

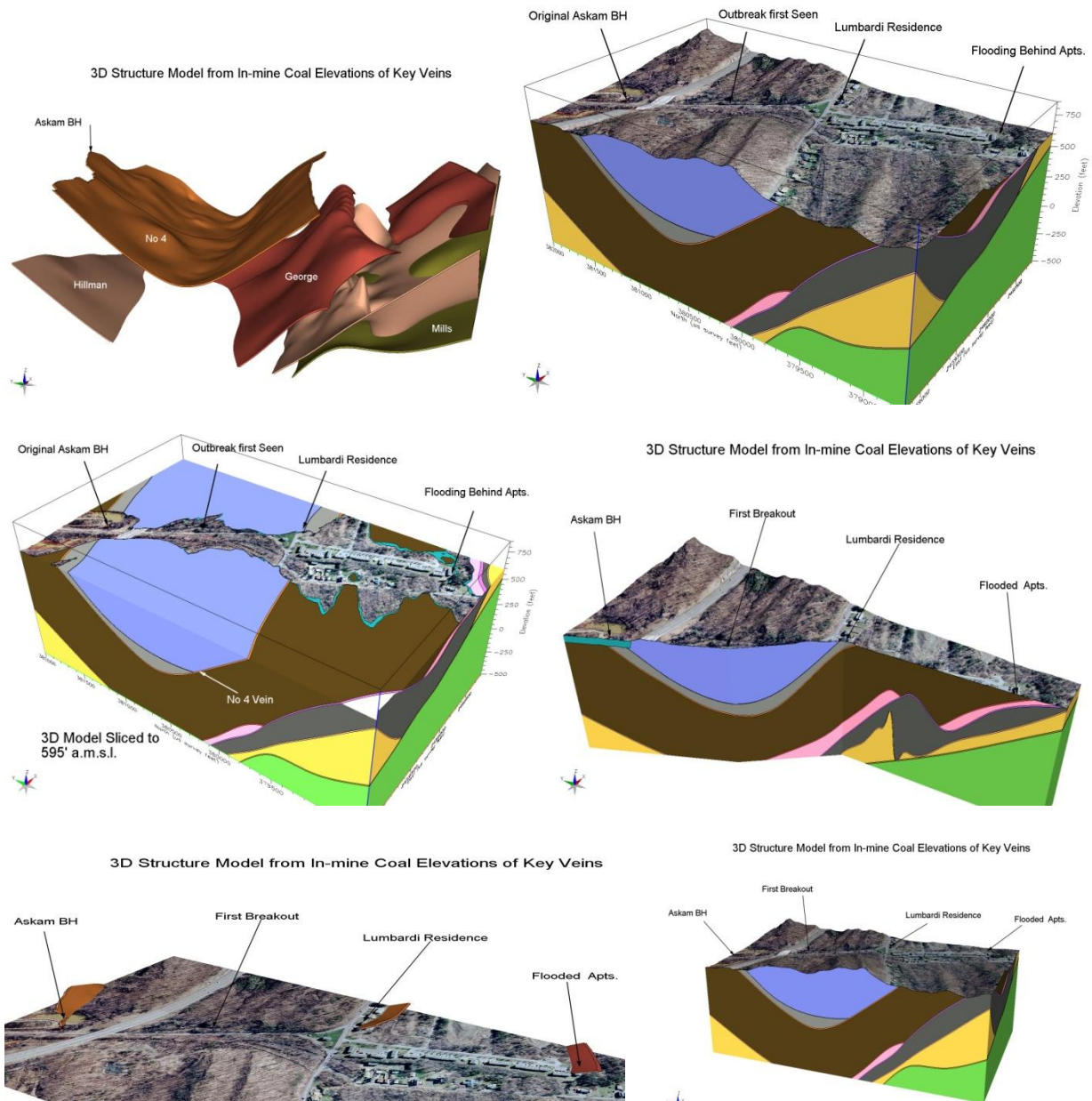
Eastern PA Coalition for Abandoned Mine Reclamation-
Mine Reclamation-Eastern PA
Mine Pool Mapping Update Work Progress Report 5-PD060367
(July 1, 2009 thru December 31, 2009)-3rd & 4th Quarter 2009

- On July 1st , EPCAMR Executive Director informed Ian Palmer and Roger Hornberger of the situation that our grant extension request had not been formally approved to date from our original request in April 2009 yet; Their contracts were up on June 30, 2009; EPCAMR is willing to extend and amend the contract date once the extension is formally approved, however, budget adjusted will have to be made and taken into consideration first before any rates or additional payments are renegotiated and reimbursed; They were informed to slow down on work until the State Budget impasse is passed and the extension is granted; Our Project Officer informed us that we should proceed slowly and that no extensions previously submitted had been denied; We asked for a two year extension, however it is likely that we will get a one year extension through June 30, 2010; What the EPCAMR Executive Director had said to Dan Koury and Roger was that we would just amend the contract to change the end date of the current contracts and adjust the payment amounts after we had a chance to review the remaining balance of the grant, incorporate EPCAMR's time into the grant and divvy up the remaining balance
- On July 26th , reviewed Ian's Progress Report and Invoice (June-July 2009)
- On July 30th, EPCAMR received our Application for Workers' Compensation from the PA Dept. of L & I and they were requesting that EPCAMR provide them with current workers Comp Certificates of Insurance for our all of subcontractors moving forward from a July 1, 2009 start date. EPCAMR requested these from a few engineering firms that we have under contract already to provide us with a copy; Independent sub-contractors don't need one, since they are not employees of EPCAMR and is considered a "casual" employee/contractor because what he does, which is not necessarily the main line of business of the organization
- Reviewed Ian's and Roger's Progress Reports and Invoices (July-December 2009); Made payments on most of the invoices
- On August 3rd , Corresponded with Christian Stiels,- RAME Research Association Mining and Environment in Vietnam VINACOMIN Vietnam National Coal & Mineral Industries Group, who is currently working for a German environmental research project in Viet Nam. He stumbled across our Article „Using GIS to Remedy Coal Mining's Aftermath - Pennsylvania Coalition Designs Mapping Application to Target Areas Most in Need of Reclamation“ in „GIS Mine Post“ Spring 2009 and provided us with an outline of what their project was about. They are a German financed research project of several universities and institutes; Together with their Vietnamese partners they form the Research Association Mining and Environment in Vietnam – RAME; See www.rame.vn

Their goal is to increase the environmental performance of coal mining in Vietnam and to develop and adapt adequate low cost solutions; Against this background they are also developing a GIS-System to prioritize environmental measures; Unlike our project, they focus not only on abandoned but also on ongoing mining activities; After reading our article, they were quite curious to get some more information on the RAMLIS application we created

- On September 9th, Mike provided Terry Schmidt-Skelly & Loy with the majority of historical information that we are gathering from the US Bureau of Mines Barrier Pillar Reports and some 3-D image files on some coal veins in the Wyoming Valley; We took the maps and georeferenced them (lot of time spent to make sure they were just right); Since they are published works, we gave him those maps, .aux and .rrd files; He uploaded them to an FTP site for EPCAMR, and forwarded him to the TRAIL website <http://digicoll.manoa.hawaii.edu/techreports/index.php?c=1> for:

- “USBM 517” – Lackawanna Basin (Northern Anthracite)
- “USBM 521” – Western Middle Field
- “USBM 526” – Southern Field
- “USBM 538” – Wyoming Basin (Northern Anthracite)



- On June 30th, Informed John Orr-Dauphin CCD about the extension request and future work by the USGS until we get the approval
- On July 2nd, 2009, sent along a copy of the request letter for the extension to the USGS explaining our need to extend the project; We initially were looking at 1 to 2 years, however, we feel that we are only going to get an extension through June 30, 2010
- On July 31st, 2009, USGS will be working on the text for a USGS Open-File Report on the modeling effort; Management is pushing Dan Goode and Chuck to finish a draft and suggested that I should seek a "no-cost extension" to March 31, 2010 for final completion of the project; The extension is needed because the report review and approval process will involve many months
- On August 3rd, 2009, reviewed the updated re-projected shapefiles of the collieries, tunnels, and pillars for the Western Middle Field that were sent by Mike to USGS since Chuck was having trouble opening them; Dan Goode needed to make some changes to the conceptual model; Draft map of **MCU_2new-collieries-boreholes-AMD.pdf** Map is enclosed with this report
- On August 6th, 2009 discussions via e-mail were being had about combining and disconnecting certain collieries in the MCU depending on connectivity through geology, faults, barrier pillars, and other corresponding data from previous reports for the Western Middle Fields; Reasoning for making such changes were discussed and agreed upon given the best available data that EPCAMR had
- On August 10th, 2009 Chuck provided us with a **MCU_2final-collieries-boreholes-AMD.pdf** Map enclosed with this report where the "final" version maintains separation of collieries on the north and south of a major fault (Suffolk) or anticlinal axis that effectively separates the mines within the basin in the Western Middle Field
- On August 13th, EPCAMR Staff participated in a Web Ex Meeting with the USGS and the Pottsville DMO to revive some of our GIS and mapping data live via the internet and utilizing EPCAMR Technical Assistance Center; Mike provided Dan Goode with some "recharge" zones from AMLIS; He pulled out things like spoil piles and abandoned buildings from the AMLIS polygons database and clipped it to the Western Middle Field (a little different from the USGS Area of Concern) then projected it
- On August 26th, USGS informed EPCAMR and the Dauphin County Conservation District that according to their administrative officer, additional paperwork for a no-cost extension of the project is not needed because the original joint-funding agreement has a provision under 2(b) indicating, "Final billing to be issued upon delivery of the final product..." In other words, USGS will not submit the final quarterly bill to DCCD (originally due September 2009) until the final report is prepared with an estimated completion date by March 2010
- On August 28th, EPCAMR Executive Director reviewed some of our mapping files and reports and found a map from the Water Resources of the Schuylkill River Basin Report completed by **Biesecker et.al. from the PA Dept. of Forests and Waters in 1968**. After some intensive searching for the report online and finding nothing, EPCAMR was able to scan and georeference the map and traced **7** new mine pools, several water flow

lines and barrier pillars and verified the location of several of the same for the Southern Anthracite Coal Field; EPCAMR is looking for a hard copy of the study; The study eludes to more data and different discharges. EPCAMR thinks it would be great to have for the Mine Pool Mapping project especially as we begin to develop the Southern Field data sets; Chuck at the USGS will look around for the original; USGS did not have any copies for distribution, but did have two copies of the needed **Bulletin 3** on their library shelf; USGS will allow EPCAMR to borrow it to make better scanned images of the color copy maps for geo-referencing

Here is the listing as shown in the Bibliography for the **SCHUYLKILL WATERSHED CONSERVATION PLAN (May 31, 2001)**

- **Biesecker, J.E., J.B. Lescinsky, and C.R. Wood. 1968. Water Resources of the Schuylkill River Basin. Water Resources Bulletin No. 3. Pennsylvania Department of Forests and Waters, Harrisburg, PA.**
 - Contains the availability, distribution, quality, and use of surface water and groundwater throughout the Schuylkill River watershed with special emphasis on effects of coal mining and urbanization; Also reports the effects of the Schuylkill River restoration completed from 1945-1951 to reduce sediment discharge and make the river more suitable for water supply and recreational uses; Citations from previous studies specific to the Schuylkill River are included

- On September 2nd, 2009 USGS provided EPCAMR and the partners with a combined information revised map of the colliery and borehole water level data files for the Western Middle Field to account for possible variations of hydraulic properties within multicolliery units (MCU); The original MCU numbers (MCU_Num) and names assigned by Hornberger were retained, but letters were added and combined with these MCU numbers (MCU_NumL) to indicate potential similarity or differences in water level elevation within the MCUs; Collieries with the same MCU_NumL are alike compared to neighboring collieries with different MCU_NumL considering the borehole water level;

- The WM_collieries(090901)_NAD27UTM18N.xls and WM_collieries(EPCAMRMod)_NAD27UTM18N.dbf summarize this information; The Excel file displays the information sorted by MCU_NumL, whereas the dbf file displays the information in the original sort order; The dbf file can be pasted over the old file of the same name in the ArcMap project folder; Having done this, Chuck produced two different map displays to illustrate the effect of the letter subdivisions of the MCUs: ***MCU_090901-collieries-boreholes-AMD.pdf*** shows the original units, and ***MCU_090901A-collieries-boreholes-AMD.pdf*** shows the subdivided units.
NOTE: You can see how the average water levels of boreholes relate within these units

- On December 1st, 2009, EPCAMR received our letter that our project was extended until June 30, 2010 and we informed all of our parties of the good news

- On December 11th, 2009, EPCAMR met in Pottsville with the USGS, Pottsville DMO, Roger Hornberger, Keith Brady, Ian Palmer to review our progress to date and to set a timeline in motion for completion of the grant by June 30, 2010; Mike obtained additional data points from Ian; USGS showcased the conceptual groundwater model and reviewed the draft template of the USGS Water Resources Report; EPCAMR reviewed our work on additional mine pool layers and maps over the Fall 2009 and early Winter 2009

- On December 16th, EPCAMR worked up the 3rd & 4th Quarter 2009 Progress Report
- On December 17th, EPCAMR worked up the 3rd & 4th Quarter 2009 Reimbursement

**3rd & 4th Qtr. 2009 Report of work done for Mine Pool Mapping Grant
Mine Pool Mapping Update Work Progress Report -Mike Hewitt-Program Manager**

July

- Converted digitized maps and cross sections of the I-528 series produced in R2V by Jim Andrews, PA DEP Pottsville District Mining Office (DMO), into .dat and .bmap files readable by EarthVision. Ran the 2 scripts created for EarthVision to incorporate the data into a 3D grid and contours of the Buck Mountain Coal Vein. Documented the process in a “how to” document to replicate the process much easier in the future. Ran into the same problem with the grid when it approaches a vein dipping 90 degrees or more. Redrew these sections in R2V to add more detail to the lines and reran scripts, with no change in the grid. Sent the documentation and files resulting from the process to Mike Dunn, Office of Surface Mining (OSM) Pittsburg Field Office and Skip Pack, Dynamic Graphic Inc. (DGI) to see if they could help resolve the glitch or suggest how the grid could be edited.
- Sent updated multi-colliery hydrologic unit and mine drainage tunnels GIS data for the Mine Pool Mapping Program to Chuck Cravotta and Dan Goode, USGS, as requested.

August

- EPCAMR staff attended and presented at the 19th ARIPPA Technical Symposium at the Sheraton Hershey-Harrisburg. Presentations focused on coal ash as a beneficial use and the use of mine pools for cooling water.
- Reprojected multi-colliery hydrologic unit (MCU) and mine drainage tunnels GIS data for the Mine Pool Mapping Program for Chuck Cravotta and Dan Goode, U.S. Geological Survey (USGS), to Universal Transverse Mercator (UTM) Zone 18 North American Datum (NAD) 1983 to fix issues with their software. Not all programs have the ability to reproject “on the fly” like Arc View 9.x.
- Began a discussion about separating some MCUs that were previously combined in the Western Middle Anthracite Coal Field for the Mine Pool Mapping Program with USGS. Decided to differentiate zones within an MCU where water levels can be different. This satisfied the definition of the MCU and the restraints of the ModFlow Program.
- Georeferenced OSM Mine Map Folios W-9C in ArcMap around the St. Nicholas and Boston Run Collieries to analyze the connections between these and surrounding mines.
- Merged all Buck Mountain Contours for the Western Middle Anthracite Coal Field, including the ones extrapolated by Mike Dunn based on the Mammoth Vein, to make a complete set of contours for the area in one layer.
- Georeferenced OSM Mine Map Folios N-1E-00 and 07 in ArcMap around the area of the Espy Run Treatment System
- EPCAMR and Pottsville District Mining Office staff participated in a conference call and webcast hosted by USGS to discuss changes the MCUs for the Mine Pool Mapping program.
- Created a “recharge zone” layer from the AMLIS Polygons layer by selecting surface feature types that had a well defined connection to underground mines (ex. dry and water strip pits and subsidence prone areas) and sent to USGS staff as requested.
- As a result of purging some old files from the filing cabinet, EPCAMR Executive Director found a map associated with the Water Resources of the Schuylkill River Basin Report

completed by Biesecker et.al., Pennsylvania Department of Forests and Waters in 1968. After some intensive searching for the report online and finding nothing, I scanned and georeferenced the map and traced 7 new mine pools, several water flow lines and barrier pillars and verified the location of several of the same for the Southern Anthracite Coal Field.

September

- Updated metadata for the EPCAMR modified USGS Anthracite Discharges GIS Database. Also updated the online GIS data list, disclaimer, data use and management information on www.orangewaternetwork.org
- Chuck Cravotta, U. S. Geological Survey (USGS) New Cumberland Office, found a hard copy of the Water Resources of the Schuylkill River Basin Report completed by Biesecker et.al., Pennsylvania Department of Forests and Waters in 1968 and mailed to the EPCAMR office for scanning of the maps and related tables and pages. Once scanned, one map (Figure 38) was georeferenced, mine pools, barrier pillars and discharge elevations were digitized and added to existing GIS database associated with the Mine Pool Mapping program.

October

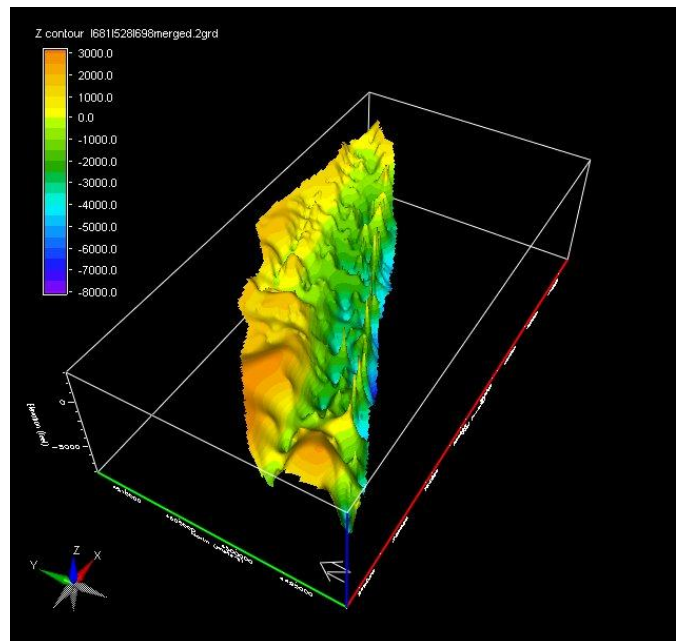
- Began digitizing 50 ft contours of the Mammoth Vein under the Panther Valley (northern tip of the Southern Anthracite Coal Field) as portrayed in the 2nd Geologic Survey as a part of the Mine Pool Mapping Project. The area is made up of 3 separate maps. Currently, contours from 2 of these maps are digitized with the use of R2V software.
- Conducted a Mine Pool Mapping conference call with the Pottsville DMO Staff to get caught up with progress and what needs to be done next to move the project forward.
- Finished drawing mine pool layers based on DEP BAMR borehole water level elevations and the C-series Buck Mountain (and Mammoth in some areas) contours in the Western Middle Anthracite Coal Field. Where borehole elevations were not available, discharge elevations were used. Out of all 71 collieries, only 10 did not contain enough information to draw mine pools (Raven Run, Mid Valley (3), Morris Ridge, Sayre, Big Mountain, Maysville, Buck Ridge, and Neilson), either there was no discharge/borehole information or mines in the colliery did not penetrate the Buck Mountain seam. 12 mine pools were delineated in areas where mines were shown as being pumped in Ash Maps previously "blank" areas (Alaska, Reliance, Sioux, Potts, Locust Run, Miriam, Continental, Hammond, Packer #5, West Shenandoah, and Maple Hill).
- Conducted a mine pool mapping meeting with Pottsville District Mining office staff to nail down the first ½ of the multi colliery hydrologic units for the Southern Anthracite Coal field (Stopped at the Otto Colliery, the last colliery still in the Schuylkill River Drainage). Delineated these boundaries in GIS layer to show collieries that are hydrologically connected.
- Continued to draw old workings and anticlines from the 2nd Geologic Survey. These layers help determine the interconnectedness of collieries and mine pools.

November

- Finished digitizing old workings and tunnels from the 2nd Geologic Survey in the southern anthracite coal field in ArcGIS as a part of the Mine Pool Mapping Initiative. Also, had a discussion with PA DEP Pottsville District Mining Office (DMO) staff on the Pine Knot and Replier Mine Pools that were shown in a map in a recent open file report by the USGS and were originally adopted into the mine pools shapefile, but with the discovery of the PA Bureau of Forests and Waters Schuylkill River Resources map, there were

discrepancies with the mine pool shapes, levels and barrier pillar altitude of effectiveness values. Changed the shapes of the mine pools in this region to reflect this map, barrier pillar altitude of effectiveness and research into surface mine permits by the Pottsville DMO Staff.

- Updated EPCAMR Program Manager Desktop and Laptop to ArcGIS 9.3.1, the newest version supported by the Office of Surface Mining and Reclamation Enforcement (OSM) Technical Innovation & Professional Services (TIPS) program. Received EarthVision 8 from the OSM TIPS program and proceeded to install it on the EPCAMR Program Manager laptop.
- Organized EarthVision files on laptop and stumbled upon more files from the Askam Borehole Collapse Incident. Shared these files with EC and explained how the OSM was able to place the new borehole. Created a success story on the work that was completed and submitted it to the OSM TIPS website.
- Created a document to show the progression work to complete the conversion of the I-Series Coal Cross Section Maps to 3D Contours for the southern anthracite coal field. Ran "Skips scripts" on the I-681 coal cross sections and created a 3D grid from the raw data which represents the Buck Mountain Seam. Merged all raw data from maps I-681, I-689, I-528 and I-737 to create 1 large grid of the completed maps. This took care of any anomalies between the maps as EarthVision assumed they were all 1 set of data. There is still a problem with the way the grid is drawn as it encounters Sharp Mountain to the south. The layer of coal actually dips over 90 degrees (a.k.a. overturned). I am told that this version of EarthVision cannot handle this extreme geologic structure, but there is a possibility of creating an intrusion feature (usually for domes or diapirs) to take care of this. Also, adding the faults into the mix using the EarthVision Workflow Manager can create a more accurate representation of the Buck Mountain Seam. Faults were created from I-689 cross sections, but none of the others. Updated the "Conversion of Coal Cross Sections to 3D Contours" document to reflect these findings. See attached documents.



December

- EPCAMR staff met at the Pottsville DMO with the USGS, Pottsville DMO, Roger Hornberger, Keith Brady, Ian Palmer to review our progress to date on the project.
- Inquired of Mike Dunn, OSM Pittsburgh, about how to deal with Sharp Mountain and the overturned horizon dilemma. Sent all current EarthVision files to Mike for review.

