



**Barton Springs
Edwards Aquifer**
CONSERVATION DISTRICT

January 3, 2015

MEMORANDUM

To: Mark Helper, Brian Hunt
From: Tom Grimshaw
Subject: Mountain City Geologic Quadrangle Map Project: Status and Next Steps

I think we have made significant progress on our project to prepare a geologic map of the Mountain City quadrangle at a scale of 1:24,000. As we enter a new year, it may be appropriate to review this progress and note the work needed to complete the project. Shown below are the major areas of accomplishment and proposed next steps for each.

Topographic Base Map

The topographic map has been set up by MH in a GIS format from a USGS quad sheet. This map serves as the “underpinnings” for the geologic map and other layers.

Next Step: Continue to use the map to support the geologic mapping.

Previous Geologic Mapping

MH has digitized existing geologic maps covering the Mt City quad by Richard Smith (MA thesis) and the UT BEG (RI 86), and they are being used to guide updates and more detailed mapping for the current project. Previous mapping by the USGS (citation needed) has also been made available for reference as a GIS layer. The lower 1/3 of the quad was previously mapped by TG for his dissertation and has been digitized as part of a previous project (“The Beast”).

The Signal Hill quad, north of the Mt City quad has been mapped by Kolb (MA thesis) and is being digitized under MH supervision and with support of the BSEACD.

Next Steps: Continue to reference the previous mapping in the current project. TG to download air photo stereo pairs from USGS website for examining the Signal Hill quad for consistent mapping with the Mt City quad.

Geologic Mapping

An initial draft of the geologic map (updated from previous mapping in part) has been prepared by TG on air photo stereo pairs. A composite map has been prepared from the overlapping photos in GIS format with line work by MH. Mapping was initiated on the basis of previous geologic mapping. The mapping of the lower 1/3 of the quad by TG for his dissertation has been revised somewhat.

Next Step: Revise the map with field checks and data from BSEACD to acceptable status for publication. Determine the best way to transfer changes from the air photos to the composite map efficiently. MH to conduct independent mapping where possible.



Field Checks

Reconnaissance checks have been made by TG (with MH and BH when available) to support the air photo mapping. Some changes have been made to the mapping since the composite map was prepared based on field observations.

Next Step: TG, MH, and BH to conduct systematic field checks with careful note taking for a geologic report and finalization of the geologic map. Determine the best way to deal with limited access for outcrop checks.

Lidar Mapping

TG obtained Mt City Lidar data from the TNRIS for MH consideration as an asset for geologic mapping. With participation of an undergraduate assistant, MH has prepared initial maps showing faults and stratigraphic packages. Mapping has proven to be most useful as an adjunct to air photo mapping in the Edwards outcrop area. The results of mapping to date have been integrated with air photo mapping on a preliminary basis by TG.

Next Steps: MH to examine Lidar mapping by undergraduate student and modify if required. MH to check TG efforts to integrate mapping with air photo geologic mapping.

BSEACD Geologic Data ("Third Dimension")

BH has provided a map (on a photo mosaic and topographic base map) with outcrops and numbered well locations along with a spreadsheet with geologic and other information. TG has begun the process of integrating this information with air photo (and Lidar) geologic mapping.

Next Steps: BH and TG to complete integration of the well data with the surface geologic map. An overlay of the well spots and outcrop on the air photo mosaic may be the best way to accomplish the integration. Prepare text as needed to supplement geologic map report.

Adjacent Quadrangles

Current strategy is to complete the San Marcos North and San Marcos South quads when the Mt City quad is complete based on previous geologic mapping by TG for his dissertation in mid-1970s. A draft of the map of these two quads ("The Beast") has been completed by MH and TG, including a proposed collar. Some revision of the northern part of the San Marcos quad will be needed to "fit" the revised mapping of the southern 1/3 of the Mt City quad. The lower 1/3 of the San Marcos South needs to be "filled in", most likely from the Seguin Sheet of the BEG Geologic Atlas of Texas. A decision is needed whether to add BSEACD well data as for the Mt City quad.

The previous mapping of the Signal Hill quad (north of the Mt City quad) by Kolb had been received in hard copy. The digitized version has been prepared under MH supervision. TG has acquired stereo pair images from the USGS website. Similar images have been acquired for the Oak Hill quad, just east of the Signal Hill quad.

Next Steps: TG and MH to revise The Beast slightly and finalize the San Marcos North. They also need to complete the San Marcos South quad with additional mapping of the southern 1/3. Make the decision about incorporating BSEACD well data as for the Mt City quad.



TG needs to acquire the digitized version of the Signal Hill quad. Possible re-mapping of the Signal Hill will take place as required to “fit” the Mt City quad.

Final Map Preparation

The Beast serves as a model for the final quadrangle maps, including the “collar” information and layout. The objective is to comply with current standards for geologic maps at the 1:24,000 scale.

Next Steps: Finalize the quad map layout with collar as appropriate. Determine the best venue for publication needs to be determined. The organization and content of the reports to accompany the maps need to be determined. Possible models exist at the Bureau of Economic Geology.

Report to Accompany Maps

An initial outline of a report has been prepared based on TG’s dissertation (mostly the appendix). The report should be prepared to be as applicable as possible to all quads ultimately included in this project.

Next Steps: Finalize content (scope) and organization (outline) of the report. Assemble previous applicable reports and “tee up” for reference in this report.

Other Topics

The BSEACD is supporting a project by MH to get all the previous mapping in their area of interest digitized. An undergraduate assistant has been making progress, including the Signal Hill quadrangle.

The Walter Geology Library has agreed to be a repository for maps prepared under the sponsorship of the BSEACD. The Library has also provided work space for this mapping project in the drafting table area.

I look forward to working with both of you to complete the Mt City quad geologic mapping project and then the adjacent quadrangles, primarily the San Marcos North and San Marcos South quads. Please let me know if I have left out or misconstrued anything on this report of the project status.

As before, we will continue to make progress as time permits given our priorities in other “realms of life”, including job requirements.