



Partners for a Better Quality of Life

June 29, 2009

Project No.  
CRO07006-35

Mr. Chuck Todd, P.E.  
City of Rockwall  
385 S. Goliad  
Rockwall, Texas 75087

Re: Review comments on revised report, "Arkoma Development – Letter of Map Revision (LOMR) Submittal, for Squabble Creek Tributaries C and D", dated May 2009 (with responses to previous review comments), prepared by Kimley-Horn and Associates, Inc.

Dear Chuck:

I have completed a review of the revised study report prepared by Kimley-Horn and Associates, Inc. (KHA), dated May 2009, along with their responses to previous review comments, pertaining to the as-built portion of the Arkoma Development involving Tributaries C and D of Squabble Creek in Rockwall, Texas, located downstream of State Highway 205 and north of North Lakeshore Drive. The intended purpose of the report is to provide the Federal Emergency Management Agency (FEMA) with the necessary information to justify a Letter of Map Revision (LOMR) for the current Flood Insurance Study (FIS).

In summary, the report should be forwarded on to FEMA. The review contractor for FEMA may have additional comments or requests during their review, and KHA can address those as needed during the review process.

KHA has addressed all previous comments and concerns regarding the development along Tributaries C and D of Squabble Creek. Their responses to comments, in combination with documentation provided in their report, indicate that their proposed development will be reasonably safe from flooding due to stormwater discharges of Tributaries C and D produced by a 100-year frequency storm.

Regarding the small flood detention dam on Tributary C, which has already been constructed, KHA mentioned in their response that it is smaller than the minimum size regulated by the State. To clarify, the State does (and will) regulate dams of this size (greater than 6 feet maximum height) if they are classified as significant or high hazard dams, regardless of storage volume [References: Texas Administrative Code Title 30, Part 1, Chapter 299, Rule §299.1(a)(3); verification during correspondence with TCEQ; and this clarification is being emphasized in TCEQ dam safety seminars]. However, KHA has presented a simplified breach analysis to support their opinion that the dam is classified as a low-hazard dam and indicates that the extent of affects by inundation by a dam breach flood wave would be to a point located

1820 Regal Row, Suite 200  
Dallas, Texas 75235  
214.638.0500 • 214.638.3723 fax  
www.cpyi.com



Mr. Chuck Todd, P.E.  
City of Rockwall  
June 29, 2009  
Page 2 of 3

approximately 600 feet downstream of the confluence of Squabble Creek and Tributary D. KHA also indicates that the affects of the flood inundation wave would include breach discharges expected to pass over Pecan Valley Drive.

The following is a list of facts for further consideration regarding the hazard classification of the dam and chance of failure:

1. The dam and detention basin are designed to contain the 100-year flood. Therefore, assuming that the detention basin operates as intended, a breach of the embankment due to overtopping would not be expected until a larger flood occurs. Larger floods than the design flood considered for this dam are possible and do occur. A 100-year flood has about a 26 percent chance of being exceeded within a 30-year period. A 500-year flood has about a 6 percent chance of being exceeded within a 30-year period, and about an 18 percent chance of being exceeded within a 100-year period.
2. Although the breach analysis provided by KHA did not account for coincidental flood flows along Tributary D and Squabble Creek, their computed breach discharge is conservative, as it assumes an instantaneous and complete breach formation. Using the States guidelines for a *detailed* breach analysis would be expected to result in much less breach discharge than the discharge computed by KHA, considering that such a total breach formation would be expected to occur over several minutes, thereby gradually releasing the impounded water over a period of time, rather than instantaneously.
3. Considering the small storage volume of the detention basin (5.89 acre-feet, as indicated by KHA), the total release through a breach would be very small in comparison to the large downstream floodplain valley storage along Squabble Creek. Any significant inundation impacts would be expected to dampened out within a short distance after entering the Squabble Creek floodplain. Most of the damage caused by the breach of the dam would be expected to be associated with Pecan Valley Drive.
4. The dam is an earthen embankment and does not have an emergency spillway. Other small dams in Texas (including Rockwall County) have failed due to flood flows passing over the dam. These failures were caused primarily as a result of inadequate spillway capacity. An emergency spillway is advised for all earthen dams, regardless of size, to help prevent a breach (or other damages) due to overtopping by large floods and

Mr. Chuck Todd, P.E.  
City of Rockwall  
June 29, 2009  
Page 3 of 3

to provide alternative passage of stormwater runoff in the event that the primary discharge facilities do not operate as intended (such as becoming clogged).

Both the City and the owner of the dam should anticipate that the dam may eventually breach. Regardless of the hazard classification and the chance of a breach, full responsibility for the design and safe operation of the dam, as well as any damages caused by the dam, rests with the owner of the dam.

KHA's responses to all other review comments have been adequately addressed. Unless the City has any additional comments or concerns related to the project, KHA's report is ready for submittal to FEMA. The City and KHA are both reminded that a detailed re-evaluation of hydrologic consequences related to the overall development of the Arkoma property will need to be provided to the City and approved prior to construction in Parcel 5. This re-evaluation and project design should include the mitigation previously proposed to the City (i.e., proposed flood detention facilities and floodplain excavations as presented in earlier flood study submittals). A report should be submitted with supporting documentation to show that there will be no increased flooding at any point along Squabble Creek to Lake Ray Hubbard as a result of the overall Arkoma Development.

If you have any questions, or need to discuss this project in further detail, please call.

Sincerely,



Dwayne Stubblefield, P.E., CFM  
CP&Y, Inc. [TBPE Registration #1741]  
Senior Associate  
Vice President of Water Resources

