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# CITY OF TALLADEGA

## INTEROFFICE MEMORANDUM

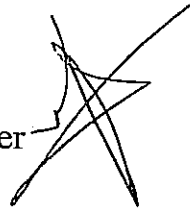
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TO: City Council

FROM: Michael Stampfler, City Manager

SUBJECT: Safety Evaluation of Dams

DATE: September 16, 2009



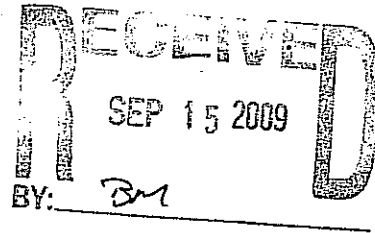
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Attached please find a memo from Terry Hanner, Purchasing Director, outlining the results of the safety evaluation and hydraulic study approved by the Council on April 20, 2009.

The study indicates numerous areas of concern, including significant seepage issues at all three dams. The engineers have recommended various treatments for these maladies, including epoxy injection, grouting and the installation of a protective sealant. The report also states that trees and underbrush growing along the various dams are of significant concern and recommends their immediate removal. Additionally, the engineers have recommended the development of Operations and Maintenance plans for all three dams.

As noted, this report was forwarded to James Brasher, Director of Water & Sewer for his attention by Terry Hanner on July 29, 2009.

Attached: Hanner Memo (9/15/2009)  
Dam Safety Evaluation Report



TO: MR. MICHAEL STAMPFLER- CITY MANAGER  
FROM: TERRY HANNER- PURCHASING DIRECTOR  
DATE: SEPTEMBER 15, 2009  
SUBJECT: DAM SAFETY EVALUATION REPORTS

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Per your request, I have forwarded copies of Dam Safety Evaluations and Hydraulic Studies and have included a brief summary of findings and recommendations pulled from the attached documents. I have also included a timeline of receipts and meetings concerning this project.

- We received Dam Safety Evaluation Reports around the first week and Hydraulic Studies around the last week of July.
- Safety Evaluation Reports were informally presented to Mr. James Brasher on July 29, 2009, at the Coleman Circle Preconstruction Meeting.
- After reviewing Safety Reports, I requested additional information on proposed O&M Plans from Jerry Smith of Gallet and Associates. Mr. Smith supplied me with three sample O&M Plans on July 31, 2009, which I forwarded to Mr. Brasher for his review.
- Martin Engineering hand delivered Hydraulic Studies on Monday, August 3, 2009. After a brief discussion with Mr. Martin, I felt it would be beneficial to review findings with Mr. Brasher.
- Mr. Martin, Mr. Brasher, and I met on Wednesday, August 5, 2009, to review Hydraulic Reports.

I apologize for the delay of your receipt of this information, but assumed the Water Department would present findings and recommendations from this report along with a course of action to address the issues I have listed below.

In my review of the Safety Evaluations, we need to address several repair and maintenance concerns. The engineers indicated there are several areas of seepage from cracks of which many are in need of immediate repair, while others should be monitored for change in quantity or discoloration. They also noted several trees growing in or adjacent to concrete structures that should be removed to prevent future damage.

Trees and underbrush were a major concern on Mump Creek Dam which is an earthen structure. The engineers recommend removal of all trees and underbrush on this structure. The root balls of the trees should also be excavated and replaced with well-compacted engineered fill, or could be filled with rip-rap.

The engineers also highly recommend that an Operations and Maintenance plan be developed for all sites. This is a brief summary of their recommendations regarding the safety evaluation. We have pulled from their report their conclusions and recommendations for easy reference, but highly recommend that the full report is reviewed.

### **Conclusions and Recommendations for New Dam on Talladega Creek**

There were no observable problems to suggest that the dam structure impounding the lake was not stable for short-term conditions. However, we have identified several issues that should be addressed in the short term. These issues include:

- We have not reviewed the construction documents for the dam. A review of the construction documents should be performed if they are available.
- Considerable seepage was noted near the foundation of the dam at the floor area of Bay 6. The seepage was noted coming up through the cobbles and small boulders of the floor materials, near and at the roof/foundation tie point. Seepage was estimated to be well in excess of 100 gallons per minute (GPM). This seepage should be monitored for change in quantity or discoloration, or may be reduced using a grouting program or some other means if desired.
- Significant seepage was noted penetrating the roof at a construction joint consistent with the approximate dam crest in Bay 7. The concrete in this area of the roof appeared to be damaged with considerable exposed aggregate. Seepage was estimated to be in excess of 100 GPM. We recommend that this area be repaired by grouting or some type of epoxy injection, accompanied but addition of a protective outer coating or sealant.
- Seepage was noted within the lower construction joints of the roof in many of the Bays. This seepage should be monitored for change in quantity or discoloration, or may be reduced using a grouting program or some other means if desired.

- Some trees are growing at the upper portion of the right abutment and outside of the retaining wall structure as it steps down the abutment. These trees should be removed.
- We highly recommend that an O & M plan be developed for this site. The O & M plan may include provisions for evaluating the operability of the control valves.

### **Conclusions and Recommendations for Mump Creek Dam**

There were no observable problems to suggest that the dam structure impounding the lake was not stable for short-term conditions. However, we have identified several issues that should be addressed in the short term. These issues include:

- The upstream slope of the embankment has bushes and small trees over most of its length. We recommend that all trees and underbrush be removed. The root balls of the trees should also be excavated and replaced with well-compacted engineered fill, or could be filled with rip-rap.
- The downstream slope of the embankment is covered with some large trees, many small trees and some dense underbrush. We recommend that all trees and underbrush be removed. The root balls of the trees should also be excavated and replaced with well-compacted engineered fill, or rip-rap.
- Some seepage was noted near the toe of the embankment near the left abutment, generally at the apparent fill/natural soil interface toward the left abutment. As a minimum, the seepage should be monitored for change in quantity or discoloration.
- Additional seepage was noted around the concrete wingwall structure noted at the toe of the downstream slope. It is likely that this seepage is associated with seepage along a conduit through the dam embankment. This seepage should also be monitored for change in quantity or discoloration.
- The operability of the drawdown valves at the control structure was not evaluated as a part of this inspection. Its operation should be verified periodically, but at least yearly.
- We highly recommend that an O & M plan be developed for this site.

## Conclusions and Recommendation for Old Dam on Talladega Creek

There were no observable problems to suggest that the dam structure impounding the lake was not stable for short-term conditions. However, we have identified several issues that should be addressed in the short term. These issues include:

- We have not reviewed the construction documents for the dam. A review of the construction documents should be performed if they are available. We understand that there are photographs of the dam taken with a relatively low water level. Review of these photographs should occur as a part of this records review.
- Some erosion of soil was noted where the concrete dam abutment meets the natural rock interface, particularly at the downstream side of the left abutment. Several trees were also located within this area. We recommend that the trees be removed from this area, and the abutment zone be backfilled with erosion-resistant materials, perhaps class I rip-rap, and grouted or concreted in place.
- The small retaining wall associated with the access drive has partially collapsed, and portions of the access drive are undermined, and other portions are failing. Remediation of this area is likely necessary, but should occur in conjunction with a review of construction documents. Possible remedial action could include reconstruction if necessary, but may also include construction of a rock buttress adjacent to the wall and grouting to fill the underslab void(s).
- Some small trees are also growing adjacent to the retaining wall structure at the right abutment. These trees should be removed.
- Some seepage was noted in the access portal to the conduit that reportedly extends through the dam. This seepage should be monitored for change in quantity or discoloration, or may be reduced using a grouting program or some other means if desired. As a part of monitoring the seepage we recommend an observation of the interior of the dam if possible. Entry into the access portal and interior of the dam will likely be considered as confined space entry by OSHA, therefore, appropriate safety measures should be implemented.
- We highly recommend that an O & M plan be developed for this site.

In review of the Hydraulic Study and my understanding from our meeting of August 5, 2009, with Mr. Martin, our spillways have discharge capacity to handle a 500 year flood. Our drainage basin for all three watersheds was calculated to cover over 80 square miles through rural areas. This area is considered to have minimal hazardous runoff due to the lack of industry and urban development in the drainage basin area. The majority of the basin is located in the Talladega National Forest.