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April 29, 2016

Mr. Jason Miles, Capital Facilities Director
City of Valdez, Alaska
P.O. Box 307
Valdez, Alaska 99686

RE: City of Valdez, Alaska municipal Town water system
SUBJ: South Harbor Drive water demands and capital improvements needed to service possible build-out – Proposal to identify needs and preliminary costs

Dear Jason:

The City of Valdez Town water system consists of four wells, two tanks, and thousands of feet of water main ranging in size from twelve inch to six inch in diameter. One water tank is on a hill on the north side of Town, and other tank is on a hill on the south side of Town. 3 wells near Hanagita pump directly to the north tank. 1 well near Egan pumps directly to the south tank. See the schematic of the water system enclosed.

The water system as originally designed was well thought out for residential water use. The two tanks were connected by pipe, and the pipes filled both tanks evenly from all wells. As the Town grew, the existing pipes in Town were not large enough to equate system pressure evenly between the tanks during higher demand. The water system in essence has become two systems during higher demand. The north tank serving the north side of town, and the south tank serving the south side of town. The well near Egan was installed to feed the south tank to remedy the unequal tank levels during high water demand. The Town continues to grow on the south side, specifically on South Harbor Drive. Silver Bay's recent construction will have major impact on south water demand.

If a pump malfunctions, or there is a problem in the well near Egan, you lose the ability to fill the south tank. Without south tank water, there is a problem supplying South Harbor Drive with adequate water pressure in the summer when Silver Bay and Peter Pan are running. A second well is needed on the south side to pump to the south tank. The new well will ensure municipal water service on the south side during a pump failure or other problem with the well near Egan. A new well on the south side is a good start to growing the water system to meet the growing demands. The southwest corner of the elementary school property looks like a good location in the water system to have a new well to pump to the south tank.

Due to the size of the existing south tank fill pipe, the new well will only be used as a back-up to the well near Egan initially, and both wells will not be operated the same time. The groundwater aquifer may not support both wells running at the same time for a total of over three thousand gallons a minute, but we don't know that yet. There are various options that can be made to allow both wells to run simultaneously.

Additional storage may be needed, and larger piping options will have to be studied to make recommendations for the best improvements to serve South Harbor Drive.

Our proposal is to supply the City with a simple improvement plan /report outlining the water system improvement needs and preliminary costs to construct the improvements.

TASK 1 – COMPILE SYSTEM COMPONENT INFORMATION AND WATER DEMANDS

Compile tank sizes, water pipe sizes, elevations, pump sizes, water demands (existing and predicted) into tabular form for easy comparison and analysis.

COST - \$ 2,500

TASK 2 – CONSTRUCT A FUNCTIONING TOWN WATER SYSTEM COMPUTER MODEL

Construct Water Cad computer water system model using some elements already constructed by City staff, and completing the model into a functioning computer model. Verify flow results with City staff and fire flow tests.

COST - \$ 10,000

TASK 3 – MODEL SCENARIOS OF IMPROVEMENTS AND RECORD RESULTS

Model scenarios of various improvements using the functioning water system model and compiled information.

COST - \$ 5,000

TASK 4 – IDENTIFY OPTIONS AND PRELIMINARY COST ESTIMATES

Choose the best improvements based on the results of modeling, and calculate project costs.

COST - \$ 5,000

TASK 5 - PROVIDE A REPORT / PLAN OF RECOMMENDED IMPROVEMENTS AND PRELIMINARY COSTS

Tabulate options, sketches, and tables into a report / plan with preliminary cost estimates.

COST - \$ 2,500

TASK 6 – PRESENT REPORT / PLAN TO CITY COUNCIL

Travel to Valdez and present the report / plan to the City Council if needed.

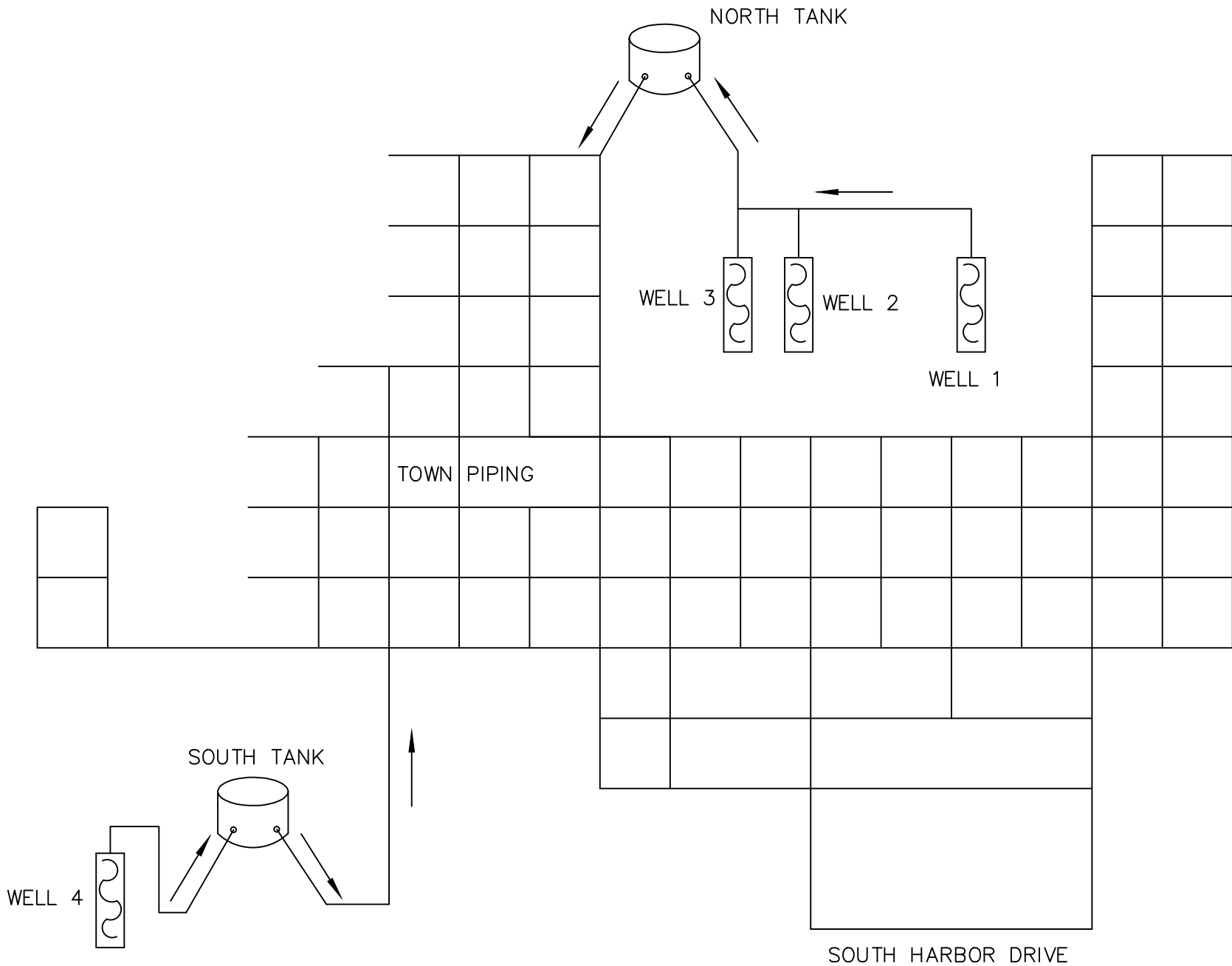
COST - \$ 3,000

TOTAL TASKS 1 – 5 = \$ 25,000

TOTAL TASKS 1 -6 = \$ 28,000

Very truly yours,

Dean Day, P.E.
Project Engineer



TOWN OF VALDEZ WATER SYSTEM SCHEMATIC