



COUNCIL REPORT

February 24, 2015

TO: Honorable Mayor and City Council

FROM: Brian Kischnick, City Manager
Mark Miller, Director of Economic and Community Development
Tim Richnak, Public Works Director
Steven J. Vandette, City Engineer/Project Manager

SUBJECT: Evergreen Farmington Sewage Disposal System – Contracts for Improvements to Meet the Goals of the Long Term Corrective Action Plan (LTCAP)

There will be several construction agreements with the Oakland County Water Resources Commissioner (WRC) coming to City Council sometime in April. These agreements will allow for the construction of various improvements within the Evergreen Farmington Sewage District that are designed to eliminate sanitary sewer overflows to the Rouge River during a 10-year storm event, as required by the Michigan Department of Environmental Quality (MDEQ).

These overflows are well documented and over the years have been the focus of numerous studies, plans and projects, which were carried out under the City's and WRC's Short Term Corrective Action Plans (STCAP). While the City's local improvement projects, including several grant assisted manhole and sewer rehabilitation programs, were proven effective at reducing peak sewer flows, thereby reducing the frequency of overflows, they alone were not sufficient. Various studies under the WRC's LTCAP have identified several intrinsic abnormalities with the North Evergreen Interceptor itself that can only be corrected by major reconstruction and strategic improvements designed to reduce peak flows and improve the hydraulic characteristics of the sewer.

Definition of Problem

High wet weather flows in the Evergreen/Farmington interceptor pipe in Troy necessitates relief pumping from the interceptor to the Rouge River by Troy DPW. This pumping is classified as a sanitary sewer overflow (SSO). The City performs this work in order to protect adjacent properties from basement flooding. Since 2005 there have been 11 rain events during which the City has implemented relief pumping. The City is bound by its LTCAP with the MDEQ to eliminate this pumping (SSO) by the end of 2017.

Project Descriptions & Locations

There are three projects included within the scope of the agreement, two of which Troy will share in the cost.

Sixteen (16) select manholes, downstream and outside of Troy, will receive interior modifications to improve hydraulic efficiency (see attachment). These manholes are among a total of 51 whose shape are irregular; they're square instead of round and lack a good channeling device (bench) in the bottom of the manhole. Studies have determined that these unusual manhole features cause a hydraulic abnormality, which restricts flow and causes backups, also known as surcharging. The problem increases where there is a significant change in horizontal flow direction at the manhole, such as around corners.

In general, the rehabilitation will involve installing additional concrete in the bottom of the manhole, adjacent to the sewer flow channel, such that sewer flow will continue through the manhole and remain smoothly channelized up to the top of the pipe. The WRC previously performed this work in six manholes. Testing showed it effectively reduced hydraulic inefficiencies at these manholes.

Also included with the manhole rehabilitation is a segment of the Evergreen/Farmington interceptor sewer along Old Woodward between Vinewood and Harmon. It has two severe bends, essentially a zig-zag, which results in significant hydraulic inefficiencies, especially since it also includes two (2) square manholes. This 216 foot segment of 24-inch sewer will be reconstructed to reduce the horizontal flow angles at the manholes to approximately 45 degrees. Also include are two (2) new round manholes (see attachment).

The second project will eliminate a hydraulic restriction at an existing sewer crossing under Woodward Avenue. Improvements at this location include a new junction chamber, relining of the sewer and interior manhole modifications (see attachment).

The final project included in the agreement is the only project in Troy and consists of a 60-inch diameter sewer pipe. A total of approximately 3,500 feet of 60-inch pipe will provide temporary storage during the design storm event. This linear storage is provided along Wattles Road east and west of Adams Road and along Chestnut Hill Court south of Big Beaver (see attachment). Due to utility conflicts along Adams Road, the storage is required to be divided into two sections. The section east of Adams Road in Troy consists of approximately 1,900 feet of 60-inch pipe (see attachment). The section west of Adams in Bloomfield Township consists of approximately 1,600 feet of 60-inch pipe. Both sections will provide a combined total of approximately 500,000 gallons of temporary storage before discharging the sewage into the existing interceptor sewer after the storm event.

Project Costs and Allocation

The cost of the projects were allocated by the WRC to each community based on their flow contributions. Troy's share of the Wattles Road sewer is 78.2%. Troy's share of the manhole improvements, Woodward Ave. sewer crossing relining and elimination of the "zig-zag" hydraulic restriction is 71.4%. Bloomfield Township is responsible for the rest of the cost (see attachment). Troy's share of project costs is approximately \$5 million.

These projects have been a long time in coming. As far back as 2003 Troy has identified in the Sewer Capital Budget a \$9 million dollar "project" to address sewer overflow problems in the Evergreen Farmington Sewerage District. The project's scope of work had yet to be determined, but over the years potential projects were identified. They evolved as system improvements and studies were done under the City's and WRC's Short Term Corrective Action Plans, and ultimately they resulted in the Long Term Corrective Action projects being proposed today. These projects were submitted by the WRC to the MDEQ and are approved for construction.

The proposed 2015-16 Sewer Capital Budget will include sufficient funding to pay Troy's share of the projects, as recommended by Tom Darling, Director of Financial Services and supported by city management.

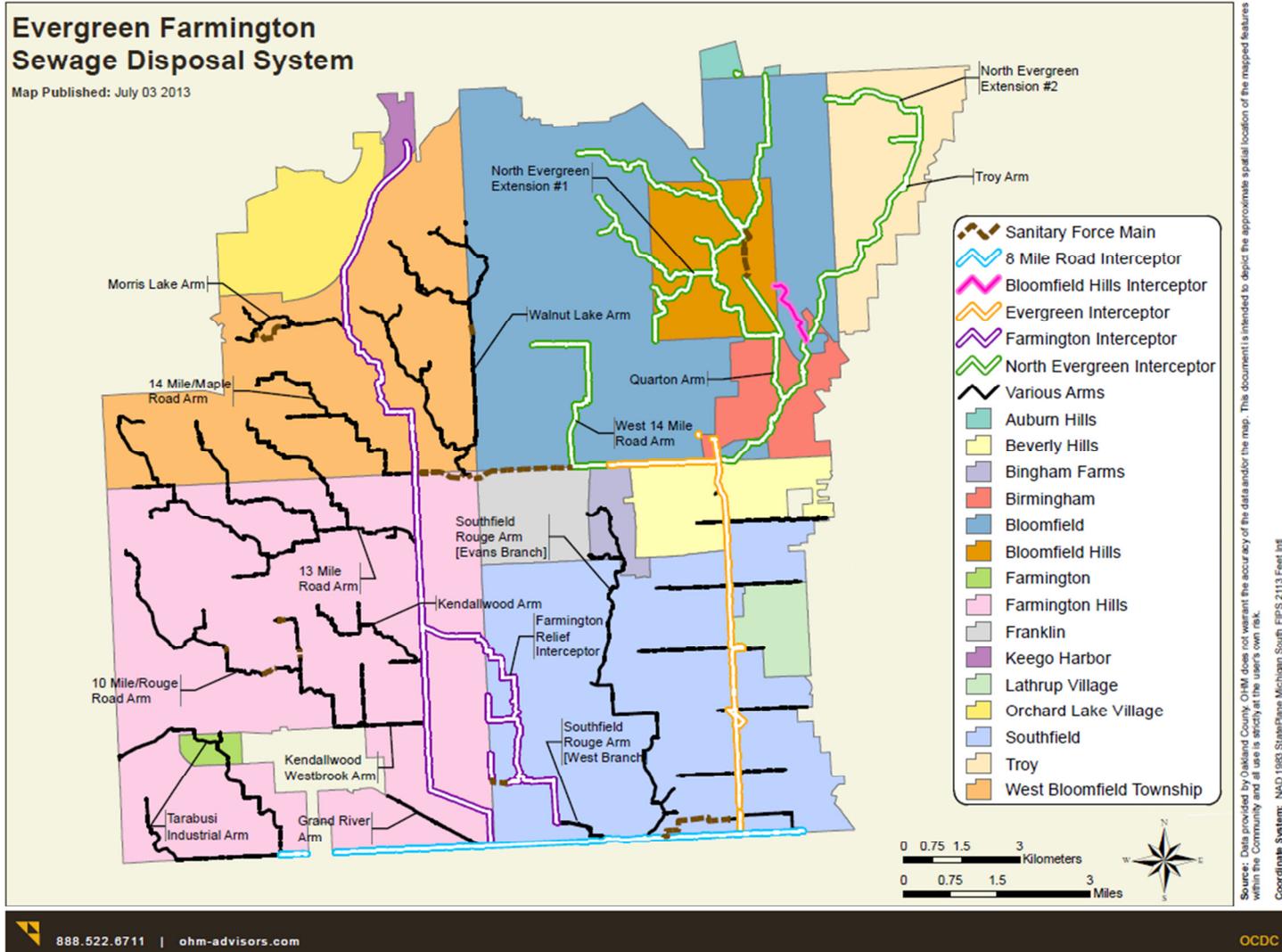
Construction Schedule

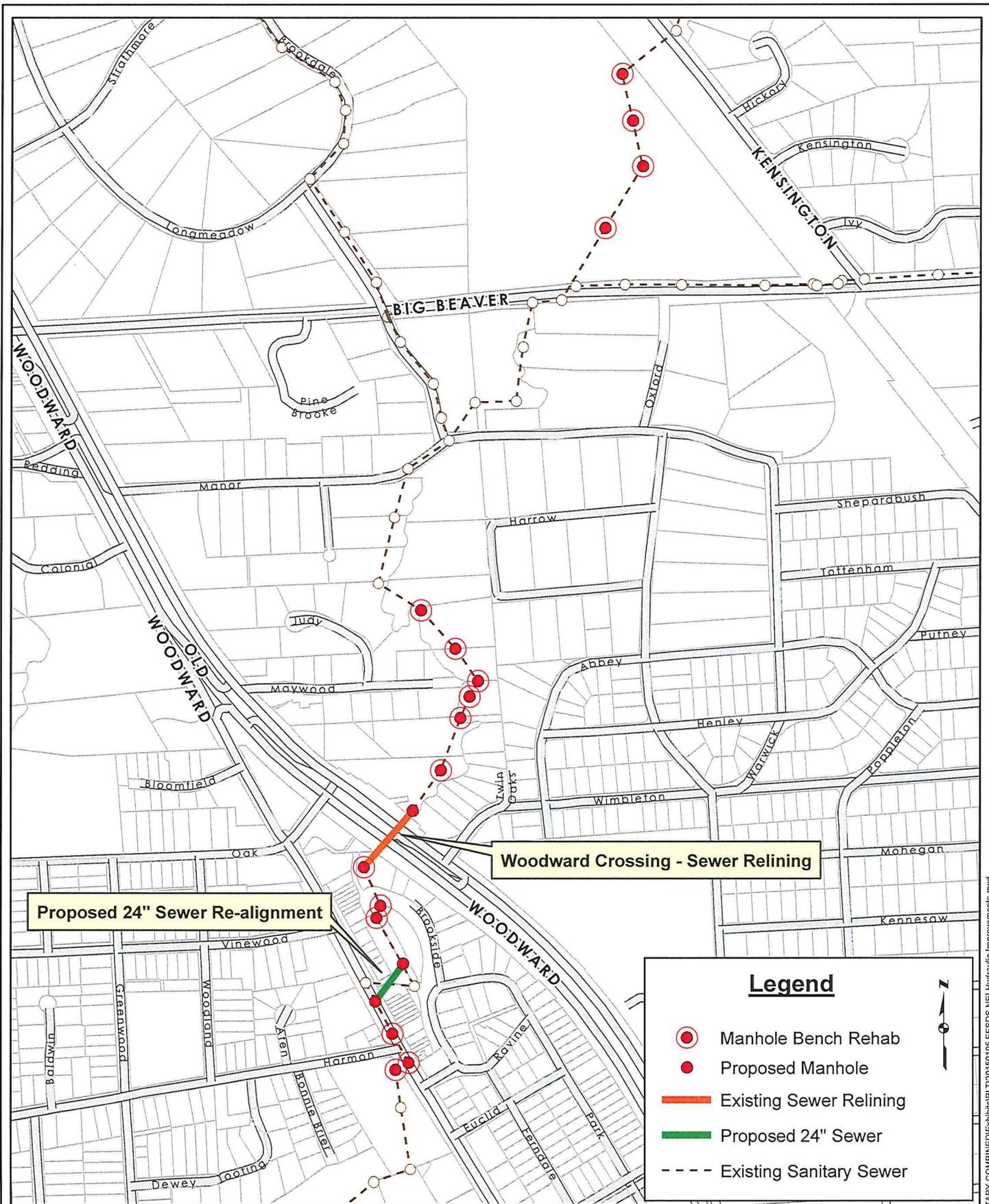
The WRC expects to open bids in July, 2015. Construction of the 60-inch sewer on Wattles is expected to start in the winter of 2015-16 and be complete in the spring of 2016.

Oakland County WRC Contract

The proposed contract with the Oakland County WRC will authorize them to construct the above mentioned improvements to the Evergreen/Farmington Sewage Disposal System. The WRC will own and maintain the improvements as part of the County System.

Figure B-1: The Evergreen-Farmington Sanitary Sewage Disposal System (EFSDS)





Evergreen Farmington Sewage Disposal System
North Evergreen Interceptor
NEI Hydraulic Improvements (B4)

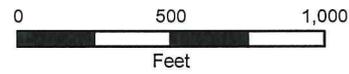
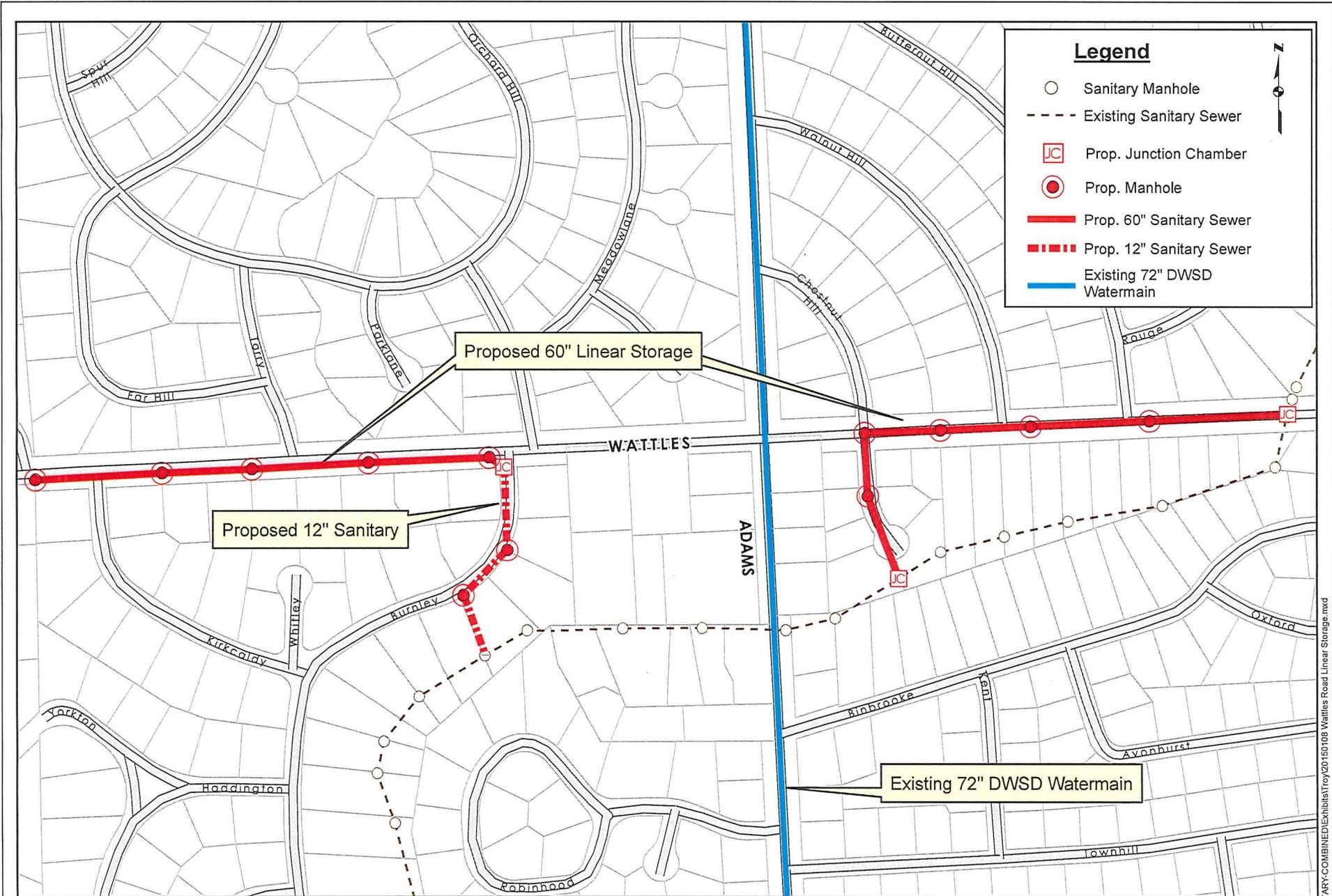


Figure No. 1

DISCLAIMER:
The information displayed on this map is compiled from recorded deeds, plats, tax maps, surveys and other public records. Although this information is intended to be accurate, neither the WRC nor the City of Evergreen warrants or represents that the information is accurate, complete or that it has been used for any purpose other than that intended. Users should consult primary original information sources when appropriate.

Last Revision: 01/12/2015
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Evergreen Farmington Sewage Disposal System
 North Evergreen Interceptor
 Wattles Road Linear Storage (B3)

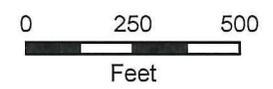


Figure No. 1

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Last Revision: 01/09/2015
 J:\Drain\Mapping\Units\SANITARY-COMBINED\Exhibits\Troy20150108 Wattles Road Linear Storage.mxd

Summary of the NEI Projects Cost Allocation Calculation

Project No.	Peak Inflow into Project by Community (cfs)															Total		
	AHC	BFV	BHC	BHV	BIC	BLT	FAC	FHC	FRV	KHC	LVC	OLC	SOC	TRC	WBT			
B3	-	-	-	-	-	3.43	-	-	-	-	-	-	-	-	-	12.27	-	15.69
B4	-	-	0.40	-	0.00	3.39	-	-	-	-	-	-	-	-	-	9.47	-	13.26
C2	-	-	0.57	-	-	7.75	-	-	-	-	-	-	-	-	-	-	-	8.32
C4*	2.31	-	5.00	-	0.04	17.02	-	-	-	-	-	-	-	-	-	-	0.02	24.40

Project No.	Percent of Cost Allocated to Community															Total		
	AHC	BFV	BHC	BHV	BIC	BLT	FAC	FHC	FRV	KHC	LVC	OLC	SOC	TRC	WBT			
B3	-	-	-	-	-	21.8%	-	-	-	-	-	-	-	-	-	78.2%	-	100.0%
B4	-	-	3.1%	-	-	25.5%	-	-	-	-	-	-	-	-	-	71.4%	-	100.0%
C2	-	-	6.9%	-	-	93.1%	-	-	-	-	-	-	-	-	-	-	-	100.0%
C4*	9.4%	-	20.5%	-	0.2%	69.8%	-	-	-	-	-	-	-	-	-	-	0.1%	100.0%

*C4 Allocation will change based on possible EFSDS diversion to Pontiac.