTOK BFR PIPELINE PROJECT	DRAWN BY: SJS	SCALE: NONE	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: SJS	DATE: 6-08-07	
TITLE: PIPELINE SCHEMATIC	FILE NAME NEW-SCHEM	SHEET M2 OF 2	

ITEM	QUAN	UNIT	UNIT COST	MATL COST	UNIT HRS	LAB HRS	LAB RATE	LABOR COST	CONTR COST	FREIGHT COST	TOTAL COST	UNIT WT	TOTAL WT(#)
PIPING SYSTEM													
3" Sch 40 Welded Above Grade	3,500	lin. ft.	$7.50	$26,250	0.12	420	$60	$25,200			$51,450	7.6	26600
2" Sch 80 Welded Above Grade	200	lin. ft.	$6.50	$1,300	0.10	20	$60	$1,200			$2,500	5	1000
1" Sch 160 Welded Above Grade	100	lin. ft.	$5.00	$500	0.10	10	$60	$600			$1,100	3	300
Security/spill box - fillpoint	1	lump	$500	$500	20.00	20	$60	$1,200			$1,700	200	200
4x12 Treated Timber Sleepers	100	lin.ft.	$6.00	$600	0.05	5	$60	$300			$900	13	1300
3" Pipe Straps	25	ea	$3.00	$75	0.05	1	$60	$75			$150	1.60	40
Misc Strut & Pipe Clamps	1	lump	$500	$500	10	10	$60	$600			$1,100	200	200
Flexible Connectors	6	ea	$150	$900	1	6	$60	$360			$1,260	10	60
Manifold Connection Fittings	1	lump	$1,000	$1,000	20	20	$60	$1,200			$2,200	500	500
3" Flanged Gate Valves	11	ea	$350	$3,850	2	22	$60	$1,320			$5,170	50	550
3" Flanged Check Valves	4	ea	$250	$1,000	2	8	$60	$480			$1,480	50	200
2" Flanged Ball Valves	4	ea	$225	$900	1	4	$60	$240			$1,140	30	120
Misc Threaded Ball Valves	1	lump	$200	$200	10	10	$60	$600			$800	50	50
1" Flanged PRV	5	ea	$475	$2,375	1	5	$60	$300			$2,675	10	50
MISCELLANEOUS													
Signs & Valve Tags	1	lump	$650	$650	10	10	$60	$600			$1,250	100	100
Spill Response Supplies	1	lump	$2,000	$2,000	0	0	$60	$0			$2,000	600	600
Misc Hardware	1	lump	$1,000	$1,000	0	0	$60	$0			$1,000	500	500
Misc Tools & Safety Gear	1	lump	$1,000	$1,000	0	0	$60	$0			$1,000	500	500
Welding Rod, Gases, Etc.	1	lump	$1,000	$1,000	0	0	$60	$0			$1,000	2000	2000
OVERHEAD													
4 Wheeler Rent	0.5	mo.							$750		$750		0
Welder/Compr/Misc Tool Rent	1	lump							$2,000		$2,000		0
Project Diesel Fuel/Gasoline	1	lump							$1,000		$1,000		0
Superintendent Overhd Off-Site	20	hr			1	20	$80	$1,600			$1,600		0
Superintendent Overhd On-Site	20	hr			1	20	$80	$1,600			$1,600		0
Crew Travel Time	8	hr			1	8	$80	$640			$640		0
Crew Airfares	1	trips							$800		$800		0
Crew Per Diem	14	mn.dy							$588		$588		0
Housing Rent	0.5	mo.							$750		$750		0
FREIGHT													34,870
Pipe Barge Freight SEA-BET	30000	lb.	$0.25							$7,500			
Air Freight ANC-BET	5000	lb.	$0.50							$2,500			
CASA Charter BET-WWT	8	ea.	$2,500							$20,000			
Misc Small Freight backhaul	1	lump	$5,000							$5,000			
CONSTRUCTION SUB-TOTAL				$45,600		619		$38,115	$5,888	$35,000	$124,603		
Engineering (Design & CCA)	1	lump							$10,000				
Construction Management	1	lump							$10,000				
PROJECT SUB-TOTAL				$45,600				$38,115	$25,888	$35,000	$144,603		
Contingency	20	%									$28,921		
								TOTAL PROJECT COST			**$173,524**		


CMCU 794177

NEWTOK BFR MEETING

6/1/07

Name	Association
Phillip Carl	Newtok Corporation Member
George Tom	Newtok Traditional Council
Mary Ecoome	Newtok T.C.
Charlie Tommy	Newtok Traditional Council
Tom John	Newtok Native Corporation
John Andy	Newtok Native corporation
Francis Tom	Newtok corpration Gas man and VPC
Joseph INAKAK	TRADITIONAL Council
Margaret Nickerson	NIC. BASE/Care
Joseph Johnson SR	TRADIL COUNCIL
GEORGE M. CARL	NEWTOK NATIVE Corp.

To: Steve

From: David

STEVE SHASSEI	AE&C
DAVID LOCKARD	AEA
RAY KASE	WELDER