Detroit Water and Sewerage Department

Wastewater Master Plan

DWSD Project No. CS-1314

Review of Sewerage Studies in Wayne County

Technical Memorandum
Original Date: May 9, 2002
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Review of Sewerage Studies in Wayne County

1. Introduction

To support the development of Wastewater Master Plan (WWMP) of the City of Detroit, Tucker, Young, Jackson, Tull, Inc. (TYJT) collected, and reviewed, previously completed and ongoing studies relating to planning activities for wastewater collection and treatment systems servicing Wayne County suburban communities. All of the communities that were included in this effort are located, at least partially, within the current service area of Detroit Water and Sewerage Department (DWSD). Down River communities were not included in the scope of work for this task.

The following types of study reports were targeted for collection and review:

1. Wastewater Master Plans
2. Information and/or reports on previous, current and proposed studies related to the planning of wastewater collection and treatment systems.
3. Information and reports of Sanitary Sewer Evaluation Studies (SSES)
4. Infiltration/Inflow (I/I) study reports
5. Project Performance Certification (PPC) Studies
6. Hydraulic Modeling Investigations
7. Other Related Studies
8. Correspondence by any community (not in the DWSD system showing interest in joining DWSD system)

In order to collect these study reports and get the latest information on planning and development of wastewater services, TYJT identified officials in charge of sewer/wastewater departments and the communities' Engineers, documenting contact addresses, telephone numbers, and e-mail addresses. A list containing updated contact information is on page11.

TYJT has communicated with the identified communities in Wayne County and/or their Engineers initially by way of a letter signed by Dr. Mohammad Gill, of the Detroit DWSD, and follow-up by phone and/or e-mail. The communities and their Engineers were generally cooperative in forwarding the available information to TYJT for review. A wide variety of reports and other documents dealing with wastewater services were received and reviewed.

2. Description and Characteristics of The Area

Wayne County is located in southeast Michigan and contains the City of Detroit, along with numerous smaller communities.

In total twenty-five autonomous governmental units, in addition to the City of Detroit, are located within the existing service area. This number includes Wayne County and twenty-four local municipalities.

The southern portion of the County contains additional municipalities which have not been considered as they are part of the Down River collection system, and therefore excluded from this report.

3. Sewer Service Areas

TYJT completed telephone interviews with municipal representatives and requested the latest information available regarding their sanitary sewage disposal systems. A summary of the information collected from different governmental units and/or their designated Engineers is presented in Table 1.

As previously established by Spalding DeDecker, Table 1 contains the following information:

Community:
It includes the name of the governmental unit i.e., village, city, or township.

Own Sewer System:
Whether the community has a sewer system or not.

Own Wastewater Treatment Plant:
Whether the community owns a treatment plant or dependent upon another organization for the treatment of its wastewater.

Wastewater Disposal District / System:
Whether the community has septic tanks or is a part of a wastewater collection system.

Managing Authority:
Describes the governmental identity that is responsible for managing the wastewater for that community.

Part of DWSD system:
Whether the community's wastewater collection and treatment system is part of the DWSD system.

Future Plans:
The future plans of the community to join the DWSD system or not.

Remarks:
Any special information about the community's wastewater services is presented.

An analysis of Table 1 indicates that there are two (2) wastewater treatment plants (WWTP) owned and operated by different entities, which provide treatment for portions of several of the communities within the current DWSD service area. Four communities send a portion of their wastewater to the Ypsilanti Community Utility Authority , through WTUA, and four communities are partially serviced by the Down River Collection System. There are three major wastewater disposal districts or interceptor systems serving the rest of the service area.

Table 1. Wastewater Services in Wayne County

	Community	Own Sewer System	Own WWTP	Wastewater Disposal System / District	Managing Authority	Part of DWSD System	Future Plans	Remarks
1	Grosse Pointe Park	Yes	No	WCNESCS	Self	Yes	Remain with DWSD	Built Out
2	Groose Point	Yes	No	WCNESCS	Self	Yes	Remain with DWSD	Built Out
3	Grosse Pointe Farms	Yes	No	WCNESCS	Self	Yes	Remain with DWSD	Built Out
4	Groose Pointe Woods	Yes	No	Milk River Drainage District	Self	Yes	Remain with DWSD	Built Out
5	Harper Woods	Yes	No	Milk River Drainage District	Self	Yes	Remain with DWSD	Built Out
6	Hamtramck	Yes	No	DWSD	Self	Yes	Remain with DWSD	Built Out
7	Highland Park	Yes	No	DWSD	Self	Yes	Remain with DWSD	Built Out
8	Melvindale	Yes	No	DWSD	Self	Yes	Remain with DWSD	Built Out
9	Allen Park	Yes	No	DWSD / Downriver	Self	Yes	Requesting Additonal Capacity	Built Out
10	Dearborn	Yes	No	DWSD	Self	Yes	Remain with DWSD	Built Out
11	Dearborn Heights	Yes	No	NHVRVWCS / Downriver	Self	Yes	Remain with DWSD	Built Out
12	Redford Township	Yes	No	NHVRVWCS	Self	Yes	Remain with DWSD	Built Out
13	Inkster	Yes	No	NHVRVWCS	Self	Yes	Remain with DWSD	Built Out
14	Garden City	Yes	No	NHVRVWCS	Self	Yes	Remain with DWSD	Built Out
15	Livonia	Yes	No	NHVRVWCS	Self	Yes	Remain with DWSD	
16	Westland	Yes	No	NHVRVWCS	Self	Yes	Remain with DWSD	
17	Wayne	Yes	No	NHVRVWCS	Self	Yes	Remain with DWSD	
18	Romulus	Yes	No	NHVRVWCS / Downriver	Self	Yes	Remain with DWSD	
19	Van Buren Township	Yes	No	NHVRVWCS / Downriver	Self	Yes	Remain with DWSD	
20	Plymouth	Yes	No	NHVRVWCS / WTUA	Self	Yes	Remain with DWSD	Built Out
21	Northville	Yes	No	NHVRVWCS	Self	Yes	Remain with DWSD	Built Out
22	Canton Township	Yes	No	WTUA	WTUA	Yes	Redirection of Flows to YCUA	
23	Plymouth Township	Yes	No	WTUA	WTUA	Yes	Redirection of Flows to YCUA	
24	Northville Township	Yes	No	WTUA	WTUA	Yes	Redirection of Flows to YCUA	

All these major wastewater interceptor systems discharge to the Detroit Wastewater Treatment Plant through Detroit Water and Sewerage Department (DWSD) collection system.

3.1 Sewer Service Boundaries

The extent of sewer service boundaries, within Wayne County, are shown on Figure 1. Sewer service areas as well as disposal/interceptor district boundaries are shown. In some areas a number of government units have partnered together to form drainage districts to operate portions of the collection system. Generally, the operating authority for each of the drainage districts is responsible for the operation of interceptors, pumping stations, and other common infrastructure. Local governments typically maintain their own collection systems.

Basic information regarding different wastewater disposal districts along with the participating communities is presented in Table 2. Drainage districts in Wayne County include: North Huron Valley/Rouge Valley Wastewater Collection System; Wayne County North East Sanitary Collection System; Western Townships Utility Authority; and, the Milk River Drainage District.

4. Review Of The Existing Reports

TYJT collected and reviewed 26 reports that are listed in Table 3. An abstract/ brief summary of these reports is presented in Appendix A in a tabular form. The summaries were prepared following the style developed by Spalding DeDecker. The summary of each report includes the following:

1. Report Name, Description, City/Township/Community/Report/Volume Number & Date.
2. Consultant(s)
3. Background, Purpose and Abstract/ Brief Summary
4. Remarks/ Recommendations/ Conclusions, Relevance to WWMP

TYJT collected a wide variety of reports on different aspects of sewer system management. These reports included wastewater master plans, flow monitoring, infiltration and inflow studies, sewer system evaluation surveys, relief sewers, sewer separation, basis of design, sewer and manhole inspection, facilities plan, project plans for State Revolving Fund, and sanitary sewer capacity studies, etc.

The wastewater master plans developed by different communities and counties are directly relevant to the development of the City of Detroit wastewater master plan for the next 50 years.

Flow monitoring and infiltration/inflow studies presented very useful data on dry and wet weather flows for different communities.

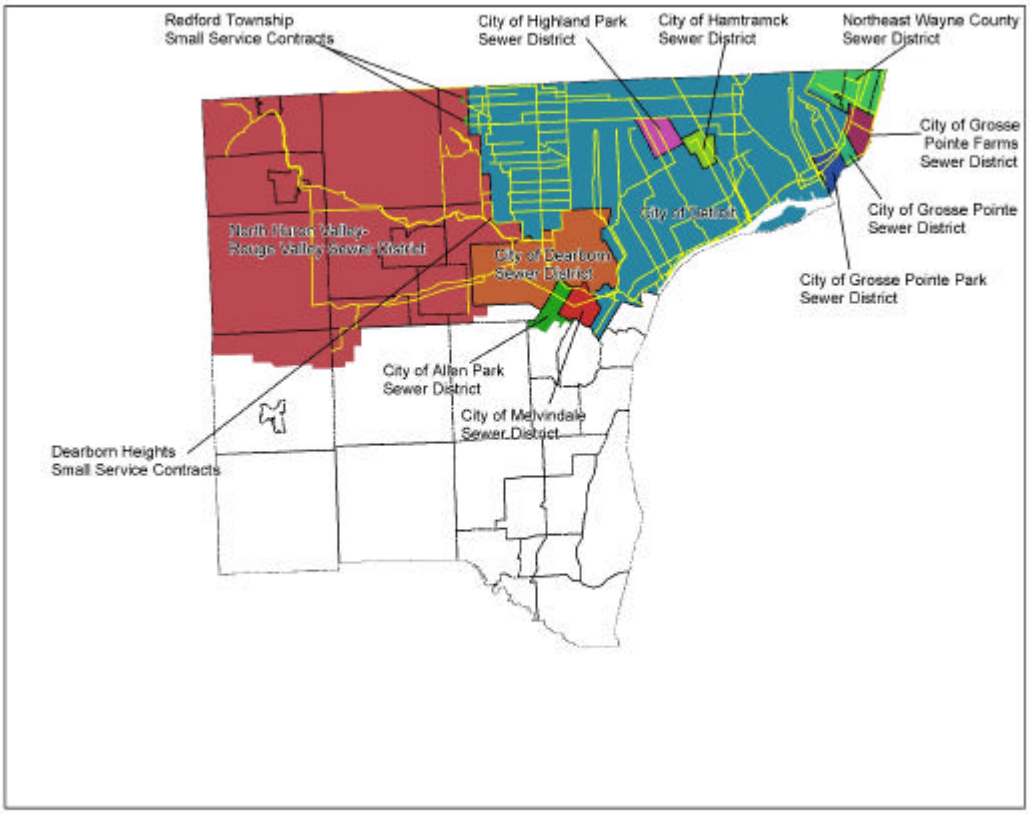

Figure 1. Wayne County Sewer Districts

Table 2. Wastewater Service Districts in Wayne County

Wastewater Disposal District	Participating Municipalities	Remarks
Milk River Drainage District (MRDD)	Harper Woods	Discharge to the WCNESDS
	Grossse Point Woods	
Wayne County Northeast Sewage Disposal System (WCNESDS)	Harper Woods	Interceptor system operated by Wayne County
	Groose Pointe Woods	
	Groose Pointe Shores	
North Huron Valley/Rouge Valley Wastewater Control System (NHVRVWCS)	City of Northville	Interceptor system operated by Wayne County
	Livonia	
	Redford Township	
	City of Plymouth	
	Westland	
	Garden City	
	Dearborn Heights	
	Wayne	
	Inkster	
	Van Buren Township	
	Romulus	
Western Townships Utilities Authority (WTUA)	Canton Township	Discharge partially to YCUA with remainer sent to NHVRVWCS
	Plymouth Township	
	Northville Township	
Directly Connected to the DWSD System	Highland Park	Tier 1 customers
	Hamtramck	
	Melvindale	
	Allen Park	
	Dearborn	
	Groose Pointe	
	Groose Pointe Park	

The information presented in these reports can be used for estimation of rainfall dependent infiltration and inflow (RDI/I) parameters for use in the Greater Detroit Regional Sewer System (GDRSS) Model. The data can also be used to forecast the wastewater capacities required for carrying the wet weather flow through the collection system.

Sewer System Evaluation Survey (SSES) and sewer and manhole inspection reports give useful information about the existing conditions of the collection systems where these studies were conducted. This information can be incorporated in the development of the wastewater master plan for the City of Detroit.

Basis of design and project plan reports present important design criteria for construction of different wastewater collection, treatment, retention, and transport facilities. These reports also present rainfall-inflow data required for sewer separation and relief sewers. Relief sewers are required to convey additional flow generated by rising population in the tributary areas.

These reports is a very valuable source of information and their review and understanding can be useful in many ways for developing, organizing, and formatting of the wastewater master plan for the City of Detroit for the next 50 years.

The following procedure is suggested to make the best use of the information presented in these reports:

1. Identify the communities from Table 1, and Wastewater Disposal District from Tables 2.
2. Go to Table 3, and check for the communities or the wastewater disposal district. If the community or wastewater disposal district is listed then check the report title. If the report is of any interest then check the page number.
3. Go to Appendix A, and read the summary of that particular report. If the report seems to be of any interest then go to the actual report and extract the information and use it, where required.

5. Future Plans

Most of the communities that were contacted in Wayne County indicated that they plan on continuing to discharge to the DWSD system. The exceptions to this generalization are Canton, Plymouth and Northville Townships, which are all members of the Western Townships Utility Authority (WTUA). WTUA has indicated that they intend to redirect flows which are currently directed to the DWSD system, to an expanded plant in Ypsilanti, by the year 2004. They intend to reserve rights to their contract capacity until their existing contract expires in 2010.

While the communities that have expressed an interest in remaining part of the Detroit Wastewater system are for the most part completely developed, flows from these communities may change during the 50-year planning period being contemplated by the WWMP.

Table 3. List of the Reports Collected and Reviewed

	Type of Report	Jurisdiction/Community	Page
1	Basis of Design - CSO Control	City of Dearborn	C-1
2	Project Plan - CSO Control	City of Dearborn	C-2
3	Facilities Plan - I/I Study	Fox Creek Drainage District	C-3
4	Basis of Design - Sewer Separation	Grosse Pointe Farms	C-4
5	Project Plan for Michigan DNR	Grosse Pointe Park	C-5
6	Sewer Infrastructure Study	City of Grosse Pointe	C-6
7	Facilities Plan	Livonia	C-7
8	Basis of Design - Pumping Station	Milk River Drainage District	C-8
9	Basis of Design - Lift Station 1A	NHV/RV	C-9
10	Sewer System Evaluation Survey	NHV/RV	C-10
11	Facilities Plan	City of Northville	C-11
12	Basis of Design - RTB	Redford Township	C-12
13	Rouge River RAP Plan Update	NHV/RV	C-13
14	Basis of Design - System Improvements	Wayne County Northeast Sanitary Drainage System	C-14
15	Project Performance Certification - Wastewater Control System	NHV/RV	C-16
16	Basis of Design (Hydraulic) - Wastewater Control System	NHV/RV	C-17
17	Basis of Design - SSO Criteria Evaluation	NHV/RV	C-18
18	Sanitary Sewer Evaluation Study	Highland Park	C-19
19	RV CSO Control Projects - Project Plan	Wayne County, 8 Rouge Valley Communities	C-20
20	Facility Plan	Dearborn	C-21
21	Facilities Plan	Inkster	C-22
22	Sanitary Sewer System Operations & Maintenance Plan	Livonia	C-23
23	Melvindale Sanitary Pumping Station	Melvindale	C-24
24	Flow Monitoring Study	Van Buren Township	C-25
25	Greenfield Road Pumping Station Review	City of Dearborn	C-26
26	Final Project Plan for CSO Control	Grosse Pointe Farms	C-27

Flow reductions may be achieved through Best Management Practices such as eavestrough disconnection, flow restrictors in catchbasins, footing drain disconnections, etc. Increases in flow may be realized as a result of increased infiltration in an aging collection system or the need for additional capacity to deal with CSOs and SSOs.

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List of Contacts for Wayne County Suburban Communities

	Authority/ Community/ Address	Contact Person/ Head Wastewater	Tel/Fax No/ E-mail	Remarks
1	DWSD Suburban Engineering Division 13th Floor 735 Randolph Street Detroit, MI 48226	Arnold Smedes	313-224-4771	Reports and maps on file are available for copying.
2	DWSD Planning Division International Center Building 400 Monroe Street Suite 700 Detroit, MI 48226	George Haberer Project Manager, Planning Section	313-964-9871 313-964-9810 haberer@dwsd.org	Reports and maps on file are available for copying.
3	Wayne County Department of Environment Wayne County Dept. of Environment 415 Clifford Street Detroit, MI 48226	Vyto Kaunelis Chief Deputy Director	313-224-3832 313-224-0045 vkaunelis@co.wayne.mi.us	Wade-Trim is the Consulting Engineer for the Rouge Disposal District of Wayne County Collection System Serving Rouge Communities.
4	Western Township Utilities Authority (WTUA) 40905 Joy Road, Canton, MI 48187	Timothy Faas Director of Operations	734-453-2793 734-453-3551	The Western Townships Utilities Authority (WTUA) services Northville Township, Plymouth Township, and, Canton Township. Currently WTUA is partially discharging to the DWSD system. WTUA has indicated in writing that it's member municipalities intend to withdraw from the DWSD system and therefore no reports will be made available.
5	Southeast Michigan Council of Governments (SEMCOG) 5356 Griswold, Suite 300 Detroit, MI, 48226	Kathy Smith Library Technical Assistant	313-961-4266 313-961-4869	Information is available for various member communities including master plans, facilities plans and studies.
6	City of Allen Park 16820 Southfield Rd. Allen Park, MI 48101	John Kozuh Community Engineer	313-928-4111 jkozuh@cityfallenpark.org	Alan Park hires consultants on an as needed basis.

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List of Contacts for Wayne County Suburban Communities

	Authority/ Community/ Address	Contact Person/ Head Wastewater	Tel/Fax No/ E-mail	Remarks
7	Canton Township 1150 S. Canton Center Canton, MI 48188-1699	Aaron Machnik	734-394-5150 734-397-5382 amachnik@ canton-mi.org	The Canton Township collection system is currently serviced by: **Western Townships Utilities Authority** 40905 Joy Road Canton, MI 48187 Contact Person: Tim Faas Tel: 734-453-2793 / Fax: 734-453-3551 Email: Tim@Wtua.org The Western Townships Utilities Authority (WTUA) has indicates that it intends to withdraw from the DWSD/Wayne County system by 2006. Further, WTUA will reserve it's existing contract capacity until the current contract expires in 2011.
8	City of Garden City 6000 Middlebelt Garden City, MI 48135	Jack Barnes Director of Public Services	734-525-8842 734-422-7320	The Consulting Engineer for the City is: **Wade-Trim** 25251 Northline Road PO Box 10 Taylor, MI 48180 Contact Person: Greg Weeks Tel: 734-947-9700 / Fax:734-947-9726 Email: gweeks@wadetrim.com
9	City of Grosse Pointe 17147 Maumee Grosse Pointe, MI 48230	Tim VandenBoom DPW Supt.	313-417-1188 313-885-0820	The Consulting Engineer for the City is: Tetratech MPS 710 Avis Dr. Ann Arbor, MI 48108 Contact Person: Tom Allbaugh Tel: 734-213-5002 /Fax:734-665-2570 Email: tomgllbaugh@ttmps.com
10	Grosse Pointe Farms 90 Kirby Rd. Grosse Pointe, MI 48236-3100	Joe Leonard City Engineer	313-885-6600 ext. 227 313-885-0917	The Consulting Engineer for the City is: Hubbell, Roth & Clark, Inc. 555 Hulet Drive P.O. Box 824 Bloomfield Hills, Michigan 48303-0824 Contact Person: Tom Biehl Tel: 248-338-9241 / Fax: 248-338-2592 Email:

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List of Contacts for Wayne County Suburban Communities

	Authority/ Community/ Address	Contact Person/ Head Wastewater	Tel/Fax No/ E-mail	Remarks
11	Grosse Pointe Park 15115 E. Jefferson Ave. Grosse Pointe Park, MI 48230-1399	Ken Alan Pumping Station Supervisor	313-822-6200 313-881-2622	The Consulting Engineer for the City is: Ayres, Lewis, Norris & May, Inc. 3959 Research Park Drive Ann Arbor, MI 48108 Contact Person: Alan Rothe Tel: 734-761-1010 / Fax:734-761-1200 Email:
12	Grosse Pointe Shores 795 Lakeshore Drive Grosse Pointe Shores, MI 48236	Michael Kenyon Village Manager	313-881-6565 313-881-2622 dpw@ grossepointeshores.org	The Consulting Engineer for the City is: Hubbell, Roth & Clark, Inc. 555 Hulet Drive P.O. Box 824 Bloomfield Hills, Michigan 48303-0824 Contact Person: Tom Biehl Tel: 248-338-9241 / Fax: 248-338-2592 Email:
13	Grosse Pointe Woods 20025 Mack Ave. Grosse Pointe Woods, MI 48	Joe Ahee Director of Public Works	313-343-2622 313-343-2785 pubwks@ ci.grosse-pointe-woods.mi.us	The Consulting Engineer for the City is: Anderson, Eckstein and Westrick, Inc 51301 Schoenherr Road Shelby Township, MI 48315 Contact Person: Tel: 810-726-1234 / Fax:810-726-8780 Email: aewinc@aewinc.com
14	City of Hamtramack 960 Buffalo Hamtramack, MI 48212	Andre Pietrucha DPW Supt.	313-876-7750 313-876-7835	The Consulting Engineer for the City is: Hennessessy Engineers 2674 West Jefferson, Suite 200 Trenton, MI 48183 Contact Person: Skip Bainbridge Tel: 734-692-3300 / Fax: 734-692-3203 Email:
15	City of Harper Woods 19617 Harper Ave. Harper Woods, MI 48225	William Snyder DPW Supt.	313-343-2570 313-343-2507	The Consulting Engineer for the City is: Anderson, Eckstein and Westrick, Inc 51301 Schoenherr Road Shelby Township, MI 48315 Contact Person: Steve Pangori Tel: 810-726-1234 / Fax:810-726-8780 Email: aewinc@aewinc.com

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List of Contacts for Wayne County Suburban Communities

	Authority/ Community/ Address	Contact Person/ Head Wastewater	Tel/Fax No/ E-mail	Remarks
16	City of Inkster 2121 Inkster Rd. Inkster, MI 48141	Hilliard Hampton Mayor	313-563-0249 313-563-9844	The Consulting Engineer for the City is: **Wade-Trim** 25251 Northline Road PO Box 10 Taylor, MI 48180 Contact Person: Greg Weeks Tel: 734-947-9700 / Fax:734-947-9726 Email: gweeks@wadetrim.com
17	City of Livonia 33000 Civic Center Dr. Livonia, MI 48154	Kevin Roney Public Utility Manager	734-466-2608 734-466-2660	The Consulting Engineer for the City is: Hubbell, Roth & Clark, Inc. 555 Hulet Drive P.O. Box 824 Bloomfield Hills, Michigan 48303-0824 Contact Person: Walter Alix Tel: 248-338-9241/ Fax: 248-338-2592 Email:
18	City of Melvindale 3100 Oakwood Blvd. Melvindale, MI 48122-1298	Eric Witte DPW Director	313-389-1129 313-383-3993 cityofmel@juno.com	The Consulting Engineer for the City is: **Charles Raines Engineering** 555 Hulet Drive P.O. Box 824 Bloomfield Hills, Michigan 48303-0824 Contact Person: Souheio Sabak Tel: 734-285-7510 / Fax: Email:
19	Charter Township of Northville 41600 W. Six Mile Rd Northville, MI 48167	Don Weaver Director of Public Works	248-348-5820 248-348-5823 Dweave01@northvillemich.com	The Northville Township collection system is currently serviced by: **Western Townships Utilities Authority** 40905 Joy Road Canton, MI 48187 Contact Person: Tim Faas Tel: 734-453-2793 / Fax: 734-453-3551 Email: Tim@Wtua.org The Western Townships Utilities Authority (WTUA) has indicates that it intends to withdraw from the DWSD/Wayne County system by 2006. Further, WTUA will reserve it's existing contract capacity until the current contract expires in 2011.

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	Authority/ Community/ Address	Contact Person/ Head Wastewater	Tel/Fax No/ E-mail	Remarks
20	City of Northville DPW 650 Doheny Drive Northville, MI 48167	Paul R. Vertrees Water/Sewer Superintendent	248-349-3271 248-349-4920	The Consulting Engineer for the City is: **McNeely & Lincoln Associates, Inc.** 25251 Northline Road PO Box 10 Taylor, MI 48180 Contact Person: Robert Warner Tel: 734-432-9777 / Fax:734-432-9786 Email: info@mnline.com
21	City of Plymouth 1231 Goldsmith Ave. Plymouth, MI 48167-1599	Scott Baker Assistant Director of Municipal Services	734-453-7737	The Consulting Engineer for the City is: **Wade-Trim/Associates, Inc.** 25251 Northline Road PO Box 10 Taylor, MI 48180 Contact Person: Shawn Keough Tel: 734-947-9700 / Fax:734-947-9726 Email: skeough@wadetrim.com Plymouth delivers 70% of it's wastewater to the Wayne County Collection System and 30% to WTUA. There are not immediate plans to change this arrangement.
22	Township of Plymouth 42350 Ann Arbor Rd. Plymouth, MI 48170-4394	Jim Anulewicz	734-453-8131, ext. 23 janulewicz@ plymouthtwp.org	The Northville Township collection system is currently serviced by: **Western Townships Utilities Authority** 40905 Joy Road Canton, MI 48187 Contact Person: Tim Faas Tel: 734-453-2793 / Fax: 734-453-3551 Email: Tim@Wtua.org The Western Townships Utilities Authority (WTUA) has indicates that it intends to withdraw from the DWSD/Wayne County system by 2006. Further, WTUA will reserve it's existing contract capacity until the current contract expires in 2011.

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	Authority/ Community/ Address	Contact Person/ Head Wastewater	Tel/Fax No/ E-mail	Remarks
23	Redford Township 12200 Beech Daly Redford, MI 48239	Ron Caryl Water and Sewer Director	313-387-2640 water@redfordmi.com	The Consulting Engineer for the City is: **Wade-Trim/Associates, Inc.** 25251 Northline Road PO Box 10 Taylor, MI 48180 Contact Person: Dan Brooks Tel: 734-947-9700 / Fax:734-947-9726 Email: dbrooks@wadetrim.com
24	City of Wayne 4001 South Wayne Rd Wayne, MI 48184	Ramzi El-Gharib City Engineer	734-728-9100 734-728-2159 rgharib@ci.wayne.mi.us	The Consulting Engineer for the City is: Ayres, Lewis, Norris & May, Inc. 3959 Research Park Drive Ann Arbor, MI 48108 Contact Person: Philip Loude Tel: 734-761-1010 / Fax:734-761-1200 Email:
25	City of Westland 37137 Marquette Rd. Westland, MI 48185	Rick Hornkohl Water and Sewer Supt.	734-467-3242 734-721-1377	The Consulting Engineer for the City is: **Orchard, Hiltz & McCliment, Inc.** 34935 Schoolcraft Livonia, MI 48150 Contact Person: John Kramer Tel: 724-522-6711 / Fax: 734-522-6427 Email:
26	Van Buren Township 46425 Tyler Rd. Van Buren Township, MI 48111	Patti J. Duha Director Water and Sewer	734-699-8925 734-699-8958 pduha@vanburen-mi.org	The Consulting Engineer for the City is: **Orchard, Hiltz & McCliment, Inc.** 34935 Schoolcraft Livonia, MI 48150 Contact Person: Zane Janiki Tel: 724-522-6711 / Fax: 734-522-6427 Email:
27	City of Highland Park 30 Gerald Ave. Highland Park, MI 48203	Katreah Bey Water Director	313-252-0169 313-868-7420	The Consulting Engineer for the City is: **DLZ Corp.** Murphy-Telegraph Building 151 West Congress, Suite 328 Detroit, Michigan 48226 Contact Person: Samir Matta Tel: 313-961-4040 / Fax: 313-961-4086 Email: smatta@dlzcorp.com
28	City of Dearborn 2701 Greenfield Rd. Dearborn, MI 48126-3586	Godfrey Udoji	313-943-2445 313-943-2420	Dearborn uses a variety of consultants.

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	Authority/ Community/ Address	Contact Person/ Head Wastewater	Tel/Fax No/ E-mail	Remarks
29	City of Dearborn Heights 24600 Van Born Rd. Dearborn, MI 48125	Ken Carlson Water Supt.	313-277-7920 313-277-7908	The Consulting Engineer for the City is: **Wade-Trim/Associates, Inc.** 25251 Northline Road PO Box 10 Taylor, MI 48180 Contact Person: Dan Brooks Tel: 734-947-9700 / Fax:734-947-9726 Email: dbrooks@wadetrim.com

APPENDIX A

DWSD CS-1314 Wastewater Master Plan Wayne County Abstract/Brief Summary of Reports			
Report Name: Description; City/Township/ Community; Report/Volume Number & Date;	**Consultant(s)**	**Background, Purpose and Abstract/Brief Summary**	**Remarks/Recommendations/Conclusions; Relevance to WWMP;**
Dearborn CSO Control Program Basis of Design Report City of Dearborn, Wayne County, Michigan Draft Report July 2000	NTH Consultants LTD. 38955 Hills Tech Drive Farmington Hills, Michigan 48331-3432	• The city of Dearborn wastewater collection system consists of approximately 456 miles of sewer. About two thirds of the system is serviced by combined sewers. Overflows from the system are currently discharged into the Rouge River. • In 1985 the Michigan Water Resources commission called for a twenty year plan to restore the Rouge River quality by the year 2005. • In 1989 the Rouge River remedial action plan was completed. • In 1994 final plans and specifications were issued for construction of a 31,000-foot,18 feet diameter rock tunnel. • During construction in 1995, heavy hydrogen sulfide bearing ground water inflows were encountered. The contract was terminated. The City subsequently entered into a Administrative Consent Order with the MDEQ, which extended the CSO control program completion date to January 2008. • In 1999 the City retained NTH to prepare the Basis of Design Report.	• The study developed water quality criteria and CSO facility sizing. • Several alternative CSO control alternatives were evaluated. • The 17-foot diameter flow through tunnel was recommended as the most cost effective alternative. • The project is pertinent to the DWSD system and is, therefore, important to the WWMP.

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Report Name: Description; City/Township/ Community; Report/Volume Number & Date;	**Consultant(s)**	**Background, Purpose and Abstract/Brief Summary**	**Remarks/Recommendations/Conclusions; Relevance to WWMP;**
Dearborn CSO Control Project Plan City of Dearborn, Wayne County, Michigan October 1993	Snell Environmental Group 1120 May Street Lansing, Michigan 48906	• The report was prepared for the Dearborn planning area to evaluate existing conditions as they relate to CSO. • The report outlines a control plan that is consistent with the Rouge River RAP and regulator considerations. • The recommended alternative was the construction of a retention treatment tunnel (RTT).	• While primarily focusing on CSO control, this report has a thorough description of the existing Dearborn Sewer System and the interconnections with the DWSD collection system. • The report contains information pertinent to the DWSD system and is, therefore, important to the WWMP.

DWSD CS-1314 Wastewater Master Plan Wayne County Abstract/Brief Summary of Reports			
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Fox Creek Enclosure No. 1 Appendix A to the Facilities Plan Infiltration/Inflow Analysis Treatment Works Grant C262601-01 Revised Edition May 1979	Not Identified	• This engineering report has been prepared for the Wayne County Drain Commissioner to satisfy requirements of P.L. 92-500 concerning I/I conditions for the cities of Grosse Point Park, Grosse Pointe, Grosse Pointe Farms and the Village of Grosse Pointe Shores. • The Wayne County Drain Commissioner has been authorized by the MDNR to act as the lead agency for these communities.	• Excessive I/I is addressed separately for each community. • In general excess infiltration does not exist. • Overflow chambers in both Grosse Pointe Farms and Grosse Point Shores showed evidence of inflow from Lake St. Clair. The inflow was attributable to backwater gates which were not fully seated. Routine inspection and maintenance are recommended for correction.

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Report Name: Description; City/Township/ Community; Report/Volume Number & Date;	**Consultant(s)**	**Background, Purpose and Abstract/Brief Summary**	**Remarks/Recommendations/Conclusions; Relevance to WWMP;**
Basis of Design Report for Sewer Separation Combined Sewer Overflow Abatement Program City of Grosse Pointe Farms Lakeside Sewer District Wayne County, Michigan September 1998	Hubbell, Roth & Clark, INC. 555 Hulet Drive P.O. Box 824 Bloomfield Hills, MI 48303 248-338-9241	• The purpose of this report is to establish design requirements for the Combined Sewer Overflow (CSO) Control Facilities described in the Lakeside Sewer District Project Plan and as required by the Michigan Water Resources Commission Authorization to Discharge Under the National Pollutant Discharge Elimination System (NPDES) Draft Permit No. MI 0026077 and Administrative Consent Order ACO-SW97-003.	• Construction of 3,650 l.ft. 10- inch sanitary sewers. • Construction of 84,500 l.ft. 12-inch to 54- inch storm sewers with outlets to Lake St. Clair. • Existing Combined Sewer Outfalls No. 001 through 007 will continue to be monitored for a two year period after which time, if there have been no overflows, they will be abandoned.

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Project Plan for Michigan DNR City of Grosse Point Park Wayne County, Michigan March, 1995	Ayres, Lewis, Norris & May, Inc. 3959 Research Park Drive Ann Arbor, Michigan 48108	• The report investigated alternatives to control CSOs for the Cities collection system. At the time of the study Grosse Point Park had a combined sewer system which discharged to the City of Detroit/Wayne County system or directly to Fox Creek. • The report contains a description of the existing collection system and hydraulic analysis for the collection system.	• Upon review of the available alternatives, sewer separation was presented as the best alternative. • Sewer separation has the potential to impact the volume of wastewater entering the DWSD system and therefore this report is relevant to the WWMP.

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Report Name: Description; City/Township/ Community; Report/Volume Number & Date;	**Consultant(s)**	**Background, Purpose and Abstract/Brief Summary**	**Remarks/Recommendations/Conclusions; Relevance to WWMP;**
Sewer Infrastructure Study Sewer System Record Drawings City of Grosse Pointe Wayne County, Michigan Final Report July 1987	McNamee, Porter and Seeley Engineers/Architects Ann Arbor, Michigan	• The City has experienced an increasing number of sewer system failures. • Review existing data, complaints and records for relevant historical data. • Assemble a list of all known problems existing • in the sewer system. • Develop a prioritized repair plan and cost estimate. • Determine failure causes and recommend methods of rehabilitation.	• Immediate repair of existing sewer system critical problems. • TV inspection program to identify other potential failures in those sewers with a high potential for collapse. • Computerized Management System for • planning and management of operation and maintenance, budgets and records of the sewer system. • Perform ongoing sewer system monitoring program.

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Facility Planning Study City of Livonia Rouge Valley District City of Livonia Wayne County, Michigan Draft Report August 1982	Hubbell, Roth & Clark, INC. Consulting Engineers 2323 Franklin Road Bloomfield Hills, Michigan Orchard, Papke, Hiltz & McCliment Consulting Engineers 34935 Schoolcraft Road Livonia, Michigan	• Study to evaluate local sanitary sewer needs and to develop alternate courses of action to provide solutions to these needs. This facility plan was prepared as part of a regional study which included the Cities of Garden City, Dearborn Heights, Inkster, Wayne, and Westland, and the Townships of Plymouth and Redford. This local and regional study analyzed the CSO's into the Rouge River System to determine water quality as to NPDES permit requirements.	• Conduct SSES survey. • Abandon Coventry Garden Pump Station. • Accept Six Mile Relief Sewer Alternative. • Accept the recommended Regional CSO control of Optimal Storage and Treatment Alternative. • Accept the local alternative Lift Station for the Inkster Road Interceptor.

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Milk River Pumping Station Retention Basin and Harper Woods Sanitary Pumping Station Value Engineering Report Intercounty Drainage Board City of Harper Woods Wayne County, Michigan March, 1991	Madison Madison International 1420 Washington Boulevard Detroit, Michigan, 48226 McNamee, Porter & Seeley, Inc. 3131 South State Street Ann Arbor, MI 48108	• This report documented a Value Engineering exercise for the construct of the Milk River Pumping Station and Retention Basin (MRPS). • These facilities service the Milk River Drainage District which consists of the Cities of Grosse Pointe Woods and Harper Woods. Grosse Pointe Woods is serviced with Combined Sewers while 90% of Harper Woods is serviced with a separated system. • Sanitary and Storm flows from Harper Woods and Combined flows from Grosse Pointe Woods are directed to the MRPS. Dry weather flows are pumped to the Detroit system.	• While the main focus of the project was to control CSO events, the MRPS pumps dry weather sanitary flows from both Harper Woods and Grosse Point Woods to the Detroit system. • This project impacts the flows to the Detroit System and is therefore relevant to the WWMP.

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Final Project Plan Lift Station 1A North Huron Valley / Rouge Valley Wastewater Control System Wayne County Department of Environment Division of Public Works Wayne County, Michigan 1995	Wade-Trim/Associates, Inc. 25185 Goodard Road Taylor, MI 48180	• Lift Station 1A is needed at the downstream end of the improved Rouge Valley Interceptor system to guarantee delivery of contracted purchase capacity flow from the Rouge valley communities into the Detroit system at times of high flows and to protect against flooding at times of system failure. • Lift Station 1A is designed to prevent surcharging from the Detroit system from impacting the Rouge Valley Interceptor (RVI) while maintaining a flow within the purchase capacity that Wayne County holds.	• The report contains information pertinent to the function of the interceptor sewers which service communities west of Detroit. • In addition, this report contains some detailed information about the individual communities in the Rouge Valley System. • This project impacts the flows to the Detroit System and is therefore relevant to the WWMP.

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Sewer System Evaluation Survey Districts H,O,P,R&S North Huron Valley-Rouge Valley Wastewater Control System Volume 1&2 Department of Public Services Division of Public Works Wayne County, Michigan Final Report September 1990	Madison, Madison International of Michigan 1420 Washington Blvd. Detroit, Michigan 48226 313-963-6110 Wade-Trim Associates Inc. 25185 Goddard Road Taylor, Michigan 48180 734-291-5400	• This SSES study was recommended by the Rouge Valley Interceptor System Infiltration and Inflow (I&I) Analysis 1982. Volume 1 • Locate I/I sources and estimate flow rates. • Evaluate costs for removing these flows versus transporting and treating them. • Recommend system improvements and rehabilitation methods and priorities based on cost effective analysis. Volume II • Log of Project photos.	• Remove and replace manhole frames and covers. • Bulkhead existing storm pipes and re-route catch basins to existing storm sewers. • Repair and seal wall and pipe joint leaks at manholes. • Grout and waterproof sewer lines. • Perform post-rehabilitation flow monitoring. • Develop corrective action plan if program performance standards are not achieved. • The project is pertinent to the DWSD system and is, therefore, important to the WWMP.

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Northville Facilities Plan City of Northville Wayne County, Michigan Draft Report June 1982	Finkbeiner, Pettis & Strout, Limited Consulting Engineers and Planners 4405 Talmadge Road Toledo, Ohio 43623 419-473-1121	• Determine the quantities of I/I and evaluate sewer system rehabilitation economics. • Evaluate unsewered areas and recommend the best method of treating the wastewater generated in these areas. • 131 homes in the City have on-site wastewater disposal systems (septic tanks and leach fields).	• Comparison of cost of sewer system rehabilitation Vs transportation and treatment, it is concluded that rehabilitation is cost effective. • The quantities of extraneous flow, which were determined by this plan, should be utilized by Wayne County for the design of proposed improvements and billing purposes. • Evaluation of on-site disposal systems concluded that no health hazards are being created. It is recommended that the systems remain.

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Wayne County Combined Sewer Overflow Project Redford Township Retention Basin Basis of Design Report Redford Township Wayne County, Michigan May 1993	Wade-Trim/Associates 25185Goddard Road Taylor, Michigan 48180 734-291-5400 McNamee, Porter & Seeley Madison Madison International Sigma Associates, Inc. SOMAT Engineering, Consulting Engineering Associates, Inc.	• In1992 the MDNR reissued the NPDES permits regulating the CSO overflow points in the Township of Redford. • A detailed Basis of Design will be submitted by May 1, 1993. In addition to the permit requirements, the report will include features which are intended to enable the basin to be operated as a demonstration basin as part of the Rouge River National Wet Weather Demonstration Project. • A State Revolving Loan will be sought to finance the construction.	Retention Basin Features • 20 min. Retention of 10 year-one hour storms. • 3-course screens @ 1.5 inch spacing. • 2-35 foot diameter swirl concentrators. • Sodium hypochlorite disinfection. • Flow metering • Composite and discrete automatic samplers. • Tipping bucket flushing system. • Sodium Hypochlorite odor control system. • Standby diesel generator. • The project is pertinent to the DWSD system and is, therefore, important to the WWMP.

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1994 Rouge River Remedial Action Plan Up Date Draft Report September 1994	SEMCOG 660 Plaza Drive, Suit 1900 Detroit, Michigan 48226 313-961-4266	• The International Joint Commission Has identified the Rouge River as one of the worst polluted "hot spots" in the Great Lakes watershed. As directed in the Great Lakes Water Quality Agreement between the United States and Canada the MDNR is responsible for the development and implementation of the Remedial Action Plan (RAP). The Rouge River is Considered a hot spot because it is polluted by excessive levels of bacteria, heavy metals, organic chemicals, and other substances.	• The original RAP, published in 1989, • defined an ambitious 20-year program of actions needed to protect public health and to make substantial progress toward full clean up of the River. • This report represents the first update of the goals and recommendations. • In 1993, the DNR reorganized the existing committee structure to better address the new RAP process and formed the Rouge RAP Advisory Council to represent all parties interested in cleaning up the River.

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Improvement Project Basis of Design Wayne County Northeast Sewage Disposal System Department of Public Services Division of Public Works Wayne County, Michigan November 1992	Hubbell, Roth & Clark, Inc. 420 Michigan Building 220 Bagley Detroit, Michigan 313-965-3330	• The purpose of this report is to establish design requirements for improvements to the Wayne County Northeast System Kerby Road Pumping Station. • This report evaluates the alternatives and outlines the • basis of design for the most cost effective (selected) alternative. • The Marter Road Pumping Station was also evaluated.	

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North Huron Valley / Rouge Valley Wastewater Control System Project Performance Certification Report Wayne County Drainage Commission January 1994	Wade-Trim 25251 Northline Road P.O. Box 10 Taylor, MI 48180	• Wayne County prepared a Project Performance Certification report in compliance with Final Order of Abatement No. 2117. This report provide technical information to support certification that the total flows from the NHV/RV collection system are within design limits. • Individual communities within the collection system are responsible for certifying that their local collection system are in compliance with their individual design reports.	• The following conclusions were drawn: 1. End-of-system peak wastewater flow delivered to the City of Detroit is within the BOD limitation of 378.8 cfs. 2. Interceptor rehabilitation was effective in reducing peak interceptor I/I. 3. No sewer backups or surcharging was recorded on the NHV/RV Interceptor system during the monitoring period with the exception of the Middle Rouge Interceptor outlet to the City of Detroit. • ●This report is pertinent to the WWMP as it contains detailed information regarding wastewater flows delivered from the NHV/RV system to the Detroit Collection System.

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North Huron Valley / Rouge Valley Wastewater Control System Hydraulic Basis of Design Wayne County Drainage Commission September 1998 (final)	Wade-Trim 25251 Northline Road P.O. Box 10 Taylor, MI 48180	• This report details the basis for development of the peak wastewater flows used in the design; the hydraulic design of the NHV/RV Wastewater collection system; and, the hydraulic design at the connection to the City of Detroit Collection System. • The collection system serves Northville, Novi, Plymouth, Van Buren Township, Westland, Wayne, Garden City, Inkster, Romulus, Redford, Dearborn Heights and Livonia. The Northville, Plymouth and Canton Townships were limited to their existing purchase capacity.	• This report is based heavily on the NHV/RV Multi-Municipality Facilities Plan. • Detailed flow information is available for sub catchment areas within the system including: peak infiltration and inflow rates and CSO settings. • Interceptor capacity and projected required capacities, for the year 2025, are summarized for the NHV/RV system. • This report contains detailed information with respect to the interceptor system servicing the NHV/RV area. • Both the project flows and detailed descriptions of the hydraulic interconnections between the NHR/RV and Detroit systems may be useful in the preparation of the WWMP.

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SSO Basis of Design Criteria Evaluation Report North Huron Valley / Rouge Valley Wayne County Drainage Commission October 2000	Wade-Trim 25251 Northline Road P.O. Box 10 Taylor, MI 48180	• A Facility Plan for the North Huron Valley/Rouge Valley System was developed in the mid-1980's and implementation was completed in September 1999. • The purpose of this report was to determine design criteria for regional alternatives to address the following post implementation concerns: 1. Nine of the 15 communities have not completed PPC's. 2. To protect against basement flooding, an ability to bypass flows in excess of the system capacity during wet weather events is needed. 3. SSO criteria need to be established.	• Four different SSO Criteria Alternatives were identified: 1. MDEQ Presumptive Criteria – retention of 25-year, 24-hour storm. 2. Original NHV/RV Basis of Design – generally design for 10-year, 1-hour storm. 3. MDEQ CSO Presumptive Criteria – complete capture of 1-year, 1-hour storm, 30 minutes contact time for 10-year, 1-hour design storm. 4. SSO Water Quality Criteria – screening and disinfection, 20 minutes contact time for flows generated from 25-year, 24-hour storm. • A detailed map showing SSO and CSO locations is included. • A study of wet weather SSO and CSO pollutant loadings at the Dearborn Heights CSO Basin is included.

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Sewer System Evaluation Survey City of Highland Park Wayne County, Michigan April, 1982	Snell Environmental Group 1120 May St., Lansing, MI 48906	• A SSES was completed as a follow-up to an earlier facilities plan which identified a need for further work. Approximately 60% of the City was included in the study area, and a smaller area (6% of the City) was the focus of an intensive study.	• The SSES was part of a facilities planning process which was intended to lead to the completion of a Facilities Plan for a publicly owned wastewater collection works for Highland Park. • A major system-wide problem was identified with watermain leaks entering the sewer system. In some areas the amount of I/I identified warranted sewer rehabilitation.

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Rouge Valley Combined Sewer Overflow Control Project State Revolving Load Fund Project Plan Wayne County Department of Public Services Volumes 1 & II April, 1993	Camp Dresser McKee McNamee, Porter & Seely Dietrich, Bailey & Associates Jarrett-Mills-Schron & Associates McNeeley & Lincoln Associates Orchard, Hiltz & McCliment Wade-Trim/Associates	• This report was prepared to support an application for a State Revolving Fund (SRF) load to fund local and regional improvements as required by NPDES permits. • Wayne County was the lead applicant for the project which also involves local improvements for: the City of Dearborn Heights, Garden City, City of Inkster, City of Livonia, Plymouth Township, Redford Township, City of Wayne, and, the City of Westland. • The report provides a summary for the existing collection systems for each of the participating communities as well as the preferred improvements in each of the communities.	• Maps of the service areas for the participating communities are included. Assessment of the alternatives for each of the individual communities are included in Appendices. • The recommended plans are as follows: Retention City of Dearborn Heights Redford Township Complete Sewer Separation City of Garden City City of Livonia Plymouth Township City of Wayne City of Westland Combination Separation and Retention City of Inkster • The information presented in this report details local improvements which may have an impact on flows to the DWSD Collection System.

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Facilities Plan City of Dearborn Wayne County, MI November 1980	Hubbell, Roth & Clark, Inc. 2323 Franklin Road, Bloomfield Hills, MI 48013	• The facilities plan was prepared to address identified problems in the Dearborn Wastewater system, namely: • Obsolescence of the Greenfield and Miller Road Pumping Stations. • Address inflow into separated sewers. • The study prioritized the Cities needs in the following order: 1. Rehabilitation of pumping stations. 2. Control of CSOs into the Rouge River. 3. Control remaining CSOs	• This report contains a detailed analysis of a number of alternatives to address problems which were identified in the Dearborn system. • Detailed maps and a description of the collection system are included in the body of the report. • Since all of the Wastewater generated in Dearborn is discharged to the City of Detroit the modifications outlined in this report could impact flows to Detroit. Due to the age of the report it is of limited value to the WWMP, but may prove useful in interpreting subsequent reports from the City of Dearborn and their impact on the Master Planning process.

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Rouge Valley Wastewater Management Study Volume VI A City of Inkster – Facilities Plan Wayne County Board of Public Works April 1994	Pate, Hirn and Bouge, Inc. 17000 Twelve Mile Road, Southfield, MI 48076 ESEI 508 West Washington St. South Bend, IN 46601 Elon Mickels Associates 10641 West McNichols Detroit, MI 48221	• The facilities plan was prepared to address combined sewer overflows in the Lower Rouge at Inkster. • Three alternatives were evaluated and sewer separation was identified as the preferred local alternative. • In addition, a 1.9 million gallon retention basin was proposed to serve both Dearborn Heights and Inkster and be operated under the jurisdiction of the Wayne County Board of Public Works.	• While this project focused on the specific concerns of the City of Inkster, it was prepared as part of the overall Rouge Valley Interceptor System (RVIS) project. • The final recommended sewer improvement plan featured the following points: 1. Cost effective 2. Provides sewer relief 3. Eliminated pumping stations 4. Controlled CSOs • Due to the age of the report it is of limited value to the WWMP, but may prove useful in interpreting subsequent reports from the City of Inkster and their impact on the Master Planning process.

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Sanitary Sewer System Operation and Maintenance Plan City of Livonia Department of Public Works Public Service Division February, 2001	Completed by the City of Livonia Department of Public Works	• An annual report detailing the operation and maintenance of the Sanitary Sewer System. • Prepared in accordance with the Final Order of Abatement no. 21121. • Outlines a systematic cleaning and inspection program for the collection system.	• Contains a summary of the components of the local collection system and location of permanent flow monitors. • The report indicates that Livonia will actively maintain their sewer system which many lead to control of I/I and therefore have an impact on the flows ultimately delivered to the DWSD collection system. • The local maintenance program may impact long term flow rates from Livonia and therefore this report is pertinent to the WWMP.

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Melvindale Sanitary Pumping Station Permit Application Sanitary Flow Study for Infiltration-Inflow Determination City of Melvindale Wayne County, Michigan March 1990	Charles E. Raines Company 17700 Fort Street Riverview, MI 48192	• This report was prepared to support an application for approval to the MDNR, for the construction of a new sanitary pumping station of the City of Melvindale. • Information regarding pumping station capacity and a plan to use the collection system for inline storage of flows in excess of their contract capacity are detailed. • An I/I study was included with the report. A number of problem areas were identified. In most cases measured flows were 50% higher than predicted during wet weather periods.	• Copies of the sewage disposal agreement between the City of Detroit and the City of Melvindale is included, limiting discharge to 6.375 cfs. • Melvindale pumps wastewater directly into the City of Detroit system and therefore information regarding pumping capacities and excessive inflow/infiltration will be useful during the preparation of the WWMP.

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Rouge Valley District Flow Monitoring Study Van Buren Township Wayne County, Michigan March 1990	Orchard, Hiltz & McCliment 34935 Schoolcraft Road Livonia, MI 48150	• This flow monitoring study was conducted as the first step in a program to ensure that the Charter Township of Van Buren's wastewater flows were within their purchased capacity in the Rouge Valley Sewage Disposal System. • Excess inflow was found in some portions of the collection system. The projected flows for the year 2025 were determined to be greater than the Township's purchase capacity of 5.0 cfs.	• An inflow removal rate of 63% was used to determine the feasibility of sewer rehabilitation. This value is consistent with criteria that are used through out the Rouge Valley System. • It was recommended that the S.S.E.S. be completed for the Rouge Valley District Collection System to address excessive inflow. • Sewer rehabilitation was expected to reduce Van Buren's Wastewater flows to a level below their contract capacity. • Population projections for the Township and the methodology used to develop them are detailed. • The detailed population and flow rate projections will be a valuable resource for use during the preparation of the WWMP.

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Greenfield Road Pump Station Project Report (Updated Facilities Plan) & MDNR Design Review City of Dearborn Wayne County, Michigan 1989, 1990	Hubbell, Roth & Clark, Inc. 555 Hulet Drive, Bloomfield Hills, MI, 48303	• The project was completed because the existing station's equipment and controls were obsolete and the station did not meet present day safety standards. • The Pump Station serves the West Dearborn District which is a combined sewer area of approximately 6,359 acres, with approximately 328 acres served by separate sewers. • Population projection for the City of Dearborn is included which indicated a shrinking population over the 25 year projection period.	• The station is a submersible type with a design capacity of 50 cfs. • Population projects are included for the City of Dearborn. • The Greenfield Pump Station discharges, via forcemain, into the Northwest Interceptor and therefore it is a critical facility in the DWSD system. The information contained in this document may prove use full in the preparation of the Detroit WWMP.

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Final Project Plan for Combined Sewer Overflow Abatement Program City of Grosse Pointe Farms Lakeside Sewer District Wayne County, Michigan June 1998	Hubbell, Roth & Clark, INC. 555 Hulet Drive P.O. Box 824 Bloomfield Hills, MI 48303 248-338-9241	• The purpose of this report is to establish design requirements for the Combined Sewer Overflow (CSO) Control Facilities described in the Lakeside Sewer District Project Plan and as required by the Michigan Water Resources Commission Authorization to Discharge Under the National Pollutant Discharge Elimination System (NPDES) Draft Permit No. MI 0026077 and Administrative Consent Order ACO-SW97-003.	• Two methods for CSO Control were evaluated: sewer separation or construction of Retention/Treatment Facilities. • The estimated project cost for sewer separation was $10.1 million. The estimated construction cost for an RTB was $18 million plus and additional $3.8 million for rehabilitation of the existing collection system.