MINUTES

SEWRPC ADVISORY COMMITTEE ON REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS

DATE: August 29, 2006

TIME: 1:30 p.m.

PLACE: City of Mequon City Hall
Upper Level Council Chambers
11333 N. Cedarburg Road
Mequon, Wisconsin

Committee Members Present

Daniel S. Schmidt, Chairman	SEWRPC Commissioner
Michael G. Hahn, Secretary	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Julie A. Anderson	Director, Racine County Division of Planning and Development
Martin A. Aquino (for Jeffrey J. Mantes)	Environmental Manager, Environmental Engineering, City of Milwaukee
John R. Behrens	Commissioner-Secretary, Silver Lake Protection and Rehabilitation District
Marsha B. Burzynski (for James L. McNelly)	Regional Water Quality Planner, Wisconsin Department of Natural Resources
Elizabeth Hellman (for Kristine M. Krause)	We Energies
Andrew A. Holschbach	Director, Ozaukee County Planning, Resources, and Land Management Department
Judy Jooss (for Diane M. Georgetta)	Town and Country Resource Conservation and Development, Inc.
William A. Kappel	Director of Public Works, City of Wauwatosa
James F. Lubner	Sea Grant Advisory Services Specialist, University of Wisconsin Sea Grant Institute
Charles S. Melching	Associate Professor, Civil & Environmental Engineering, Marquette University
Matthew Moroney	Executive Director, Metropolitan Builders Association of Greater Milwaukee
Paul E. Mueller	Administrator, Washington County Planning and Parks Department
Cheryl Nenn	Riverkeeper/Project Director, Friends of Milwaukee's Rivers
Jeffrey S. Nettesheim	Director of Utilities, Village of Menomonee Falls
Dean Perlick (for Joyce Fiacco)	Manager of Planning, Dodge County Land Resources and Parks Department
Stephen Poloncsik (for Peter G. Swenson)	Senior Staff Engineer, U.S. Environmental Protection Agency
Kevin L. Shafer	Executive Director, Milwaukee Metropolitan Sewerage District

Staff Members and Guests

Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Troy E. Deibert (for William Krill)	Water Resources Engineer, HNTB Corporation
Ronald J. Printz	Principal Engineer, Southeastern Wisconsin Regional Planning Commission
Paul Sebo	Senior Technician, Washington County Land & Water Conservation Division

WELCOME AND INTRODUCTIONS

Mr. Schmidt thanked the Advisory Committee members for attending this meeting. He indicated that roll call would be accomplished with a sign-in sheet circulated by Commission staff.

APPROVAL OF MINUTES OF THE MEETING OF MAY 24, 2006

Mr. Schmidt asked if there were any additions or revisions to be made to the minutes of the May 24, 2006, meeting of the Committee.

Ms. Jooss noted the following typographical errors: 1) the first occurrence of the word "first" should be deleted in each of the last two Secretary's Notes on page 2, 2) one occurrence of the words "was added" should be deleted from the second part of the first Secretary's Note on page 3, and 3) the Secretary's Note on page 6 should be revised to replace the word "port-development" with "post-development."

Mr. Lubner said that the word "the" should be deleted from the last line of the last paragraph on page 2.

There being no further additions or revisions, the minutes were approved as revised, on a motion by Ms. Anderson, seconded by Mr. Moroney, and carried unanimously.

UPDATE ON STATUS OF REPORT PREPARATION AND SCHEDULE FOR COMPLETION OF THE PLAN

Mr. Schmidt asked Mr. Hahn to provide the update. Mr. Hahn referred the Committee members to chapter preparation schedules for Technical Report No. 39 and Planning Report No. 50, which were handed out at the meeting (see Exhibit A). He reviewed the schedules in some detail, noting that from the time of the meeting through April 2007, it is anticipated that there will be one meeting a month, except for December 2006. He said that it was intended that the Regional Planning Commission approve the regional water quality management plan update at its June 2007 meeting. Finally, Mr. Hahn thanked the Committee for their continued participation and valuable input and asked for their continued interest in the final stages of the planning process.

Mr. Hahn also noted that the format for providing hard copy preliminary draft reports to the Committee had changed since the previous meeting. He said that, for all future draft chapters the text, tables, maps, and figures would each be provided in separate packets in an effort to reduce color copying costs by eliminating color maps and figures from the body of the report text. He also said that, as is standard Commission practice, the final report would be typeset with tables, maps, and figures inserted within the text.

CONSIDERATION OF THE FIRST FOUR SECTIONS FROM PAGES 1 THROUGH 32 OF THE PRELIMINARY DRAFT OF CHAPTER X, "SURFACE WATER QUALITY CONDITIONS AND SOURCES OF POLLUTION IN THE MILWAUKEE HARBOR ESTUARY AND ADJACENT NEARSHORE LAKE MICHIGAN AREAS," OF SEWRPC TECHNICAL REPORT NO. 39, WAT*ER QUALITY CONDITIONS AND SOURCES OF POLLUTION IN THE GREATER MILWAUKEE WATERSHEDS*

Mr. Schmidt asked Mr. Boxhorn to review the following sections from the preliminary draft chapter:

- Introduction and Setting within the Study Area
- Description of the Watershed
- Quantity of Surface Water
- Surface Water Quality of the Milwaukee Harbor Estuary, Lake Michigan Direct Tributary Drainage Area, and the Adjacent Nearshore Lake Michigan Areas: 1975-2004

Mr. Behrens asked that the nearshore Lake Michigan area be included in the legend of Map X-1.

[Secretary's Note: That addition was made.]

Mr. Melching noted that the legend for Map X-1 indicated that surface water was shown in both green and blue on the map.

[Secretary's Note: The description of the green legend item was changed to "Inner Harbor Estuary."]

Mr. Melching said that up to this point, the technical report had little discussion of the role of the broader nearshore Lake Michigan area beyond the domain of the Lake Michigan water quality model. Mr. Boxhorn replied that, beginning with Chapter X, the report addresses the Harbor estuary and the nearshore Lake Michigan area. Mr. Melching inquired about the availability of data beyond the nearshore area. In reply, Mr. Boxhorn generally indicated those locations where water quality data are available as shown on Map X-5. Mr. Hahn noted that the nearshore Lake Michigan area was defined as extending from the Village of Fox Point to the Village of Wind Point, consistent with the north-south extent of the hydrodynamic and water quality model of the Lake.

[Secretary's Note: With a few exceptions, the water quality data presented in the chapter are from nearshore locations within the domain of the Lake model.]

Ms. Anderson noted that municipality No. 10 on Map X-2 should be the "Village" of Caledonia.

[Secretary's Note: That correction was made and the previous chapters of the Planning and Technical Reports were checked to make sure that the all references reflect the recent change from the Town to the Village of Caledonia.]

Mr. Melching asked that additional explanation be provided on page 3 regarding calculation of the 45-day running mean Lake Michigan elevation.

[Secretary's Note: The following footnote was added after the third sentence of the last paragraph on page 3:

"The running mean was computed by averaging the day of interest with the 22 days before and the 22 days after the day of interest."]

Mr. Lubner questioned the use of the term "cycles" in describing changes in Lake Michigan levels in the last paragraph on page 3. He said that the use of such a term gives a false perspective, noting that examination of the 130-year Lake level record yields little indication of longer-term cycles beyond the annual cycle. He suggested substituting the word "fluctuations for "cycles.

[Secretary's Note: The eighth through 13th sentences of the last paragraph on page 3 were revised to read as follows. (The revised and added text in this and all subsequent revisions indicated in these minutes is indicated in bold letters for clarification only. The report text will not be bold):

"Second, the seasonal cycles appear to be superimposed over **fluctuations of approximately decadal length.** The maximum water levels of the last two **fluctuations** were achieved in 1986 and 1997. Third, these **fluctuations** appear to be superimposed over a general lowering in lake level since the early 1970s. Large declines in lake level were observed following the maximum levels achieved in 1986 and 1997. In fact, the decline since 1997 is the largest drop observed since records have consistently been kept, beginning in 1860. It is not clear whether the current decline represents a long-term trend or reflects **an additional fluctuation**."]

Mr. Lubner said that, in Figure X-2, the labels in the legend describing the box plot features should be moved to better align them with the corresponding features.

[Secretary's Note: That revision was made.]

Referring to Figure X-4, Mr. Melching asked if stating the time period of the data as 1975-2004 in the title was misleading because data are only available for the period 1998-2004. Mr. Boxhorn said that the Technical Report consistently uses the 1975-2004 (or 2001) data analysis period. He noted that approach intentionally enables the identification of missing data periods through inspection of the box plots.

[Secretary's Note: The following note was added to Figure X-4:

"Data are only available for the period from 2000 through 2004."]

Mr. Melching asked that the Commission staff provide a rationale for the high *E. coli* counts shown near South Shore Beach on Map X-6. Mr. Boxhorn said that this issue would be addressed in the section of the chapter on **Water Quality at Lake Michigan Beaches.**

[Secretary's Note: The following sentences were added after the third sentence in the second full paragraph on page 7:

"Higher concentrations of *E. coli* were detected at the southern end of the outer harbor near the Milwaukee Confined Disposal Facility. The low concentrations of *E. coli* at the mouth of the Milwaukee River and in most of the southern half of the outer harbor make it unlikely that the high concentrations at the southern end were due to loadings from the estuary and the tributary rivers. Instead these high concentrations were probably the result of local inputs from adjacent land."]

Regarding the mention in the first partial paragraph on page 8 of "unrecognized sanitary sewer inputs" as a possible cause for the *E. coli* from human sources being found in the Milwaukee Harbor during precipitation events without sewer overflows, Mr. Shafer said that the Milwaukee Metropolitan Sewerage District (MMSD) is now collecting additional data intended to better explain that situation. He said that the conclusion as stated may be broader than can be supported by the data collected for the Great Lakes WATER Institute bacteria fate and transport study. Mr. Hahn replied that the Commission staff had already given careful consideration to the

conclusions as stated, but that they would look into further qualifying the conclusion and would recognize the ongoing MMSD sampling and analysis program.

[Secretary's Note: The following sentence was added at the end of the first partial paragraph on page 8:

"However, since the study did not directly investigate the possible *E. coli* sources through field sampling or monitoring, these suggestions, while plausible, are somewhat speculative. The MMSD has instituted a systematic program to collect data in an effort to better define the origin of human-sourced *E. coli* found in the harbor and upstream locations."]

Mr. Lubner, Mr. Melching, and Ms. Nenn each noted that the conclusion in the first full paragraph on page 8 that "ANOVA showed that the mean concentration of chlorophyll-*a* in the portion of the Menomonee River in the estuary was significantly higher than the mean concentrations of chlorophyll-*a* in the Kinnickinnic and Milwaukee River during all periods" appears to conflict with the mean concentrations cited previously in the paragraph.

[Secretary's Note: The fifth and sixth sentences of the first full paragraph on page 8 were revised to read as follows:

"For example, analysis of variance showed that the mean concentration of chlorophyll-*a* in the portion of the **Milwaukee River** in the estuary was significantly higher than the mean concentrations of chlorophyll-*a* in the Kinnickinnic and **Menomonee Rivers** during all periods. During the baseline period, the mean concentration of chlorophyll-*a* in the portion of the **Menomonee River** in the estuary was higher than the mean concentration of chlorophyll-*a* in portion of the Kinnickinnic River in the estuary."]

Regarding the water temperature subsection on pages 9 and 10, Mr. Melching asked why the data analysis included winter data that were only collected from 1975 through 1986. Mr. Boxhorn replied that, as stated in Chapter III of the report, the trend analysis of water temperatures excluded the winter data.

[Secretary's Note: The following footnote was added after the ninth full sentence of the first partial paragraph on page 10, the end of which reads "…in the outer harbor (Table C-6)." Similar footnotes will be added in the *Temperature* subsections in Chapters V through IX of the technical report.

"The trend analysis of water temperatures excluded the winter data, which were only collected from 1975 through 1986**.**"]

Referring to the increasing trends in water temperature as shown in Figure X-7 and mentioned on page 10 of the chapter text, Mr. Melching said that it would be worthwhile to compare the water temperature changes to air temperature changes in an effort to possibly explain some of the increase in water temperature.

[Secretary's Note: Several characteristics of the available data set indicate that it would be difficult to draw definitive conclusions from a comparison of water temperature changes to air temperature changes. Measurements of air temperature are not available at the Lake Michigan water temperature sampling sites. Because of this, water temperature would have to be compared to air temperature at inland weather stations. These data may not be representative of air conditions over the Lake. In addition, there are considerable differences in time-scale of sampling between available air temperature data and water temperature data. Air temperature data are available on an hourly basis; water temperature data are available, at best, on a biweekly basis. While these could, in principle, be matched by day and time to reduce noise, time of collection is unavailable for much of the water temperature data. In

addition, while changes in water temperature have been detected at some stations in the estuary and outer harbor, they generally account for small portions of the variation, suggesting that these are rather subtle trends. Given the number of factors that are likely to affect water temperature (*e.g.* air temperature, water motions, land use changes, wind patterns), it is felt that the available data are not adequate for disentangling the drivers of the trends observed.]

Mr. Lubner noted that the low water temperature of -2.8ºC as stated in the second full paragraph on page 9 of the text would indicate that the water was frozen. He also noted that none of the data set forth in Figure X-7 indicated temperatures below 0ºC. Finally, he asked why the box plots for water temperature extend to -10ºC. Mr. Boxhorn replied that the -2.8ºC temperature was included in the data that was provided.

[Secretary's Note: Although water temperatures slightly below 0ºC might be possible, a temperature of -2.8ºC is unlikely, therefore, the second sentence in the second full paragraph on page 9 of the text was revised to read as follows:

"Water temperatures in individual samples ranged from 0ºC to 34.1ºC."

The vertical scale on the water temperature box plots extends to -10ºC so that temperatures of 0ºC can be clearly indicated without overstriking the horizontal axis.]

Mr. Melching asked whether the first full subsection on page 11 should be called *Biochemical Oxygen Demand (BOD)* or *Carbonaceous Biochemical Oxygen Demand (CBOD).* Mr. Boxhorn replied that the title was correct as stated (*Biochemical Oxygen Demand).*

Mr. Lubner noted that on Figure X-9 it appeared that the lower range data were not shown on several of the biochemical oxygen demand box plots. Mr. Boxhorn said that in those cases, the median and the lower ranges of the data were at, or very near zero.

[Secretary's Note: The biochemical oxygen demand box plots in Figure X-9 were compared to summary statistics for biochemical oxygen demand at the stations shown in the figure. In those cases where no median was apparent on the graph, the summary statistics showed that the median coincided with either the 25 percentile line on the graph or, in a few instances, the 75 percentile line. In all cases, this was due to a large number of samples having the same value as the median.]

Mr. Hahn called the Committee's attention to the listing, beginning on page 32, of the chapter sections and subsections that must still be written.

A motion to approve the first four sections of preliminary draft Chapter X, "Surface Water Quality Conditions and Sources of Pollution in the Milwaukee Harbor Estuary and Adjacent Nearshore Lake Michigan Areas," of TR No. 39, as amended, was made by Mr. Moroney and seconded by Mr. Shafer and was carried unanimously by the Committee.

CONSIDERATION OF CHAPTER V, "WATER RESOURCES SIMULATION MODELS AND ANALYTIC METHODS," OF SEWRPC PLANNING REPORT NO. 50, *A REGIONAL WATER QUALITY MANAGEMENT PLAN UPDATE FOR THE GREATER MILWAUKEE WATERSHEDS*

Mr. Schmidt asked Mr. Printz to review the preliminary draft chapter. Mr. Hahn mentioned that Mr. Printz was working closely with the consultant modeling team, that he had reviewed and commented on the modeling memoranda, that he was the Commission staff expert on continuous simulation modeling such as that being applied for the riverine water quality model, and that he was the primary author of Chapter V.

Mr. Printz noted that revised copies of Maps V- 3 and V-4 were distributed to the Committee at the meeting.

Mr. Melching said that the TR No. 39 Chapter X and PR No. 50 Chapter 50 included references to both the "Lake Michigan nearshore" area and the "nearshore Lake Michigan" area, and he asked that one term be used consistently.

[Secretary's Note: The two chapters were revised to consistently use the term "nearshore Lake Michigan."]

Mr. Printz noted that, on Figure V-1, an arrow should be added from "Conveyance Model" to "Harbor/Estuary/Lake Model." Mr. Shafer added that an arrow should also be added from "Watershed Model" to "Harbor/Estuary/Lake Model."

[Secretary's Note: Those revisions were made.]

Mr. Holschbach asked 1) about the methodology that was used to calibrate the models and 2) how the accuracy of the models was determined. Mr. Printz replied that there are accepted tolerances that are applied to evaluate the adequacy of the hydrologic/hydraulic calibration of the riverine model. He said that the same type of guidelines do not exist for the water quality portion of the model and that the adequacy of the model was evaluated during the calibration/validation process through statistical tests and by comparing observed and modeled data graphically using time series plots.

Mr. Melching noted that on Figure V-4, an arrow should be added from "lower zone or groundwater storage" to "active or deep groundwater storage."

[Secretary's Note: That revision was made. Also, "impervious area" in the circle between "interception" and "infiltration" was corrected to "pervious area," the "pervious area" circle was disconnected from the "channel inflow" arrow, an arrow was added from the "snowmelt" subroutine to a new "impervious area" function, and that function was connected through "channel inflow" to the circle containing "channel and reservoir routing." The revised Figure V-4 is attached as Exhibit B.]

Referring to Table V-1, Mr. Lubner said that while the text in the second full paragraph on page 4 mentions eight categories of meteorological data sets, seven of which are input directly, he could only identify six sets that are input directly. Mr Printz responded that six data sets are used for the hydrologic simulation and a seventh, cloud cover, is used for the water quality simulation.

[Secretary's Note: The following footnote was added after the third sentence of the second full paragraph on page 4:

"Six of the eight meteorological data sets are required as input for hydrologic simulation; the seventh, percent sunshine, is used to compute solar radiation, and the eighth, cloud cover, is required as input for simulation of some water quality processes."]

Mr. Lubner asked if there should be an input to the "total dissolved solids" function on Figure V-5. Mr. Printz said that he would check on that.

[Secretary's Note: There should be no arrow since total dissolved solids is a conservative constituent that is not related to the other processes.]

Ms. Jooss asked what the term "ultra-low impervious" represents in Table V-3. Mr. Printz replied that that category is for impervious surfaces within largely pervious land uses, such as roads in parks or cemeteries. Ms. Jooss noted that there is not a land segment category for total land disturbance such as on a construction site. Mr.

Printz replied that construction sites were transient in nature. Mr. Mueller asked that, despite the transitory nature of construction activities, some effort be made to represent the average impact on water quality from the extensive construction that occurs within the study area. He also inquired about how much land is under construction at any given time. Mr. Hahn responded that the Commission staff would try to develop a relative measure of the significance of construction sites with respect to water quality, and he noted that the effects of construction in the study area is implicitly accounted for through the model calibration although such activity is not specifically represented in the water quality model. Ms. Jooss speculated that in some cases disagreement between model results and observed data might be explained by the omission of construction sites from the model.

[Secretary's Note: In response to these comments, the Commission staff prepared a comparative analysis of possible total suspended solids (TSS) and total phosphorus (TP) loads from construction sites under the highest growth year 2020 scenario considered with total nonpoint source loads from the study area under the same 2020 conditions with Chapter NR 151 controls on urban and rural nonpoint source pollution. Consistent with the assumption of NR 151 controls on existing and new development, achievement of the NR 151 requirement for 80 percent control of total suspended solids from construction sites was assumed. Under the high growth assumption, approximately 3.5 square miles of land in the 1,127 square mile study area, or 0.3 percent of the study area, might be under construction during a typical year.

For the Kinnickinnic, Menomonee, Milwaukee, Oak Creek, Root, and Lake Michigan watersheds the TSS loads from construction sites as a percentage of the total other point and nonpoint source loads were estimated to be 3, 13, 5, 23, 7, and 3 percent, respectively. For the overall Greater Milwaukee Watersheds study area, the annual TSS loads from construction sites were 7 percent of the total other point and nonpoint source loads.

For the Kinnickinnic, Menomonee, Milwaukee, Oak Creek, Root, and Lake Michigan watersheds the TP loads from construction sites as a percentage of the total other point and nonpoint source loads were estimated to be 1, 4, 1, 6, 3, and 0.1 percent, respectively. For the overall Greater Milwaukee Watersheds study area, the TP loads from construction sites were 1 percent of the total other point and nonpoint source loads.

Even with the conservatively high overall growth assumptions used for this analysis, on balance, if controlled as required by law, the amounts of nonpoint source pollution from construction erosion sources would be expected to be relatively small and are generally considered to be within the accuracy limits of the model. In addition, the calibration implicitly accounts for pollution contributions from all sources, including construction sites. Thus, explicit inclusion of construction sites in the model is not considered to be warranted. The recommended plan will call for stringent enforcement of state and local construction erosion control regulations to ensure that total suspended solids are reduced by at least 80 percent.]

Mr. Melching suggested that the term "real time" be eliminated from the second last sentence of the second full paragraph on page 7 and from the second last sentence of the second full paragraph on page 19.

[Secretary's Note: Those revisions were made.]

Mr. Melching observed that no Wisconsin Department of Natural Resources water quality data were used in the model calibration and validation. Mr. Printz replied that the biweekly MMSD monitoring data were considered to be adequate for those purposes. Mr. Melching then asked why WDNR data were not used outside of the MMSD planning area. Mr. Printz replied that the use of such data was considered, but the data were generally limited in scope and the amount of data within the calibration period was limited. Mr. Melching said that the WDNR had

collected monthly samples at Racine since 1990. Mr. Hahn said that the project staff could try to compare the water quality calibration results to the WDNR data that were collected at Racine.

[Secretary's Note: WDNR water quality data for the Root River at Johnson Park in the City of Racine are available from the U.S. Environmental Protection Agency STORET legacy and modern databases from 1977 through 2000. The regional water quality management plan update water quality calibration period extends from 1994 through 1998 and the validation period is from 1999 through 2001. During the period from 1994 through 2000, the STORET data were collected approximately quarterly. In addition, the WDNR provided the Commission staff with 1) approximately quarterly sample data covering the period from 2000 through mid 2001 and 2) monthly data for July through December 2001. The Commission staff will double check the use of those data in the model calibration and validation.]

Mr. Lubner noted that there was a typographical error in the spelling of "Oak Creek" at the bottom of Map V-7.

[Secretary's Note: A revised copy of Map V-7 is attached as Exhibit C. That revision addresses Mr. Lubner's comment, corrects a typographical error in the spelling of the "KK Flushing Tunnel," and includes a darker grid representing the cells in the Lake/estuary model. The grid was also darkened on Map V-8.]

Mr. Lubner said that although the second sentence in the second last paragraph on page 19 begins, "As stated previously…," he could not locate a previous reference to solar radiation being calculated rather than measured.

[Secretary's Note: The previous reference to solar radiation being calculated is in the last two sentences of the first full paragraph on page 7.]

Mr. Melching asked that the phrase "in a particular watershed" be eliminated from the first sentence of the fourth full paragraph on page 23 and replaced with a more case-specific reference.

[Secretary's Note: The beginning of the sentence was revised to read as follows:

"Once the simulation model is calibrated and validated over a wide range of conditions that have occurred in **the river estuaries, outer harbor, and nearshore Lake Michigan area**, the basic premise ….]

Mr. Behrens noted that the National Weather Service station at Hartford was mentioned in the second last paragraph on page 7, but the Hartford station is not shown on Map V-1. Mr. Printz replied that the map is intended to show the stations for which data were actually input to the model and the Hartford station was not shown because it was only used to distribute the rainfall temporally. Mr. Hahn said that a legend item would be added for stations used only to distribute rainfall data over time.

[Secretary's Note: The revised Map V-1 is attached as Exhibit D.]

Ms. Jooss asked if the hydrologic and hydraulic calibration tolerances listed on page 13 are standard. Mr. Printz replied that they were and that they were actually fairly tight. Mr. Melching said that the U.S. Geological Survey (USGS) supports the HSPF continuous simulation model and that the listed tolerances are identical too, or tighter, than the USGS tolerances. Ms. Jooss asked that a reference for the tolerances be added.

[Secretary's Note: The following footnote was added after the last sentence of the first full paragraph on page 13:

"*These tolerances are consistent with, and in some cases more stringent than, those recommended by the U.S. Geological Survey for calibration of the HSPF model. U.S. Geological Survey Water Resources Investigations Report 94-4168,* Users Manual for an Expert System (HSPEXP) for Calibration of the Hydrological Simulation Program-Fortran, 1994."]

A motion to approve preliminary draft Chapter V, "Water Resources Simulation Models and Analytic Methods," of PR No. 50, as amended, was made by Mr. Lubner and seconded by Mr. Melching and was carried unanimously by the Committee.

REVISIONS TO CHAPTER V, OF SEWRPC PLANNING REPORT NO. 50 AS SUGGESTED BY MR. MELCHING FOLLOWING THE COMMITTEE MEETING

Following the meeting, Mr. Melching provided Mr. Printz with an annotated copy of the chapter, suggesting a number of limited editorial revisions. The two most substantive suggestions made by Mr. Melching were 1) to substitute "potential evapotranspiration" for all occurrences of "evaporation" in the chapter text and figures and 2) to substitute "carbonaceous biochemical oxygen demand" for all occurrences of "biochemical oxygen demand."

[Secretary's Note: Mr. Melching's editorial revisions were made and the following footnote was added after "carbonaceous biochemical oxygen demand" in the bulleted list on page 5:

"Typically, carbonaceous biochemical oxygen demand may be assumed to approximate five-day biochemical oxygen demand values."]

REVISIONS TO CHAPTER V, OF SEWRPC PLANNING REPORT NO. 50 SUGGESTED BY MR. DAVID PERRY OF BROWN & CALDWELL FOLLOWING THE COMMITTEE MEETING

Mr. Perry is a member of the team modeling the MMSD conveyance, storage, and treatment system, thus, he was provided with a copy of the preliminary draft chapter and asked to review the sections related to the Flow Forecasting System, MOUSE, and MACRO models.

[Secretary's Note: The following revisions were made based on Mr. Perry's suggestions:

The first sentence in the first full paragraph on page 15 was revised to read:

"As noted above, the FFS program was used to compute wastewater flow hydrographs **for sewersheds** which in turn … "

The first sentence in the third full paragraph on page 15 was revised to read:

"Sewer flow data for existing, planned year 2020, and buildout land use conditions, were developed using data on residential population and commercial … "

The second last sentence in the fourth full paragraph on page 15 was revised to read:

"Actual I/I flow was computed within the FFS model by applying **sewershed calibration** factors **to the three HSPF flow components.**"

The second last sentence in the last partial paragraph on page 25 was revised to read:

"Infiltration and inflow is computed by applying **sewershed calibration** factors to simulated surface and subsurface **flow components**."

The two sentences in the partial paragraph at the top of page 26 were deleted.]

OLD BUSINESS

Mr. Behrens said that he received the June 22, 2006, SEWRPC memorandum to the Advisory Committee members transmitting revised pollutant loading Tables VII-29 and VII-30 from Chapter VII of preliminary draft Chapter VII, "Surface Water Quality Conditions and Sources of Pollution in the Milwaukee River Watershed," of SEWRPC TR No. 39. He asked if there was any information on what pollutant loadings would be under natural conditions in the study area. Mr. Hahn replied that there is no information of that sort and he said that a pre-settlement condition would have to be modeled to develop such data. He noted that there would be no information to which the model results could be compared to determine the validity of the results.

Mr. Behrens expressed concern that the pollutant loading data would be used to identify rural areas as the sources of all water quality problems. Mr. Hahn replied that that would not be the case and that this type of information along with water quality model results would be used to locate urban and rural areas where water quality improvements should be made.

[Secretary's Note: While a pre-settlement water quality analysis would be very interesting and would have value in establishing a baseline condition based solely on natural conditions, development of such a model is beyond the scope of this study and it would be an extremely time-consuming and costly undertaking.]

DETERMINATION OF NEXT MEETING DATE AND LOCATION

The next meeting of the Advisory Committee was scheduled for Wednesday, September 27, 2006, beginning at 1:30 p.m. at the Mequon City Hall in the upstairs Council Chambers. **[NOTE: FOLLOWING THE AUGUST 29 MEETING, THE TIME OF THE SEPTEMBER 27 MEETING WAS CHANGED TO 9:00 A.M.]**

ADJOURNMENT

The August 29, 2006, meeting of the Advisory Committee on the regional water quality management plan update was adjourned at 3:27 p.m. on a motion by Mr. Behrens, seconded by Mr. Moroney and carried unanimously by the Committee.

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#121191 V1 - RWQMP UPDATE MINUTES 08/29/06
300-4001
MGH/pk
09/25/06

Exhibit A

#118616 V1 - RWQMPU PR-50 & TR-39 STATUS OF CHAPTERS
MGH/pk
06/07/06, 07/18/06, 8/28/06,
09/18/06

SEWRPC REGIONAL WATER QUALITY MANAGEMENT PLAN REPORT PREPARATION STATUS AND SCHEDULE

Report	Chapter	Status	On SEWRPC Web Site
SEWRPC Planning Report No. 50, *A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds*	Chapter I–Introduction and Background	Reviewed by RWQMPU Advisory Committee on February 17, 2005	X
	Chapter II–Description of the Planning Area	Reviewed by RWQMPU Advisory Committee on March 23, 2005	X
	Chapter III–Existing and Historic Surface Water and Groundwater Conditions	To be reviewed by RWQMPU Advisory Committee in February or April 2007	
	Chapter IV–Sources of Water Pollution	To be reviewed by RWQMPU Advisory Committee in February or April 2007	
	Chapter V–Water Resource Simulation Models and Analytic Methods	To be reviewed by RWQMPU Advisory Committee on August 29, 2006	
	Chapter VI–Legal Structures Affecting Water Quality Management Plan Update	Reviewed by RWQMPU Advisory Committee on May 24, 2006	X
	Chapter VII–Water Quality Management Goals, Objectives, and Standards	Reviewed by RWQMPU Advisory Committee on February 17, 2005	X
	Chapter VIII–Future Situation: Anticipated Growth and Change	To be reviewed by RWQMPU Advisory Committee in October 2006	
	Chapter IX–Alternative Plan Description and Evaluation	To be reviewed by RWQMPU Advisory Committee in late November 2006	
	Chapter X–Recommended Water Quality Management Plan	To be reviewed by the RWQMPU Advisory Committee in late January 2007	
	Chapter XI–Plan Implementation	To be reviewed by the RWQMPU Advisory Committee in March 2007	
	Chapter XII–Summary and Conclusions	To be reviewed by the RWQMPU Advisory Committee in March 2007	

#118616 V1 - RWQMPU PR-50 & TR-39 STATUS OF CHAPTERS
MGH/pk
06/07/06, 8/25/06

SEWRPC REGIONAL WATER QUALITY MANAGEMENT PLAN REPORT PREPARATION STATUS AND SCHEDULE

Report	Chapter	Status	On SEWRPC Web Site
SEWRPC Technical Report No. 39, *Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds*	Chapter I–Introduction	Reviewed by RWQMPU Advisory Committee on May 25, 2005	X
	Chapter II–Water Quality Definitions and Issues	Reviewed by RWQMPU Advisory Committee on May 25, 2005	X
	Chapter III–Data Sources and Methods of Analysis	Reviewed by RWQMPU Advisory Committee on May 25, 2005	X
	Chapter IV–Water Use Objectives and Water Quality Standards	Reviewed by RWQMPU Advisory Committee on May 25, 2005	X
	Chapter V–Surface Water Quality Conditions and Sources of Pollution in the Kinnickinnic River Watershed	Reviewed by RWQMPU Advisory Committee on October 12, 2005	X
	Chapter VI–Surface Water Quality Conditions and Sources of Pollution in the Menomonee River Watershed	Reviewed by RWQMPU Advisory Committee on August 3, 2005	X
	Chapter VII–Surface Water Quality Conditions and Sources of Pollution in the Milwaukee River Watershed	Reviewed by RWQMPU Advisory Committee on March 28, 2006	X
	Chapter VIII–Surface Water Quality Conditions and Sources of Pollution in the Oak Creek Watershed	Reviewed by RWQMPU Advisory Committee on December 14, 2005	X
	Chapter IX–Surface Water Quality Conditions and Sources of Pollution in the Root River Watershed	Reviewed by RWQMPU Advisory Committee on January 25, 2006	X
	Chapter X–Surface Water Quality Conditions and Sources of Pollution in the Milwaukee Harbor Estuary and Adjacent Nearshore Lake Michigan Areas	Partial chapter reviewed by RWQMPU Advisory Committee on August 29, 2006. Remainder of chapter to be reviewed in late October 2006	
	Chapter XI–Groundwater Quality Conditions and Sources of Pollution in the Study Area	To be reviewed by RWQMPU Advisory Committee in late September 2006	
	Chapter XII–Summary and Conclusions	To be reviewed by RWQMPU Advisory Committee in April 2007	

Exhibit B

Figure V-4

INTERDEPENDENCE BETWEEN HYDROLOGIC PROCESSES IN THE LSPC MODEL

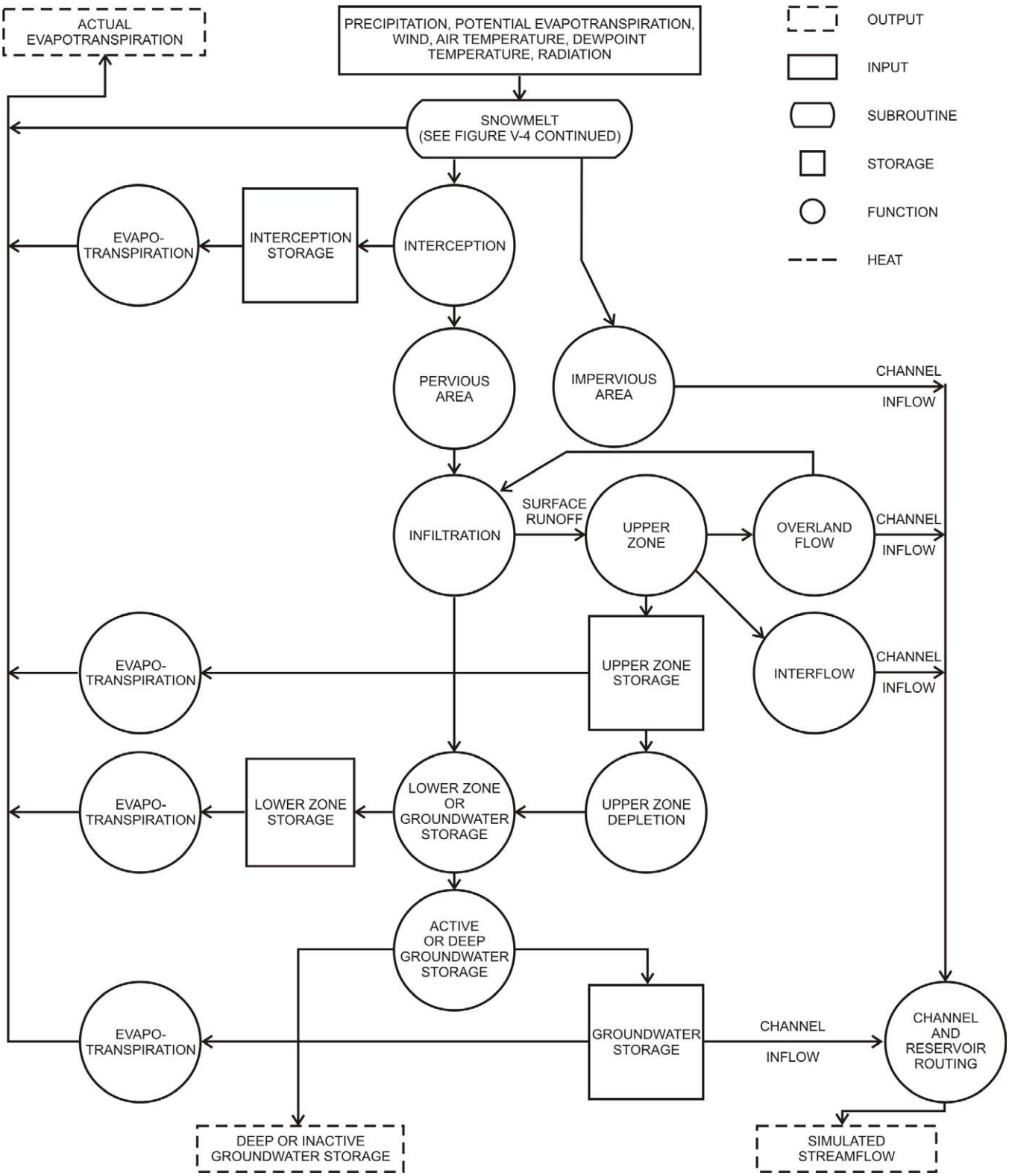
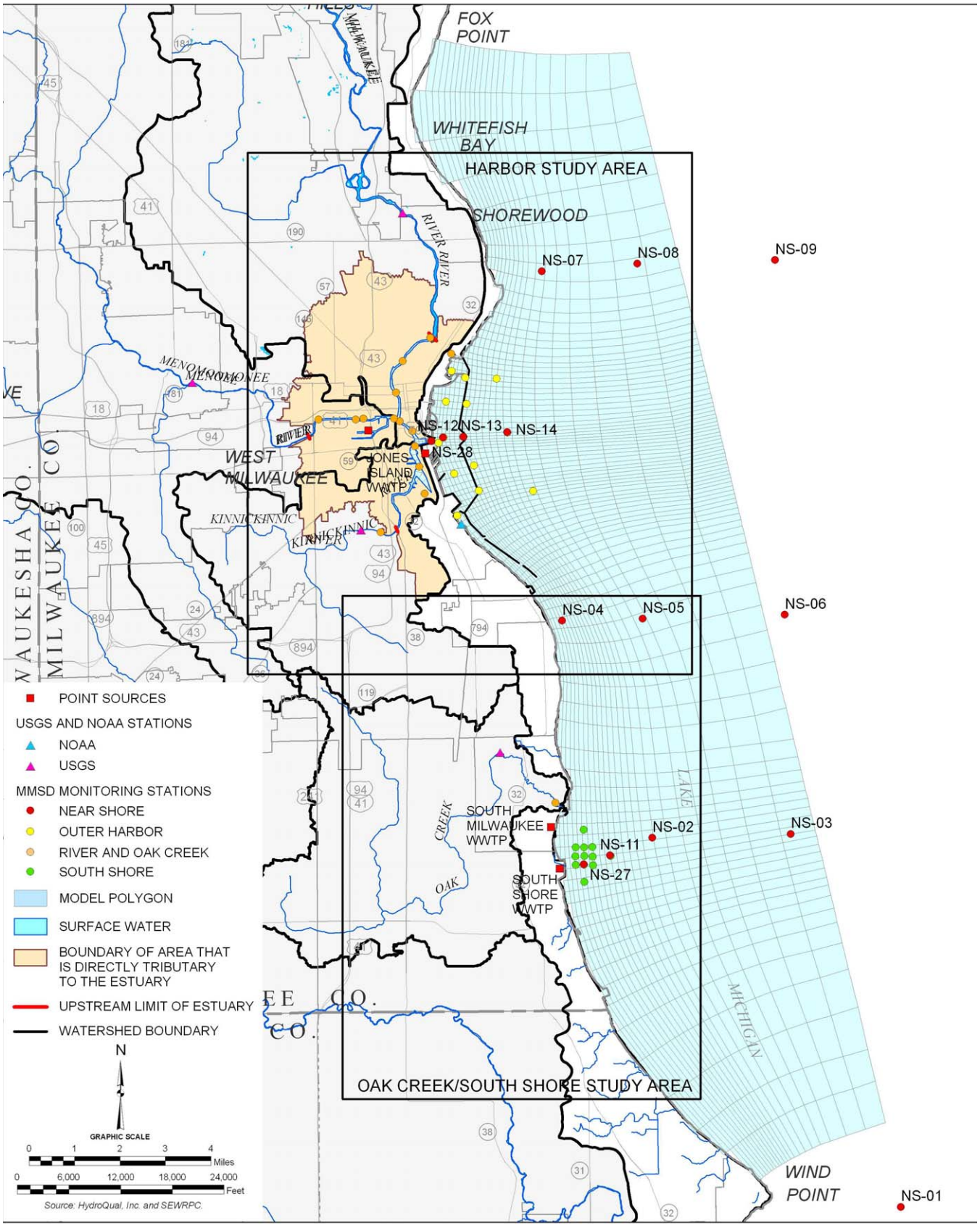


Exhibit C

Map V-7

REPRESENTATION OF THE MILWAUKEE HARBOR ESTUARY AND LAKE MICHIGAN NEARSHORE AREA IN THE HYDRODYNAMIC/WATER QUALITY MODEL



PRELIMINARY DRAFT

Map V-7 (continued)

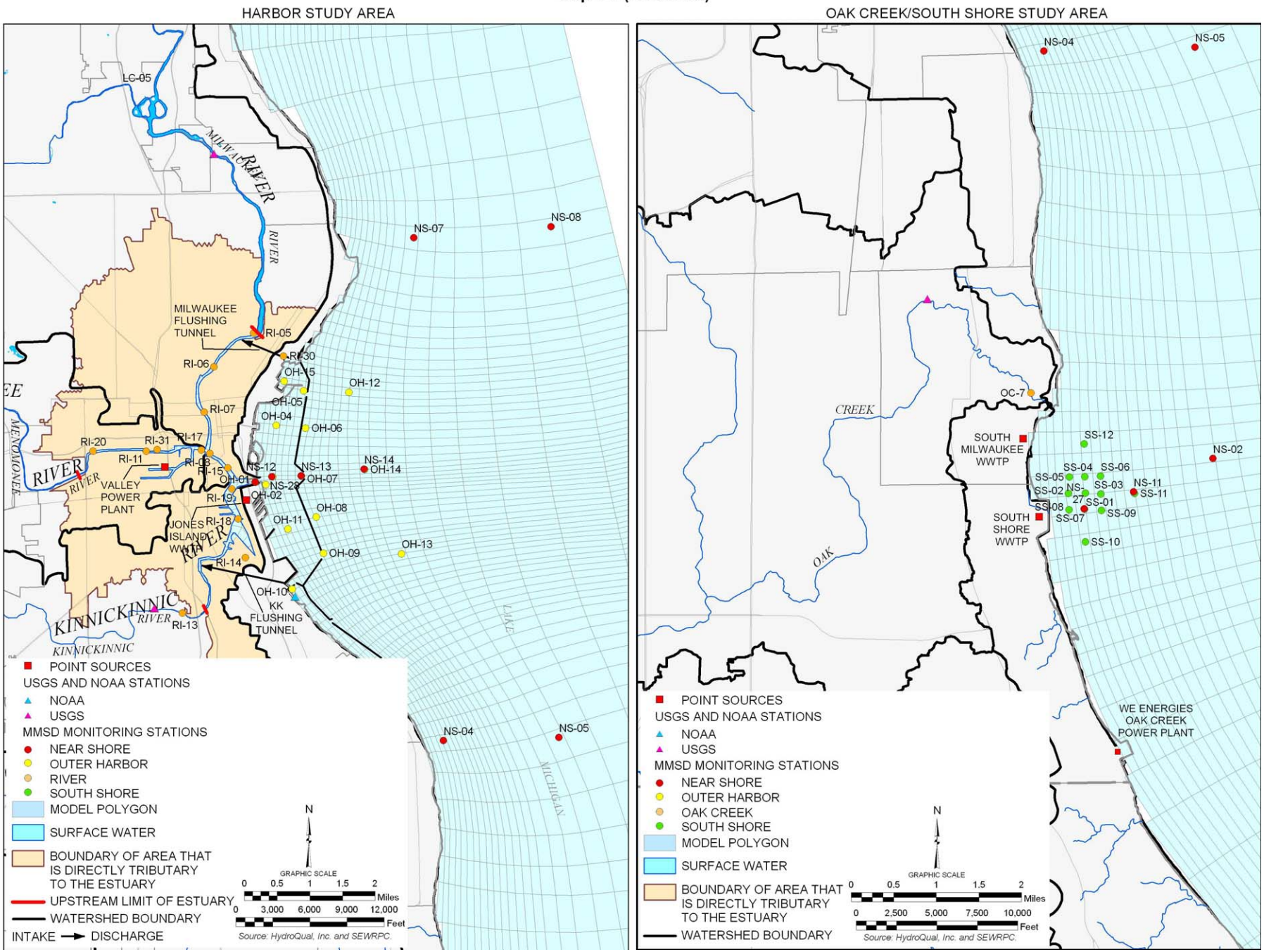
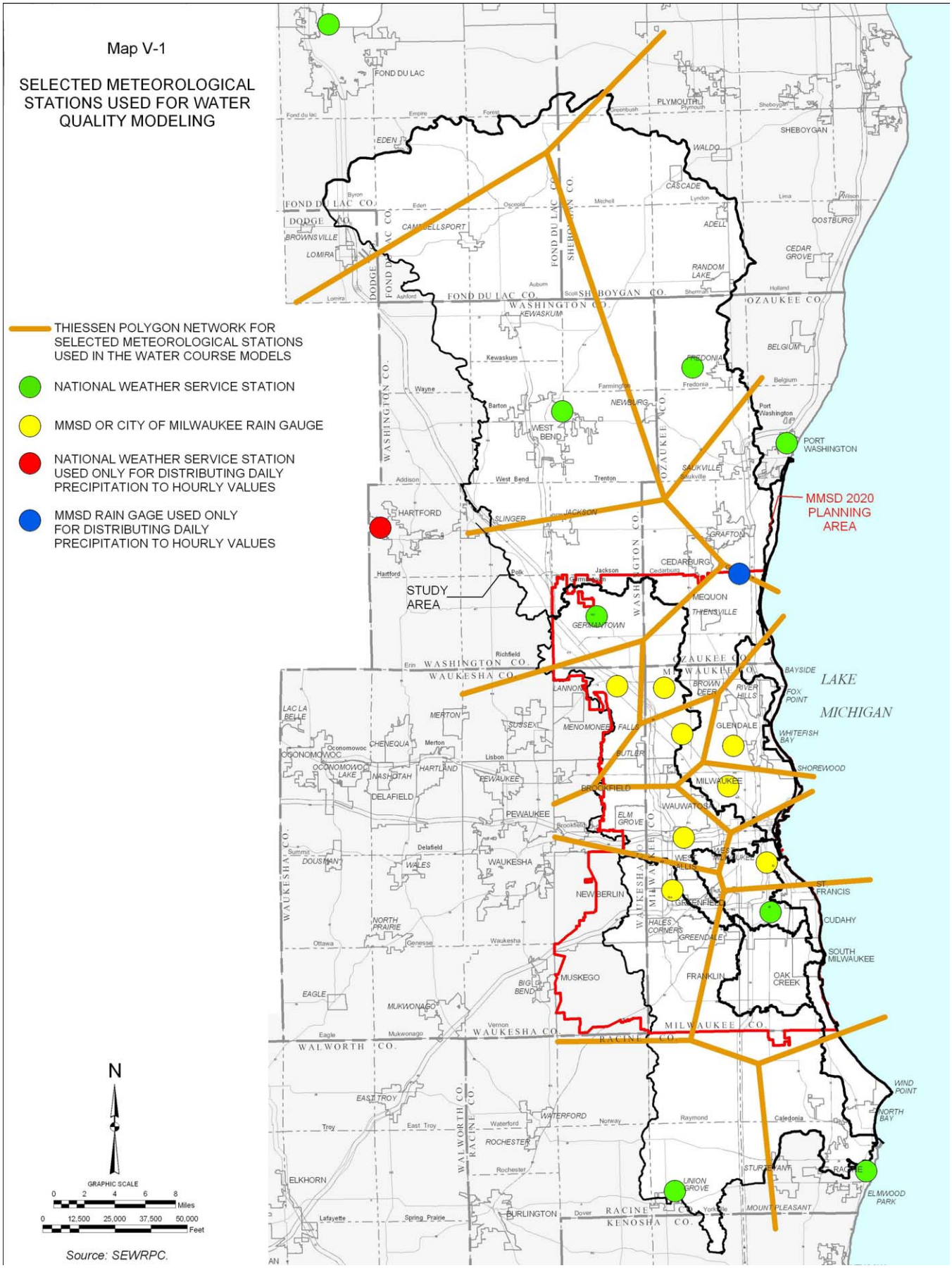


Exhibit D


Map V-1
SELECTED METEOROLOGICAL STATIONS USED FOR WATER QUALITY MODELING
THIESSEN POLYGON NETWORK FOR SELECTED METEOROLOGICAL STATIONS USED IN THE WATER COURSE MODELS
NATIONAL WEATHER SERVICE STATION
MMSD OR CITY OF MILWAUKEE RAIN GAUGE
NATIONAL WEATHER SERVICE STATION USED ONLY FOR DISTRIBUTING DAILY PRECIPITATION TO HOURLY VALUES
MMSD RAIN GAGE USED ONLY FOR DISTRIBUTING DAILY PRECIPITATION TO HOURLY VALUES
MMSD 2020 PLANNING AREA
STUDY AREA
LAKE MICHIGAN
FOND DU LAC
PLYMOUTH
SHEBOYGAN
WALDO
CASCADE
OOSTBURG
ADELL
CEDAR GROVE
RANDOM LAKE
BELGIUM
PORT WASHINGTON
SAUKVILLE
NEWBURG
WEST BEND
HARTFORD
SLINGER
JACKSON
GRAFTON
CEDARBURG
MEQUON
THIENSVILLE
GERMANTOWN
BAYSIDE
FOX POINT
BROWN DEER
RIVER HILLS
GLENDALE
WHITEFISH BAY
SHOREWOOD
MILWAUKEE
WAUWATOSA
BROOKFIELD
ELM GROVE
MENOMONEE FALLS
BUTLER
LANNON
SUSSEX
MERTON
LAC LA BELLE
OCONOMOWOC
OCONOMOWOC LAKE
NASHOTAH
DELAFIELD
HARTLAND
LISBON
CHENEQUA
PEWAUKEE
WAUKESHA
WALES
DOUSMAN
NEW BERLIN
GREENFIELD
HALES CORNERS
GREENDALE
ST. FRANCIS
CUDAHY
SOUTH MILWAUKEE
OAK CREEK
FRANKLIN
MUSKEGO
BIG BEND
NORTH PRAIRIE
MUKWONAGO
EAGLE
WALWORTH CO.
WAUKESHA CO.
WASHINGTON CO.
OZAUKEE CO.
MILWAUKEE CO.
RACINE CO.
KENOSHA CO.
FOND DU LAC CO.
DODGE CO.
SHEBOYGAN CO.
EAST TROY
WATERFORD
ROCHESTER
ELKHORN
BURLINGTON
UNION GROVE
STURTEVANT
MOUNT PLEASANT
WIND POINT
NORTH BAY
ELMWOOD PARK
RACINE
N
GRAPHIC SCALE
0 2 4 6 8 Miles
0 12,500 25,000 37,500 50,000 Feet
Source: SEWRPC.