SUMMARY NOTES OF THE OCTOBER 21, 2015
MEETING OF THE TECHNICAL ADVISORY COMMITTEE FOR
A CHLORIDE IMPACT STUDY FOR THE SOUTHEASTERN WISCONSIN REGION

INTRODUCTION

The October 21, 2015, meeting of the Technical Advisory Committee for *A Chloride Study for the Southeastern Wisconsin Region* was convened at the offices of the Southeastern Wisconsin Regional Planning Commission at 1:30 p.m. The meeting was called to order by Committee Chair Thomas M. Grisa, Director of the City of Brookfield Department of Public Works. Attendance was taken by circulating a sign-in sheet.

In attendance at the meeting were the following individuals:

Technical Advisory Committee Members

Thomas M. Grisa, Chair	Director, Department of Public Works, City of Brookfield
Roger Bannerman	Liaison to Wisconsin Department of Natural Resources, U.S. Geological Survey
Shelly Billingsley	Acting Director of Public Works/City Engineer, City of Kenosha
Wanda Booker (for Ghassan Korban)	Sanitation Services Manager, Public Works, City of Milwaukee
Kevin M. Brunner	Director of Central Services, Walworth County Public Works Department
Steve Corsi	Research Hydrologist, Chemistry, U.S. Geological Survey
Peter Chladil	Manager, Highway Operations, Waukesha County Highway Department
Matthew T. Magruder	Environmental Research Manager, Milwaukee Metropolitan Sewerage District
Maureen McBroom	Stormwater Specialist, Wisconsin Department of Natural Resources
Cheryl Nenn	Riverkeeper, Milwaukee Riverkeeper
David Nguyen	SE Region Systems Operations Chief, Wisconsin Department of Transportation
Madeline Gotkowitz (for Kenneth Bradbury)	Hydrogeologist, Wisconsin Geological and Natural History Survey
David Strifling	Director, Water Law and Policy Initiative, Marquette University Law School
John Walker	Director, Wisconsin Water Science Center, U.S. Geological Survey
Thomas A. Wiza	Director, Engineering and Public Works, City of Cedarburg

Staff and Guests

Joseph E. Boxhorn	Senior Planner, Southeastern Wisconsin Regional Planning Commission
Michael G. Hahn	Deputy Director, Southeastern Wisconsin Regional Planning Commission
Laura L. Kletti	Chief Environmental Engineer, Southeastern Wisconsin Regional Planning Commission
Aaron Owens	Planner, Southeastern Wisconsin Regional Planning Commission
Kenneth R. Yunker	Executive Director, Southeastern Wisconsin Regional Planning Commission

Mr. Grisa welcomed the attendees to the meeting. Mr. Hahn thanked the attendees for their participation, and he noted that David Strifling, J.D., LL.M, P.E., Director of the Marquette University Law School's Water Law and Policy Initiative has been added to the Technical Advisory Committee. He added that the Commission staff was very pleased that Mr. Strifling had agreed to serve on the Committee, and that his background as both an attorney and a Registered Professional Engineer would be valuable to the Committee deliberations and the conduct of the study. He concluded by noting that one of the issues that Mr. Strifling is working on is developing policy strategies for chloride management.

Mr. Hahn said that as the Commission staff has continued to research issues related to road salt and other sources of chloride in the environment, it has become clear that there are multiple significant sources that the proposed study would need to address, in addition to road salt. Thus, he proposed substituting "chloride" for "road salt" in the study title, and he asked the Committee members if they agreed with that change. The members expressed general agreement. Mr. Hahn said that the prospectus would be edited as appropriate to reflect the change in the study title and the inclusion of sources of chloride in addition to road salt.

[Secretary's Note: The Commission staff will review the prospectus and edit it to reflect the change in study title as appropriate. The "Description of the State-of-the-Art of Winter Road Maintenance" subsection on page 53 in Chapter IV of the prospectus will be replaced with the following to reflect the study's broader consideration of the effects of chloride:

"Description of the State-of-the-Art of Activities Affecting Chloride in the Environment

A comprehensive state-of-the-art component will be developed that will examine various aspects of chloride sources in the environment. That component will largely be based on an extensive search of both the technical literature and other appropriate sources and interviews of municipal public works staff and employees of private snow and ice control firms. It will address chloride in the context of a) winter anti-icing and deicing by both the public and private sectors, including salt storage; b) water softening; c) municipal wastewater sources; d) private onsite wastewater treatment systems; and e) other potentially significant sources such as large agricultural feed lots and fertilizers. The toxicity and other environmental effects of various alternative road anti-icing and deicing substances will be evaluated; best practices and technologies for application of anti-icing and deicing substances, for water softening, and for fertilizer application will be identified and evaluated; effects of chloride on transportation infrastructure will be described; regulatory requirements related to winter road maintenance will be reviewed;[x] and legal and policy aspects related to chloride in the environment and to approaches to mitigate the effects of

chloride will be explored. Where appropriate, the performance of practices will be evaluated and cost information will be developed for various practices considered.

[x]*Examples of issues to be addressed in this review include permit conditions related to winter road maintenance for municipal separate storm sewer systems and training programs and certification programs for winter road and parking lot maintenance personnel.*"

The final review copy of the prospectus which will be provided to the Committee members will indicate other edits and revisions to address the change in study title.]

REVIEW AND APPROVAL OF THE SUMMARY NOTES OF THE SEPTEMBER 8, 2015, TECHNICAL ADVISORY COMMITTEE MEETING

Mr. Grisa asked Mr. Hahn to review the minutes of the September 8, 2015, Committee meeting, and he mentioned that, since the summary notes included proposed revisions to the study cost and potential funding agency cost apportionments, Committee consideration of approval of the summary notes would be deferred until later in the meeting following review of Chapter VI, "Budget."

Mr. Hahn said that he did not intend to review in detail pages 1 through 11 of the summary notes since they presented a straightforward account of the discussion at the September meeting and the proposed Commission staff modifications to the prospectus in response to that discussion. He went on to say that he would spend some time reviewing pages 12 through 15 of the summary notes, which relate to written comments received subsequent to the September 8 meeting from the staffs of the U.S. Geological Survey (USGS); Wisconsin Geological and Natural History Survey (WGNHS); and U.S. Environmental Protection Agency (USEPA), Region 5.

Mr. Hahn summarized written comments from Mr. Corsi as set forth on page 12 of the summary notes, noting that the regression relationship between specific conductance and chloride should be optimized by site and that such optimization would require collecting chloride samples at the new specific conductance monitoring sites to be established under the study. Mr. Hahn said that comments related to additional monitoring were also received from the USEPA staff, and that both the USGS and USEPA monitoring comments were addressed in a Secretary's Note later in the summary notes.

Mr. Hahn then described comments from Michael Parsen of the WGNHS staff regarding an update of the Wisconsin Springs Inventory that the WGNHS is conducting. Mr. Hahn said that southeastern Wisconsin springs would be examined in 2016, and that would represent an opportunity for collection of additional measurements related to the regional chloride study. Mr. Hahn concluded that the Commission staff would work with the WGNHS staff to identify possible sampling sites and determine the feasibility and cost of monitoring for additional parameters.

Finally, Mr. Hahn reviewed comments provided by Robie Anson of the USEPA, Region 5 staff. Mr. Anson asked that, because the toxicity of chloride to aquatic organisms can be affected by hardness and ionic composition, additional samples collected for the study be analyzed for hardness and concentrations of major ions. Mr. Hahn noted that, in response to Mr. Anson's request as well as to Mr. Corsi's recommendation regarding monitoring for chloride, the monitoring program would be expanded to include collecting samples and analyzing them for concentrations of chloride, total hardness, sodium, potassium, sulfate, magnesium, and calcium. He said that expanding the data collection component of the study would extend the surface water quality inventory by six months, resulting in a two-year monitoring period as shown in the revised schedule that was attached as Exhibit D of the September 8 meeting summary notes, but that the estimated overall study duration of four years would be unchanged. He also said that the additional monitoring would increase the study cost by approximately $290,000, as reflected in Exhibit E of the September 8 summary notes, which sets forth the proposed study cost apportionment between the Wisconsin Department of Natural Resources (WDNR), the Wisconsin Department of Transportation (WisDOT), and SEWRPC. He noted that the additional monitoring cost would result in an

estimated overall study cost of $1.719 million, and that, in Exhibit E of the September 8 summary notes, the additional cost was split evenly between the first two years of the study and was apportioned equally between WDNR, WisDOT, and SEWRPC.

Mr. Grisa asked if there were any additions, revisions, or comments regarding the minutes of the September 8, 2015, Committee meeting.

Ms. Nenn asked about a reference to cheese brine being used as a road salt pre-wetting agent in one Wisconsin county. Mr. Hahn replied that the use of such substances in road anti-icing and deicing operations would be addressed in the state-of-the-art description and that the positive and negative aspects would be presented.

Mr. Corsi noted that on page 16 of the September 8 meeting summary notes, the USEPA Region 5 comments suggest that the study highlight the impacts on aquatic organisms of chronic exposure to lower levels of chloride. He asked for confirmation that, as proposed, the study would not include biological testing. Mr. Hahn confirmed that no biological testing is proposed. Mr. Corsi said that performing bioassays to assess the impacts on aquatic life of chronic exposure to lower levels of chloride may be worthwhile. Mr. Hahn replied that the Commission staff's preference was to address that issue through a thorough review of the scientific literature. Dr. Boxhorn said that he had done some literature review on this issue related to the Commission's work in developing a watershed-based stormwater discharge permit for the municipal separate storm sewer systems in the Menomonee River watershed. Mr. Corsi reiterated the importance of considering low-level chronic effects. Mr. Hahn responded that, with the study cost having risen with the additional monitoring that is proposed, it was not feasible to expect that the project could realistically be funded if more significant monitoring costs were added. He said that the issue of chronic exposure would be addressed through a thorough literature search and summary. Mr. Corsi indicated that the continuous sampling data to be obtained through deployment of data loggers under the study would be useful in assessing chronic effects.

Mr. Hahn said that, since several members of the Committee in attendance at this meeting were not at the September 8 meeting when Chapters I through IV of the prospectus were reviewed, the Committee was welcome to provide comments on those chapters.

Dr. Gotkowitz referred to the mention of human health considerations when road salt accumulates in drinking water sources on page 9 of the prospectus in Chapter III, "Need for Study." She noted that there is also an aesthetic consideration regarding consumers' perceptions of sodium and chloride in drinking water, and those perceptions affect water utilities. She noted that the "aesthetic limit" generally doesn't reach toxic levels, and the limits associated with taste of drinking water vary widely in the literature. Mr. Bannerman added that issues related to drinking water taste have arisen in water supply wells in the City of Madison where chloride concentrations have approached 125 milligrams per liter in one well. Mr. Yunker said this would be addressed in the prospectus.

[Secretary's Note: The following sentence was added after the sixth sentence in the second paragraph on page 9:

"There may also be considerations regarding consumers' perceptions of the taste of drinking water containing elevated levels of sodium and chloride."

Footnote 1 in Chapter IV "Work Program," on page 23 of the study prospectus was revised to read as follows (Text in bold is included here, and in similar subsequent Secretary's Notes, to indicate language changed or added to the text. Text will not be bold in the prospectus.):

"The State of Wisconsin has promulgated surface and groundwater quality criteria for chloride concentrations and those criteria will be incorporated in the standards established for the proposed study. **In addition, a literature search will be conducted to obtain information on sodium and chloride concentrations**

associated with "aesthetic limits" for drinking water. At and beyond such limits, consumers note that the taste of drinking water is affected. Such limits are important considerations relative to water utilities using a groundwater source of water supply. The literature review will also seek to establish whether exceedance of "aesthetic limits" may have human health effects.]

In reference to the mention of cheese brine as a road salt pre-wetting agent on page 15 of the September 8 meeting summary notes, Mr. Brunner noted that Walworth County has considered the use of soy brine and that some guidance on the use of such substances would be helpful. Mr. Hahn said that the state-of-the-art-report would address those considerations. Ms. Nenn said that alternate deicers or wetting agents may be sources of biochemical oxygen demand (BOD) to receiving waters. Mr. Corsi said that the BOD associated with such organic substances has not been thoroughly studied, and the effects are still in question.

Mr. Strifling noted that on page 20 of the draft prospectus, the report section on "Needs to be Met," the seventh item listed refers to "[t]he evaluation of alternative means for reducing the use of road salt ….", and on page 65 of the draft in a listing of study work products it is stated that the study would "[e]valuate alternative scenarios for reducing the use of road salt …" Mr. Strifling also inquired whether the scenarios to be developed would include consideration of legal and policy issues, such as the law in the State of New Hampshire relative to the legal liability of private anti-icing and deicing salt applicators. Mr. Hahn said that clarification would be provided relative to 1) the use of "means" versus "scenarios" and 2) the nature of the scenarios to be evaluated. Mr. Bannerman said that it would be worthwhile to contact private applicators to obtain their thoughts on legal issues associated with winter maintenance of private walkways, parking lots, and vehicular roads. Mr. Hahn mentioned that the Commission staff had invited a representative from the Building Owners and Management Association of Wisconsin to serve on the Technical Advisory Committee, but they were unable to participate.

[Secretary's Note: The reference to "scenarios" on page 65 better represents the intent of the study, thus, the seventh item on page 20 of the draft prospectus was revised to read:

"The evaluation of alternative **scenarios** for reducing the use of road salt in winter road maintenance and for abating the adverse effects of such use on the specific groundwater and surface water resources of the Region identified as exhibiting, or apt to exhibit in the foreseeable future, significant adverse effects from the use of road salts in winter road maintenance practices. **The scenarios will be developed considering a) the amounts of salt applied to public and private facilities, b) substances that could be substituted for chlorides, c) emerging practices regarding anti-icing and pre-wetting agents, d) other operational modifications that may be identified during the course of the study, and e) legal and policy approaches to reduce salt use.**"

The last sentence in the preceding paragraph was also inserted as a footnote at the end of the last bulleted item on page 65.]

Mr. Yunker mentioned that he and Mr. Hahn had recently attended an excellent presentation on "Policy Strategies for Chloride Management," that Mr. Strifling had given under the Marquette University Department of Civil, Construction and Environmental Engineering fall 2015 seminar series. He said that, as the study proceeds, the Commission staff would contact Mr. Strifling regarding legal and policy issues.

Dr. Gotkowitz referred to the first Secretary's Note on page 5 of the September 8 meeting summary notes. That Note sets forth a proposed addition related to snow storage areas, which was to be made on page 30 of the draft prospectus. She noted that the location of snow storage areas near stormwater infiltration practices designed to infiltrate runoff can result in increased chloride concentrations in groundwater, and she suggested that such storage areas should be excluded from wellhead protection areas. Ms. McBroom said that avoiding infiltration from melting snow storage areas might be addressed through management of infiltration areas during the spring of the year when large-scale melting begins and the potential for infiltration increases. Mr. Hahn noted that

potential infiltration of runoff with elevated chloride concentrations has long been a concern of the Commission staff relative to the potential for groundwater contamination. He added that, as an example, by plowing permeable pavement, the need to apply salt to clear snow may be avoided under certain conditions.

[Secretary's Note: The following footnote was added at the end of the sentence that was added to the last paragraph on page 30 of the draft prospectus as described in the preceding paragraph:

"Infiltration of melting snow from storage areas within designated wellhead protection areas could result in increases in chloride concentrations in groundwater used as a public water supply source. Thus, the location of snow storage areas relative to public water supply wellhead protection areas will be an important consideration in conducting the State, county, and municipal maintenance practice inventory. Municipal wellhead protection plans will be reviewed when evaluating the locations of snow storage areas relative to public water supply wells."]

As noted previously, Committee consideration of approval of the summary notes was deferred until later in the meeting following review of Chapter VI, "Budget" (see below).

REVIEW OF PRELIMINARY DRAFT CHAPTER V, "ORGANIZATION FOR STUDY," OF *PROSPECTUS FOR A ROAD SALT IMPACT STUDY FOR THE SOUTHEASTERN WISCONSIN REGION*

At Mr. Grisa's request, Mr. Hahn reviewed preliminary draft Chapter V of the prospectus.

Mr. Hahn said that it is proposed that the study be conducted by the Commission staff with input and guidance from the Technical Advisory Committee. He reviewed Figure 7, "Organizational Structure for Proposed Road Salt Study," noting that the Commission Environmental Planning Division would take the lead role in preparing the study, with support roles assigned to the Transportation Planning, Land Use Planning, and Geographic Information Systems Divisions. He concluded by noting that the plan would be documented in a SEWRPC Technical Report.

[Secretary's Note: The title of Figure 7 on page 59 was changed to:

"Organizational Structure for Proposed **Chloride** Study."]

There were no questions or comments from the Committee, and Chapter V, "Organization for Study," was approved, on a motion by Mr. Brunner, seconded by Ms. Nenn, and carried unanimously.

REVIEW OF PRELIMINARY DRAFT CHAPTER VI, "BUDGET," OF *PROSPECTUS FOR A ROAD SALT IMPACT STUDY FOR THE SOUTHEASTERN WISCONSIN REGION*

Mr. Hahn reviewed preliminary draft Chapter VI of the prospectus. He said that the table in Exhibit E on page 31 of the September 8, 2015, summary notes reflects the estimated additional water quality monitoring cost of $290,000 as previously described during the review of comments received from Committee members following the September 8, 2015, meeting. He noted that the $290,000 cost would be incurred during the first two years of the study, thus, it was added to the cost table in those years and split evenly between the three recommended funding agencies – WisDOT, WDNR, and SEWRPC.

Mr. Grisa asked if the table in Exhibit E of the summary notes would replace Table 4 in the prospectus, and where the additional $290,000 would be added to Table 3, which sets forth estimated study costs itemized by task. Mr. Hahn replied that the table in Exhibit E would replace Table 4 in the prospectus, and that the additional $290,000 would be added to the cost of Item D.1.

[Secretary's Note: After further review of Table 3 on page 62 in the prospectus, it was determined that the additional $290,000 should be added to the "Inventory" section under Item C.5., "Surface Water Quality Data." Thus, the cost associated with Item C.5. should be increased from $77,000 to $367,000; the subtotal for the "Inventory" section of the table should be increased from $458,000 to $748,000; and the total study cost should be increased from $1,429,000 to $1,719,000.

Also, Table 4 on page 62 and Table 5 on page 66 of the draft prospectus should each be replaced with the table in Exhibit E of the September 8, 2015, meeting summary notes.]

Mr. Grisa then asked the Committee for a motion to approve the summary notes of the September 8, 2015, meeting. He noted that approval would indicate that the Committee considered the summary notes to be an accurate representation of both the discussion during the September 8 meeting and the information provided by Committee members after the meeting, and described in the summary notes. He said that approval of the summary notes would not constitute approval of the budget chapter.

The summary notes of the September 8, 2015, Technical Advisory Committee meeting were approved, on a motion by Dr. Gotkowitz, seconded by Mr. Brunner, and carried unanimously.

Mr. Hahn then continued with review of Chapter VI. He said that the proposed equal study cost apportionment between WisDOT, WDNR, and SEWRPC as set forth in Exhibit E of the September 8 meeting summary notes was a good starting point because of the relevance of the study to the three agencies and the benefits of the study to WisDOT and WDNR. He noted that the proposed contribution per agency of approximately $573,000 represents a substantial commitment, and he asked if Ms. McBroom (WDNR) and Mr. Nguyen (WisDOT) could comment on any internal discussions within their agencies regarding the likelihood that they would fund the study as proposed. Mr. Hahn went on to say that there may be additional sources of funding that could be considered, including the USEPA through the Great Lakes Restoration Initiative, or perhaps another USEPA program. He said that once the prospectus is approved by the Committee, the next step would be to secure funding for the study. He raised the possibility of modifying the study scope to reduce the cost, and indicated that the proposed monitoring cost might be reduced by about $90,000 by eliminating monitoring for sodium, potassium, and sulfate. He offered another option for consideration by the Committee, which would be to reduce the geographic scope of the study from addressing the entire Southeastern Wisconsin Region to choosing typical subwatersheds within the Region. He said that, under that option, the study would address conditions in those subwatersheds on the assumption that by picking representative areas, the results for the typical subwatersheds could be extended to similar areas within the Region. He suggested that typical subwatersheds could be selected to represent urban, suburban, and rural conditions, and that they should also include several lakes. He estimated that such a reduction in scope might reduce the total study cost by 25 to 30 percent.

[Secretary's Note: The Committee members did not comment on those options. The Commission staff will proceed to seek funding for the full study.]

Mr. Yunker said that the Commission staff considered the study cost and determined that the Commission could cover some, but not all, of the cost. Mr. Strifling inquired whether the Commission staff had any prior discussions with WisDOT and WDNR regarding the project. Mr. Yunker said that he had discussed it with the WisDOT Southeast Region Director, but that it would be difficult for WisDOT to make any commitment until there is an agreed upon scope of work.

Mr. Nguyen said that it would be helpful to have a summary of the benefits of the proposed study to WisDOT that he could use in internal discussions on a funding role for WisDOT. Mr. Hahn said the Commission staff would provide a list of study benefits. Mr. Nguyen asked what was driving the need for the study. Mr. Hahn replied that two SEWRPC Commissioners had asked that such a study be considered, and he added that the Commission staff had thought about the issues that a chloride study would address for some time, and the request from the Commissioners provided an opportunity to formulate a study design. Mr. Yunker noted that one of the

Commissioners making the request is the Chair of the Walworth County Board, and that the request was largely prompted by the Commissioners' concern regarding the effects of chlorides on inland lakes. He said that the subject of the impacts of road salt is often raised at WisDOT highway expansion project public meetings, and that there is generally not a good answer available. He said that the proposed study would address that issue. Mr. Nguyen asked that Mr. Yunker elaborate on situations when road salt use had been raised as an issue relative to highway expansion projects. Mr. Yunker cited the example of the expansion of STH 50 from USH 12 to STH 67 in Walworth County. Ms. Nenn said that the issue of road salt was also raised during the public meetings for the Zoo Interchange project and the expansion of IH 94 east of the interchange.

[Secretary's Note: In response to Mr. Nguyen's comment regarding providing a summary of the benefits of the study, it is proposed to rename Chapter VI as "Costs and Benefits of the Study," and to add the following section on page 62 at the end of that chapter:

"BENEFITS OF THE STUDY

The study will provide multiple benefits to the Region and the State of Wisconsin by providing 1) an understanding of the levels of chloride in surface waters and groundwater; 2) an evaluation of historical and future trends in chloride loads and concentrations in surface water and groundwater; 3) quantification of the potential chloride contribution to surface water and groundwater from various sources, including segments of the interstate, state, and county highway systems; and 4) chloride management approaches that will help to maintain high quality surface water and groundwater resources, or to improve their quality, while also addressing public health and safety considerations and the State-wide economic benefits of adequate winter maintenance of roads. Specifically, the study will benefit the Southeastern Wisconsin Region, and the State of Wisconsin as a whole, through:

1. **Establishment of sound, specific data on the amounts of chloride contributed to the environment from all significant sources.** For example, the study will provide estimates of the annual amount of chloride applied to public roads relative to other sources such as the amount of chloride applied to private parking lots or the amount discharged from water softeners. This will provide valuable context regarding the relative contributions of chloride to the environment.

2. **Development of a comprehensive state-of-the-art component that will examine various aspects of activities affecting chloride in the environment.** That component will largely be based on an extensive search of both the technical literature and other appropriate sources and interviews of municipal public works staff and employees of private snow and ice control firms. It will address chloride in the context of a) winter anti-icing and deicing by both the public and private sectors, including salt storage; b) water softening; c) municipal wastewater sources; d) private onsite wastewater treatment systems; and e) other potentially significant sources such as large agricultural feed lots and fertilizers. The toxicity and other environmental effects of road salt and various alternative road anti-icing and deicing substances will be evaluated; best practices and technologies for application of anti-icing and deicing substances, for water softening, and for fertilizer application will be identified and evaluated; effects of chloride on transportation infrastructure will be described; regulatory requirements related to winter road maintenance will be reviewed; and legal and policy aspects related to chloride in the environment and to approaches to mitigate the effects of chloride will be explored. Where appropriate, the performance

of practices will be evaluated and cost information will be developed for various practices considered.]

3. **The collection of valuable new instream and inlake water quality information, the analysis of existing and new data to identify areas where chloride concentrations are at problem levels, or may reach problem levels in the future.** This analysis will identify trends where sufficient data are available.

4. **Analysis and evaluation of the potential impacts of chloride in the environment on surface and groundwater resources.** These analyses will be performed for existing and planned year 2050 land use conditions and will be performed at a subwatershed or subbasin geographic scale, recognizing municipal boundaries, that will enable the relative contributions of the various sources (e.g., road anti-icing and deicing, parking lot anti-icing and deicing, water softeners) to be estimated at that geographic scale. These analyses will provide useful information for evaluating effects of changes in land use on the amount of chloride in the environment, including the contributions from winter maintenance of roads and highways.

5. **Evaluation of alternative scenarios for reducing chlorides in the environment while protecting public health and safety.** These scenarios would address winter road maintenance, water softening, municipal wastewater treatment, private onsite wastewater treatment, and other significant chloride sources. The scenarios would be intended to reduce the adverse effects of chloride on surface water and groundwater quality and on transportation infrastructure."]

Dr. Gotkowitz said that the breadth of the proposed study is a strength, and that the study would be of value not just to the seven-county Region, but to the entire State and even the Midwestern United States. She added that, because the study would be of Statewide benefit, it is important that State agencies assume leading roles. She concluded by asking that the broad geographic applicability of the study be addressed directly in the prospectus.

Mr. Yunker said that initiation of the study is dependent on the work being funded, and that the Commission staff would meet to discuss funding with the WDNR and WisDOT Regional Directors and Department Secretaries, as necessary.

Mr. Brunner noted that the Twin Cities of Minnesota have a chloride management plan, and he said it would be useful to learn more about that plan and to find out how its preparation was funded. He said that the counties of the Region might be a source of funding for the proposed study. Mr. Grisa mentioned that SEWRPC annually receives significant funding from the counties of the Region.

[Secretary's Note: The July 2015 draft *Twin Cities Metropolitan Area Chloride Management Plan*, prepared by the Minnesota Pollution Control Agency, along with several supplemental studies, was prepared using funds from the Clean Water Fund established by the 2008 Clean Water, Land and Legacy Amendment to the Minnesota Constitution. The Legacy amendment increases the State of Minnesota sales tax by 0.375 percent from July 1, 2009, through 2034. One-third of the funds collected are designated for the Clean Water Fund.]

Ms. McBroom said that from the perspective of WDNR, the value of the study is not in question, and she noted that streams were listed as impaired for chloride on the 2014 list of impaired waters prepared by WDNR and approved by USEPA under Section 303(d) of the Federal Clean Water Act. She added that the draft 2016 303(d) list includes additional waters with impairments attributed to chloride. Because measures to address chloride loads

to water resources would ultimately be incorporated in municipal separate storm sewer system (MS4) discharge permits, Ms. McBroom suggested that it might be in the best interest of MS4 municipalities to pursue grant funds to help fund the proposed regional chloride study. She also asked whether use of water quality data collected under the WDNR and University of Wisconsin Extension Water Action Volunteers (WAV) program could reduce study costs. Mr. Hahn replied that the WAV data could be an important source of supplemental information, but, he was not sure if WAV data would always be useful for the proposed study because of the need to collect data at specific times and locations (e.g., to capture instream concentrations during snowmelt- or precipitation-driven runoff events). He added that he did not think the use of WAV data would substantially reduce study costs. Mr. Bannerman said that the WAV data could be useful to the study. Ms. Nenn said that the Milwaukee Riverkeeper WAV data collection program could be flexible in collecting data that would be useful to the study.

[Secretary's Note: The Water Action Volunteers (WAV) program is mentioned as a potential source of existing specific conductance or chloride concentration data under footnote 3 on page 34 of the draft prospectus and footnote 7 on page 35. When the detailed study design is developed, the SEWRPC staff will coordinate with Milwaukee Riverkeeper regarding maximizing the usefulness to the study of the water quality data collected by Riverkeeper volunteers.]

Ms. McBroom said that she has discussed the funding issue with Benjamin Benninghoff, WDNR Natural Resource Basin Supervisor stationed in the Southeast Region, as well as the WDNR Water Monitoring Section Chief and Central Office staff in the Wastewater and Water Quality Divisions. She said it is difficult for WDNR to commit to providing funds, given the Department's budget situation.

Mr. Grisa asked if it was necessary to identify the sources of funding at this stage in project formulation, noting that identification of the sources might limit other opportunities for funding. Mr. Yunker said that the text of the prospectus would be revised to indicate that sources of funding other than WisDOT, WDNR, and SEWRPC would be sought and that after such funding is obtained, the remaining amount needed to fully fund the study would be divided equally between WisDOT, WDNR, and SEWRPC. He said that Table 4 in the prospectus, which was revised as indicated above to include the cost of additional water quality monitoring, and which indicates the costs in each of the four study years and the equal apportionment between WisDOT, WDNR, and SEWRPC assuming no outside grant funding, would be retained as an example of the funding levels without outside grant support.

Ms. McBroom said that lake associations and river-oriented groups might be sources of funding. Mr. Hahn replied that such organizations certainly would benefit from the study. Dr. Gotkowitz suggested that the League of Wisconsin Municipalities might be a source of funding relative to the legal and liability aspects of the study. Ms. Billingsley asked whether WisDOT funding for municipal highway construction projects could be reduced if WisDOT were to contribute funding to the proposed chloride study. Mr. Yunker replied that the level of funding of the study assigned to WisDOT is relatively modest, and that planning and construction projects are separated in the WisDOT budget.

Mr. Nguyen inquired as to what the study is expected to achieve. Mr. Hahn replied that the study would 1) consider both existing and planned land use conditions; 2) identify areas with potentially problematic chloride loads to receiving streams and groundwater under those land use conditions; 3) include a state-of-the-art report that would be applicable State-wide and would evaluate road winter road management options, the effectiveness of those options, and their environmental impacts; and 4) develop a set of management actions and evaluate their cost-effectiveness; and 5) balance environmental effects and public safety. Mr. Yunker noted that, by considering planned land use conditions, the study would provide an early warning of where chloride problems may develop in the future. He also said that the Commission staff may explore the possibility of working with the Marquette University Law School on the complex legal and policy issues.

Mr. Bannerman said it would be important for the study to set realistic expectations by illustrating the benefits achievable through different levels of reduction in chloride use. He indicated that it would not be likely that a 50 percent reduction in chloride loads could be achieved, but that improvements could be obtained over time until

better technologies and products are developed. He noted that studies have already been done regarding the relative amount of deicing salt applied by the public sector (approximately 45 percent of the total) and the private sector (40 to 50 percent). Mr. Hahn replied that the proposed study would provide a sound technical basis for decision making in the Southeastern Wisconsin Region and that application estimates would be geographically specific to the Region. Mr. Bannerman mentioned that the City of Madison Water Utility WiSaltWise web site (http://www.cityofmadison.com/water/insidemwu/tag/wisaltwise) is a good resource for information related to road salt use.

[Secretary's Note: In response to comments from Mr. Hahn on page 7 of these summary notes, Dr. Gotkowitz as described in the last paragraph on page 8 and the first paragraph on this page, Mr. Brunner in the second paragraph on page 9, Ms. McBroom as described in the third paragraph on page nine and the first paragraph on this page, and Mr. Yunker as described in the last paragraph on page 9, the "Cost Allocation" section on page 61 of the draft prospectus was revised as indicated below:

"Because of the importance of salt use in winter road maintenance and the potentially adverse effect of such use on the transportation infrastructure and the water resources of the Region, and particularly on the inland lake, wetland, and groundwater resources of the area, it may be possible to obtain direct State funding for the conduct of the study. **The state-of-the-art component and the study findings and recommendations would be applicable statewide and perhaps throughout the Midwestern United States. The applicability of the study beyond the Southeastern Wisconsin Region increases its value to the Wisconsin Department of Transportation (WisDOT) and the Wisconsin Department of Natural Resources (WDNR). Thus, a possible strategy for funding the study would be for WisDOT, WDNR, and SEWRPC** to each provide one-third of the required funding, or **approximately $573,000** each.

The WisDOT and WDNR representatives on the Technical Advisory Committee asked that additional sources of funding be pursued to reduce the costs to WisDOT, WDNR, and SEWRPC. Possible additional funding sources that will be considered include 1) the U.S. Environmental Protection Agency Great Lakes Restoration Initiative, 2) Federal Highway Administration (FHWA) research funds, 3) the WisDOT State Planning and Research Program (80 percent funding from FHWA with the remainder provided by the State and SEWRPC), 4) the Fund for Lake Michigan, 5) municipalities that have municipal separate storm sewer system (MS4) permits from the State of Wisconsin under the Wisconsin Pollutant Discharge Elimination System (WPDES), 6) the Milwaukee Metropolitan Sewerage District, 7) lake associations and river-oriented groups, and 8) the League of Wisconsin Municipalities. If funding is obtained from sources other than WisDOT, WDNR, and SEWRPC, the amount of that funding would be subtracted from the total study cost and the remaining amount would be divided equally between WisDOT, WDNR, and SEWRPC.[x]"

[x] ***Any WisDOT or SEWRPC matching contributions that may be required for certain grants (e.g., from FHWA) would be treated as part of the WisDOT or SEWRPC equal cost shares.***

The title for both Table 4 and Table 5 was changed to:

"Funding Strategy for Southeastern Wisconsin Regional **Chloride** Impact Study **in the Absence of Supplemental Funding from Other Sources"**]

Mr. Grisa suggested that the Committee vote to approve Chapter VI in two parts, in an effort to reflect Committee support for the study as a whole, but to recognize WisDOT and WDNR concerns regarding the three-agency funding approach. Based on a suggestion from Ms. McBroom, it was decided to move Table 3, "Regional Road Salt Study Cost Estimate, into the "Cost Estimate" section, which is the first of two sections in Chapter VI, and to first request a motion to approve that part of Chapter VI from the beginning through the relocated Table 3, "Regional Road Salt Study Cost Estimate."

[Secretary's Note: Table 3, "Regional Road Salt Study Cost Estimate," was moved to the end of the "Cost Estimate" section in Chapter VI, and renamed "Regional Chloride Study Cost Estimate." The third sentence in the third paragraph in the "Cost Estimate" section on page 61 of the prospectus was revised as follows:

"Consequently, the cost estimates presented in Table **3** must be considered tentative with respect to the allocation of the total cost among the various work elements."]

Chapter VI of the prospectus from the beginning of the Chapter through Table 3 was approved, as amended, on a motion by Dr. Walker, seconded by Mr. Magruder, and carried unanimously.

The remainder of Chapter VI of the prospectus, constituting the "Cost Allocation" section and Table 4 was approved, as amended, on a motion by Ms. Nenn, seconded by Dr. Gotkowitz, with the representatives from the WDNR and WisDOT abstaining and the remainder of the Committee members voting to approve.

REVIEW OF PRELIMINARY DRAFT CHAPTER VII, "SUMMARY AND RECOMMENDATIONS," OF *PROSPECTUS FOR A ROAD SALT IMPACT STUDY FOR THE SOUTHEASTERN WISCONSIN REGION*

Mr. Hahn then reviewed preliminary draft Chapter VII of the prospectus.

Mr. Bannerman noted that good information is available on road salt application in Madison area, and that this information would be useful for the proposed study.

Mr. Chladil said that Waukesha County has road salt application data going back to at least the year 2000. He also said that the County has implemented innovative practices, including initiating pre-wetting of salt in 2006 and pre-wetting all salt by 2012. He also mentioned looking into automatic vehicle location global positioning system (AVL GPS) technology. He emphasized the importance of obtaining information on highway lane miles. Mr. Yunker noted that the SEWRPC staff would be able to obtain information on lane miles of roads from Regional inventories. Mr. Hahn added that, during the course of the study, the SEWRPC staff would contact municipalities and counties to obtain information on winter road maintenance practices. Mr. Nguyen said that road salt vendors throughout the State should be contacted to obtain information on amounts sold. Mr. Hahn replied that they would be contacted.

Mr. Corsi inquired as to the format and content of the state-of-the-art report. Mr. Hahn replied that it might be a separate report or it could be an appendix to the chloride study. He said that the state-of-the-art report would be comprehensive and would identify best practices related to chloride management that would inform development of alternative approaches.

Dr. Walker said that the second last bullet on page 65 of the prospectus should be revised to reflect the broadening of the study to address multiple sources of chloride in the environment.

[Secretary's Note: The second last bullet on page 65 of the prospectus was revised as follows:

"**Include a comprehensive** state-of-the-art **component that will examine various aspects of chloride sources in the environment**, including information on the

technologies involved in various practices **to address chlorides**, and the attendant costs."]

Mr. Bannerman mentioned that weather reports and pavement temperature measurement technology would be important considerations for the state-of-the-art report to address relative to winter road maintenance. Mr. Nguyen asked whether average snowfall and temperature data would be considered under the study. Mr. Hahn replied that they would.

Mr. Corsi said that some recent work has focused on salinity, rather than chloride concentration, and he noted that some alternative deicing substances may still affect salinity, which affects aquatic life. Ms. Billingsley mentioned that another chloride source could be salt water swimming pools, which are becoming more popular. Mr. Yunker said that issue would be considered.

Ms. McBroom noted that some older stormwater detention basins built before stormwater standards were adopted are excavated within the groundwater table and are unlined, providing a connection to the groundwater for chloride dissolved in the water within the basin. Mr. Corsi added that detention basins change the timing of delivery of runoff to downstream areas, possibly making an acute problem a chronic one as the discharge from the basin occurs over a longer time than if runoff were not detained.

Chapter VII of the prospectus from the beginning of the Chapter through the first sentence of the last paragraph on page 65 was approved, as amended, on a motion by Dr. Walker, seconded by Mr. Magruder, and carried unanimously.

[Secretary's Note: The first sentence of the last paragraph on page 65 of the prospectus was revised as follows:

"The cost of cooperatively preparing a technically sound **chloride** impact study for the urbanizing Southeastern Wisconsin Region is estimated to total **$1.719** million."]

The remainder of Chapter VII of the prospectus (the last paragraph on page 65, the paragraph on page 66, and Table 5) was approved, as amended, on a motion by Mr. Wiza, seconded by Ms. Nenn, with the representatives from the WDNR and WisDOT abstaining and the remainder of the Committee members voting to approve.

[Secretary's Note: The last four sentences of the last paragraph on page 65 and the paragraph on page 66 of the prospectus were revised as follows:

"Because of the importance of salt use in winter road maintenance and the potentially adverse effect of such use on the transportation infrastructure and the water resources of the Region, and particularly on the inland lake, wetland, and groundwater resources of the area, it may be possible to obtain direct State funding for the conduct of the study. **The state-of-the-art component and the study findings and recommendations would be applicable statewide and perhaps throughout the Midwestern United States. The applicability of the study beyond the Southeastern Wisconsin Region increases its value to the Wisconsin Department of Transportation (WisDOT) and the Wisconsin Department of Natural Resources (WDNR). Thus, a possible strategy for funding the study would be for WisDOT, WDNR, and SEWRPC to each provide one-third of the required funding, or approximately $573,000 each.**

The WisDOT and WDNR representatives on the Technical Advisory Committee asked that additional sources of funding be pursued to reduce the costs to WisDOT, WDNR, and SEWRPC. Possible additional funding sources that will be considered are listed in Chapter VI. The costs could be incurred over a four-year period.

In consideration of the foregoing, the Committee recommends that a **chloride** impact study be undertaken for the Southeastern Wisconsin Region, and that the scope, content, techniques, time sequence, staffing, committee structure, and **funding strategy** for the needed planning effort be as recommended in this prospectus. The Committee respectfully urges the Southeastern Wisconsin Regional Planning Commission to give careful consideration to this prospectus and to act favorably thereon."]

NEXT STEPS IN THE STUDY PROCESS

Mr. Hahn said that the next steps would be to:

- Prepare the summary notes documenting the discussion at the October 21 meeting, and the associated changes to the prospectus and
- Revise the prospectus, and distribute the revised version to the TAC.

He indicated that the SEWRPC staff might call one more meeting of the TAC to review the final changes to the prospectus, based on the discussion during the October 21 meeting.

In the longer term, he said that the SEWRPC staff would develop a funding strategy that would include seeking grants and would pursue funding for the study.

Mr. Yunker said that the SEWRPC staff would have further discussions regarding funding with staff from WisDOT and WDNR.

Mr. Grisa suggested that the SEWRPC staff could request that the TAC members indicate their approval of the October 21, 2015, summary notes and the final prospectus through e-mail, and that the SEWRPC staff could offer the TAC members an option to request a meeting to review those documents.

Mr. Yunker concluded by saying that the Commission appreciates the time and work of the Committee, and the Commission staff believes the study would be very worthwhile.

ADJOURNMENT

The meeting was adjourned by unanimous consent at approximately 3:30 p.m.

ADDITIONS TO THE DRAFT PROSPECTUS MADE BY SEWRPC STAFF FOLLOWING THE OCTOBER 21, 2015 MEETING OF THE TECHNICAL ADVISORY COMMITTEE

Following the October 21, 2015, meeting of the Technical Advisory Committee, the Commission staff drafted the following footnote to address the component of chloride load that would reach wastewater treatment plants through infiltration and inflow to sanitary sewers.

[Secretary's Note: The following footnote was added after footnote 20 at the end of the first partial paragraph on page 52:

"[21] *An additional component of the chloride load to waterbodies would be from the chloride applied for anti-icing and deicing of paved surfaces that would reach sanitary sewers, and ultimately wastewater treatment plants, through infiltration and inflow. The magnitude of that component of the load would not be directly estimated, but it would be accounted for in the chloride loads from those treatment plants. The*

inflow component would generally enter sanitary sewers through surface connections such as manholes, and thus, would travel through the system and be discharged to waterbodies within a relatively short time. The infiltration component would be comprised of chloride that first infiltrates into the ground before infiltrating into a sanitary sewer. In relatively densely developed urban areas, the chloride load attributable to infiltration into sanitary sewers would reach those sewers on a short time frame (generally less than the monthly time frame to be used for the chloride mass balance analysis) given the spatial density of the sewer network. In certain less-densely developed areas served by sanitary sewers, and along the outer boundaries of densely-developed areas, there might be instances where chloride infiltrated into the ground would reach the groundwater table and travel more slowly to the sanitary sewer, perhaps on a time scale longer than one month. Such contributions might show up later in the winter maintenance period, or after winter. The magnitude of the loads reaching waterbodies on time frames greater than one month would be anticipated to be relatively small, but the possibility of chloride contributions from longer-term infiltration to sanitary sewers and from longer term groundwater inflow to waterbodies, will be taken into consideration during the mass balance analysis."]

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