

January 22, 2018

MEMORANDUM

To: Brian Hunt
From: Tom Grimshaw
Subject: Proposed Process for Preparing a GIS Version of Our Geologic Map of the Mountain City Quadrangle

This memo summarizes the procedure we discussed last week for getting the geologic map of the Mountain City quadrangle digitized and put into GIS format. The process for preparing the map up to this point has consisted of the following steps.

1. The USGS Mountain City Quadrangle (1968) is being used as the topographic base map for the geologic mapping.
2. The mapping is accomplished on air photo stereo pairs that were taken in 1958¹. These photos are of high quality and were taken just a couple of years after the major Texas drought that ended in 1956. The 1958 photos are available on the USGS “Earth Explorer” website.
3. In general, the surface geologic features – stratigraphic units and faults of the Balcones Fault Zone – were mapped on the photos in conjunction with field checks for outcrops and exposures of faults.
4. Using transparency copies of the topographic map (in nine 2½-minute segments of the quadrangle), the geology was manually copied to the base map.
5. The stratigraphic units were colored with colored pencils using contrasting hues to make the complex faulting of the Balcones Fault Zone more visible.
6. As progress was made in the fieldwork and mapping, the results were recorded in periodic memos that I prepared and addressed to you. These memos and other work products have been placed on Dropbox where we can both access them in the folder “BSEACD TWG Share”.

¹ Geologic mapping of the quadrangle was previously done by Richard Smith for a 1978 MA thesis at The University of Texas, which incorporated pre-existing mapping of the southern one-third of the quad that I had done for my 1976 dissertation, also at UT. The current project builds on this previous work to take advantage of new insights on the faulting in the area as well as our increased mapping experience in central Texas geology.

The fieldwork for this mapping project has been accomplished jointly by you, me, and other members of the BCEACD staff. The mapping has now been essentially completed, so the process for digitizing the maps that we discussed is as follows:

1. Digitize the manually prepared geologic map described above. You indicated that this task might be accomplished with resources at BSEACD.
2. Check the digitization to make sure it is fully usable for preparation of a GIS-based geologic map on the topographic base.
3. Prepare a draft GIS geologic map.
4. Using the air photos with the “original” geology, make adjustments as required to the GIS map to make sure the features are shown correctly.
5. Prepare a short description of the stratigraphy and structural geology, and other features (such as hydrologic characteristics) to accompany the geologic map.

We will consider the possibility of a continuing role for Mark Helper in finalizing the map and report and will also look for a suitable venue for their publication, such as the UT Bureau of Economic Geology.

I look forward to your feedback on this description of the procedure that we discussed last week.