

Quinhagak Pre-Conceptual Design Report

Bulk Fuel and Power System Upgrades



Prepared for:
Alaska Village Electric Cooperative
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701 West 8th Avenue, Suite 400 | Anchorage, AK 99501
(907) 257-1700 T • (907) 257-1795 F

Executive Summary

NANA Pacific was responsible, in conjunction with Alaska Village Electric Cooperative (AVEC), for the development and execution of a Pre-Conceptual Design review for the community of Quinhagak, Alaska. The goal of this exercise is to ascertain community readiness for participation in the bulk fuel/power system upgrades amalgamated program with an explicit recommendation to AVEC whether to advance to the CDR stage.

NANA Pacific recommends that the community of Quinhagak advance to the Conceptual Design Review (CDR) stage. By most accounts, the community of Quinhagak is a responsive community and AVEC should proceed in the CDR process. Throughout the data collection analysis, no significant obstacles emerged that would inhibit advancement to the CDR stage for the community of Quinhagak. There has been a site identified with site control currently being secured on the part of AVEC, and the community has contributed positively to these initial stages.

To develop this recommendation, a site visit, review of program documents, review of secondary literature, and key informant interviews were undertaken and the data collectively analyzed by the project team.

The following observations are noted:

- **Community Plan.** The community plan of Quinhagak needs and should be updated to reflect evolving priorities. We suggest that the plan be monitored and reviewed upon completion to determine how operating the Bulk Fuel facility fits into the completed plan.
- **Lower Kuskokwim School District.** The distance from the proposed site to the school's facilities is substantial and is an obstacle to cost-effective co-location.
- **Limited Power Inter-Tie Opportunity.** There are limited opportunities for sub-regional energy projects and suggest that a single facility for Quinhagak be considered.
- **Wind Potential.** To make the CDR stage more effective and efficient, we suggest looking into the possibility of utilizing wind turbines in Quinhagak.
- **Opportunity for Co-Mobilization.** The community is expanding both the runway and terminal, along with sanitation and new housing developments. These projects offer a good opportunity for co-mobilization for more cost effective construction of the facility.

- **Coordination/Collaboration with the Village Corporation.** The type and nature of the collaboration with the village corporation needs to be clarified. Their bulk fuel facilities are relatively new and reportedly in good condition.

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1. Report Objective

This report is developed as a discussion of salient issues that emerged during the data collection process. Specific micro-data is found in the Quinhagak Pre-CDR checklist and secondary data attached to this document. There will be specific references made from the report to the checklist to facilitate review of the document.

2. Community Leadership and Key Stakeholders¹

The majority of community services in Quinhagak are provided by the Native Village of Kwinhagak (NVK). NVK is the combined Village and City Council entity responsible for a variety of public and community services, including health and social service, community development programs, environmental, land and natural resources, and housing. They currently own tanks and plan to take part in the bulk fuel/power upgrades program.

Qanirtuuq Inc., which is the village corporation, has a vital role in the community, they own and operate the native store and manage a fuel facility which supplies fuel to homes. The Lower Kuskokwim School District (LKSD) has a K-12 school in Quinhagak with 150 students and 12 teachers. The combined capacity of their fuel tanks is 42,200 gallons and is located in close proximity to the school.

3. Demographics and Historical/Projected Fuel Use²

Quinhagak is a relatively vibrant rural Alaskan coastal community with an active fishing industry. Quinhagak has grown steadily over the past 10 years increasing its population by 11% during that timeframe. It is reasonable to expect increased population growth in the next 10 years compared to that of the last 10 years. Factors driving the community growth and development include a new housing sub-division to be built by HUD, new water and sanitation facilities to be built by Village Safe Water, and an upgraded runway to increase the amount of cargo exportation. In a recent

¹ Refer to section 1,6, 7,& 9 for information on key stakeholders.

² Refer to Section 2 in the check-list.

RUBA (Rural Utility Business Advisor) report, it stated that NVK is stable and competent with an experienced staff. The report indicates that Quinhagak has a “green” light status and meets all Essential and Sustainability indicators.

There were no reported incidences of fuel rationing in the community.

4. Geographic and Physical Dimensions³

Quinhagak is one of the more accessible communities due to its accessibility to the ocean and ocean barge service. Quinhagak is located on the Kenekotok River, less than one mile from the Bering Sea and approximately 71 miles southwest of Bethel.

4.1. Geotechnical Considerations

Soil conditions throughout the community are important considerations during construction of any type of facility. According to Golder Associates, soil deposits are expected to be mostly fine sand and silt which is common of the Lower Y-K Delta. Permafrost is likely discontinuous and patchy. To determine exact soil conditions to use in the recommendation of foundation, a geotechnical survey should be done during the CDR stage.

4.2. Foundation Types

Most of the buildings in Quinhagak are supported on post and pad foundations. There is a good supply of gravel in the community available from both the Calista Corporation and/or local land owners. As of May 2005, the price for gravel was at \$1.80 per cubic yard.

4.3. Proposed Sites

The community planning process identified a site which is within the area set aside for industrial development. This site is located on the west side of the community in the 13.8 acre industrial complex. This site was chosen locally because it is within the industrial development area with adequate land available and existing road access. Refer to the attached drawings for site selection.

³ Refer to section 3 in check-list.

4.4. Sub-Regional Energy Planning Considerations

There are limited opportunities for sub-regional energy projects, including power inter-ties. The analysis at this time suggests that a single facility for Quinhagak be considered.

5. Technology

Major considerations regarding this step include:

5.1. Wind Potential According to the NREL (National Renewable Energy Laboratory), wind rating and potential in Quinhagak is good.

5.2. Power Inter-tie Distance to neighboring communities and the terrain suggests low feasibility for a power inter-tie.

5.3. Extraordinary Construction Considerations. Arctic Construction considerations (permafrost, weather, community isolation, logistics, etc) and the appropriate measure to minimize its impact are of concern for the community.

6. Community Infrastructure

6.1. Co-mobilization There are numerous opportunities for co-mobilization with other construction projects. The community is expanding both the runway and terminal, along with other projects to improve sanitation and to add new housing.

6.2. Logistical Obstacles Quinhagak has remained accessible in recent years for barge deliveries, with no reported delays or cancellations in ocean barge service. With the scheduled improvements of the new runway, Quinhagak will be able to accommodate cargo planes as large as a DC6.

6.3. Operations and Maintenance In a recent report by RUBA (Rural Utility Business Advisor), it concluded that the Native Village of Kwinhagak (NVK) is stable and competent in all aspects including Finance, Accounting Systems, Personnel Systems, Organizational

Management and Operation of Utility. The main operator for the water and sewer system has over 15 years of experience along with appropriate certifications. A monthly O&M report is given to a manager to review and check over completed maintenance on facilities.

6.4. Community Planning The community plan is unavailable at this time. Quinhagak is in the process of updating their community plan.

7. Owner(s)/Operator Assessment⁴

Seven different owner/operators of the different tank farms emerged during the pre-CDR stage.

7.1. Native Village of Kwinhagak NVK is co-managing Alaska Village Electric Cooperative's (AVEC) Tank Farm.

7.2. Lower Kuskokwim School District The LKSD manages the school tank farms. Contacting LKSD is advised during the CDR phase to confirm their future plans for the tank farms. At this time, distance between the proposed site and the school are obstacles to co-locating.

7.3. Native Village of Kwinhagak The Traditional Council appears to be an influential community entity at this time and have expressed an interest in participating.

7.4. Qanirtuuq, Inc Along with fuel sales, the Qanirtuuq Village Corporation owns and operates the Native Store.

7.5. Other Owners The Moravian Church, A & C Market, and the National Guard Armory own tanks with significantly less capacity than those mentioned above.

⁴ Refer to section 7 in checklist.

8. Legal/Regulatory Assessment

8.1. Permitting The permits and regulatory interface include Alaska Fish and Game (AF&G), wetland permitting with the United States Army Corps of Engineers (USACOE), Fire Marshal, United States Environmental Protection Agency (USEPA), and United States Coast Guard (USCG). Refer to Section 8 in the questionnaire for more information. Work with U.S. Fish & Wildlife for wind turbines.

8.2. Facility Compliance No facility compliance issues were reported during the course of research. However, the Pre-CDR did not involve a full compliance inspection and review of facilities.

8.3. Contaminated Sites The only contaminated site involved Qanirtuuq, Inc.'s fuel tank, where approximately 4,200 gallons of gasoline were released on June 13, 1992. The tank farm was then relocated to a lined, bermed area in late summer, 1992. Cleanup was completed the end of summer of the year of the spill with approximately 300 cubic yard area of contaminated tundra remaining in a lined containment cell.

9. Project Sustainability

In January RUBA released a status report for the Quinhagak community. RUBA reviewed Finances, Accounting Systems, Tax Problems, Personnel Systems, Organizational Management, and Operation of Utility for the Native Village of Kwinhagak. The report concluded that NVK showed stability and competency in all areas of operation. However, like many rural Alaskan communities, Quinhagak is experiencing revenue and cash shortfall. During the site visit, NVK was reviewing the previous year's audits and planning for this shortfall.

10. Strengths

Discovered strengths for this project are:

- **Native Village of Kwinhagak** It is a motivated presence for community action in the community.

- **Wind Potential** The coastal location and NREL Wind maps suggest excellent potential for Wind Generation.
- **Designated Industrial Area** The community has designated a 13.8 acre parcel for industrial use. Site control is in the process of being secured within the context of this facility. This is a positive, viable area for the Bulk Fuel/Power System to be located.

11. Weaknesses

Discovered weaknesses for this project are:

- **Community Plan.** The community plan needs to be updated.
- **LKSD Role.** The role of the LKSD needs to be clarified.

12. Specific Recommendations

NANA Pacific recommends the following for this project:

- Resolutions received from the Village Corporation.
- Letter of Support from LKSD detailing their degree of participation in the amalgamated program.
- Prioritization on the part of project stakeholders on proposed sites.
- Secure an anemometer for wind monitoring in the community.
- Monitor sanitation and water system project development for co-mobilization opportunities.
- Ensure that business plans are developed using a break-even analysis framework.
- Allocate sufficient resources for maintenance and renewal during the business plan development phase.
- Review tank farm facilities for ownership, capacity, and compliance.
- Clarify the feasibility of the National Guard Armory's fuel tank in the amalgamated program.
- Integrate the community planning and CDR process to the greatest extent possible.
- Plan for appropriate budget needs for the CDR stage, including;
 - Geo-technical Study
 - Aerial photos

- Site Survey
- Undertake a site inspection of the Village Corporation and City Bulk Fuel Facility during the CDR stage.

15. Drawings

Four proposed sites were developed and proposed to the community. Site 2 was ultimately selected and is included in the submittal. A second drawing to be used for the lease agreement is also included in this submittal package. Please refer to the following page for the drawing.

Quinhagak Pre-CDR Checklist

1. Community and Key Stakeholder Contacts

Provide contact information for all key community contacts and stakeholders.

Name of Community. *Quinhagak*
 ANCSA Region. *Calista*

Table 1. Community Key Contacts

Community Entity	Name	Position	Contact Information	Comment
Qanirtuuq, Incorporated	Henry Small	Gen. Manager	P.O. Box 69 Quinhagak, AK 99655 <u>Phone:</u> 907-556-8289 <u>Fax:</u> 907-556-8814	
Native Village of Kwinhagak	Wassilie Bavilla	President	P.O. Box 149 Quinhagak, AK 99655 <u>Phone:</u> 907-556-8165 <u>Fax:</u> 907-556-8166	Village Council. BIA-Recognized IRA Council. Also 907-556-8167 Housing Authority
City of Quinhagak	Grace Hill	Mayor	P.O. Box 90 Quinhagak, AK 99655 <u>Phone:</u> 907-556-8202 <u>Fax:</u> 907-556-8166	
Lower Kuskokwim Schools	Phil Gutleben	Business Manager	P.O. Box 305 Bethel, AK 99559 <u>Phone:</u> 907-543-4800 <u>Fax:</u> 907-543-4904	
Calista Corporation	Mary Martinez	Land Planner	301 Calista Court, Suite A Anchorage, AK 99518 <u>Phone:</u> 907-279-5516 <u>Fax:</u> 907-272-5060	
Yukon-Kuskokwim Health Corporation	Bonnie Armstrong	Operations Manager, Sub Regional Clinic	P.O. Box 528 Bethel, AK 99559 <u>Phone:</u> 907-949-3517	
Coastal Villages Regional Fund	Camille Sorenson	Information Coordinator	711 H. Street Suite 200 Anchorage, AK 99501 <u>Phone:</u> 907-278-5151 <u>Fax:</u> 907-278-5150	
AVEC Power Plant Operator	Easau More	Chief Power Plant Operator	<u>Phone:</u> 907-556-8939	
Village Safe Water	Marie Steele	VSW Engineering Assoc.	555 Cordova Street Anchorage, AK 99501 <u>Phone:</u> 907-269-7604 <u>Fax:</u> 907-269-7509	

2. Demographic/Future Demand Assessment

Demographics: Historical & Projectional.

Historical: Describe demographic patterns over the last 10 years.

Quinhagak has experienced steady growth over the last 10 years. When viewing the growth rates over this time-frame, one notes some fluctuation from year to year. It does appear that these fluctuations are limited when viewed over time. Fluctuations such as these should be expected for a community the size of Quinhagak.

Comment and provide justification for any significant variances.

See Tables 2 – 4.

Projectional: Project population growth for the next 10 years.

The population is projected to increase by 21.9% over the next 10 years, assuming an average annual growth rate of 2%⁵. The actual population change between 2003 and 1992 was +78, or 10.7% growth rate. Future socio-economic activities and development support the above projections.

Table 2. Historical By Decade (US Census Data)

Year	1950	1960	1970	1980	1990	2000
Population	194	228	340	412	501	555
% Change	-13.39%	17.53%	49.12%	21.18%	21.60%	10.78%

Table 3. Historical By Year (DCRA/DOL Data)

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	10 Year Change
Population	501	523	544	549	567	567	612	595	582	555	572	579	
% Change	0.00%	4.3%	4.02%	0.9%	3.2%	0.0%	7.9%	2.7%	2.1%	4.6%	3.0%	1.2%	10.71%

Table 4. Projected By Year (Based on AVEC Benchmark Recommendation Annual Growth Rate of 2.00%)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	10 Year Change
Population	591	602	614	627	639	652	665	678	692	706	720	
% Change	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	21.90%

Fuel Consumption.

Historical: Describe fuel consumption patterns over the last 5 years?

Community wide fuel deliveries has seen moderate fluctuations from year to year and lacking a discernible trend.

Has there been any fuel rationing?

Yes No Comments: *No reported fuel rationing within the last 5 years.*

⁵ The 2% population index is the standard used by Alaska Village Electric Cooperative/Denali Commission in population projects.

Comment and provide justification for significant variances.

See Table 5.

Table 5. Fuel Delivered- Historical (Yukon Fuel Company & Crowley Marine Services)

Village Entity	Fuel Type	# of Deliveries & Amount Delivered	Years					Mean
			2000	2001	2002	2003	2004	
AVEC	Diesel/HF#1	Amount Delivered	104,539	119,664	117,115	127,705	152,000	124,205
		Estimated # of Deliveries	3	3	4	2	2	(5 data pts.)
LKSD	Diesel/HF#1	Amount Delivered	35,032	32,952	27,400	35,873	18,604	29,972
		Estimated # of Deliveries	1	1	1	1	1	(5 data pts.)
Northstar Gas	Diesel/HF#1	Amount Delivered	90,605	147,897	175,291	80,000		
		Estimated # of Deliveries	4	3	5	1		
Native Village Kwinhagak (NVK)	Diesel/HF#1	Amount Delivered				2665	43,760	43,760
		Estimated # of Deliveries				1	2	(1 data pt.)
Qanirtuuq Inc.	Diesel/HF#1	Amount Delivered				45,865	91,241	91,241
		Estimated # of Deliveries				1	2	(1 data pt.)
Subtotal- Northstar, NVK, Qanirtuuq	Diesel/HF#1	Amount Delivered	90,605	147,897	175,291	128,530	135,001	135,465
								(5 data pts.)
Northstar Gas	Unleaded	Amount Delivered	101,684	89,548	109,652	45,000		
		Estimated # of Deliveries	4	2	5	1		
Native Village Kwinhagak (NVK)	Unleaded	Amount Delivered					8193	8193
		Estimated # of Deliveries					2	(1 data pt.)
Qanirtuuq Inc.	Unleaded	Amount Delivered				50,159	97,552	97,552
		Estimated # of Deliveries				1	2	(1 data pt.)
Subtotal- Northstar, NVK, Qanirtuuq	Unleaded	Amount Delivered	101,684	89,548	109,652	95,159	105,745	100,358
								(5 data pts.)

Projection⁶:

Project fuel consumption demand for community over the next 10 years.

See table 7 below for projections.

What are the sources used and how are results calculated?

The analysis utilized fuel records provided by the Yukon Fuel Company and Crowley Marine Services to project fuel demand. The projections were based upon the mean of the previous 5 years (where data was available) and an annual 2% increase in sales and demand. In the case of NVK and Qanirtuuq, it appears these individual entities were only recently separated out of former purchaser (Northstar Gas). Thus for the future projections for these two new fuel purchasers, only one year (2004) is available for projecting future fuel demands. This may be further investigated during the CDR stage to

⁶ Fuel deliveries Askinuk Corporation, City Council, and NorthStar Gas have all been combined for this analysis due to inconsistent deliveries over the 5 year time of analysis. If an amalgamated program is undertaken in Quinhagak, individual projections would have to be undertaken.

see if additional fuel usage data exists to provide a more definitive basis for future projected fuel demand.

Describe short to medium term factors impacting future demand for fuel.

The primary driver in fuel demand will be population growth, the fishing industry, and the new housing division. The projections below have assumed a 2% annual increase in demand. At this time, there is insufficient data to predict the impact of other variables. Therefore, the 2% average compounded annual growth rate is the most reasonable predictor available.

Table 6. Fuel Projections

Village Entity	Fuel Type	Fuel Demand & Projections (Assumes 2% annual increase in demand)										10 Year Increase
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
AVEC	Diesel/HF#1	126,689	129,223	131,807	134,443	137,132	139,875	142,673	145,526	148,436	151,405	21.90%
LKSD	Diesel/HF#1	30,571	31,183	31,807	32,443	33,092	33,753	34,428	35,117	35,819	36,536	21.90%
NVK	Diesel/HF#1	44,635	45,528	46,438	47,367	48,315	49,281	50,266	51,272	52,297	53,343	21.90%
Qanirtuuq Inc.	Diesel/HF#1	93,066	94,927	96,826	98,762	100,737	102,752	104,807	106,903	109,041	111,222	21.90%
NVK	Unleaded	8,357	8,524	8,694	8,868	9,046	9,227	9,411	9,599	9,791	9,987	21.90%
Qanirtuuq Inc.	Unleaded	99,503	101,493	103,523	105,593	107,705	109,859	112,057	114,298	116,584	118,915	21.90%

Peak & Average Load⁷

Historical: Describe peak & average load patterns over the last 10 years?

Are there any seasonal factors?

Yes No

Comments:

Quinhagak has experienced a strong increase in demand for electricity as evidenced by historical use patterns. The housing authority will also be building a new sub-division in the community, which could increase demand for electricity. Quinhagak has an active seasonal fishing industry that could result in demand spikes in the summer time. Available data did not break down the use by season.

Table 7. Quinhagak Peak Load and Average Load/ %Change

Category	93	94	95	96	97	98	99	2000	2001	2002	2003	% Change (1993 to 2003)	10 Year Average
Peak Load	216	212	218	254	259	296	296	298	311	367	504	133%	302
% Change		-1.85%	2.83%	16.51%	1.97%	14.29%	0.00%	0.68%	4.36%	18.01%	37.33%		
Average Load	114	119	118	126	130	141	150	155	169	177	190	67%	148
% Change		4.39%	-0.84%	6.78%	3.1%	8.46%	6.38%	3.33%	9.03%	4.73%	7.34%		

⁷ Refer to AVEC Graph

3. Physical & Geographical Assessment

Does an existing community map exist? (Attach map)

Yes No

Source/Comments:

Community maps exist, but they are not the updated ones done by DCED and electronic copies were unavailable.

Do existing aerial photos exist for this community? (Attach photos)

Yes No Date: 9/16/04 Site? Overview

Source/Comments:

Photos were available via the DCED web-site. Aerial photos were procured from Aeromap and used for development of the drawing. due to the availability of DCED map.

Is there recent geotechnical data available? (Attach if available)

Yes No

Source/Comments:

See Table 8.

Table 8. Available Geotechnical Data Summary

Source	Date	Comments
Duane Miller & Associates Report	2004	Geotechnical reports are available for the fish processing plant, materials sources, KLHA Housing, water treatment plant, Arolik River and Beach Roads, teen center and clinic, and for the existing washeteria building. The data shows natural conditions consist of a surface layer of peat and organic silt underlain by ice-rich gray silt and silty sand. Massive ice has been encountered in the village soils, and most of the material is thaw unstable; it will settle large amounts if it thaws. End of summer active layers generally have been found to be in the range of 2 to 2.5 feet in higher areas and up to 4 feet in low lying areas. Measured ground temperatures are in the range of 30 to 32 degrees where snow drifting is not deep. Permafrost is degrading where snow drifting occurs. During 1997, an alternative site for the new washeteria building. A test boring was drilled to a depth of 25.5 feet just north and west of the existing BIA school building. Beneath a 4.5 foot thick gravel fill, the boring found a natural soil profile of peat underlain by icy organic silt and massive ice to depths of about 10 feet. Silty sand, gravelly sand and sandy gravel were present below the silt to the base of the hole. When the hole was drilled at the end of April, marginally frozen soil was present from 7 to 10 feet. Where permafrost was encountered.

Describe the annual heating degree days for this community?

The average annual heating degree days from 1993-2004 is 12,329 with a high of 13,373 in 2000 and a low of 10,944 in 2003 for Bethel.

Is this community a snow drift site⁸?

Yes No

Provide a summary of ACOE community flood data.⁹

- Status: 2nd Class City
- Population: 595
- River System: Kanektok River
- Coastal Area: Kuskokwim Bay
- NFIP Status: not participating
- Flood Plain Report: YES
- Flood Insurance Study: NO
- Flood Gauge: NO
- Spring Breakup: *Spring breakup generally does not cause flooding. However, river levels rise significantly three to four weeks after spring breakup due to snow melt in the mountains. The river at times floods the airport road due this rise.*

Comments:

The following information is based on a temporary benchmark (TBM) with an assumed elevation of 100.0 ft. The TBM is located on the front porch of the new Quinhagak School, out from the center of the door.

Table 10. Available Geotechnical Data Summary

Location	Elevation Level
1978 flood level	86.5
Recommended building elevation	88.5
First floor of the clinic	95.4
Front doorsill of the city office building	94.4
Front porch (1 st floor) of the city power plant	95.1
Bottom of fuel tanks (near power plant)	92.7
Center of doorsill of the old Moravian Church	90.7
Tidal float debris from the fall, 1993 storm	88.5

What is the recommended building elevation?

88.5 ft.

⁸ Reference AVEC list.

⁹ Reference U.S. Army Corps of Engineers flood hazard data

What is the flood data and recommendations based upon?

Survey Data Local Experience Other (Describe)

Source/Comments:

ACOE Community Flood Data

Describe the source of gravel available to the community or nearest to the community.

Table 11. Available Gravel Source

#	Quality	Quantity Available	Owner	Distance away	Mode of Transportation	Price \$	Comments/Description ¹⁰
1	Excellent	N/A	Calista Corporation	0-3 miles	Road access	\$1.80 p/cubic yard	Prices as of May 2005. Prices may vary

What are the possible marine header locations?

Site #1: Existing village corporation marine header site located adjacent the city dock. This site has been identified by the community as their industrial center. The other tank farms in the community use this as their marine header staging area. There is also a staging area for commercial fishing, construction, and industrial types of activities. A joint use agreement should be established with the Village Corporation.

Are there any extraordinary construction cost considerations?
Skilled labor available?

Yes No Comments: Quinhagak has seen active and positive development activities. The local labor force has benefited from previous training and project implementation, resulting in a relatively strong work force to that of rural Alaska.

Length of fill pipelines?

Yes No Comments: The proposed site is adjacent the city dock and existing marine headers. There should be minimal problems with the length of the fill line. The fill lines would be anywhere from 100-600 ft, depending upon siting in this industrial area.

Geotechnical/soil conditions?

Yes No Comments: The Village Corporation reported settling of their tank farm in the site they choose.

Climate?

Yes No Comments: *Quinhagak is located in a marine climate. Precipitation averages 22 inches, with 43 inches of snowfall annually. Summer temperatures average 41 to 57, winter temperatures average 6 to 24. Extremes have been measured from 82 to -34.*

Transportation limitations?

Yes No Comments: *Quinhagak relies heavily on air transportation for passenger mail and cargo service. A State-owned 2,600' long by 60' wide gravel airstrip is available. A longer runway is nearly complete, which will enable direct flights to Anchorage. Float planes land on the Kanektok River. A harbor and dock were recently completed. Barges deliver heavy goods at least twice a year. Boats, ATVs, snow machines, and some vehicles are used for local transportation. Winter trails are marked to Eek (39 mi.) and Goodnews (39 mi.) Travel to and from Quinhagak is highly dependent on the weather.*

Existing fill pipelines?

Yes No Comments: *400 ft. fill pipeline located adjacent to the dock.*

Other?

Yes No Comments:

What types of security systems should be considered for the project?

Each owner's bulk tank fuel cell and the Power Plant will be fenced. Fencing will consist of 8 ft. of fabric and three strands of barbed wire per AVEC standard design criteria.

Should wind energy be considered in the amalgamated program?

Yes No Justification: *Although there is limited wind data available, the coastal location suggests excellent wind potential. Likewise, comments from stakeholders indicate strong interest in the use of wind for the community.*

It is recommended that an anemometer be implemented with meteorological towers, data logging equipment, and technical support to help Quinhagak quantify their wind resource.

What is the NREL wind rating?

Quinhagak is a high-value (excellent), class-5 wind regime for wind power generation. It is suggested that AVEC erect a wind monitoring tower at the potential wind generator location.

What is its economic feasibility¹¹?

For Nightmute (a community found in the same region with similar

¹¹ Preliminary Opinion.

mobilization needs), the cost of erecting a wind tower was estimated at approximately \$850,000 (2002 market data). Quinhagak has potentially better ocean barge accessibility than Nightmute and more vibrant economic potential. These reasons suggest that its economic feasibility is good for this community. It is recommended that a detailed cost/benefit analysis be undertaken to fully assess the economic potential of wind.

What are the USF&W issues?

According to Ellen Lance with the USF&W service, there will be USF&W issues with wind power.¹² The stellar's eider moves throughout the area. (Critical habitat is not believed to be in the area, but migration through the community is a concern). If the decision was made to proceed with wind, a correspondence to their office is required indicating specifics of the projects (where, when, & how). They would then proceed with letter stating their concurrence with the project.

Equipment availability? (crane)

Yes No Comments:

Comments on wind potential from stakeholders.

See Table 11

Table 11.1. Preliminary Wind Analysis-Power Corp-Dennis Meiner (Wind Class)

Population	KWhrs generated	Gallons	Pk Load	Average Load	Area (sq. km)	Min. Wind Power Class	Max Wind Power Class	Avg. Wind Power Class
582	1356820	107072	321	160	15	5	5	5.0

Table 11.2. Preliminary Wind Analysis-Power Corp-Dennis Meiner (Nominal Wind)

	At 10 meters	At 30 meters
Nominal Wind Speed	6.3	7.4
Power Density Lower	250.0	400.0
Power Density Upper	300.0	480.0
Nominal energy (kWh/m ² /yr)	2190.0	3510.0
Nominal energy (kWh/m ² /yr)	2630.0	4210.0
Estimated Power Density at Hub Height	-	400.0

Source: Power Corp- Dennis Meiner

Should heat recovery be included in the amalgamated program?

Yes No Justification:

Who are the potential users?

School, city offices, store, and other public facilities are beyond the 500 ft program guideline threshold for the community. There is a possibility of incorporating a heat recovery technology with the piped water system, as it maybe within the 500 ft threshold, depending upon design. According to city

¹² Telephone conversation with Ellen Lance on November 9, 2004.

leadership, the piped water system will be finalized during the 2005 construction season.

What is the length of the supply lines per proposed site?

Supply lines for heat recovery would surpass the 500 ft program guideline threshold for public buildings. The proposed site to the washeteria/offices and school is approximately 1500-2000 ft.

Comments from stakeholders.

Interest was expressed on the part of community members for the application of recovered heat in the area.

Should a power intertie be considered with other villages?

Yes No Justification: *Quinhagak’s remote location, distance from neighboring communities, and rugged terrain makes power intertie feasibility low.*

Table 12. Distance between Communities

Community Name	Distance From Quinhagak	Observations
Eek	29 miles north	New power facilities construction in Eek. Wetland area between the two communities.
Good News Bay	50 miles south	Need to cross the Ahklun Mountains- elevation 2200 ft- 2600 ft.

Existing route or road between communities?

No roads exist between the communities.

What infrastructure is available for the power intertie?

No other infrastructure exists between communities. There maybe a winter trail between Eek and Quinhagak.

4. Logistics Assessment

In considering how freight and fuel would be moved to the community, which scenarios best describes the means? Include all logistics options available and schedule.

Quinhagak relies heavily on air transportation for passenger mail and cargo service. A State-owned 2,600' long by 60' wide gravel airstrip is available. A longer runway is nearly complete, which will enable direct flights to Anchorage. Float planes land on the Kanektok River. A harbor and dock were recently completed. Barges delivery heavy goods at least twice a year. Boats, ATVs, snow machines, and some vehicles are used for local transportation. Winter trails are marked to Eek (39 mi.) and Goodnews (39 mi.)

Transportation Mode	Delivery Schedule	Company	Additional Information ¹³
Ocean Barge- SW	June/October	Northland Barge & Crowley	No road access
Air Freight	On-Demand	ATS , Arctic Air, Village Air Cargo	

Is the village runway adequate for support of the project¹⁴?

Yes No

Comments:

The airport runway is being expanded to accommodate aircraft as large as a DC-6.

Is there sufficient and functional equipment is locally available or could be mobilized any time of the year?

Yes No

At the time of the site visit, equipment was reportedly in good condition

Type	Owner/Operator	Available for Use	Condition
(2) CAT D6R Dozer w/ Ripper (EROPS)	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(2) CAT 325 BL Excavator	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(1) CAT 950 Series II ITC Loader	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(1) CAT 140H Grader	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(1) CAT CS-563C Compactor	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(1) CAT D4H Dozer (EROPS)	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(1) Deere 490 Excavator	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(1) Deere 544 Loader (EROPS)	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(1) Bobcat Loader 743B	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(1) Koehrig 665 Crane	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(9) Int'l 4900 Dump Trucks	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good
(1) Int'l Water Truck	Native Village of Kwinhagak	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Good

¹³ Access due to seasonal issues, water levels of rivers, condition, and other general conditions.

¹⁴ Airport accessible by large aircraft.

4. Major Community Infrastructure Assessment

What is the existing community infrastructure? Fill out the following table.

Structure	Year Built	Plans/Needs for Renovation Expansion	Owner	Operator
NVK Building/U.S. Post Office	Early 1980's	Plans for a new Post Office are in the works	Native Village of Kwinhagak	Native Village of Kwinhagak/ U.S. Postal Service
Bingo Hall	Mid 1970's		Native Village of Kwinhagak	Native Village of Kwinhagak
Corporation Store	Early 1980's		Qanirtuuq Inc.	Qanirtuuq Inc.
Clinic/Washeteria/ NVK Office	1997/98	Plans for a new clinic are in the works		
Water plant	Mid 1990's		Native Village of Kwinhagak	Native Village of Kwinhagak
(4) Boat Harbors	n/a			
Teen Center	2005		Native Village of Kwinhagak	Native Village of Kwinhagak
School	1982/83		Lower Kuskokwim School District	Lower Kuskokwim School District

What project information is available from other projects in the last 5 years? For future village construction projects?

See below.

Capital Project Database

Agency	FY	Status	Project Description	Project Stage	Agency Cost	Total Cost	Schedule	Type	Contractor
DEC/VSW	2005	Funded	Sanitation Improvements, PH IV	Preliminary	\$499,200	\$1,996,500			
EDA	2005	Funded	Airport Extension and Terminal Building	Preliminary	\$1,222,222	\$1,529,862	Grant Approved 9/24/04	Direct Grant	Native Village of Kwinhagak
FAA	2004	Funded	Construct New Airport	Contract	\$2,319,896	\$2,474,556	Grant Agreement Date 6/11/04	Direct Grant	Native Village of Kwinhagak
DEC/VSW	2004	Funded	Sanitation Improvements, Phase 2	Design	\$560,700	\$2,242,700		Force Account	
FAA	2004	Funded	Acquire Snow Removal Equipment	Contract	\$525,000	\$560,000	Grant Agreement Date 6/11/04	Direct Grant	Native Village of Kwinhagak
HUD	2004	Funded	Indian Housing Block Grant	Preliminary	\$469,198	\$469,198		Direct Grant	Native Village of Kwinhagak
FAA	2004	Funded	Construct Terminal Building	Contract	\$50,000	\$53,333	Grant Agreement Date 6/11/04	Direct Grant	Native Village of Kwinhagak
DCCED	2004	Funded	Aerial Mapping - Base Map	Contract	\$0	\$0	June 2004 - May 2005	Contract	Coastal Villages Region Fund
DCCED	2003	Funded	Youth Center and Multipurpose Facility	Construction	\$0	\$1,319,473	Construction 2004	Direct Grant	Native Village of Kwinhagak
DEC/VSW	2003	Funded	Sanitation Improvements	Construction	\$250,000	\$1,000,000		Force Account	
DEC/VSW	2003	Funded	Sewer System	Construction	\$0	\$1,000,000	March 2002 - July 2003	Force Account	
HUD	2003	Funded	Indian Housing Block Grant	Construction	\$590,086	\$590,086		Direct Grant	Native Village of Kwinhagak
DCCED	2003	Funded	Youth Center Multi-Purpose Facility	Completed	\$25,000	\$26,316		Direct Grant	
FAA	2002	Funded	Construct New Airport	Contract	\$1,912,703	\$2,040,217	Grant Agreement Date 06/20/02	Direct Grant	Native Village of Kwinhagak
COE	2002	Funded	Harbor/Pre-Construction	Completed	\$750,000	\$750,000	2008-2010		
HUD	2002	Funded	Indian Housing Block Grant	Completed	\$521,860	\$521,860			
HUD/ICDBG	2002	Funded	Youth Center/Multi-Purpose Facility	Construction	\$500,000	\$500,000		Direct Grant	Native Village of Kwinhagak
FAA	2002	Funded	Construct Snow Removal Equipment Building	Contract	\$420,000	\$448,000	Grant Agreement Date 06/20/02	Direct Grant	Native Village of Kwinhagak
DCCED	2002	Funded	Airport Design/Engineering	Contract	\$87,500	\$87,500			City of Quinhagak

Capital Project Database (cont.)

Agency	FY	Status	Project Description	Project Stage	Agency Cost	Total Cost	Schedule	Type	Contractor
BIA	2002	Funded	Winter Trail Marking to Eek (29 mi.) and Kanertok (39 mi.)	Design	\$0	\$70,000	Winter 2004-2005	638 Contract/DOT	
COE	2002	Funded	Harbor/Feasibility & Design	Completed	\$50,000	\$50,000	Apr. 2008-Apr. 2009		
Denali	2002	Funded	Bulk Fuel Storage Project	Design	\$40,000	\$40,000	Active (12/23/02)	Direct Grant	Alaska Village Electric Cooperative
DCCED	2002	Funded	Headstart Building	Completed	\$25,000	\$26,316		Direct Grant	
DEC/VSW	2001	Funded	Sanitation Facilities Improvements	Construction	\$333,369	\$1,333,475	2003-2004	Direct Grant/Force Account	
HUD	2001	Funded	Indian Housing Block Grant	Completed	\$520,858	\$520,858		Direct Grant	Native Village of Kwinhagak
DCCED	2001	Funded	Youth Center/Multi-Purpose Facility Design/Engineering of	Completed	\$75,000	\$75,000		Direct Grant	
DCCED	2001	Funded	Headstart Building Construction	Completed	\$25,000	\$26,316		Force Account	
DEC/VSW	2000	Funded	Sanitation Facilities Improvements	Construction	\$650,000	\$1,950,000	2002-2003	Direct Grant/Force Account	
DCCED	2000	Funded	Salmon Processing Plant	Completed	\$200,000	\$732,000	Apr-01	Force Account with Sub-Contracts	
HUD	2000	Funded	Indian Housing Block Grant	Completed	\$449,137	\$449,137		Direct Grant	Native Village of Kwinhagak
DCCED	2000	Funded	Headstart Building Design	Completed	\$25,000	\$25,000		Force Account	
FAA	1999	Funded	Construct New Airport	Completed	\$4,960,217	\$5,290,898		Direct Grant	Native Village of Kwinhagak
DEC/VSW	1999	Funded	Flush/Haul Expansion	Construction	\$612,500	\$1,225,000	2001-2002	Direct Grant/Force Account	CRW Engineering (A/E)
FAA	1999	Funded	Construct New Airport	Completed	\$463,085	\$493,957		Direct Grant	Native Village of Kwinhagak
HUD	1999	Funded	Indian Housing Block Grant	Completed	\$471,730	\$471,730		Direct Grant	Native Village of Kwinhagak
DCCED	1999	Funded	Headstart Building	Completed	\$25,000	\$26,316		Force Account	
DOT&PF	1998	Funded	Airport Relocation, Ph I	Completed	\$272,500	\$4,360,000			
BIA	1998	Funded	Road to Arolik River	Completed	\$3,500,000	\$3,500,000			
DOT&PF	1998	Funded	Sanitation Road Construction	Completed	\$49,655	\$550,000	Bid Adv May 2002	Force Account	
DEC/VSW	1998	Funded	Washeteria, Phase III	Completed	\$275,000	\$550,000		Direct Grant/Force Account	
HUD	1998	Funded	Indian Housing Block Grant	Completed	\$496,365	\$496,365		Direct Grant	Native Village of Kwinhagak
ANTHC	1998	Funded	New Washeteria Completion	Completed	\$0	\$348,000			

Capital Project Database (cont.)

Agency	FY	Status	Project Description	Project Stage	Agency Cost	Total Cost	Schedule	Type	Contractor
DCCED	1998	Funded	Headstart Building	Completed	\$25,000	\$26,316		Force Account	
USDA	1997	Funded	New Washeteria	Completed	\$275,000	\$550,000			
HUD/ICDBG	1997	Funded	Community Health Sanitation Bldg	Completed	\$500,000	\$500,000		Direct Grant	
ANTHC	1997	Funded	New Washeteria, Phase I	Completed	\$0	\$450,000			
DEC/VSW	1997	Funded	LKSD Sewage Lagoon Repair Study	Completed	\$48,000	\$48,000		Direct Grant/Force Account	
DCCED	1997	Funded	Health Clinic Addition to Washeteria for Head Start and other health programs	Completed	\$25,000	\$26,316		Direct Grant	
DCCED	1997	Funded	Small Business Development Assistance	Completed	\$5,875	\$5,875		Direct Grant	
ANTHC	1996	Funded	New Water Treatment Plant	Completed	\$0	\$850,000			
DCCED	1996	Funded	Integrate New Health Clinic into Washeteria Facility	Completed	\$200,000	\$400,475		Direct Grant	
ANTHC	1996	Funded	New Washeteria	Completed	\$0	\$200,000			
DCCED	1996	Funded	Kanektok River Safari Business Marketing	Completed	\$22,000	\$51,000		Direct Grant	
DCCED	1996	Funded	Community Facilities & Equipment	Completed	\$25,000	\$26,316		Direct Grant	
USDA/RD	1995	Funded	Water Treatment	Completed	\$1,090,000	\$1,090,000			
HUD/ICDBG	1995	Funded	Flush and Haul Water & Sewer System	Completed	\$0	\$328,525			
HUD/CGP	1995	Funded	Housing Modernization	Completed	\$101,520	\$101,520			
DCCED	1995	Funded	Dock Reconstruction Completion	Completed	\$40,000	\$69,877		Direct Grant	
DCCED	1995	Funded	Water & Sewer/Washeteria Relocation	Completed	\$25,000	\$26,316		Direct Grant	
BIA	1995	Funded	Road to Arolik River / Design	Completed	\$0	\$0			
DCCED	1994	Funded	Ice Production Plant Equipment	Completed	\$80,000	\$860,000		Direct Grant	
ANTHC	1994	Funded	Water & Sewer/9 HUD homes	Completed	\$0	\$620,000			
DOT&PF	1994	Funded	Airport Master Plan	Completed	\$30,005	\$300,053			
DCCED	1994	Funded	Dock/Harbor Construction & Erosion Control	Completed	\$205,000	\$205,000		Direct Grant	
HUD/CGP	1994	Funded	Housing Modernization	Completed	\$60,000	\$60,000			
DCCED	1994	Funded	Dock/Harbor Construction & Erosion Control	Completed	\$25,000	\$26,316		Direct Grant	
HUD/CGP	1993	Funded	Housing Modernization	Completed	\$550,000	\$550,000			
DCCED	1993	Funded	Bulk Fuel Storage Consolidation	Completed	\$200,000	\$266,000		Direct Grant	
HUD/AHFC	1992	Funded	Construct 9 Low Rent Housing Units	Completed	\$896,983	\$1,074,231			
HUD/CGP	1992	Funded	Housing Modernization	Completed	\$959,000	\$959,000			

Capital Project Database (cont.)

Agency	FY	Status	Project Description	Project Stage	Agency Cost	Total Cost	Schedule	Type	Contractor
DEC/VSW	1991	Funded	Water, Sewer, Solid Waste	Completed	\$200,000	\$200,000		Direct Grant/Force Account	
DEC/MGL	1990	Funded	Flush Haul Improvements	Completed	\$200,000	\$200,000			
DEC/VSW	1983	Funded	Sewer	Completed	\$300,000	\$300,000		Direct Grant/Force Account	
EED	2005	Potential	Kuinerramuit Elitnaurvait K-12 Renovation/Addition, Quinhagak	N/A	\$12,918,047	\$13,181,681			
N/A	2003	Potential	Computer Networking Project	N/A	\$0	\$30,000			

Source: DCED Capital Project Database 4/27/05

What future projects planned and scheduled for the community?

Continue to improve sanitation conditions.

5. Site Selection Decision Matrix.

Through the community planning process, the community had identified an area for industrial development. Their were four sites discussed, all were located in the proximity of the industrial site. The village corporation and city tank farm are within this area. The area is a logical, locally selected site.

The four proposed sites are within close proximity of each other, with minimal real differences.

Details can be found on the following table.

Category	Proposed Site Description
Physical Location ¹⁵	<i>West side of community, located in the 13.8 acre industrial complex.</i>
Road access (if no, distance to nearest road)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <i>High quality road- easily accessible with any type of vehicle.</i>
Available land for expansion	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <i>There appears to be substantial land (13.8 acres total) available for expansion.</i>
Soil & top suitability	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <i>Site is likely in wetlands areas Village Corporation Tank farm (located in the same area) foundation is still settling.</i>
Flood risk	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <i>ACOE flood data/information and proximity to the river indicates that there could be flooding problems.</i>
Proximity to barge Fill line length (approx)	<i>50-500 ft, depending on actual siting of facility in the industrial sector.</i>
Potential Foundation ¹⁶	<i>Village corporation foundation is gravel pad foundation. Geotechnical investigation to occur during CDR phase.</i>
Contamination concerns- distance to water source	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <i>> 100 ft Site is adjacent to the Kanektok River.</i>
Noise & emission concerns; Distance to neighbors	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> <i>Sparsely populated corner of town. Site is part of the industrial sector</i>
Fire safety Distance to neighbors	<i>Low Risk 300ft Long distance to residential neighbors</i>
Other location comments	<i>Location has been identified in their community plan as an industrial site.</i>
Parcel ID & Land owner	<i>Moravian Church. The church has granted right of way and sub-division plat.¹⁷</i>
Local select	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Secondary Containment Description ¹⁸	<i>Gravel Dike w/geomembrane</i>

¹⁵ Brief statement.

¹⁶ Preliminary Opinion

¹⁷ According to plat of tracts A, B, and C Quairtuuq exchange lots recorded in the Bethel recording district (P94-4) and prepared by McIntock Land Associates. Land ownership issues needs to be carefully analyzed.

¹⁸ Preliminary Opinion

Potential project site identification evaluation for any legal obstacles.¹⁹

What are the potential site control issues of the proposed site (s)?

The Moravian Church is the current owner of the proposed location. They have however, dedicated right of way as indicated on the platting record P94-4. All owners would sign over site control to AVEC for the construction phase. Entities appeared positive and willing to participate during this assessment- there does not appear to be significant obstacles to site control.

What are the recommended use agreements for the proposed sites(s)?

All owners would sign over site control to AVEC for the construction phase. Entities appeared positive and willing to participate during this assessment- there does not appear to be significant obstacles to site control.

Were city officials able to identify any ROW for proposed site(s)?

No

Who are the primary land owners of proposed site?

NVK with the lease agreement with the Moravian Church as described in this document. Moravian Church.

¹⁹ Questions to be asked of the mayor, city administrator, land owners. This will not entail review of official records at municipal boroughs.

6. Operator Assessment

#	Criteria	Operator 1: NVK/City Council	Operator 2: Village Corporation
1.	Who provides oversight of operations for the existing power system/bulk fuel facilities?	<i>Council Members</i>	<i>Board</i>
2.	Who is the primary operator? Who is the secondary operator? Describe operating context.	<i>NWK/City Council are operating jointly.</i>	<i>Corporation- no secondary operator. President of the corporation is responsible for all management.</i>
3.	Does the operator have a structure with clearly defined lines of authority and responsibility?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>At the time of the site visit, the structures appeared to be working together in a positive manner with appropriate lines of authority.</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>There are organizational charts posted throughout the village corporation's office.</i>
4.	Is an adequate repair and maintenance program in place to maintain existing facilities?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>RUBA reports did not indicate any problems.</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>Village corporation was currently updating both the spill response plan and the operations and maintenance plan during the site visit.</i>
5.	Do administrative procedures exist and are they followed?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>RUBA report did not indicate any deficiencies.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/> Justification: <i>No information provided.</i>
6.	Is there an adequate number of personnel available with required skills to operate facility?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>Village corporation is fully staffed. President has solid management experience and bulk fuel management experience.</i>
7.	Is there a high turnover of personnel?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Justification: <i>Administrators have been in their positions for an acceptable level of time.</i>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Justification: <i>Henry Small is well established in his position as president. Did not indicate that turnover of personnel was a problem.</i>
8.	Are appropriate financial procedures and reporting systems in place?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>During the site visit, there was a workshop occurring on financial controls. Furthermore, the RUBA report indicated that adequate financial procedures exist.</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>President said that these are addressed during their audit.</i>
9.	Are project funds clearly separated?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification:	Yes <input type="checkbox"/> No <input type="checkbox"/> Justification: <i>No information provided.</i>
10.	Is there a regular budgeting process developed?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>The RUBA report</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
11.	Are adequate financial and inventory controls in place and implemented?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>No significant problems were highlighted in the RUBA report.</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification:
12.	Are internal and external financial reviews performed regularly?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>During the site-visit, the auditors were presenting their annual audit.</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>Address in their annual audit.</i>
13.	Are financial reports accurate and timely?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Justification: <i>RUBA report did not indicate any problems.</i>	Yes <input type="checkbox"/> No <input type="checkbox"/> Justification: <i>No information provided.</i>
14.	Are there any contaminated sites?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Justification: <i>The only contaminated site involved Qanirtuuq, Inc.</i>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Justification: <i>The only contaminated site involved Qanirtuuq, Inc..</i>

Due to the proposed site and the location of the LKSD school with respect to this site, it does not appear likely that LKSD will participate.

7. Legal/Regulatory Assessment

What types of permit(s) are likely for this power plant/bulk fuel upgrade project?

Permitting requirements for the new tank farm and fuel distribution systems will include submittal of construction documents to the State Fire Marshal for review and approval, obtaining a US Army Corps of Engineers (COE) permit to place fill on wetlands and consultation with the US Department of Interior, Fish and Wildlife Service regarding the Endangered Species Act.

1. Fire Marshal Review

The construction of the new tank farm and fuel distribution systems would require submittal of a complete set of construction documents to the State of Alaska, Department of Public Safety, Division of Fire Prevention (Fire Marshal) for plan review and approval.

2. U.S. Army Wetlands Permit

The U.S. Army corps of Engineers is responsible for reviewing applications and issuing permits for the placement of fill material in wetlands. Specific provisions have been established as a General Permit (96-07) to address the construction of tank farms in Alaska. As a result, facilities that meet requirements of the General Permit, can utilize this expedited review process, which reduces the review period from approximately 120 days to 15 days.

3. U.S. DOI, Fish and Wildlife Service – Endangered Species Act

The U.S. Department of Interior, Fish and Wildlife Service administers the Section 7 consultation process for the Endangered Species Act. The purpose of the Act is to ensure that proposed projects or actions do not jeopardize the continued existence of listed species. A formal consultation process with the Service may take up to 135 days. However, the informal consultation process provides an opportunity for the Federal action agency or its non-federal representative to utilize an informal consultation process and receive a preliminary determination for some proposed projects.

Ellen Lance of the U.S. DOI, Fish and Wildlife Service was contacted regarding endangered species for the Quinhagak project. She indicated that there are potential conflicts with endangered specie in the area.

During detailed design, AVEC will complete the consultation process through submittal of a letter to the U.S. DOI, Fish and Wildlife Service on behalf of its federal partner, the Denali Commission, providing its assessment of Section 7 Endangered Species.

Table 9. Permit Requirements

Permitting Agency	Type of Permit	Likelihood	Justification/Comments
AF&G	n/a	Not at all likely	
USFWS	General permit	Highly Likely	Wind generation should be considered in Quinhagak
USACOE	General Permit	Required	Proposed sites are more than likely in wetlands areas.
FAA	n/a	Not at all likely	Proposed site is a long distance from the airport.
Fire Marshal	Plan Review and Approval	Required	Plan review and approval. Alaska Department of Public Safety, Division of Fire Prevention.
OPMP		Required	

What degree of regulatory interface is likely for this project? With who?

Table 10. Regulatory & Agency Interface

Regulatory Agency	Type of Interface	Likelihood	Justification/Comments
USEPA	Compliance	High Degree	SPCC interface.
USCG	Oil Spill Response	High Degree	USCG has jurisdiction over the marine header.
ADEC	Compliance	Low Degree	Proposed facilities are more than likely outside of DEC's limits.
USFWS	Endangered Species	High Degree	The area has high potential for wind.

8. Sustainability Assessment

Does community leadership have an understanding of the sustainability requirements? Yes No

Explain and how verified.

The sustainability requirement was communicated during the community meeting on March 30, 2005. Denali Commission documentation was distributed to the community. Native Village of Kwinhagak has approved a resolution that indicates understanding of the sustainability requirements.

Has the community effectively involved other stakeholders in the past in the planning and management of the bulk fuel facilities/power facility? Yes No

Explain and how verified.

The City Council, in partnership with AVEC, is the village entity most involved in the management of the existing power facility. As with many City Councils in rural Alaska, they have been adversely affected with the state cuts in revenue sharing. In the case of Quinhagak, this created difficulties in meeting their obligations.

Provide details on the nature (who, what, when, etc) of agreements, support letters, etc that should be established with AVEC and other entities.

MOU

Village Corporation & AVEC

Letters of intent

LKSD & Village Corporation.

Resolutions

NVK has approved a resolution on this project.

Has the community established a comprehensive community plan?

Yes

No

Comments: *Needs to be updated*

Explain how (who, methodologies, and outcomes) the plan was developed.

Attach copies & supporting information.

Actual/ Estimated Completion date.

Do business plans exist for the facilities?

Yes

No

Comments

If no, does community leadership understand the components of the business plan?

Understands that business plan needs to be updated?

Yes

No

Justify:

The need for a business plan was clearly communicated to the community during the community meeting on March 30, 2005. Denali Commission Guidelines were also given to the community.

Does community leadership understand the requirement for a renewal and replacement fund?

Yes

No

Justify:

The need for a renewal fund was clearly communicated to the community during the community meeting on March 30, 2005. Denali Commission guidelines were given to key community leaders and the policies explained.

Are existing tank-farm facilities in compliance with the laws that govern its operation?

Yes

No

Justify:

In reviewing the DCRA Bulk Fuel Community Data Base for Quinhagak , the following observations can be made:

Table 11. Reported Tank Farm Deficiencies²⁰

Community Entity	Deficiencies
Village Corporation.	14 violations noted.
City of Quinhagak	16 violations noted.
Moravian Church	12 violations noted
Alaska Army National Guard	9 violations noted.
AVEC	5 violations noted
LKSD Quinhagak School	10 violations noted.
A&C Market	15 violations noted
Tribal Council	16 violations noted.
Kusko Aviation	15 violations noted

Source: DCRA Bulk Fuel Report

There were two spill incidences on DEC’s web-site., involving:

- Quinhagak Village Corporation Tank Farm. 4200 gallon spill occurred in 1992. The case file is currently closed.
- LKSD School District: In 1994, approximately 15,000 gallons of Arctic Heating Oil spilled. The case is currently inactive.

Does the community understand that an adequate preventative and maintenance plan needs to be established?

Yes No Justify:
The need for a preventative and maintenance plan was clearly communicated to the community during the community meeting on February 22, 2005. Denali Commission guidelines were given to the committee.

Does the primary owner maintain separate accounts and arranges for annual audits?

Yes No Justify:
The City/NWK had arranged for an audit by an independent accounting company and was being reviewed by the community during the site visit.

Primary/secondary operators understand that formal agreements need to be established and understands the content of these arrangements?

Yes No Justify:
Formal operating agreements was discussed during the community meeting.

How does the operator deal with cash-flow difficulties?

City Council/NWK is proactively managing their cash flow problems. At time of site visit, the community was involved in a financial planning workshop for municipal finances. The council is aware of their financial situation and were developing contingency plans.

²⁰ Refer to Quinhagak Bulk Fuel Storage Assessment Report

8/16/2005

AVEC /Quinhagak Pre-CDR

Is there any foreseeable bankruptcy or financial difficulties?

Yes No Justify:

Quinhagak's current financial problems are affiliated with increasing insurance costs and a decrease in municipal revenue sharing. The community is proactively dealing with these issues by sub-contracting with a management consulting firm and seeking out better contractual terms on their insurance contracts.

Are the operators in good standing with the IRS? (self-disclosed)

Yes No Justify:

No issues disclosed by the community members.