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HEARNE 2017 CDBG GRANT APPLICATION

OPTIONS

JANUARY 10, 2017

Option 1 – Wastewater Treatment Plant Improvements

The City of Hearne's Waste Water Treatment Plant is permitted for an average daily flow of 1.2 million gallons and a peak flow rate of 2,500 gallons per minute. The permitted daily average effluent characteristics are: CBOD – 10 mg/l; TSS-15 mg/l; and ammonia nitrogen-2 mg/l. The plant consists of an equalization basin, oxidation ditch, two clarifiers, aerobic digester and UV system.

All wastewater from the entire City is pumped from the Mumford Road Lift Station, located a short distance northeast of the treatment plant, to the equalization basin. The equalization basin is a concrete above ground structure that measures 110 feet by 32 feet and varies from 12 to 15 feet deep and has a capacity of approximately 300,000 gallons. The basin's purpose is to balance, or equalize, the flow during major rainfall events when the incoming flow exceeds the plant's capacity. It does this by storing the excess water entering the plant during the high flow event. After the high flow event the stored wastewater is pumped to the treatment units by a lift station at one end of the basin,

This equalization basin stores the excess wastewater adequately but under normal conditions the flows are allowed to enter directly into the basin since the discharge into the basin is located on the opposite end from the basin's lift station. This allows thrash and grit contained in the wastewater to settle out in the basin because there is no headworks structure at the plant for thrash and grit capture. Some thrash is pass through the equalization basin on to other units in the plant where it has to be removed by hand from various pieces of equipment. The combination of not having a headworks structure and having normal flows go into the equalization basin is creating a major operational problem for the City and is effecting the treatment process. There is no permanent equipment built into the treatment plant to remove the thrash and grit.

It is recommended that a headworks structure with mechanical bar screen at the lift station end of the equalization basin be considered for a grant application. The bar screen will be designed to remove trash and screenings from the waste stream. The discharge pipe into the basin will be moved to discharge into the new headworks structure. Normal wastewater flows will then go through the headworks structure and directly into the lift station and not into the equalization basin. The existing lift station will be modified to allow excess flows during high rainfall periods to backup into the equalization basin after passing through the new headworks structure. These improvements will improve operational issues at the WWTP, improve the treatment process and improve the quality of the plant's discharge.

OPTION 2 – Water Supply Improvements

The City of Hearn's water supply system consists of four wells drilled into the Carrizo-Wilcox aquifer. The four wells have a combined capacity of approximately 3,000 gallons per minute or 4.3 million gallons per day. Well 2 located at San Antonio and Mary Street has a capacity of approximately 875 gallons per minute.

On the same site as Well 2 are a high service pump station and a ground storage tank. The high service pumps have a capacity of 700 gallons per minute and the storage tank has a capacity of 400,000 gallons. The tank temporarily stores the water being pumped from the well and the high service pumps transfer the water from the tank into the distribution system.

The high service pump facility consists of two pumps, two electric motors, valves, piping, electrical controls and building. The facility is approaching 50 years in age and of all the mechanical and electrical components need to be replaced or upgraded. The building appears to be in good structural condition and can be salvaged.

It is recommended that a grant application be considered for the replacement of the the pumps, motors and valves in the pump station. The piping and building can be refurbished. The electrical and controls should be replaced with variable frequency drives that will allow city staff to

adjust the flow rate of the pumps to meet the water use in the city which will reduce pressure surges that effect the operation of other wells in the system.

OPTION 3 – Water Distribution System Improvements

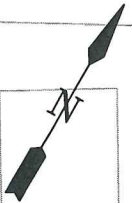
The City of Hearn’s water distribution system consists of approximately 50 miles of 1”, 2”, 3”, 4”, 6”, 8”, and 12” pipelines. The system is separated into three distinct areas by the railroads and Highways 79 and 6. Because of the expense of boring across the railroads and highways the water main connections between the three areas are limited to three connections between the west area and the central area and three connections between the central area and the east area.

A much needed 12” connection was installed between the west area and central area several years ago with grant funds. A 12” connection between the central and east areas is also needed. Ideally a 12” main should be extended from the downtown pump station to the Moss Street elevated tank. This main would cost approximately \$500,000. This main would create better circulation of water within the system and would allow water from the various well locations to be transported to the three distinct areas. It will also reduce pressure surges within the system.

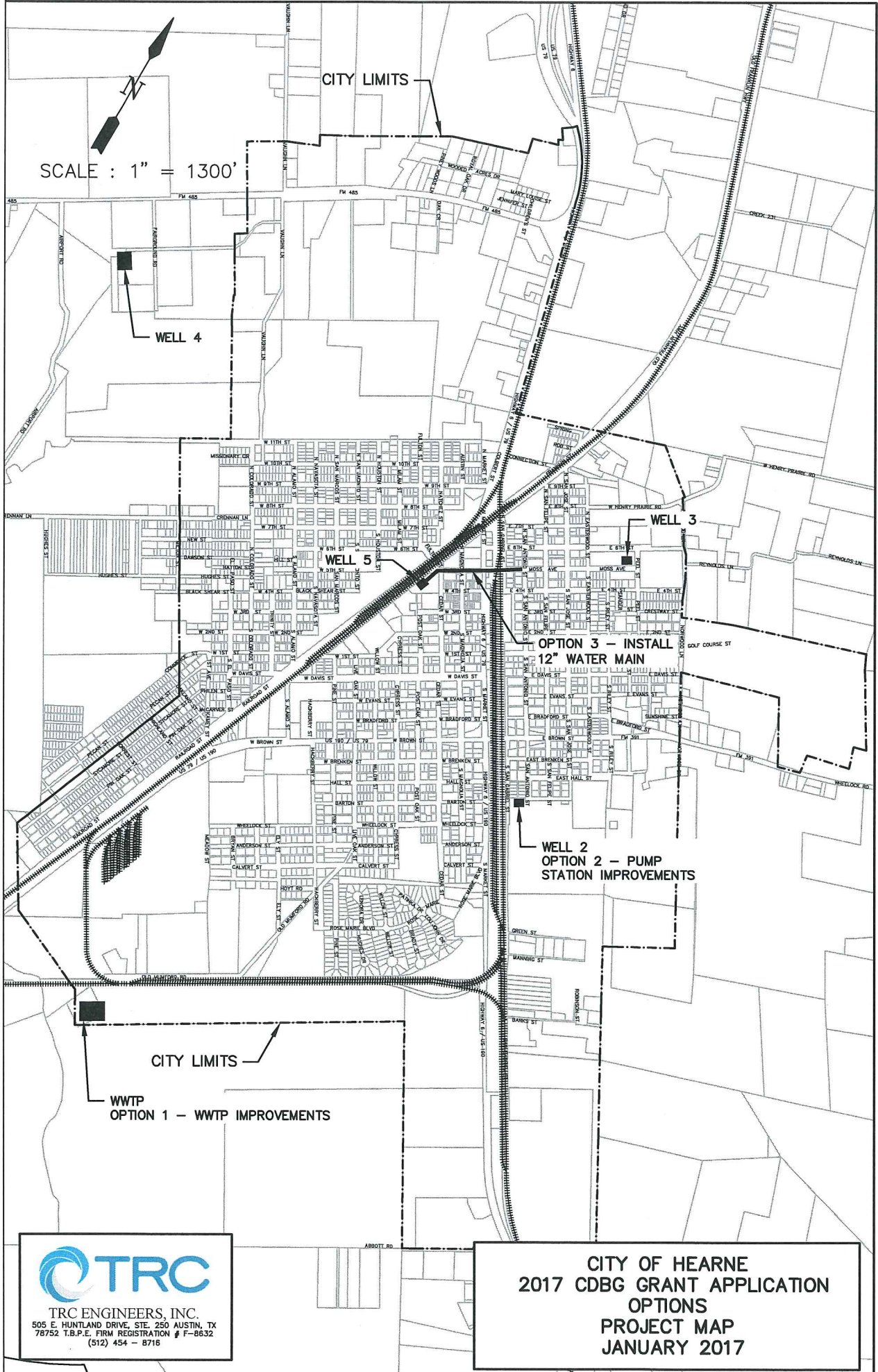
It is recommended that a grant application be considered for a portion of this 12” main extending from the downtown pump station along Fourth Street to the east side of the railroad tracks.

Any one of these three projects could be completed within a CDBG grant budget.

SCALE : 1" = 1300'



CITY LIMITS



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 2017 CDBG GRANT APPLICATION
 OPTIONS
 PROJECT MAP
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