



Neighborhood & Economic Operations

Building a Stronger Jackson

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TO: Patrick H. Burch, Acting City Manager

DATE: September 6, 2012

FROM: Randall T. McMunn, P.E., Assistant City Engineer

SUBJECT: Water Main Replacement and Local Street Reconstruction Plan

The attached Eight (8) Year Water Main Replacement and Local Street Reconstruction Plan (Figure 1) has been developed to addresses BOTH water main and local street construction needs. This report presents the plan and explains the criteria used to establish priorities.

WATER MAIN REPLACEMENT: A Water System Master Plan was developed in 1996. The Master Plan identified problem water mains and defined a course of action to address the problems. Prior to the Master Plan, the City did not have a significant water main replacement program. Over 27 miles of water main have been reconstructed since 1996 (See Figure 2).

In April of 2011 the Michigan Department of Environmental Quality (MDEQ) did a Sanitary Survey of the City of Jackson Water Supply System. System operations were rated as **Marginally Satisfactory**. The rating was primarily due to the condition of the City's Water Distribution System. City staff met with the MDEQ to review survey comments and to present a strategy for updating the City's water main construction priority list. While many water main problems were addressed by the 1996 plan, it was agreed that the plan needed updating to be sure that resources were being focused effectively. Updating the plan has involved collecting hydrant flow data and performing a comprehensive review of available data for water mains.

PROJECT SELECTION AND PLAN DEVELOPEMNT: Water main condition has been selected as the primary criteria for local street project selection. Inadequate water mains on local streets were identified first (Ranking greater than 9). Then the Pavement Condition Rankings (PASER less than 3) were used to prioritize and select projects. Project scopes were adjusted to reflect practical considerations (e.g., extending the project limits so that new water main connects to an adequate source of water). Explanations of water main and pavement rankings are included below. Figure 3 shows locations of streets and water main meeting the criteria stated above as well as the location of selected projects.

It is intended that the plan will be reviewed and updated every few years to reflect updated data. It is also understood that the plan may be revised for non-technical considerations (e.g., including a street that has been petitioned by property owners).

Federal Aid street construction projects (major streets) will be selected separately based upon transportation needs. All street projects that include pavement replacement will include water main replacement when existing mains are more than 50 years old. Water mains with inadequate hydrant flow or a main break history will also be replaced.

WATER MAIN RANKING: Two primary criteria have been used to rank water main; Flow Capacity and Main Break History. The total of these two rankings is the Water Main Ranking.

Flow Capacity Ranking of 0-10 is based upon hydrant flow test results. Flow capacity provides a composite measure of pipe size, material and loss of pipe capacity due to age. High density residential and commercial, schools, medical, restaurants and industrial facilities require more flow capacity, so higher rankings have been assigned to pipe segments in these areas. A Flow ranking of 0 is assigned to hydrants with very good flow rates. A Flow ranking of 10 is assigned for very low (inadequate) flow rates.

Main Break Ranking of 0-5 is based upon the number of water main breaks that have occurred on a pipe segment since 1971. A Break Ranking of 0 is assigned to pipes with no main breaks. A ranking of 5 indicates 5 or more main breaks on a pipe segment.

LOCAL STREET PAVEMENT CONDITION RANKING: In 2011 the Department of Engineering completed a review of all Local Streets in the City and evaluated pavement conditions based upon the Pavement Surface Evaluation and Rating (PASER) system. The PASER ranking system is used by the Michigan Department of Transportation and most road jurisdictions in Michigan to evaluate the condition of street pavements, and is used to establish priorities for street maintenance and construction. Pavements are ranked on a scale of 1 to 10. A ranking of 10 represents new pavement. Pavements with a ranking of 3 or less require pavement replacement reconstruction.

COST CONSIDERATIONS: Implementation of the Plan as presented will require continuation of the current funding of approximately \$1,000,000 per year for water main replacement. Current Local Street funding is insufficient for the amount of street construction proposed which assumes an average of \$1,100,000 per year from the local street fund (not including assessments). For comparison purposes, the 2012/2013 budget includes \$675,000 for local street construction. If funding is not increased, it will be necessary to replace water mains without complete street reconstruction as has been the case for other water main projects in recent years. On the other hand, if local street construction is accelerated significantly, water main funding will need to be increased to keep pace with street construction.

Thirty-five (35) miles of the 170 miles of water main in the City have a Ranking of more than 5 and are considered to be Inadequate. Thirty-four (34) miles of local street have a PASER Ranking of 3 or less and need reconstruction. Based upon the rate of replacement and reconstruction presented in the 8-year Plan, it will take 25 years to repair those water mains and streets.

VAN BUREN STREET: At the August 14 City Council meeting, Council Member Frounfelker asked if Van Buren Street between Steward Avenue and Blackstone Street is on any plan for reconstruction. This road is not included in the plan presented herein. Ranking data for Van Buren Street is as follows:

Total Water Main Ranking – 8
PASER Ranking – 2

According to the PASER ranking, Van Buren Street does need reconstruction. However, the Water Main Ranking puts this street a lower priority than other streets included in the Plan.

RTM/rtm



FIGURE 1 - Water Main Replacement and Local Street Reconstruction Plan (2012 - 2019)

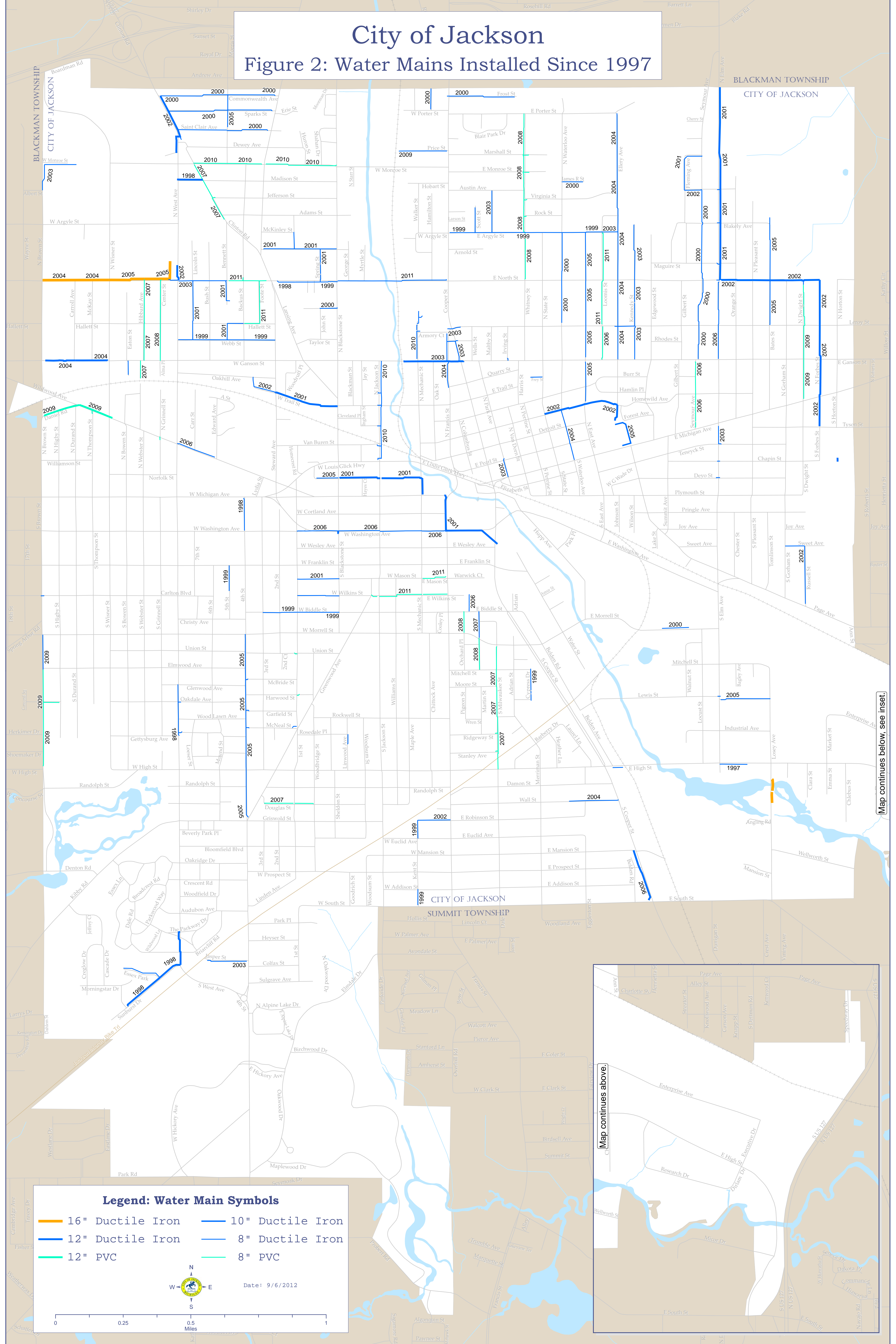
Prop Const Yr	Project Description	Length (ft)	Water Main \$	Local St Fund \$	Pavt PASER	Total			Orig Const Year
						Water Rank	Flow Rank	Break Rank	
2012	Durand St from the south end to Morrell and the Oakdale ROW from Durand to Wisner	2,689	336,000	434,000	1	14	9	5	1963
2012	Hibbard St from Wildwood to the railroad (Petitioned for Storm sewer construction)	839	147,000		6	5	4	1	1919
2012	Forest St and Homewild Ave from Ellery to Edgewood (CDBG street construction)	2,050	299,000	267,000	2	7	5	1	1919
2012	West Ave from Wildwood to Ganson (Federal Aid)	1,275			3	10	8	2	1926
2012	Wildwood Ave from Edward to Lydia (pressure problem at JHS)	1,058	132,000		NA	7	7		1925
2012	Ganson St from Center to Steward (Federal Aid)	2,250	281,000		3				1926
Total for 2012 =		10,162	1,195,000	701,000					
2013	Argyle St from Walker to Cooper, Hamilton from Argyle to Hobart, Hobart from Walker to Cooper	2021	305,000	435,000	3	13	9	4	1919
2013	Webster St from Oakdale to Elmwood (Petitioned for street construction)	660	82,000	145,000	2	0	0		1926
2013	Carlton Blvd from Brown to Wisner, Higby St from Morrell to Carlton, Thompson St from Morrell to Carlton	2805	351,000	617,000	2	12	7	5	1930
2013	Fourth St from Griswold to Linden (Federal Aid)	1679	209,000		1	5	5		1919
Total for 2013 =		7,165	947,000	1,197,000					
2014	Bowen St from Gettysburg to Elmwood	1677	210,000	369,000	1	11	7	4	1964
2014	Grinnell St from Norfolk to Wildwood	650	81,000	143,000	2	12	10	2	1919
2014	Wilson St and Johnson St from the south end to Plymouth	1550	237,000	333,000	2	15	10	5	1919
2014	Thompson St from the Oakdale ROW to Morrell	1331	166,000	293,000	1	12	7	5	1946
2014	Arnold St from Cooper to the east end	645	113,000	135,000	7	12	10	2	1925
2014	West Ave from Griswold to High (Federal Aid)	998	124,000		4	5	5		1926
Total for 2014 =		6,851	931,000	1,273,000					
2015	Adams St and Jefferson St from Lansing to Blackstone	2763	415,000	594,000	3	12	10	2	1926
2015	Monroe St from Cooper to Whitney	1400	245,000	294,000	7	12	7	5	1963
2015	Pleasant St from Ganson to Michigan	1066	133,000	234,000	3	12	7	5	1940
2015	Federal Aid St Const - To be Determined	1600	200,000						
Total for 2015 =		6,829	993,000	1,122,000					
2016	Briarcliff Rd from West to Audubon	1273	159,000	280,000	3	11	7	4	1963
2016	Austin Ave from Cooper to Howard, Marshall from Whitney to the east end	1159	145,000	255,000	3	11	9	2	1926
2016	Bennett St from Clinton to North	1086	136,000	239,000	2	10	10		1947
2016	Robinson St from Milwaukee to Merriman, Eggleston ROW from Robinson to Wall	2073	300,000	343,000	2	12	8	4	1919
2016	Demay Ct from Steward to the east end	273	34,000	60,000	3	10	9	1	1926
2016	Federal Aid St Const - To be Determined	1600	200,000						
Total for 2016 =		7,463	974,000	1,177,000					

FIGURE 1 - Water Main Replacement and Local Street Reconstruction Plan (2012 - 2019)

Prop Const Yr	Project Description	Length (ft)	Water Main \$	Local St Fund \$	Pavt PASER	Total			Orig Const Year
						Water Rank	Flow Rank	Break Rank	
2017	Oakhill Ave from West to Steward	1911	239,000	420,000	3	10	9	1	1926
2017	Mcbride St from Fourth to First	910	160,000	191,000	6	11	10	1	1926
2017	Backus St from Clinton to Monroe	1419	199,000	307,000	3	11	10	1	1926
2017	Southridge Park (east of Francis, south of Franklin)	1885	236,000		NA	11	10	1	1926
2017	Federal Aid St Const - To be Determined	1600	200,000						
Total for 2017 =		7,725	1,034,000	918,000					
2018	Hollywood Ct and Larson St from Cooper to Scott	1000	176,000	210,000	6	9	9		1919
2018	Chapin St, Deyo St and Joy Ave from Summitt to Elm	2868	358,000	632,000	3	10	7	3	1919
2018	Bush St from Hallett to the north end	1540	269,000	323,000	5	10	10		1919
2018	Federal Aid St Const - To be Determined	1600	200,000						
Total for 2018 =		7,008	1,003,000	1,165,000					
2019	Edward from Wildwood to Winthrop, Woodward Ave from Edward to A St	736	111,000	158,000	2	10	8	2	1919
2019	Carr St from Wildwood to north end	1121	140,000	247,000	3	9	8	1	1992
2019	Whitney St from North to Leroy, Leroy from Irving to Whitney, Irving from Ganson to Leroy	1854	280,000	398,000	2	9	9		1926
2019	Dewey Ave from Clinton to Lansing	1558	273,000	328,000	5	10	10		1919
2019	Federal Aid St Const - To be Determined	1600	200,000						
Total for 2019 =		6,869	1,004,000	1,131,000					

City of Jackson

Figure 2: Water Mains Installed Since 1997



Legend: Water Main Symbols

16" Ductile Iron	10" Ductile Iron
12" Ductile Iron	8" Ductile Iron
12" PVC	8" PVC

Date: 9/6/2012

0 0.25 0.5 1 Miles

Map continues below, see inset.

Map continues above.

City of Jackson

Figure 3: Water Main & Local Street Construction Plan

