

January 24, 2011

Mr. William G. Bailey
Savannah District,
US Army Corps of Engineers
100 West Oglethorpe Avenue
Savannah, GA 31401

**RE: Savannah Harbor Expansion Project
Draft Tier II Environmental Impact Statement
Review Comments**

Mr. Bailey,

The City of Savannah appreciates the opportunity to review and provide relevant comments concerning the Draft Tier II Environmental Impact Statement for the Savannah Harbor Expansion dated November 2010. Savannah understands the vital role that the Georgia Ports Authority plays not only on a local level, but also on the state and national levels. As such, Savannah has great interest in the successful operation of the Georgia Ports Authority and very much wants to support the efforts of the Georgia Ports Authority to expand their capabilities of handling the larger vessels soon to passing through the Panama Canal.

Unfortunately, and after 14 years of study, the issue of increasing chlorides within the area of Savannah's water supply intakes remains. The draft Tier II EIS, with regard to projected chloride increases, is based on a chloride model and analyses that were rejected by the Corps own technical reviewers and has subsequently been replaced with an updated model and analyses. Unfortunately, the updated model and analyses were not released and only vaguely mentioned as part of the draft Tier II EIS documents. The updated model shows that increases in chloride levels at Savannah's intakes will not be negligible, but will instead be significant to Savannah and its customers. However, most readers of the draft Tier II EIS would not be aware of this issue and would easily be misled by the inclusion and recommendations of the original model and results. This is particularly true with respect to the adequacy and reasonableness of the principle of "Adaptive Management".

While Savannah has no desire to impede the legitimate progress or efforts of the Georgia Ports Authority to deepen the Harbor, it is imperative that Savannah insist that its water supply and quality be protected. Therefore, the use of "Adaptive Management" for this portion of the SHEP project is not acceptable. Based on the updated model's projections of increased chlorides, Savannah must insist that

the mitigation measures (i.e. construction of a supplemental intake and associated transmission lines) be included and funded as an integral part of the SHEP project. It is also necessary for this work to be scheduled such that its completion will coincide with the completion of the channel deepening.

A more detailed discussion of the City's concerns and comments are provided as follows:

1. Savannah has been involved in discussions with the Georgia Ports Authority and the Corps of Engineers from essentially the inception of the project. The majority of Savannah's concern has focused on the potential for increases in chlorides at the City's raw water intakes along Abercorn Creek. Over the course of that time, Savannah has voiced its concerns repeatedly in both open meetings and letters with regard to the potential of the project to increase the concentration of chlorides at the City's raw water intakes.

The Draft Feasibility Report and EIS; Enclosure H – Responses to Comments Received as a Result of Public Review of the Draft Feasibility Report and EIS; pages H-304 thru H-325 and dated 08/11/98 includes letters from the Office of the City Manager dated June 7, 1998 and June 12, 1999 providing the requested comments. The Corps response to the City's comments included the following statement:

"The additional studies and resulting mitigation plan will be subject to a Tier II EIS."

Since the time that responses to the City's 1998 and 1999 comments were provided, the Corps of Engineers has embarked on several occasions to obtain acceptable data and to develop a usable model for projecting potential chloride increases. Unfortunately, most of the attempts did not result in either suitable data or model.

In a letter to Mr. Bill Bailey of the Corps of Engineers and dated July 18, 2007, Savannah provided review and comment to the first chloride modeling report entitled Savannah Harbor Expansion Project – Chloride Data Analysis and Model Development, dated November 15, 2006 as well as the Chloride Impact Evaluation dated February 2007, the Chloride Mitigation Evaluation dated March 2007, the Memorandum of Record entitled Acceptability of Savannah Harbor Chloride Model dated January 10, 2007 and revised February 13, 2007. Savannah's comments included strong concerns regarding the acceptability of the data used and the foundational algorithm employed in the development of the model. The Draft General Re-Evaluation Report for Savannah Harbor Expansion Project Chatham County, Georgia and Jasper County, South Carolina; Section 8.2.4 Chloride Impacts to Savannah's Municipal and Industrial Water Intake and dated November 2010 includes the following statement:

"...substantial uncertainty has been expressed about the ability of the model to make reliable predictions at such low chloride concentrations. The City expressed such concerns, as did the USGS Independent Technical Reviewer and Wilmington District Engineering Division in their final assessment of the chloride model. Additional chloride data collection followed by reanalysis of

the chloride modeling with the new data was authorized in order to address those concerns. This reanalysis has not yet been complete but will be included in the final report.”

Savannah acknowledges that an updated draft chloride study and model have now been made available to Savannah for review. However, this draft was not made available until December 15, 2010. In addition, it should be noted that as of January 6, 2011 the updated draft chloride study had not been disseminated to the regulatory agencies of the State of Georgia. It is Savannah’s understanding that the latest modeling and associated results could have been made available, at least in draft form, for review and discussed as early as September, 2010. However, the entire updated modeling and associated results were withheld awaiting final technical review on the basis of protocol. As a result, the draft Tier II EIS uses the original chloride analysis report, which was known to the Corps of Engineers to have already been rejected by the technical reviewer and their own Wilmington District, as the basis for all conclusions relative to potential chloride impacts. In addition, the Tier II EIS makes only cursory mention that additional studies of potential chloride impacts were underway leading the reader to gloss over the very real potential for serious consequences to Savannah’s water supply. Savannah acknowledges that there are several places throughout the draft Tier II EIS that mention our concerns regarding the adequacy of the predictive model. However, the concurrence with Savannah’s concerns by the technical reviewer and the Wilmington District Engineering Division are mentioned only twice in a document containing over 11,600 pages of report and attachments.

The release of the Tier II EIS based on a modeling effort known to be unacceptable and with full knowledge that the additional chloride investigations were essentially complete and could have been issued in draft form in September will unnecessarily mislead all readers except those most intimate with the chloride issues. This action has also caused Savannah to necessarily respond with comments to both the discussion of chlorides as provided in the officially released draft Tier II EIS document as well as the draft chloride document received on December 15, 2010, but not included within the draft Tier II EIS document.

Comments on Draft Tier II EIS as issued:

2. Table 3-6 SUMMARY OF HYDRODYNAMIC-RELATED IMPACTS WITHOUT MITIGATION; Page 3-20

The table provides results based on the original chloride study which is known by the Corps to be in error and is anticipated to be replaced with an updated study dated December 15, 2010. Therefore, the results indicated in this table are incorrect and must be updated accordingly.

3. Table 3-7 SUMMARY OF HYDRODYNAMIC-RELATED IMPACTS WITH MITIGATION; Page 3-21

The table provides results based on the original chloride study which is known by the Corps to be in error and is anticipated to be replaced with an updated study dated December 15, 2010. Therefore, the results indicated in this table are incorrect and must be updated accordingly.

4. Section 5.1.2.2 Impacts Without Mitigation

The draft Tier II EIS states the following:

“State water resource managers have capped the total volume of water that can be withdrawn from the main water-bearing aquifer...”

This is a correct statement. However, it should be noted that not only have available groundwater withdrawals been capped, but have also been reduced to 2004 withdrawal levels. In addition, discussion continues via special councils appointed by the governors of Georgia and South Carolina concerning saltwater intrusion on Hilton Head Island and the potential for further reductions. These efforts have been underway since 2005 to find amicable solutions to the saltwater intrusion problem and to avoid interstate law suits such as currently exists between Georgia, Alabama, and Florida. Initial groundwater modeling efforts have shown that reductions in groundwater withdrawals as high as 90 percent may be needed to stop saltwater intrusion altogether. Therefore, the reliance upon the Savannah River may be much greater than anyone has anticipated to date.

5. Section 5.2.3 Chloride Concentrations

The draft Tier II EIS states the following:

“The Corps had an Independent Technical Review performed of the chloride model by a staff member of the USGS in Columbia, SC. The reviewer expressed [concerns] about the ability of the model to make reliable predictions at the low chloride concentrations occurring at the City’s intake. The Corps technical staff expressed similar views in their final assessment of the chloride model. The Corps’ technical decision-makers stated that the predictive tool was the best one that could be developed using the information which was available, including data collected as part of the project specifically for development of this tool. ... The basic evaluation indicates that no changes to chloride levels would occur under drought flow conditions (1999 flows; 8-year drought). Under average flows (1997), the 48-foot depth alternate would increase chloride concentrations by 0.01 ppm. Under a severe drought flow conditions (similar to 2001; 20-year drought), chloride levels would increase marginally across the entire chloride frequency distribution. With those flows, the 48-foot depth alternative would increase the maximum chloride concentration by 3% or 0.13 ppm (14.58 to 14.71 ppm).”

In spite of concerns with the Corps own technical reviews, the decision-makers chose to recommend continued use of the original model outputs while stating “...the predictive tool was the best one that could be developed using the information which was available...”. It is most difficult to understand how the decision-makers could possibly have reached this conclusion knowing that a subsequent refining of the model had been completed with the exception of a final technical review. Not only was the updated model available, at least in draft form, but it revealed that increases in chloride increases and associated mitigation will not be marginal, but will instead be substantial. Base chloride concentrations will increase from approximately 10 ppm to approximately 20 ppm with periodic increases reaching into the 50 to 70 ppm range. Unfortunately, the entire draft Tier II EIS with regard to chlorides has been based on this initial recommendation and thus all discussion, results, and mitigation recommendations are flawed and invalid.

6. Section 5.2.4 Mitigation Techniques for Chloride Concentrations

The draft Tier II EIS states the following:

“[NOTE: The City had informed the Corps that the capacity of their plant was roughly 30 MGD. Since the analyses were performed, the City has indicated that the plant’s capacity is now 62.5 MGD.]”

This is incorrect. The question posed to the City was with regard to the production volume and not the capacity. At the time of the question, production was in-fact roughly 30 MGD. The capacity of the plant has been 62.5 MGD since its expansion in 1998.

7. Appendix D – Monitoring and Adaptive Management Plan, Section 5.C(4) – Chloride Monitoring

The draft Tier II EIS proposes to employ Adaptive Management with regard to increased chloride levels at the City’s raw water intakes along Abercorn Creek. In spite of concerns with the Corps own technical reviews, the decision-makers chose to recommend continued use of the original model outputs including the results which indicated no significant impact to chloride levels. As a result, mitigation was limited to Adaptive Management which would be based on eight years of monitoring.

However, subsequent refining of the model has been completed and reveals that increases in chlorides will not be marginal, but will instead be substantial. Therefore, all discussion, results, and mitigation recommendations are flawed and invalid and the Adaptive Management plan, including associated monitoring, is no longer a sufficient or acceptable resolution.

8. Appendix D – Monitoring and Adaptive Management Plan, Section 7.B – Post Construction Monitoring

The draft Tier II EIS states the following:

“Continue to monitor chloride levels in groundwater at the wells that the Corps installed to identify any large/unforeseen adverse impacts to the Floridan drinking water aquifer.”

Savannah is not opposed to the continued monitoring. However, Savannah questions how the Corps would mitigate any large/unforeseen adverse impacts should they occur, as the removal of several feet from the top of the upper confining layer cannot be undone?

9. Appendix I – Federal Consistency Determination Georgia Coastal Zone Management Program, Section 6.26.3 – Consistency

A. The draft Tier II EIS states the following:

“Studies conducted for this project predict that deepening the navigation channel would slightly increase chloride levels in Abercorn Creek at the intake of the City of Savannah’s Water Treatment Plant during low flow conditions. Impacts would not occur under normal or high river flows. The expected impacts are less than 5% and would not increase chloride levels above 50 ppm, well below the drinking water standard of 250 ppm.”

In spite of concerns with the Corps own technical reviews, the decision-makers chose to recommend continued use of the original model outputs. A subsequent refining of the model has been completed

and reveals that increases in chlorides will not be marginal, but will instead be substantial. Base chloride concentrations will increase from approximately 10 ppm to approximately 20 ppm with periodic increases reaching into the 50 to 70 ppm range. Unfortunately, the entire draft Tier II EIS with regard to chloride increases and associated mitigation has been based on this initial recommendation and thus all discussion, results, and mitigation recommendations are flawed and invalid.

B. The draft Tier II EIS states the following:

“If chloride levels in Abercorn Creek become unacceptable, project funds would be used to install a supplemental water line further up river to near Georgia Pacific.”

It would not appear that the draft Tier II EIS includes funding for the installation of supplemental water lines and new intake structure. If these funds are not appropriated as part of the total project as approved by Congress, a separate request for these funds will be required. Actual construction of the mitigation measures described will therefore be subject to an independent approval by Congress which may or may not be granted.

It is the City’s opinion that all funding necessary for the construction of potential mitigation shall be included in the final document to be sent forth to Congress for approval.

10. Appendix L – Cumulative Impact Analysis, Section 11 – Groundwater

The draft Tier II EIS states the following:

“The EPA has established drinking water standards of 500 mg/l for total dissolved solids and 250 mg/l for the chloride ion. Water having chloride levels of less than 250 mg/l is considered safe and palatable to drink.”

While this statement is technically correct, it fails to consider that the secondary limit of 250 mg/l for chloride is specific only to the direct consumption of chloride. However, this secondary limit does not account for the resulting impacts increased chlorides will have on the corrosivity of the water. As chlorides increase, corrosivity will also increase. Increased corrosivity will subsequently lead to increases in lead and copper at the customers tap. Lead and Copper have primary maximum contaminate levels of 0.015 mg/l and 1.3 mg/l respectively. It should be noted that lead and copper are the only substances required by EPA for a water purveyor to sample and control within a consumer’s home and at their tap. It should also be noted that where lead and copper are above the maximum contaminate levels, the water purveyor is required to take action specifically to reduce water corrosivity.

Therefore, to continually state that anticipated increases in chlorides are below the secondary limit of 250 mg/l is both misleading and short sighted.

11. Draft General Re-Evaluation Report for Savannah Harbor Expansion Project Chatham County Georgia and Jasper County South Carolina, Section 9.8 – Chloride Mitigation Plan Development

The draft Tier II EIS states the following:

“These impacts would only affect industrial uses of water and would not affect residential users, as the chloride levels would not approach the drinking water standard.”

This statement is incorrect. In addition to the numerous verbal discussions on this issue, the following has been provided to the Corps in writing:

Reference Savannah’s June 12, 1998 letter to Mr. Myron Yuschishin of the Corps of Engineers in response to the Draft Environmental Impact Statement as follows:

“6. Although current regulations set a Maximum Contaminant Level (MCL) of 250 ppm for chlorides, increased distribution system corrosion (thus increased lead and copper levels) as well as future regulations—including current scheduling for phased regulations of Trihalomethanes and Disinfection By Products—may also be effected without raw water chlorides actually exceeding the current MCL.

Reference Savannah’s September 22, 2008 letter to Colonel Edward Kertis Jr., Commander, US Army Corps of Engineers in response to information requested by the Colonel as follows:

“However, it is well regarded within the water and corrosion industries that a direct cause and effect relationship exists between increases in chloride levels and subsequent increases in corrosivity. It is also well known that the more corrosive a water supply is, the more the materials such as iron, lead, and copper leach from the water piping and plumbing into the water. Of particular concern is lead and copper which do have Primary MCLs of 0.015 mg/l and 1.3 mg/l respectively. Lead and Copper are the only MCLs that are regulated in such a manner as to place the burden of meeting these limits on the water supplier all the way to the customer’s tap. Therefore, Savannah must insure that the corrosivity of the water will not cause lead and/or copper to exceed the MCL at customer’s tap.

While it is recognized that increased levels of chlorides may not constitute a direct violation of the federal Secondary MCL it must be understood that increases in chlorides will increase the water’s corrosivity and thus a potential for causing the failure of the federal Primary MCLs for lead and copper.”

It is very difficult to understand how the Corps of Engineers, whose expertise is not in drinking water treatment, can summarily dismiss the impacts of increased chlorides on drinking water supplied to Savannah’s residential population.

12. Draft General Re-Evaluation Report for Savannah Harbor Expansion Project Chatham County Georgia and Jasper County South Carolina, Section 9.8 – Chloride Mitigation Plan Development

The draft Tier II EIS states the following:

“Impacts at those levels do not warrant the expenses shown above.”

In spite of concerns with the Corps own technical reviews, the “decision-makers” chose to recommend continued use of the original model outputs. A subsequent refining of the model has been completed and reveals that increases in chloride increases and associated mitigation will not be marginal, but will instead be substantial. Base chloride concentrations will increase from approximately 10 ppm to approximately 20 ppm with periodic increases reaching into the 50 to 70 ppm range. Unfortunately, the entire draft Tier II EIS with regard to chlorides has been based on this initial recommendation and thus all discussion, results, and mitigation recommendations are flawed and invalid.

13. Draft General Re-Evaluation Report for Savannah Harbor Expansion Project Chatham County Georgia and Jasper County South Carolina, Section 10.3.3 – Incremental Mitigation Costs

It is recognized that the discussions, results, mitigation measures and costs contained within the draft Tier II EIS are based on a flawed model that should not have been used. Table 10-4 does not include the costs for mitigation of increased chlorides at Savannah’s raw water intakes. This table must be amended to include the full cost of mitigation.

14. Draft General Re-Evaluation Report for Savannah Harbor Expansion Project Chatham County Georgia and Jasper County South Carolina, Section 11.5.1 – Environmental Effects of the Maximum Authorized Plan

It is recognized that the discussions, results, mitigation measures and costs contained within the draft Tier II EIS are based on a flawed model that should not have been used. Table 11-6 includes “Chloride @ City’s Water Intake” as an un-mitigated environmental effect of the maximum authorized plan. This is unacceptable. The full cost for chloride mitigation must be included in the maximum authorized plan.

15. Draft General Re-Evaluation Report for Savannah Harbor Expansion Project Chatham County Georgia and Jasper County South Carolina, Section 11.5.2 – Maximum Authorized Plan Mitigation Details

It is recognized that the discussions, results, mitigation measures and costs contained within the draft Tier II EIS are based on a flawed model that should not have been used. Chloride mitigation must be included as part of the maximum authorized plan mitigation details.

16. Draft General Re-Evaluation Report for Savannah Harbor Expansion Project Chatham County Georgia and Jasper County South Carolina, Section 11.5.3 – Maximum Authorized Plan Mitigation Costs

It is recognized that the discussions, results, mitigation measures and costs contained within the draft Tier II EIS are based on a flawed model that should not have been used. Table 11-7 must be modified to include the full cost for chloride mitigation.

17. Draft General Re-Evaluation Report for Savannah Harbor Expansion Project Chatham County Georgia and Jasper County South Carolina, Section 11.6 – Maximum Authorized Plan Construction

It is recognized that the discussions, results, mitigation measures and costs contained within the draft Tier II EIS are based on a flawed model that should not have been used. Table 11-8 must be modified to include construction of chloride mitigation. Scheduled timing must be such that chloride mitigation is completed and in service not later than reaching final proposed harbor depth.

18. Draft Engineering Report, Section 8.1.7

The Draft Engineering Report states the following:

“Impacts to chloride concentrations at the City of Savannah’s freshwater intake are currently unclear....Currently, the predicted increases in chloride levels at the City of Savannah’s surface water intake in Abercorn Creek do not warrant mitigation. No chloride increases would occur on high and average river flows. A small increase would occur on low flows, but those increases would be relatively minor and not preclude any existing use of the water.

The City of Savannah questioned the reliability of the Corp’s impact prediction tool, so Savannah District recently obtained additional field data to enhance its reliability. That additional data has not yet been incorporated into the prediction tool. The Final GRR will contain either a confirmation of the existing impact prediction or a new prediction based on a more reliable impact prediction tool.”

It is most difficult to understand how on one hand the impacts to chloride concentrations are unclear, but on the other hand those same impacts do not warrant mitigation, would not exist on high and average flows, and will be negligible during low flows.

It is Savannah’s understanding that with the exception of the final technical review, the updated prediction tool was ready for use in September. While it is certainly desired to complete the technical review, the likely results of the updated prediction tool would also have been known during that time frame. As these results would have indicated a much larger increase in chlorides than those predicted by the original tool, it is difficult to understand why these improved results were not mentioned even as a footnote. Instead all discussions, results, mitigation measures, costs, and etc. are based on the prediction tool known to be unacceptable.

19. Savannah Harbor Expansion Project- Chloride Data Analysis and Model Development; November 15, 2006

This document is the basis for all discussion, results, mitigation measures, costs, and etc. as relates to potential increases in chlorides at Savannah’s raw water intakes along Abercorn Creek. This document has been determined by the USGS and the Corps of Engineers to be unacceptable and should be so noted in the EIS. The document has been replaced with a document entitled Chloride Modeling

Savannah Harbor Expansion Project Savannah, Georgia and dated December 15, 2010. Subsequently, all discussions, results, mitigation measures, costs, and etc. based on the November 15, 2006 document are invalid and should either be so noted in the EIS or removed altogether. It is understood that it may be desirable to retain this document as a historical appendix for the purposes of record completeness. However, it should be noted as such and not be used or referenced for any manner other than historical record.

Comments on Savannah Harbor Expansion Project – Chloride Impact Evaluation; December 15, 2010

20. Background

The draft report states the following:

“There is a concern that the potential deepening of Savannah Harbor may increase salinity and chloride concentrations in the upper reaches of the Lower Savannah River Estuary, including Abercorn Creek. However, this concern is primarily for industrial water supply, not drinking water.”

It is true that Savannah is concerned with regard to increased chloride at its raw water intakes. However, it is not correct that this concern is primarily for industrial water supply, not drinking water. It is most difficult to understand how the Corps can reach this conclusion. As has been explicitly expressed in numerous meetings, there are a number of potential problems associated with higher chloride levels including but not limited to serious economic impacts on industrial customers, increased corrosion rates for all municipal customers including residential, and increased levels of lead and copper for all municipal customers including residential. The following written references are also noted:

- Reference Savannah’s June 12, 1998 letter to Mr. Myron Yuschishin of the Corps of Engineers in response to the Draft Environmental Impact Statement as follows:

“6. Although current regulations set a Maximum Contaminant Level (MCL) of 250 ppm for chlorides, increased distribution system corrosion (thus increased lead and copper levels) as well as future regulations—including current scheduling for phased regulations of Trihalomethanes and Disinfection By Products—may also be effected without raw water chlorides actually exceeding the current MCL.

- Reference Savannah’s September 22, 2008 letter to Colonel Edward Kertis Jr., Commander, U.S. Army Corps of Engineers in response to information requested by the Colonel as follows:

“However, it is well regarded within the water and corrosion industries that a direct cause and effect relationship exists between increases in chloride levels and subsequent increases in corrosivity. It is also well known that the more corrosive a water supply is, the more the materials such as iron, lead, and copper leach from the water piping and plumbing into the water. Of particular concern is lead and copper which do have Primary MCLs of 0.015 mg/l and 1.3 mg/l respectively. Lead and Copper are the only MCLs that are regulated in such a manner as to place the burden of meeting these limits on the water supplier all the way to the customer’s

tap. Therefore, Savannah must insure that the corrosivity of the water will not cause lead and/or copper to exceed the MCL at customer's tap.

While it is recognized that increased levels of chlorides may not constitute a direct violation of the federal Secondary MCL it must be understood that increases in chlorides will increase the water's corrosivity and thus a potential for causing the failure of the federal Primary MCLs for lead and copper."

As has been stated both verbally and in written form on multiple occasions there are numerous impacts that increased chloride concentrations will have on Savannah's water system. These impacts include both long term operation and maintenance costs, as well as the need to make immediate capital expenditures by Savannah and its industrial customers. A short discussion of these is provided as follows:

Approximately 60 percent of Savannah's water distribution system is composed of ferrous based piping. Using the projected increases in chloride levels and durations provided in the draft report, Savannah anticipates that increased corrosion will translate directly into a reduction in the useable life of the ferrous based portion of the distribution system. Therefore, Savannah will be required to expend additional funds to offset the lost usable life of these assets. The expenditures necessary to offset the value of this lost useable life for the ferrous based portion of the water distribution system has been determined to be \$25,650,000.

In addition to the lost value of Savannah's water distribution system, lead and copper levels will be negatively impacted. The following is excerpted from the Home Page of the USEPA's Office of Groundwater and Drinking Water <http://water.epa.gov/drink/index.cfm>.

"Lead and copper enter drinking water primarily through plumbing materials. Exposure to lead and copper may cause health problems ranging from stomach distress to brain damage. On June 7, 1991, EPA published a regulation to control lead and copper in drinking water. This regulation is known as the Lead and Copper Rule (also referred to as the LCR or 1991 Rule).

The treatment technique for the rule requires systems to monitor drinking water at customer taps. If lead concentrations exceed an action level of 15 ppb or copper concentrations exceed an action level of 1.3 ppm in more than 10% of customer taps sampled, the system must undertake a number of additional actions to control corrosion. If the action level for lead is exceeded, the system must also inform the public about steps they should take to protect their health and may have to replace lead service lines under their control."

The issue of lead and copper is not so much the concentrations of these elements as delivered to the customer within the water matrix itself, but it is instead the leaching of these elements into the water from the customer's plumbing. This leaching is a direct result of 1) the materials from which plumbing and fixtures are made and 2) the corrosivity of the water. It should be noted from the USEPA statement, that the required action for high levels of lead and copper is enhanced corrosion control. It should also be noted that the issue of lead in drinking water was addressed and passed by Congress under the

Reduction of Lead in Drinking Water Act (SB 3874) in December, 2010. This bill was signed into law by President Obama on January 4, 2011.

In previous documents the Corps responded to Savannah's concerns regarding the potential of increased chlorides as follows:

"Further, the USACE Office of Counsel reports that the City has no legal right to water with chloride levels below those established under the Safe Drinking Water Act, in this case 250 mg/L. Thus, even if a cause and effect relationship is found, there is no legal obligation for the GPA or the federal government to remedy the situation as long as concentrations remain below established Safe Drinking Water Standards. ..."

Does the Corps intend to stand firm on its legal interpretation that the citizens and customers of Savannah have no legal right to water with lead and copper levels below those established under the Safe Drinking water act and even if a cause and effect relationship is found, there is no legal obligation for GPA or the federal government to remedy the situation?

Obviously, Savannah is also concerned with the long term viability of its large industrial customers. As has been stated on numerous occasions, the industries served by Savannah's surface water plant are vital to the economic well being of the entire southeast Georgia region. These industries not only provide over 1,000 direct well paying jobs, but also a wide range and number of jobs associated with the many small business that provide direct and indirect support and services. In addition, these industries use approximately 80 percent of the total water produced by Savannah's surface water system and therefore pay the lion's share of the cost to operate that system. A loss of these industries would require an immediate and substantial increase in water rates to the residential customer base throughout Chatham and Effingham Counties.

21. Data Collection

A. The draft report states the following:

"Literature searches have not yielded documentation of a threshold for chloride concentration for industrial water supply use."

The lack of a threshold for chloride concentration for industrial water supply use is not surprising. The variability of uses for water throughout the generic base described as "industry" is far too broad to lend itself to such a focused threshold. Even individual plant sites manufacturing the exact same product under the umbrella of a single parent company will have variations in processes each with their own unique needs. Each "industry" will consist of many processes which for a variety of reasons will have their own demands not only for water, but also for power, chemicals, operation, maintenance and any other resources that can be imagined. Determination of the chloride threshold will be process dependent for each specific industrial site.

B. The draft report states the following:

“References located suggested that 100 mg/l is the greatest chloride concentration acceptable for irrigation water for some sensitive crops.”

It is not clear the relevance or exactly what this statement is supposed to convey within the context of the report.

C. The draft report states the following:

“As previously discussed, 250 mg/l is the EPA drinking water standard.”

It is most distressing that the Corps continues in its attempts to circumvent the issue of chloride impacts by over stressing the importance of the 250 mg/l secondary standard for chloride as established by EPA under the federal Safe Drinking Water Act. The 250 mg/l secondary standard is stated three times in this one 11 page report contrasted with the fact that only twice in the entire 11,600 page draft Tier II EIS was it mentioned that the Corps own technical evaluations of the chloride study were not acceptable.

This issue of the 250 mg/l secondary limit for chlorides was raised in the Feasibility Report For Savannah Harbor Expansion Feasibility Study, Section 7, page17, Rev. A and dated April 26, 1998, which reads as follows:

“Subsequent to the deepening, chloride concentration readings ranged from highs of 20 mg/L to lows of 6 mg/L. These readings are well below the EPA’s Safe Drinking Water Act standards of 250 mg/L... Further, the USACE Office of Counsel reports that the City has no legal right to water with chloride levels below those established under the Safe Drinking Water Act, in this case 250 mg/L. Thus, even if a cause and effect relationship is found, there is no legal obligation for the GPA or the federal government to remedy the situation as long as concentrations remain below established Safe Drinking Water Standards. ...”

Likewise, the Memorandum of Record dated January 10, 2007 and Revised February 13, 2007 states the following:

“The values of chloride that are a concern at the industrial water plant are far below drinking water standards. EPA drinking water standards for chloride, a secondary contaminant, are 250 mg/L. In this study, we are concerned with chloride levels of about 10% of the drinking water standard.”

As stated in Savannah’s response of July 18, 2007, there are a number of potential problems associated with higher chloride levels including but not limited to serious economic impacts on industrial customers, increased corrosion rates for all municipal customers including residential, and increased levels of lead and copper for all municipal customers including residential. Also, as previously stated, EPA defines the Maximum Contaminant Level (MCL) as *“the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.”* We believe that the intent of the MCL is to establish a maximum level which we are not to exceed. We do not believe that the intent of the Safe Drinking Water Act MCL is to establish a level to which we may increase contamination. While the USACE Office of Counsel may be correct within the confines of strict legal definitions, it is Savannah’s opinion that avoidance of proper mitigation by hiding behind strict legal definitions is wrong and is a disservice to the residents, businesses, and industries of Savannah and

Chatham County. While this report of December 15, 2010, does not specifically reject a lack of responsibility on the part of the Corps as has been stated in the past, there is no question that the text is constructed in such a manner and with multiple references to the 250 mg/L MCL so as to imply to the reader that the levels of chloride are negligible, regardless of the increases. This is factually incorrect and misleading to the reader.

22. Mitigation Options

- A. Increasing Freshwater Supply through Bear Creek. To the knowledge of Savannah, no modeling has been conducted to determine the volume of flow through Bear Creek and Abercorn Creek that would be necessary to offset the effects of increased chlorides from the Savannah River or even if the necessary volumes can be made available through these Creeks. Savannah would agree that this option would require a high level of maintenance to reliably mitigate the increased chlorides. It is also Savannah's opinion that the on-going cost and management of such maintenance would not be borne by Savannah.

- B. Groundwater supplementation. Discussions continue via special councils appointed by the governors of Georgia and South Carolina concerning saltwater intrusion on Hilton Head Island and the potential for further reductions. These efforts have been underway since 2005 to find amicable solutions to the saltwater intrusion problem and to avoid interstate lawsuits such as currently exist between Georgia, Alabama, and Florida. Initial groundwater modeling efforts have shown that reductions in groundwater withdrawals as high as 90 percent may be needed to stop saltwater intrusion altogether. Therefore, the reliance upon the Savannah River may be much greater than anyone has anticipated to date. In addition, Savannah's water distribution system is configured to provide some areas with surface water and some areas with groundwater. Although interconnections between these systems do exist, the infrastructure does not lend itself to moving sufficient volumes of either surface water or groundwater throughout its entire service area. Construction of sufficient infrastructure would be extremely costly and would have to be given the utmost attention to geometry and operation to prevent maintenance and water quality issues that would arise from seldom used and reverse flow portions of a modified distribution system.

Therefore, this alternative does not meet with the goal and intent of the State of Georgia EPD with regard to groundwater reductions, nor is it practical or feasible to supplement those portions of the distribution system normally fed by surface water with groundwater.

- C. Freshwater Flow Supplementation. It would appear that the Corps does not recommend such an alternative. Savannah questions whether it is within the Corps of Engineers' authority or ability to guarantee sufficient supplemental releases from Thurmond Dam under all conditions to allow this alternative to be a reliable mitigation measure. When coupled with the potential problems for users upriver such as Augusta, Savannah River Site, and Plant Vogtle, Savannah is

opposed to such an alternative that has the potential to leave Savannah with unacceptable consequences.

- D. A combination of increased groundwater withdrawal and greater releases from Thurmond Dam as described above. Savannah does not accept that these alternatives are viable regardless of whether they are independent or in combination. Independently, the reasons have been stated above. The efforts required for routine coordination between Savannah's need to supply acceptable water quality on demand and the Corps need to control releases for all of the upstream requirements would prove extremely arduous. In addition, as the largest increases in chlorides will occur during periods of low river flows, the timing and need by Savannah to have releases increased by the Corps will most often be counter to the need by the Corps to reduce those releases.

Therefore, Savannah finds this to be an unacceptable alternative.

- E. The draft report references the wording of the 2009 draft General Re-Evaluation Report as follows:

"If the proposed deepening project is found to produce sustained chloride concentrations that adversely affect the City of Savannah's Municipal and Industrial water intake on Abercorn Creek, then the USACE would construct this supplemental intake line at a cost of \$35.9 million. The supplemental water withdrawal intake would be located above the zone of project influence. The City supports this concept."

It is correct that Savannah supports the concept of locating a supplemental water withdrawal intake upstream of the zone of project influence. However, Savannah does **NOT** support the concept of chloride mitigation based on the Adaptive Management strategy as proposed. Although, adaptive management may be a very useful tool under particular circumstances, it is Savannah's opinion that it will not be an acceptable alternative with regard to the mitigation of chlorides for the Savannah Harbor Expansion Project based on the following issues:

- 1) The monitoring time frames provided for in Draft Tier II EIS does not guarantee that monitoring will occur during periods of either moderate drought and certainly not during a period of extreme drought as was experienced in Georgia during 2007. Under the proposed plan, monitoring would occur for a specific time frame regardless of the conditions. Beyond that time frame no additional funding is available. Therefore, any additional funding and as well as the burden of proof to show impact due to the deepened harbor will necessarily fall on Savannah. This is unacceptable.
- 2) The cost of mitigation is not currently included as part of the draft plan to be authorized by Congress. Therefore, even if the proposed monitoring determines that unacceptable impacts occur, a separate request including detailed justifications must be made to Congress for approval and subsequent supplemental funding. Regardless of the reasoning, failure of

Congress to approve such subsequent supplemental funding will place the full cost on the citizens, customers, and businesses of Savannah. This is unacceptable.

- 3) The time requirement for design, bidding, construction, and placing a supplemental intake into operation will be no less than three years. It cannot be expected for Savannah to ask its citizens, customers, and industries to forego their need of water supply for even one day much less three years. Delaying the construction of the supplemental intake until such time problems are actually encountered, proving that the SHEP project has caused the problems, and design and construction of a supplemental intake can take place places Savannah's citizens, customers, and industries in peril in terms of both economics and health/safety. This is unacceptable.

Savannah has no desire to unnecessarily own or bear the long term cost for operations and maintenance for an additional 16 miles of raw water piping and an addition raw water intake structure. However, this most recent draft chloride report clearly shows increases in chlorides to unacceptable levels. As water supply cannot be stopped even for one day during periods of high chlorides, it is imperative that chloride mitigation for the worst case scenario be included as a specific project component which is both authorized and funded by Congress as an integral part of the Savannah Harbor Expansion Project. In the case of chloride mitigation, the principles or use of Adaptive Management are unacceptable.

Again, the City of Savannah appreciates the opportunity to provide input on this very important project. Savannah is well aware of the significant positive impacts that the SHEP will have locally, statewide, and nationally. As such it is Savannah's very strong desire to support the Georgia Ports Authority in the timely efforts to bring this project to fruition, provided that the issue of increased chlorides and the associated mitigation measures are included and funded as an integral part of the project. Savannah must insist that the quality of its water supply be protected from the negative impacts of increased chlorides and that its citizens and customers do not shoulder the economic burden of these detrimental impacts.

If you have any questions or if we can be of any assistance in bringing this issue to closure, please contact me at 651-4241.

Respectfully,

John L. Sawyer, P.E.
Water and Sewer Director