



Fairbanks North Star Borough

Comprehensive Economic Development Strategy (CEDS) Update

IMPLAN Analysis: Pearl Creek Water Infrastructure

An economic impact analysis of constructing a water main line extension connecting Pearl Creek Elementary School to the College Utilities Corporation's water distribution system and adding a dedicated reservoir at the site.

Prepared for the Fairbanks North Star Borough

by Northern Economics and Agnew::Beck Consulting



November 17, 2021

Key Takeaways

The proposed project involves constructing a water mainline extension connecting the Pearl Creek Elementary School property to the CUC water distribution system and a dedicated reservoir at the site. The school currently receives its water from bulk water delivery service and would benefit from a constant and reliable water supply.

This project is estimated to require a \$4.04 million capital investment. This investment is projected to generate the following near-term and long-term economic benefits:

- In the near term, construction activities are projected to generate 24 direct construction jobs and 13 additional indirect and induced jobs in the region over the course of the construction phase. These short-term construction phase jobs will generate about \$2.7 million in total labor income, and \$5.9 million in total business sales.
- In the long term, further expansion of the water distribution system is expected to benefit more customers in the area surrounding Pearl Creek Elementary School. The utility has plans to expand and serve the neighborhoods to the east and west of the school; the proposed design would serve approximately 749 lots. If this expansion were to occur, there would be an additional construction spending stimulus of about \$17 million in the region. This would generate approximately 100 direct, indirect, and induced jobs and \$8 million in total labor income in the region. The additional indirect and induced business sales that would be generated from the direct construction spending are estimated at \$7.2 million.
- The customer's investment to connect to the main water line is also expected to pay-off in the long-term. It is estimated that on average, each household could save \$230 per month by having a connection to the main water line instead of relying on water delivery service.

Project Description

The proposed project involves constructing a water main line extension connecting Pearl Creek Elementary School's property to the College Utilities Corporation's (CUC) water distribution system and a dedicated reservoir at the site. The proposed system is configured to provide domestic water flows and emergency building fire water flows from the reservoir/feed pump station to be constructed onsite. The school currently receives its water from bulk water delivery service and would benefit from a constant and reliable water supply. Water consumption at the school has averaged about 99,500 gallons per year (FNSB 2021).

The proposed construction project would include installation of a 9,500 linear-foot high density polyethylene (HDPE) pipe, valves, hydrants, reservoir, and other appurtenances to provide reliable water service and metering at the school site. The reservoir will be supplied from an intertie with CUC off a 10" water main line (located on Farmers Loop just north of Tanana Drive) with adequate capacity to back-feed the CUC water distribution system and provide uninterrupted service to Pearl Creek Elementary School (CUC 2021a).

The project is estimated to cost \$4,041,238 and will include the following pre-construction and construction activities:

1. Design and construction of new water piping along the route;

2. An adequately sized reservoir with feed pump for the school water supply and a remote, or supervisory control and data acquisition (SCADA) monitoring system;
3. Permitting associated with constructing the new main/service, which include permits from the Alaska Department of Transportation and Public Facilities and the Alaska Department of Environmental Conservation (Rural Services), among others;
4. Surveying and recording a platted easement for utilities installed on the Pearl Creek Elementary School property.

In addition, it is estimated that the cost for the service line to connect the Pearl Creek site to the new CUC reservoir is \$100,000. This analysis assumes that the FNSB will contribute the property where the reservoir and pump station would be located.

Near-Term Economic Benefits of the Construction Project

The proposed construction and installation of the water distribution system to Pearl Creek Elementary School will create a short-term economic stimulus in the region that will benefit the construction, engineering services, and logistics sectors, as well as other sectors that supply goods and services to these companies and their workers.

This short-term stimulus is projected to generate 24 direct construction jobs and 13 additional indirect and induced jobs in the region over the course of the construction phase. These short-term construction phase jobs will generate about \$2.7 million in labor income. With respect to economic output (business sales), the proposed direct construction spending is estimated to generate an additional \$1.7 million in indirect and induced business sales. Note that not all the \$4.14 million in pre-construction and construction costs would be spent locally as most of materials including the pipe and valves will be imported from outside the region.

The proposed construction project’s estimated economic effects are summarized in the table below.

Table 1. Projected Economic Effects of Pearl Creek Elementary School Water Line Construction Project

Indicator	Direct ¹	Indirect ²	Induced ³	Total
Economic Output (2020\$ millions)	\$4.14	\$0.77	\$0.97	\$5.89
Employment (# of Jobs)	24	5	8	38
Labor Income (2020\$ millions)	\$2.00	\$0.28	\$0.39	\$2.68

Source: Northern Economics estimates based on construction cost estimates provided by College Utilities Corporation and the IMPLAN⁴ input-output model for the Fairbanks North Star Borough.

¹ Direct effects refer to the new economic activity that can be tied directly to the proposed project. In this table, direct effects include spending for construction of the facility, and the direct jobs and labor income associated with the construction activities.

² Indirect effects are those associated with a change in economic activity due to spending for goods and services tied to the new facility. During construction, these are the changes in the local economy occurring because construction firms purchase goods (e.g., cement, wood, and nails) and related services (e.g., landscaping, accounting, and legal). As construction firms make purchases, this creates an increase in purchases across the supply chain.

³ Induced effects are those associated with a change in economic activity due to spending by the employees of businesses (labor) and by households. These are economic changes related to spending by people directly employed to construct the facility. Once operations begin, spending by employees of the facility will drive induced effects. Induced effects also include household spending related to indirect effects.

⁴ IMPLAN is a predictive input-output model of local/regional economies and is widely used to measure the economic impact of industries and industrial/commercial development. IMPLAN uses borough level employment and payroll data to define linkages between industries in the local economy and multipliers that predict the total impact of an economic stimulus.

Operations Phase and Long-Term Economic Benefits of Future Expansion

The main line piping along with 11 fire hydrants and the reservoir will be owned, operated, and maintained by the CUC. The annual operations and maintenance of this system would add a few jobs in the region (up to four direct, indirect, and induced jobs).

In the long-term, further expansion of the water distribution system is expected to benefit more customers in the area surrounding Pearl Creek Elementary School. The utility has plans to expand and serve the neighborhoods to the east and west of the school. The proposed reservoir is configured and sized to serve the school and adjacent areas.

Preliminary cost estimates of this further expansion amount to approximately \$10.54 million for the main water line. The proposed design would serve approximately 749 lots; the average cost for a service line to connect to the main water line is about \$8,500 per lot. In total, if this expansion were to occur, there will be an additional construction spending stimulus of about \$17 million in the region. This would generate approximately 100 direct, indirect, and induced jobs and \$8 million in total labor income in the region. The additional indirect and induced business sales that will be generated from the direct construction spending are estimated at \$7.2 million. This will be in sectors that provide materials, equipment, and services to the construction sector (indirect), and sectors that will benefit from workers' spending of wages in the economy (induced).

The estimated economic benefits of the construction spending associated with the expansion of the water distribution system in the area surrounding the project site are summarized in Table 2.

Table 2. Estimated Economic Effects of Expansion of the Water Distribution System

Indicator	Direct	Indirect	Induced	Total
Economic Output (2020\$ millions)	\$17.00	\$3.17	\$3.99	\$24.16
Employment (# of Jobs)	70	10	20	100
Labor Income (2020\$ millions)	\$6.2	\$0.9	\$1.2	\$8.3

Source: Northern Economics estimates based on construction cost estimates provided by College Utilities Corporation and the IMPLAN input-output model for the Fairbanks North Star Borough.

In addition, the operations and maintenance of this expanded water distribution infrastructure would add a few more direct, indirect, and induced jobs in the region.

Finally, this expansion would also benefit customers in the long-term. The customer's initial investment to connect to the main water line is expected to pay-off in the long-term. On average, a single-family household uses about 3,000 gallons a month with a water utility bill of about \$53 per month (CUC 2021b). In comparison, water haul/delivery rate in the area costs 9.5 cents per gallon (Water Wagon 2021). Assuming the same average consumption of 3,000 gallons per month for a single-family household, the cost for water delivery adds up to \$285 per month. This amounts to more than \$230 in cost savings per household per month. The additional service, with an immediate connection to the local water utility could also increase property values in the area.

References

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