CITY OF DILLINGHAM, ALASKA

RESOLUTION NO. 2011-83

A RESOLUTION OF THE DILLINGHAM CITY COUNCIL ACCEPTING ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION MUNICIPAL MATCHING GRANT #28306 IN THE AMOUNT OF $3 MILLION FOR WATER SYSTEM IMPROVEMENT PROJECTS INCLUDED IN PHASES 1.3 AND 1.4 IN THE CITY'S 2003 WATER AND SEWER MASTER PLAN

WHEREAS water and sewer system improvements were identified as a health and safety (fire protection) priority in the Dillingham Water and Sewer Master Plan ("Master Plan"), dated June 2003, prepared by Bristol Environmental & Engineering Services Corporation ("BEESC"); and

WHEREAS existing supply wells do not have sufficient capacity to provide for domestic water demands and allow a reasonable recovery from a large (3,500 gpm, 3-hour sustained) fire demand; and

WHEREAS the State of Alaska, Department of Environmental Conservation (AkDEC) has appropriated a Municipal Matching grant in the amount of $3.0 million to the City of Dillingham to be applied towards the Water System Improvements Phases Projects 1.3 and 1.4; and

WHEREAS the City of Dillingham must formally apply for the grant and thereby agrees to the terms and conditions of the grant, and to adhere to any governing state regulations; and

WHEREAS the City of Dillingham agrees to operate and maintain the completed project constructed with said grant;

NOW, THEREFORE, BE IT RESOLVED by the Dillingham City Council that the grantee formally accepts the State of Alaska Department of Environmental conservation's Grant No. 28306 in the amount of $3 Million and accepts the conditions of the grant agreement.

PASSED and ADOPTED by the Dillingham City Council on 12/1 2011.

SEAL:

Alice Ruby, Mayor

ATTEST:

Janice Williams, City Clerk

City of Dillingham Information Memorandum No. R2011-83

Subject: A resolution of the Dillingham City Council authorizing application for an ADEC grant for water system improvements phases 1.3 and 1.4

Agenda of: December 1, 2011

Council Action:

Manager: Recommend approval.

City Manager: Dan Forster

Dan Forster, City Manager

Route To:	Department / Individual	Initials	Remarks
X	Finance		
X	Planning Director		
X	City Clerk		

Fiscal Note: Yes **X** No _____ Funds Available: Yes _____ No _____

Other Attachment(s):

- Excerpt from 2003 Water and Sewer Master Plan

Summary Statement.

The City has received a legislative appropriation in the amount of 3.0 million dollars which will be combined with the existing grant funds under ADEC 28305 for the purpose of exploring and developing a new water source, constructing a water treatment plant, water storage facility and transmission lines to connect to the existing water system. This project is phases 1.3 and 1.4 of the 2003 Water and Sewer Master Plan.

The grant requires a 30% match equal to $1.0 million. This ADEC grant is 100% state funded and can be matched with federal funds. Recommendation is for acquiring a low interest Alaska Clean Water Fund loan for $250,000 as well as application to Alaska Native Tribal Health Consortium, USDA, and EPA for funding to match.

exists in the well and iron and manganese are removed). The requirements and costs for an arsenic treatment system for a future WTP cannot be evaluated until existing or new well sources are adequately evaluated for yield and quality.

Alum coagulation may be an effective process for arsenic removal. In such a system, particulate arsenic would be removed along with particulate iron and manganese. Filtration would be performed after coagulation and sedimentation. Such a system will likely require pilot testing for activated alumina and anion exchange systems. If pilot tests do not provide sufficient arsenic removal to meet EPA standards, treatment options may include reverse osmosis and/or nanofiltration (EPA, 2001). If arsenic standards are not met through these treatment technologies, the City may have to apply for a variance or exemption from the EPA and/or ADEC. Potential funding sources for source water pilot testing are listed in Section 11.5.

The solids generated as part of the removal process in an arsenic treatment system most likely cannot be disposed of in the existing landfill. The solids may be considered hazardous waste, depending on the concentration of residual arsenic and the types of chemicals used in the treatment method. Out-of state shipment of solids waste from the WTP may be necessary (EPA, 2001).

The EPA estimates that, in order to comply with the new arsenic rule, the average annual household water bill will increase by $58 to $327 for water systems of less than 3,300 people. The cost of an arsenic removal system for the City water supply cannot be accurately estimated until the City's water quality is more thoroughly evaluated. A $360,000 placeholder treatment cost has been included for an arsenic removal system, until further testing and evaluation is provided. (EPA, 2001).

10.3.3 Phase 1.3 (New Water Supply, WTP, and Storage)

It is recommended that a new water supply, treatment facility, and storage tank be evaluated and developed near the USFWS well. The facility should be designed with a pressure head "basis" of approximately 205 feet above sea level. The construction of a pressure pump station that withdraws water from a treated reservoir storage tank should be considered (rather than construction of a standpipe) at the new WTP. If installed, the pump station would maintain the same outflow pressure head as a standpipe. The facility could consist of a 32-foot-tall, 1 million-gallon storage tank with a balanced combination of pressure pumps, with the pressure-side piping connected to hydropnuematic tanks that would supply 30 to 80 psi of pressure to the distribution system. The actual high-water level of the new tank would be approximately 116 feet above sea level. The facility would be equipped with a backup generator.

The facility should be designed with an exit head of approximately 205 feet above sea level. Increasing the pressure above this level would generate service pressures of more than 80 psi within the system. Pressures below this level would create the need for larger water mains and, in a number of areas, would prevent the City from being able to provide sufficient system pressures during fires (20 psi minimum). The existing WTP would be kept at its current pressure head (approximately 165 to 167 feet above sea level).

If the standpipe at the existing WTP was ever replaced, the City might potentially upgrade the facility so that both facilities had the same exit pressures. Both systems would be connected with hydraulic control valves to allow flows in either direction to fill tanks and bolster fire flows. A pressure relief valve would be installed along the water mains between Windmill Hill and the boat harbor to separate the City into two distinct pressure zones. This will allow the new facility to (potentially) supply minimum service pressures to virtually all areas within the study area that are not currently serviced. The two facilities would be hydraulically connected, allowing the City to shut down individual facilities for cleaning, inspections, and/or repairs. The new WTP (near the USFWS housing, or at another location) would be able to fill the downtown standpipe completely in the event of a water shortage, well failure, or fire. Conversely, the storage tank at the new WTP would be constructed so that it could be filled by the storage tanks or standpipes at the downtown WTP. Altitude valves, float valves, or similar devices would be required at both facilities to prevent overflow of the downtown standpipe, and to allow for additional overflow prevention at the new WTP tank. If a complete shutdown of the supply well(s) at either system were to occur, the distribution lines would allow for adequate flow from either WTP. The recommended location for the new facility is shown on Sheet 5.

A new water supply and WTP near the USFWS well is estimated to cost $2,426,000, not including water and sewer from NEQLEQ to the existing system (phases 1.4 and 1.5). Line item costs are shown in Table 10-5. It is assumed that a road to the top of this hill will be constructed solely on public land.

Table 10-5 Cost Estimate – New Water Source/WTP

Item	Cost ($)
Well, supply line	$135,000
Storage tank (1 million gallons)	$1,282,000
WTP and pump station	$738,000
Abandon existing USFWS well	$1,000
Gravel road to top of hill	$270,000
Total	**$2,426,000**

10.3.4 Phase 1.4 (Water Mains from NEQLEQ Subdivision to Existing System)

In order to connect the new water source and WTP to the existing system, water mains would be installed between the new WTP (presumably near NEQLEQ) and the existing lines at the boat harbor. These improvements include a number of areas already served by the sewer system. Water mains would extend from NEQLEQ east along Emperor Way, and would continue south towards Airport Road. A water main would extend from the western end of Airport Road (a lift station at the intersection of Kanakanak Road and Airport Road is required for the Phase 1.5 sewer improvements) to the airport.

A water main from the airport to Wood River Road would probably cross the airport runway. If such construction occurs, it will be necessary to import a horizontal (bore and jack) drill rig in order to lay lines underneath the runway without disrupting its surface. The drill rig would have to be barged to Dillingham. Installation of the lines would probably occur at night. The airport would probably have to be closed during construction of this water main in the event of damage to the runway surface during drilling. Other restrictions may occur for construction in the vicinity of the runway. The runway is approximately 220 feet wide.

Lines would run south along Wood River Road from the airport, then east along Kanakanak Road to the existing system at the boat harbor. Service to other areas around the airport would be provided as part of the Phase 5.1 improvements. Approximately 17,000 LF of water main would be required. (See sheets 3 through 6 for locations). The total cost for these improvements is estimated at $2,952,000. The estimated length of water main that would be installed is as follows:

Main Diameter (inches)	10	12	16
Total LF	5,508	3,781	7,720

It should be noted that once a new treatment facility is built, annual water O&M costs will be disproportionately high until full buildout of all or most of the proposed water improvements occurs. The increased O&M costs will likely be covered by monthly user fees. As the distribution system is expanded and more users are connected to the system, the portion of these user fees used to cover these O&M costs would be expected to decrease.

A $254,000 line item cost (which is included in the $2,952,000 total cost) for a water main along Airport Road from Endahl Street to Dillingham-Kanakanak Road could be postponed until sewer service (under Phase 1.5) is provided for the western end of Airport Road.

10.3.5 Phase 1.5 (Sewer from NEQLEQ Subdivision to Existing System)

The cost for sewer main upgrades is estimated at $1,596,000. This estimate assumes that sewer lines are installed between NEQLEQ Subdivision and the existing sewer system at the airport (along Emperor Way, Roshko Street, Endahl Street, and Airport Road). Lift stations would be installed at the intersection of Kanakanak Road and Airport Road and approximately where Emperor Way turns into Roshko Street (at the end of NEQLEQ). (See sheets 17 through 19 for locations). Sewer installation requirements would be as follows:

No. of Manholes	**8-inch Pipe – LF (~ 8 ft depth)**	**Force Main (LF)**	**No. of Lift Stations**
11	3,100	6,275	2

10.3.6 Phase 1 Cost Summary

Table 10-7 is a summary of the estimated costs for improvements to the existing and proposed WTPs.

Table 10-7 Cost Estimate – Phase 1 Existing Water Source

Phase	Item	Cost ($)
1.1	Existing WTP	$514,000
1.2	Arsenic removal	$360,000[1]
1.3	New water supply/WTP	$2,426,000
1.4	Water improvements: NEQLEQ to boat harbor	$2,952,000
1.5	Sewer improvements: NEQLEQ to airport	$1,596,000
	Total	**$7,848,000**

[1] Unknown cost; $360,000 included as a placeholder

10.4 PHASE 2 (HYDRANT INSTALLATIONS)

Approximately eight hydrants are recommended for installation on mains not recommended for replacement or upgrades under the Phase 3 improvements described below. Installation costs for these hydrants are estimated in Table 10-8.

Table 10-8 Cost Estimate – Phase 2 Hydrants

Item	Quantity	Unit	Unit Cost ($)	Total Cost ($)
Hydrants	12	Each	$4,800	$57,600
Planning and administration (20 percent of construction costs)				$11,520
Total				**$69,120**

10.5 PHASE 3 (WATER DISTRIBUTION SYSTEM DOWNTOWN IMPROVEMENTS)

Results of the water distribution modeling show deficiencies in a number of areas of the system. Deficiencies were defined as those areas where either insufficient fire flows occur or insufficient service pressures exist. Based upon results of the modeling effort, it was determined that no service pressure deficiencies occur in the current system (i.e., there are no locations where normal service pressures are below 30 psi). (See sheets 2 and 3 for locations).

Recommended line sizes for the water distribution system were determined based upon minimum recommended fire flow requirements (as described in Section 8.6) and network analyses of the modeled distribution system performed under EPANET2 (refer to Section 12.0). Based upon model runs, areas identified in Table 10-9 were found to have deficient fire flows.

City of Dillingham
Fiscal Note

Agenda Date: Thursday, December 01, 2011

Request:

ORIGINATOR: Carol Shade

FISCAL ACTION (TO BE COMPLETED BY FINANCE)		FISCAL IMPACT ☑ YES ☐ NO
AMOUNT REQUESTED:		FUNDING SOURCE
$	**3,000,000.00**	**ADEC, ACWF, Other**
FROM ACCOUNT		Project
23-61-754-000	$ 2,100,000.00	
23-61-755-000	$ 250,000.00	Explore and Develop new water
23-61-756-000	$ 650,000.00	source, water treatment plan, storage
TO ACCOUNT:	VERIFIED BY: Carol Shade	Date: 11/15/2011

EXPENDITURES

Capital Improvement	FY12	FY13	FY14-FY15	FY16-FY32
Personnel				
Fringe Benefits				
Capital Equipment				
Major Equipment				
Water Source E & D	3,000,000.00			
Transfers to Other Funds				
TOTAL OPERATING	**$ 3,000,000.00**	$ -	$ -	$ -

Sewer Fund Reserves				

REVENUE				

FUNDING

ADEC Grant	$ 2,100,000.00			
ACWF Loan	250,000.00			
General Fund Match	650,000.00			
TOTAL FUNDING	**$ 3,000,000.00**	$ -	$ -	$ -

POSITIONS

Full-Time				
Part-Time				
Temporary				

ANALYSIS: (Attach a separate page if necessary)

PREPARED BY: Carol Shade November 15, 2011

DEPARTMENT: Finance Department November 15, 2011

APPROVED BY: _____