

## EXECUTIVE SUMMARY

This report has been prepared for the Alaska Village Electric Cooperative (AVEC). The purpose of this report is to provide information for the development of a design for energy improvements and to provide an opinion of construction scheduling and costs related to upgrading the fuel systems in the community of Chevak, Alaska. The new fuel system upgrades include a new AVEC power plant, and new tank farms for the following participants:

- AVEC
- Chevak Company Corporation (Corp)
- City of Chevak (City)
- Wayne Hill Store (Store)

As part of the development of this report, site investigations were performed on September 10, 2002, February 25, 2004, February 1, 2006, and October 12, 2006. During these investigations, potential tank farm sites identified by AVEC were reviewed, the existing fuel systems and tanks were inspected, and meetings were conducted with the participants.

Six possible sites are discussed in this report. Site 1, located within the village, is too small for all grantees to have facilities at this location. Site 2, located east of the southern end of the existing runway, is located outside of the Runway Protection Zone but must be constructed within the maximum height requirements to stay below the existing runway airspace. Site 3 is located southwest of the village next to the road along the bluff. Site 4 is located near the sewage lagoon and the road along the bottom of the bluff. This site is may be within the floodplain of the river. Site 5 is located north of the new school and is not an option due to the new playground located on this spot. The location of Site 6 is just south of Site 5. Analysis of these sites and a community meeting on February 1, 2006, determined that Sites 1 and 4 are the best choices for the new energy facilities.

The design for the tank farms include tanks, containment, piping, fill lines, distribution lines, and dispensing stations. The basic design capacity was determined to be about 810,000 gallons. This design will meet the projected 10-year needs based on a 2.0 percent to 3.0 percent population growth rate for the village of Chevak. The power plant sizing, wind generation site feasibility, and recovered heat opportunities were all evaluated in this CDR. The final design of the fuel improvements will include two tank farm locations. One will incorporate the AVEC tank farm and power plant at Site 1 and the other will include the other participants at Site 4.

A budget cost estimate has been prepared for Alternative A. The price per gallon of fuel storage is \$13.04 for Alternative A and would be slightly less for Alternative B due to economy of scale. Alternative B is not feasible because there is no current user of the old school buildings. The costs per gallon for this project is significantly higher than the benchmarks adopted by the Denali Commission for cost containment. The benchmark

goal for a tank project of this capacity is \$6.50 or less per gallon. The increased costs account for increased costs for foundations due to lack of local fill material, inefficiency of scale at the benchmark for Store and City tanks, escalating material costs, marginal river access to Chevak, and the requirement for demolition of existing facilities at Site 1. The overall project cost estimates is \$17,781,467 for Alternative A and would be higher for Alternative B. This cost estimate includes the bulk fuel tank farms, modular power plant, the wind farm, heat recovery, and power line extensions.