

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 6C. Review of Draft FEMA Hennepin County Floodplain Maps
BCWMC April 18, 2013 Meeting Agenda
Date: April 10, 2013
Project: 23270051.34 2013 032

6C. Review of Draft FEMA Hennepin County Floodplain Maps

Recommendations:

1. Direct Engineer to draft letter for Commission signature requesting that FEMA
 - a. Modify the draft floodplain maps to include information from the 2007 LOMR to accurately map the floodplains and base flood elevations for the Sweeney Lake Branch; and
 - b. Restudy Plymouth Creek, using the information provided in the new XP-SWMM model of the Plymouth Creek watershed to incorporate up-to-date information about the current hydrology and road crossings.

Background

The Federal Emergency Management Agency (FEMA) is in the process of updating the Flood Insurance Study (FIS) for each county in the state. The FIS includes maps of the floodplains for the 1% and 0.2% Annual Chance Flood Event (100- and 500-year Floods, respectively) and the floodway for the 1% Annual Chance Flood Event. The maps provide valuable information for local entities, such as the BCWMC and member cities, for managing land adjacent to creeks and rivers to minimize risk to infrastructure and to reduce public safety issues during flood events. They are also used by the insurance industry to determine if structures with mortgages from a federally insured lending institution will be required to buy flood insurance.

FEMA issued the revised preliminary maps and requested that cities in the flood insurance program complete a review of the maps for accuracy and submit their comments before June 29th. It is in the best interest of the BCWMC and the member cities to submit comments during the 90-day appeals period so there is opportunity for FEMA to incorporate comments into the FIS maps.

Review of Preliminary Maps

As authorized at the November 14, 2012 BCWMC meeting, the Engineer completed a preliminary review of the revised mapping. This review included comparing the 100-year flood elevations in Table 5-3 from the 2009 amendment to the BCWMC Watershed Management Plan to interpolated flood elevations on the revised FIS maps. The FIS maps contain contours called Base Flood Elevations (BFEs) that show approximate locations of where the modeled flood water surface elevation is equal to a whole number (e.g. 834.0). The printed BFEs were interpolated to estimate the mapped flood elevation at the locations in Table 5-3. The flood elevations included in Table 5-3 in the BCWMC Watershed Management Plan come from a combination of the original models for the FIS and updated models that reflect new or modified road crossings.

Tables 1 to 4 (Bassett Creek Main Stem, Sweeney Lake Branch, North Branch Bassett Creek, and Plymouth Creek, respectively) below and Figures 1 to 3 (attached) provide a summary of the flood elevation comparisons at road crossings. In general, the mapped flood elevations for the Bassett Creek Main Stem and North Branch Bassett Creek match reasonably well, except at the Golden Valley Golf Club property. The mapped flood elevations for the Sweeney Lake Branch do not match because the preliminary maps do not incorporate a Letter of Map Revision (LOMR) completed in 2007 by the City of Golden Valley. Generally, the flood elevations from the preliminary maps are higher than the BCWMC flood levels. The mapped flood elevations for Plymouth Creek are also a poor match, because the city has developed significantly since completion of the original analysis and mapping in 1977. Since then, new road crossings and modified road crossings have been constructed that have impacted localized flood levels.

The Engineer recommends that the Commission request that FEMA modify the floodplain maps to include information from the 2007 LOMR to accurately map the floodplains and BFEs for the Sweeney Lake Branch. Staff also recommends that the Commission request that FEMA restudy Plymouth Creek using the information provided in the new XP-SWMM model of the Plymouth Creek watershed to incorporate up-to-date information about the current hydrology and road crossings.

Table 1. Comparison of BCWMC and FIS flood elevations for the Bassett Creek Main Stem.
(US = upstream side; DS = Downstream side)

Location	BCWMC Plan Flood Elev. (ft)	FIS Flood Elev. (ft)	Difference
Tunnel Inlet	807.1	807	0.1
Irving Avenue Bridge (DS)	808.4	808.8	-0.4
Irving Avenue Bridge (US)	809.1	809	0.1
Cedar Lake Rd	812.7	813	0.1
MN&S RR Bridge	814.6	814	0.6
Old Penn Ave Bridge (DS)	814.7	814.9	-0.2
Old Penn Ave Bridge (US)	815	815	0
BN RR Bridge	815.1	815	0.1
MN&S RR Bridge (DS)	816.2	815.5	0.7
MN&S RR Bridge (US)	816	816	0

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**Table 1. Comparison of BCWMC and FIS flood elevations for the Bassett Creek Main Stem.
(US = upstream side; DS = Downstream side)**

Location	BCWMC Plan Flood Elev. (ft)	FIS Flood Elev. (ft)	Difference
Fruen Mill Dam (DS)	816.3	817	-0.7
Fruen Mill Dam (US)	818	818	0
Glenwood Ave	820.1	820.5	-0.4
Hwy 55 (DS)	821.5	821	0.5
Hwy 55 (US)	826	826	0
Golf Cart Bridge	826	826	0
MN&S RR Bridge	826	826	0
Plymouth Ave Bridge	826	826	0
Wirth Parkway (DS)	826	826	0
Wirth Parkway (US) Bridge	826.3	826.2	0.1
Confluence w/ Sweeney Lake Branch	827	827	0
Golden Valley Road (DS)	827.2	827	0.2
Golden Valley Road (US)	830	830	0
Dresden Lane (DS)	830.3	830	0.3
Dresden Lane (US)	831.4	831	0.4
Bassett Creek Drive	832	832	0
Bassett Creek Drive	832.7	833	-0.3
Noble Lane (DS)	839.5	839.5	0
Noble Lane (US)	839.5	839.5	0
Regent Avenue (DS)		841.5	
Regent Avenue (US)	841.9	841.5	0.4
Minnaqua Avenue	842.5	842.5	0
Highway 100 (DS)	843.2	843	0
Hwy 100 (US)	849	849	0
DS Confluence N. Branch	849	849	0
Westbrook Road (DS)	857.1	857	0.1
Westbrook Road (US)	858.1	858	0.1
Duluth Street (DS)	861.3	861.3	0
Duluth Street (US)	861.8	861.8	0
St. Croix Avenue (DS)	863	863	0
St. Croix Avenue (US)	864.1	864	0.1
MN&S RR (DS)	869.5	869	0.5
MN&S RR (US)	869.5	869.2	0.3
Douglas Drive (DS)	870.2	870	0.2
Douglas Drive (US)	871	871	0
Florida Avenue (DS)	871.6	871.8	-0.2
Florida Avenue (US)	872.3	872	0.3
Hampshire Ave (DS)	872.5	872.8	-0.3
Hampshire Ave (US)	873	873	0
GV Country Club (DS)	874.4	875	-0.6
GV Country Club (US)	878.4	876	2.4
Pennsylvania Avenue (DS)	879.3	879	0.3
Pennsylvania Avenue(US)	880.5	880	0.5
C&NW RR (DS)	881.7	882	-0.3
C&NW RR (US)	882.9	883	-0.1
Winnetka Ave (DS)	883.3	883.5	-0.2
Winnetka Ave (US)	883.5	883.6	-0.1

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Table 1. Comparison of BCWMC and FIS flood elevations for the Bassett Creek Main Stem. (US = upstream side; DS = Downstream side)

Location	BCWMC Plan Flood Elev. (ft)	FIS Flood Elev. (ft)	Difference
Wisconsin Ave (DS)	884.7	885	-0.3
Wisconsin Ave (US)	888	887	1
Golden Valley Road (DS)	888	888	0
Golden Valley Road (US)	888	888	0
Westbound Hwy 55 (DS)	888	888	0
Eastbound Hwy 55 (US)	888.1	888	0.1
Boone Ave (DS)	888.2	888	0.2
Boone Ave (US)	888.3	888	0.3
Hwy 169 (DS)	888.4	888.5	-0.1
Hwy 169 (US)	888.5	888.7	-0.2
Hwy 55 Ramp (DS)	888.5	889	-0.5
Hwy 55 Ramp (US)	888.5	889	-0.5
Hwy 55 Eastbound (DS)	888.5	889	-0.5
Hwy 55 Eastbound (US)	888.5	889	-0.5
Hwy 55 Westbound (DS)	888.5	889	-0.5
Hwy 55 Westbound (US)	888.8	889	-0.2
Hwy 169 ramp to W 55 (DS)	888.8	889	-0.2
Hwy 169 ramp to W 55 (US)	888.8	889	-0.2
Hwy 55 N Frontage Rd (DS)	889	889	0
Hwy 55 N Frontage Rd (US)	889	889	0
10 th Ave (DS)	889	889	0
10 th Ave (US)	889	889	0
C&NW RR Bridge (DS)	889	889	0
C&NW RR Bridge (US)	889.4	889.5	-0.1
South Shore Drive (DS)	889.4	889.5	-0.1
South Shore Drive (US)	890.3	890	0.3
Medicine Lake Weir (DS)	890.3	890	0.3

Table 2. Comparison of BCWMC and FIS flood elevations for the Sweeney Lake Branch. (US = upstream side; DS = Downstream side)

Location	BCWMC Plan Flood Elev. (ft)	FIS Flood Elev. (ft)	Difference
Confluence w/Main Stem	827	827	0
France Ave extension (DS)	827	827	0
Union Pacific RR (DS)	831.5	838	-6.5
Union Pacific RR (US)	835.6	838	-2.4
Hwy 55 (DS)	835.6	838	-2.4
Hwy 55 (US)	836.7	838	-1.3
MN & S RR (DS)	836.7	838	-1.3
MN & S RR (US)	839.3	842	-2.7
TH 100 (DS) (Breck Pond)	839.7	842	-2.3
TH 100 (US)	845.2	857	-11.8
Turners Crossroad (US)	854.7	857	-2.3
Glenwood Pond A	854.7	857	-2.3
MN & S RR (DS)	854.7	857	-2.3
MN & S RR (US)	854.8	857	-2.2

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Table 2. Comparison of BCWMC and FIS flood elevations for the Sweeney Lake Branch. (US = upstream side; DS = Downstream side)

Location	BCWMC Plan Flood Elev. (ft)	FIS Flood Elev. (ft)	Difference
Glenwood Pond B	854.8	857	-2.2
Glenwood Ave (D	854.8	857	-2.2
Glenwood Ave (US)	854.8	857	-2.2
Duck Pond	854.8	857	-2.2
MN & S RR (DS)	854.8	857	-2.2
MN & S RR (US)	858.7	869	-10.3

Table 3. Comparison of BCWMC and FIS flood elevations for the North Branch Bassett Creek. (US = upstream side; DS = Downstream side)

Location	BCWMC Plan Flood Elev. (ft)	FIS Flood Elev. (ft)	Difference
Hwy 100 Control (US)	849	849	0
Confluence w/Main Stem	849	849	0
29th Avenue (DS)	849	849	0
29th Avenue (US)	849.5	850	-0.5
32nd Avenue (DS)	849.6	850	-0.4
32nd Avenue (US)	854	854	0
Brunswick Avenue (DS)	854.7	855	-0.3
Brunswick Avenue (US)	855.9	856	-0.1
34th Culvert (DS)	862.8	863	-0.2
34th Culvert (US)	866.1	866	0.1
Douglas Drive (DS)	870	870	0
Douglas Drive (US)	870.1	871	-0.9
Edgewood Emb (DS)	870.7	871	-0.3
Edgewood Emb (US)	878.2	878	0.2
Georgia Avenue (DS)	878.2	878	0.2
Georgia Avenue (US)	878.4	878	0.4
36th & Hampshire (DS)	878.4	878	0.4
36th & Hampshire (US)	879	879	0
Louisiana Ave. (DS)	881	883	-2
Maryland Ave. (48" CMP)	-----	-----	
Oregon Ave.(48" CMP)	-----	-----	
MN & S RR (42" CMP)	-----	-----	
Inlet of 42" CMP	888	886	2
Service Road	888	887	1
Winnetka Ave. (DS)	888	888	0
Winnetka Ave. (US)	889	889	0
Boone Ave. (DS)	889.3	889	0.3
Boone Ave. (US)	889.5	889	0.5
Northwood Lake	889.5	889	0.5
TH 169 (DS)	889.5	889	0.5
TH 169(US)	890.5	-----	
Rockford Road (DS)	890.5	-----	
Rockford Road (US)	898.5	-----	

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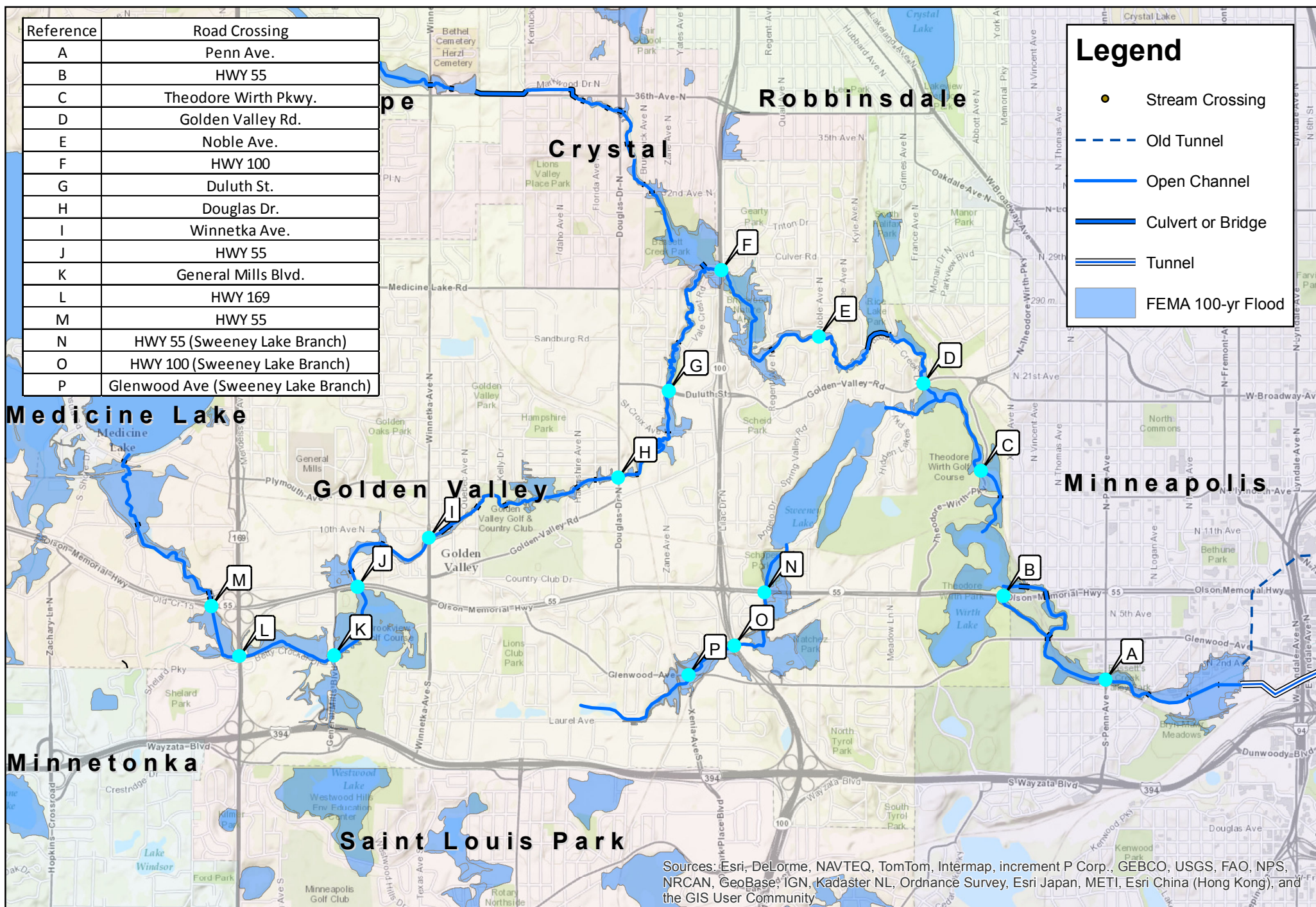
Table 4. Comparison of BCWMC and FIS flood elevations for Plymouth Creek. (US = upstream side; DS = Downstream side)

Location	BCWMC Plan Flood Elev. (ft)	FIS Flood Elev. (ft)	Difference
Medicine Lake	890.3	890	0.3
West Medicine Lake Drive (DS)	890.3	892.5	-2.2
West Medicine Lake Drive (US)	891.5	893	-1.5
26 th Avenue N. (DS)	925	925	0
26 th Avenue N. (US)	925.5	930	-4.5
28 th Avenue N. Dike (DS)	928	930	-2
28 th Avenue N. Dike (US)	930.8	930	0.8
County Road 61 (DS)	930.8	930	0.8
County Road 61 (US)	931.2	930	1.2
Xenium Lane (DS)	931.2	930	1.2
Xenium Lane (US)	931.5	931	0.5
I-494 (DS)	935	936	-1
I-494 (US)	938.5	936	2.5
Fernbrook Lane (DS)	947	946	1
Fernbrook Lane (US)	948	951	-3
Central Park Pond Outlet Structure (DS)	949	952.5	-3.5
Central Park Pond Outlet Structure (US)	953	952.5	0.5
37 th Avenue	956	953	3
County Road 9(3-72" RCPA)	959	953	6
Vicksburg Lane (DS)	961	960	1
Vicksburg Lane (US)	962	962	0
Dunkirk Lane (US)	979	979	0
Dunkirk Lane (DS)	982	980	2
T.H. 55 (DS)	982	980	2
T.H. 55 (US)	982.5	983	-0.5

Reference	Road Crossing
A	Penn Ave.
B	HWY 55
C	Theodore Wirth Pkwy.
D	Golden Valley Rd.
E	Noble Ave.
F	HWY 100
G	Duluth St.
H	Douglas Dr.
I	Winnetka Ave.
J	HWY 55
K	General Mills Blvd.
L	HWY 169
M	HWY 55
N	HWY 55 (Sweeney Lake Branch)
O	HWY 100 (Sweeney Lake Branch)
P	Glenwood Ave (Sweeney Lake Branch)

Legend

- Stream Crossing
- Old Tunnel
- Open Channel
- ▬ Culvert or Bridge
- ▬▬ Tunnel
- FEMA 100-yr Flood



Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

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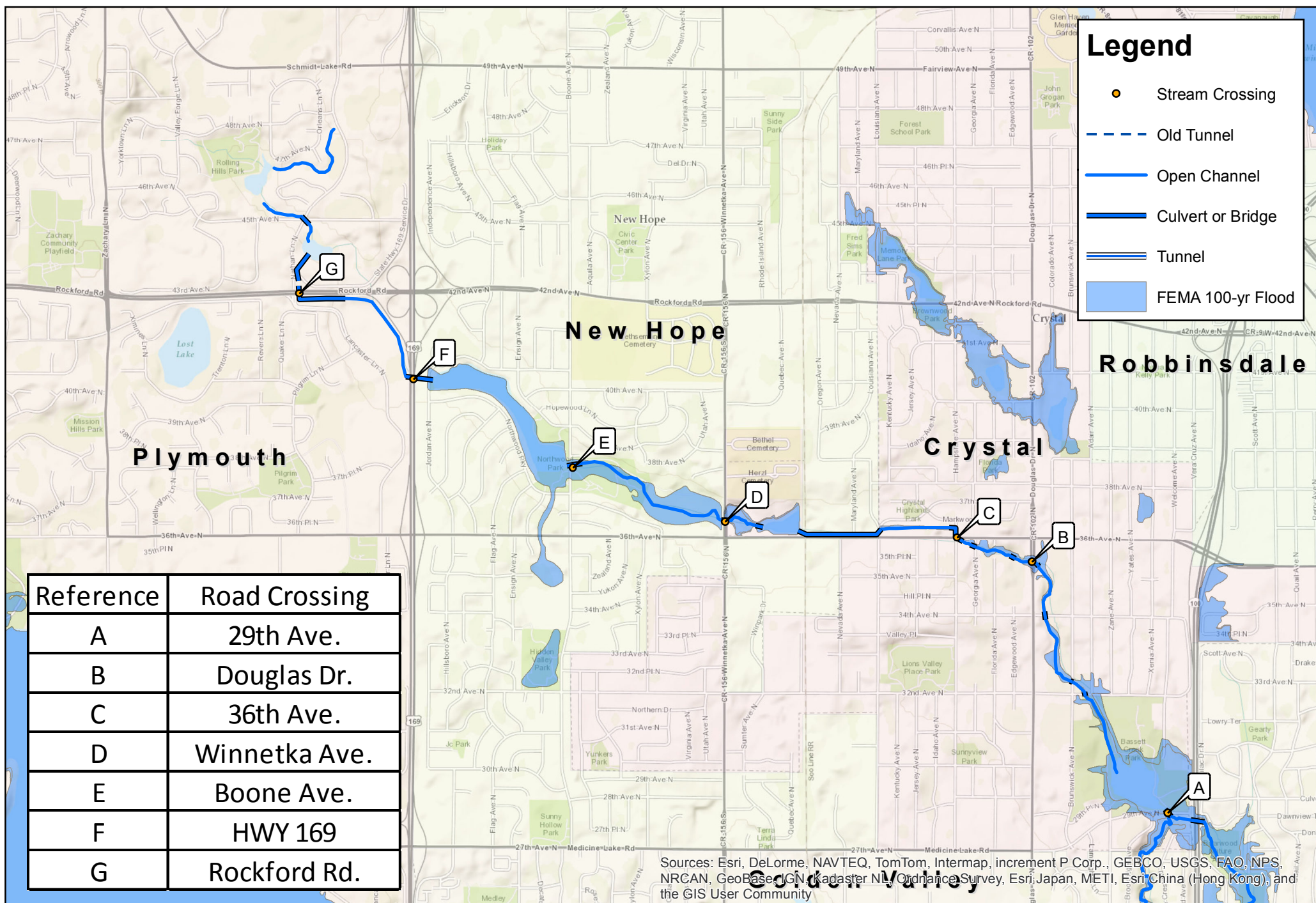
FIGURE 1

MAJOR STREAM CROSSINGS

BASSETT CREEK MAIN STEM AND SWEENEY LAKE BRANCH
FIS Review of Bassett Creek Watershed



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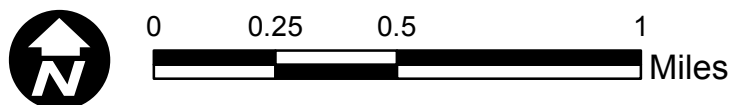
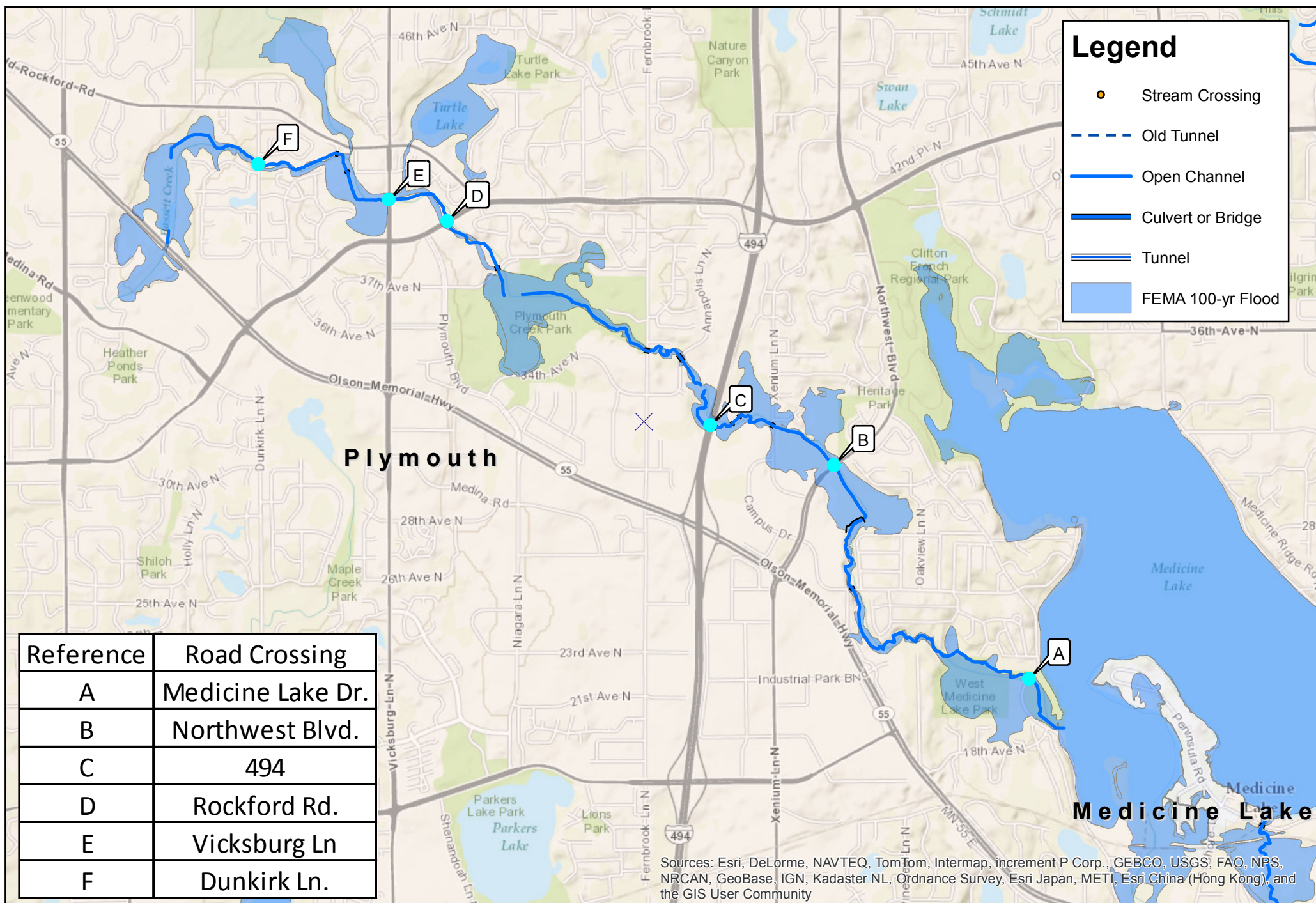


FIGURE 2
MAJOR STREAM CROSSINGS
BASSETT CREEK NORTH BRANCH
FIS Review of Bassett Creek Watershed



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FIGURE 3
MAJOR STREAM CROSSINGS
PLYMOUTH CREEK
 FIS Review of Bassett Creek Watershed