

**First Progress Report on Next Steps to
Implement a Vision for OSM Operations in the
Western States**

September 9, 2003

Prepared by the Reclamation Committee of the
Western Interstate Energy Board

This is a report on the progress in developing and implementing “A Western Vision of Improving Administration of SMCRA Through Technology and Enhanced Expertise.” It summarizes past actions and discusses needed next steps.

Chronology of Progress

- In March 2003, OSM Director Jeff Jarrett was provided a copy of the draft report “**A Western Vision of Improving Administration of SMCRA Through Technology and Enhanced Expertise**” prepared by Western states.
- On June 23, 2003, WIEB Executive Director Doug Larson met with Jeff Jarrett and OSM Western Regional Director Al Klein, at which Jarrett agreed with the concepts in the “Vision Paper” but expressed a desire for details on actions that need to be taken to implement the concept and associated budget needs.
- In August, the WIEB Reclamation Committee completed a survey of Western states to determine needed technology assistance in three areas: records conversion; database design and mass storage for data intensive applications; and Geographic Information System (GIS) design, storage and distribution. The raw survey results are compiled in the attached document.
- On September 9, Rick Chancellor and Doug Larson will meet with Jeff Jarrett and Al Klein to discuss the survey results and next step.

Proposed Next Steps

1. Recommend that OSM budget \$200,000 over the next year to assist Western states to accelerate records conversion to digital formats. Western states are in different stages of document conversion and need assistance in different areas. See survey results. It is hoped that some end-of-year funds in FY 03 may be available to start down this path. FY 03 opportunities are the purchase of scanners and funding temporary help for records conversion.
2. There should be a series of meetings of Western states and the Western Regional Coordinating Center.
 - a. The purposes of the first meeting would be to:
 - i. Further define the short-term and long-term needs of the states as identified in the survey regarding records conversion, database design and mass storage, and scoping of GIS opportunities;
 - ii. Identify priority topics and schedule group sessions on priority topics; and
 - iii. Identify near-term specific hardware/software needs including costs, delivery mechanisms, and schedule of delivery and training, if necessary.
 - b. The second step would likely involve trips to key state agencies with experience in one or more of the priority areas to demonstrate and provide a small group of state experts hands-on understanding of a priority technology. The intent is to allow the states to understand what other states and OSM are doing concerning

the different topics in order to learn what works and what doesn't work and avoid "reinventing the wheel."

- c. The third step would be to develop a detailed scoping of a long-term OSM/Western states effort to integrate GIS technology into regulatory programs.

OSM would help support state travel to the series of meetings, roughly estimated at \$7,000 for the first and third meetings and a larger amount (e.g., \$20,000) for on-site state agency meetings. The travel budget for on-site state agency trips would depend on the priority topics identified. It would also be helpful if OSM could host the necessary conference calls before and after each of the meetings.

3. There is a need for OSM to launch a new cooperative effort with Western states to determine how to integrate the potential of GIS systems into state regulatory activities. This is a multi-year effort that would become a major business line of OSM and be reflected in the agency's budget. The direction and cost of this new cooperative effort would be outlined in 2.c. above.

TECHNOLOGY ASSISTANCE IN THE WEST

1.0 RECORDS CONVERSION

1.1.A What types of hardware and software does your agency currently use for scanning paper documents (text, maps, photos, etc.) and converting them into electronic files?

Alaska:

Software: Adobe Acrobat, Adobe Capture, Omni Page Pro

Hardware: Epson GT-10000 scanner with ADF, Altek Corporations digitizing board. Access also to Fujitsu Scan Partner 620C high capacity color scanner and a large format B&W scanner.

Colorado:

Software: IBM Content Manager, Ascent, and also a custom software program for document indexing.

Hardware: Kodak 3590 C for docs, Vidar Titan Pro II for maps.

Montana:

Software: R2V (for maps), Arc Scan (for maps - find less "robust" than R2V).

Hardware: HP Scanjet ADF (for photos), Contex Magnum 650 color scanner (for maps), Scan Plus III 800T (for maps), Nikon slide scanner (for photos - currently broken).

New Mexico:

Software: Adobe Capture

Hardware: HP Scanjet, Scansoft OmniPage

North Dakota:

Software: Omnipage v.12, Adobe Acrobat, Photoshop v.6.0, WideImage v.2.6, JetCopy.

Hardware: Fugitzsu 4097D scanner, Brother Color Scanner, CalComp 510C large format scanner, Kofax 850 Image Card.

Utah:

Software: Adobe Acrobat

Hardware: Canon DR2080C scanner (scans BW/Color, Duplex, up to 11"x17").

Wyoming:

Software: Adobe PhotoShop (scan photos), Adobe Capture (scan text).

Hardware: Epson 1630XL Expression Scanner, Digital cameras.

B. Is optical character resolution (OCR) used and what file format is being used for converted documents?

AK: Have the capability to scan using OCR but generally do not.

CO: No.

MT: Optical character *recognition* (not resolution) - Only limited use of OCR. Usually saved as .tiff and .jpg files.

NM: Yes - MS Word and Excel.

ND: Yes - .pdf (Adobe); TIFF.

UT: All scanned documents are OCR'd and saved as Acrobat PDF files.

WY: LQD has the capability to do OCR using Adobe Capture. The files are being stored in PDF format.

1.2.A Please list the types of paper documents that have been converted to electronic files and any special software that is being used for the electronic filing system.

AK: Mine permits including large format drawings, OSM grant application and estimates, and inspection reports are all converted into Adobe Acrobat.

CO: All documents. See above for software (1.1.A).

MT: We have converted a number of maps for use as GIS coverages.

NM: Permit text - Adobe Capture and MS Word and Excel. Exhibits and Figures - .tif.

ND: Annual mine maps, inspection reports, hydrologic and wildlife monitoring reports, photographs, certain premine and postmine maps for some permits, and some general files. Limited use of SyBase with PowerBuilder as the front-end development tool; Adobe Acrobat.

UT: Now scanning current incoming and outgoing documents or requesting that documents be submitted in electronic format. Eventually our entire central files for coal permitting will be scanned. Our only limitation at this point is that Utah does not have a large format scanner for maps.

WY: Currently LQD has not completed scanning any paper documents to electronic files. However, LQD is initiating a program to scan the old coal inspection files in an effort to aid staff in tracking future bond release actions.

B. Would you characterize your current filing system for digital documents as archival or providing users with full search and access capabilities?

AK: No formalized filing system for electronic documents. We do use Canto Cumulus for cataloging and accessing our digital photos.

CO: Users have full search capability within our indexing structure.

MT: Electronic documents (typically Word documents) are not in a searchable format outside of what is available through Word. Also, we do not save (archive) all electronic documents. Some are deleted after a period of time. Paper and microfiche are still the official (state agency) archival methods.

NM: Full search and access.

ND: Archival with full search on most files. All files will be accessible to staff from desktop PC's.

UT: Full search and access capabilities.

WY: The filing system set up previously, when used by staff, provides users with partial search and access capabilities.

1.3 What is your agency's goal or vision for electronic documents usage? That is, how will the paper documents be used by staff in your agency and others?

AK: Need to maintain a paper copy of our records (see question 2.1.E). We would also like to have an electronic copy for on going projects and for archival purposes.

CO: Eliminate paper, provide disaster recovery, easier retrieval, multi-user access.

MT: State government administrative IT and DEQ It have strategic plans that addresses this question, but our program does not have a specific goal or vision for electronic document usage. The coal program's main interest appears to be the production of map and associated databases in GIS format.

NM: Goal is to eliminate paper and conduct all transactions electronically.

ND: All documents and program processes should be in the digital realm, including workflow and information management. "Documents" will not always be replicas of paper formats in electronic format, but information and data in a format that can be easily queried and reported to better fit end-user needs more effectively than traditional paper.

UT: To have all documents and permitting information available to the public via the Internet.

WY: The goal is to move toward electronic documents where possible. Resources (both monetary and staff) limit the ability to make this transition. The LQD is slowly trying to utilize electronic media to assist with the day to day work.

1.4.A. Does your agency currently have the staff time available to scan and convert all of the paper documents that you intend to convert to electronic files?

AK: We would hire student interns. **B. Do you use temporary employees for this work?** No.

CO: All of backlogged documents have been scanned and indexed (huge project). We are currently in day forward mode using existing staff.

B. Do you use temporary employees for this work? Temporary staff performed backlog scanning and indexing.

MT: We are not engaged in this activity. **B. Do you use temporary employees for this work?** N/A.

NM: No. **B. Do you use temporary employees for this work?** Yes.

ND: No. **B. Do you use temporary employees for this work?** Yes, use of temporary employees under staff guidance and supervision will continue to be the foundation for this program's transition into the digital world.

UT: No. **B. Do you use temporary employees for this work?** No.

WY: No. **B. Do you use temporary employees for this work?** No.

1.5. What are your agency's short-term and long-term needs for assistance in converting paper documents into electronic files?

AK: We do not have any pressing short-term needs. However, we need to develop a long-range plan for a scanning and archiving our historic files.

CO: No need at this time.

MT: Haven't identified at this time.

NM: None.

ND: All basic resources related to funding and manpower are needed.

UT: **Short-term:** scan & convert all docs. as they are processed.

Long-term: scan all historic permitting files and docs. as an information resource and provide these data as an archive.

WY: Response to follow in A, B, & C.

1.5.A. Please indicate any hardware and software needs.

AK: None at present.

CO: No needs at this time.

MT: N/A

NM: No response.

ND: In general, the resources to stay current with improving hardware and software technology.

UT: A second document scanner, a large format scanner for maps, additional servers and server capacity for document storage and retrieval. Content management software and development of web-based software for document retrieval.

WY: A map scanner would be necessary so that the old permit maps could be converted to a digital format. It would then be necessary to have the ability convert the permit maps to a form that could be imported into a GIS or AutoCAD system. An additional scanner would be necessary due to the volume of paper documents the LQD has that would need to be converted.

1.5.B. Please indicate the need for technical advice and equipment recommendations.

AK: We would need technical assistance in setting up an electronic filing system so that documents could be quickly and efficiently entered and retrieved by staff and members of the public.

CO: No need at this time.

MT: We would like more information on what other states are or have done with regard to electronic file exchange. We would like to have a better understanding of the engineering specifications and documents and find out about options for linking, indexing, etc. for electronic documents. (See the GIS section for more on the need for technical advice and equipment).

NM: No response.

ND: In the immediate future we see a significant need for both in the areas of GIS, workflow applications and document/image management.

UT: Current funds available are not sufficient for any extensive development, planning or design for a data management system. Currently have to make due with the limited funds and resources that are available.

WY: It would be beneficial to travel to a state (or states) that are much farther ahead than Wyoming to see the protocol that they are utilizing as well as equipment and staff. Then LQD could customize an approach that would work for our state. By doing this, the learning curve could be greatly reduced.

1.5.C Please indicate the need for additional staff.

AK: We would prefer to contract out the initial scanning of our existing and historic documents. Current staff levels should be sufficient to maintain the system after it has been developed.

CO: No need at this time.

MT: N/A.

NM: No response.

ND: Temporary and/or part-time manpower will be a certain need. An additional full-time staff member, serving agency-wide, with a combination of workflow/systems management, GIS and Web-based end-user application development skills is critically needed.

UT: Could use 1-2 staff members for scanning and data entry needs. Could also use additional DP programming and design resources for design and development.

WY: For LQD to advance in this area, we would need a minimum of two staff people to do scanning of documents and an additional staff person for maps. This would keep three staff people working approximately 3-5 years to scan the old documents and incoming documents. Once the historical information was all scanned, then it is projected that two people could probably keep current. To convert paper maps into a GIS or CAD friendly format, at least one full time person would be needed as well. Thus, in the short term (3-5 years) LQD would need four additional staff people.

2.0 DATABASE DESIGN AND MASS STORAGE FOR DATA INTENSIVE APPLICATIONS.

2.1. To what extent is your existing information ready for conversion to database and digital format?

AK: Limited.

CO: All existing information is currently in a relational database.

MT: Some of the data (e.g. administrative data) has been in a database for more than a decade. This database is used mainly for tracking applications, permit actions and violations. The format for these databases is obsolete and we are in the process of changing to an Oracle format. We also maintain hydrology (in Microsoft Access) and blasting databases. The Montana DEQ is in the (prolonged and protracted) process of implementing a DEQ-wide Oracle database designed to store and track data (forms and tables have been designed to accept new data), but the inclusion of historic data will be variable.

NM: No response.

ND: Most, if not all, data are ready based on successful conversions that have been completed to date.

UT: Our current files and information are a mess. Most of the time we spend converting data is related to ‘normalizing’ the files, including the elimination copies of documents, sorting and re-filing documents, and searching for missing and ‘original’ documents. Approximately 75% of the time necessary for document conversion is involved in preparation of the files for scanning and only 25% of the time is necessary for scanning and data entry.

WY: The information is ready for conversion; however, the LQD would need to design a system to convert to this type of process, establish a protocol, and add server space for storage of the documents and digital images.

2.1.A. Do you have information in an existing database that is kept current and complete?

AK: We have an access database that reflects a snapshot of the mine site but provides little in the way of adjudication or technical review capabilities.

CO: Yes.

MT: The above discussed databases are not as current or complete as desirable, in part because expectations for data completeness have changed in the last 15 years since implementation of the administrative database. Keeping the hydrology databases updated annually (upon receipt of annual hydrology report data) has not been easily implemented.

NM: Yes.

ND: Only partly and mostly in scattered administrative functions and a limited number of data sets.

UT: Utah maintains a database of water quality data and is only recently starting to incorporate permitting and other permit-related information into a database system. Much has to be accomplished before the information could be considered current and complete.

WY: LQD has a database that tracks mine permits, acreages, Notice of Violations (NOVs), correspondence, inspection reports, etc. The database just tracks the dates of correspondence, NOVs, and inspections that are sent to the operator. LQD also has a database that houses hydrology information. The database has had little to no Quality Assurance/Quality Control. The data base is presently 7-8 years out of date.

2.1.B. Do you feel your filing/archiving system is adequate?

AK: No.

CO: Yes.

MT: Seems to work for our program.

NM: Yes.

ND: No.

UT: No. Original copies of the files are maintained in Utah's Public Information Center. These documents are made available to the public for review. No copies of these documents and no archive process currently exist for our files. Converting these files to digital format will hopefully be the solution to our current situation.

WY: The paper system is adequate but cumbersome. Presently the LQD would like to re-institute microfilming for coal documents due to the sheer volume of paper materials.

2.1.C. Is your data 'centralized' or is it scattered throughout your organization and maintained by a variety of individuals?

AK: Our data is currently stored on a local server, which is only accessible to coal staff. Ideally this information should be available to all state agencies making decisions on state land.

CO: Centralized.

MT: Some of it is centralized and some of it is maintained by individuals who have a specific interest and are the only users of the data.

NM: Centralized accessible to all employees.

ND: Primarily centralized, but a few specialized and technical data sets are dispersed and managed by individual staff.

UT: Files and documents are centralized in Utah. However, permitting chronology and the history related to the permitting process is maintained by individuals in personal filing systems and is not readily available to other staff or the public.

WY: The main records are stored in a centralized area; however documents exist in field offices. The field office records are not as reliable as the main records.

2.1.D. Do you want to incorporate historic information into the electronic system?

AK: Yes.

CO: Historic information is already in our electronic system.

MT: Yes, historic data are important to the integrity of the database.

NM: The database is comprehensive.

ND: Yes, this is essential.

UT: Yes.

WY: It would be nice to incorporate all the historic information into an electronic format for staff access.

2.1.E. Do you know what requirements your agency or state has for records retention, archiving, and availability of information to the public?

- AK:** We are required to retain all surface coal mining case files for two years after the records are closed and then as a permanent record in the state archives. Permanent records must be transferred by the state agency to the state archives when they become inactive or whenever the agency cannot provide proper care and handling. Electronic records must be transferred by the state agency to the state archives on paper, microforms, or magnetic tape..
- CO:** Record retention is being met because we purge nothing. Not aware of any current policy. Archiving requirements are met based on document images saved in JPEG or TIF format. Information is currently available to public in our reception area via LAN.
- MT:** A state rule requires that all records be kept for 5 years after final bond release. Microfilm/microfiche has been determined (in the courts) to be the same as a paper document; this is what is used in the coal program to archive old files. Digital format documents are not considered archival quality because of possible irretrievability over time due to technology changes (i.e. changes in electronic media). A copy of all microfilm is given to the state library for archiving..
- NM:** Policies for retention, archiving and public information exist under Statue and regulations through NM State Records Department.
- ND:** Yes, archiving is for life of program. All information is public.
- UT:** Utah is in the process of evaluating those requirements and has not yet determined any retention schedule for permitting files.
- WY:** Yes, for all records we have retention schedules. Information is available to the public; however, quite often if the information is two to three or more years old, LQD must call the information back from archives (which takes 1-2 days). This is true for industry, the public and/or staff. The LQD has continually lost office space so we are only able to store a limited amount of the historical information. This at times is inconvenient for industry, staff and the public.

2.2. Do you have existing database applications? If so, do you feel they are meeting your program requirements?

- AK:** We are currently using MS Access. The database meets our short-term need but is not adequate to meet our long-term goals.
- CO:** Yes and yes.
- MT:** Administrative data are housed in PFS and Lotus Approach, which are gradually being replaced by the Oracle database (we are in test and conversion mode). The hydrologic databases are in Access and Excel.
- NM:** No response.
- ND:** Yes, these are SyBase/PowerBuilder applications primarily for administrative data and functions. This system is in serious need of refinement and expansion into an agency-wide information management/workflow system. Improvements to existing databases and additional applications are very much needed to better meet program requirements in today's digital information age.

UT: Utah is just beginning development and production of permitting-related database applications. Current development utilizes Microsoft SQL 2000 as the database server and MS Access 2000 as the front-end for data applications. Much additional work needs to be done to get the applications “user-friendly” and available over the internet.

WY: LQD has existing database applications. They are helpful in meeting the program requirements but there continues to be QA/QC issues with the data entered. Also, LQD struggles to keep existing databases up to date.

2.2.A. Is the database routinely used for review and analysis, or, are data primarily maintained for reporting and archival?

AK: The database is primarily used for reporting and archival purposes.

CO: Primarily reporting/analysis and for extensive document generation.

MT: The hydrology database is used for analysis. The administrative databases are used for reporting and archiving.

NM: Routinely used and updated.

ND: Data are primarily maintained for reporting and archival; however, some specialized technical data sets are used for review and analysis.

UT: Plans are to use the system for both review and archival purposes.

WY: Primarily used for reporting.

2.3. What is currently done in your state’s program that could be enhanced in your vision for e-permitting and e-business?

AK: There is an ADNR project that is evaluating the feasibility of having a web based application system for land use authorizations on state land. This project could be expanded to include coal permits. We would envision an electronic application submitted on CD and web based reporting system. To reduce the amount of data entry we would like a system that would have the application entered directly into an adjudication database and would have the operators enter annual reports into a webpage that are uploaded to the permitting database.

CO: Eventually have full web access and allow electronic permitting. Possible Statutory change.

MT: Development of databases for bond release and other program/permitting activities that could be tied into a GIS framework.

NM: Data interface with Internet and GIS applications.

ND: A significantly greater use of existing data to meet core program functions will be feasible. Useful access to voluminous information by stakeholders and the public will be possible. A significant increase in program efficiency and economy via workflow management will be possible.

UT: Utah is only in the initial stages of development for these types of applications.

WY: Our current records system has worked incredibly well for many, many years. E-permitting and E-business could enhance our program if we maintain a system similar to our existing paper system but apply E-technology to the existing system.

2.3.A. Do you maintain a digital chronology of permitting activities throughout the life of a permit?

AK: Yes, but it is just a summary of the actions taken.

CO: Yes.

MT: There is a Word file (word processing) that is maintained. Paper copies are kept with each permit file.

NM: Yes.

ND: Yes, this is one of our oldest and most successful digital applications.

UT: No, not currently.

WY: No.

2.3.B. Do you process data electronically or manually?

AK: We are using both methods depending on the scope of the permitting action and the capabilities other coordinating agencies. Revisions with few submittal documents are usually handled through emails.

CO: Data entry is done manually.

MT: I don't fully understand this question. It is not clear what data are being discussed. Most administrative data are put into a database for tracking and reporting. Hydrology data are available and processed digitally.

NM: Electronically.

ND: Both, all staff have migrated or are rapidly migrating to performing functions electronically. Many manual components remain to accommodate customers and the much slower evolution and upgrading of agency systems into fully electronic functions.

UT: Mostly manually at this time.

WY: Manually.

2.3.C. Do you receive electronic submittals, reports, data, etc. from operators or do you convert the data in-house?

AK: Yes, but they are generally in Adobe format which is little more than an electronic paper copy. We also receive some aerial photograph from our operators in the annual reports, but this is not a requirement.

CO: Paper originals converted in house. Drafts frequently received electronically.

MT: We receive some electronic submittals from operators but not from all. One mine submits annual reports to the program digitally. We are asking all operators to submit annual report maps in electronic format. Hydrology data comes to us in electronic format.

NM: Electronic submittals. To date, no conversions are done on a submittal basis.

ND: We receive both electronic and paper submittals. As in-house digital conversion progresses, we will begin routine conversion of most received paper documents in-house for entry into the digital filing and workflow system.

UT: We are now receiving some information electronically for permitting. All water monitoring information is now submitted electronically. Overall, most of the information is still being processed and converted in house.

WY: Some mines submit electronic copies of their Annual Report with their paper copies. Some mines also include monitoring data. There is not much standardization which makes use of the data inefficient for staff.

2.3.D. Are inspection reports, violations, and other forms completed on paper or can the information be produced and distributed digitally? What are your expectations?

AK: All of our inspection report, OSM reporting, and grant applications are done in word, converted to Adobe, and distributed by email.

CO: Formally on paper, informally electronically.

MT: They are produced electronically (word processed in Word), then printed for use and distribution. For the most part, inspection reports are only sent electronically to OSM and the coal operators. Eventually the information in these reports, etc. will be posted directly to the Oracle database from Word.

NM: All inspection reports are digital. Violations still paper, but convert to a database.

ND: Inspection reports are produced and distributed digitally, but signed paper originals are kept on file. Violations and forms that must be signed are completed on paper. However, digital versions of the forms that are fillable are available on the Commission's website. Our expectations are to eventually have all documents, managed, processed, produced and distributed electronically.

UT: Not at this time, but we are in the process of starting to develop these processes.

WY: At this time all of the forms are completed on paper. The expectation is to move more and more documents we create to a digital format.

2.4. How do you envision improving upon what your program is currently doing?

AK: Yes.

CO: Primarily electronic environment.

MT: Streamlining the process once the Oracle database is online.

NM: No response.

ND: See following.

UT: No response.

WY: Again going back to question 1.5B, it would be beneficial to see other systems already in place at other states instead of re-inventing the wheel so to speak. With this information, one could then look at our system and develop a plan for short and long term goals along with protocols to institute the plan. Without a short **and** long term plan, especially with the speed of electronic media changes, the program would rapidly become out of date.

2.4.A. Do you plan on keeping scanned documents, maps, and photographs on a mass storage system?

AK: Yes.

CO: Yes.

MT: We currently use designated network drives for scanned maps. The Montana DEQ-wide Oracle database will contain most of the other information that we collect and store and will, of course, be a mass storage system.

NM: Yes.

ND: Yes.

UT: Yes.

WY: Once a plan is instituted the answer to this would be yes.

2.4.B. Do you want to have all data available or just current information?

AK: We would rather have all of our current and historical information available but could live with from today forward.

CO: All.

MT: All.

NM: All.

ND: Having all data available in the management system is essential to any SMCRA-based program.

UT: All data.

WY: For our program, historic information is just as important as current information. Many of the decisions made regarding permits is based on previously approved information.

2.4.C. Do you plan on eliminating your paper filing system?

AK: We would like to but do not know how feasible that will be based on our archiving requirements (see question 2.1E).

CO: Eventually.

MT: No.

NM: Yes.

ND: Yes, this is a long-term goal.

UT: Eventually by shipping all paper data to state archives and maintaining only and electronic version of these data.

WY: In the short term the answer would be no. Once a system is in place and functioning well, LQD would consider eliminating the paper system. This would be down the road probably several years.

2.4.D. Do you want to integrate workflow and document management into the permitting process or use the electronic data for storage and archiving purposes only?

AK: We would like an integrated workflow and document management approach.

CO: Our database already integrates workflow and document generation with a link to our imaged documents system.

MT: It will be integrated.

NM: All information is part of permitting process. There is no mass storage for archive purposes.

ND: Integrating workflow and document management into the permitting/I&E electronic data management system is seen as essential because of our limited staff and budgetary resources.

UT: Yes, the costs of purchasing, developing and maintaining a document management system is currently prohibitive for our Division.

WY: Where possible, to provide for maximum efficiency, integration of workflow and document management would be used.

2.4.E. Do you plan on keeping your data in-house within your Local Area Network (LAN) environment?

AK: Any system that is developed need to accessible by other departmental or state agencies and by the members of the public.

CO: Yes and we already are.

MT: Yes. All of our information and data are public and more will be made available on line as development of the capability proceeds. The public can access some of the information (e.g. EIS's, EA's, rules, statute, etc. but no databases) on line now through our web page.

NM: Already is part of the LAN.

ND: Yes, in terms of management for economically feasible updating and modification. However, the possibility of IT consolidation on a statewide basis may change our ability to do so. IT consolidation may seriously threaten the economic feasibility of a small agency building, maintaining, modifying and offering free public access to the extremely large sets of graphics-intensive data typical of SMCRA-based environmental information.

UT: Yes. Although there has been some discussion of data consolidation and centralization on a state level.

WY: Alternatives would be viewed; however at this time it would be recommended that the data stay in-house.

2.4.F. Do you plan on accessing/entering data remotely, over the Internet?

AK: Yes, at some point in the future.

CO: Yes sometime.

MT: I'm not sure, but I think that is part of the plan.

NM: It can be, but that is not an essential workflow function.

ND: Yes, to support efficient in-program, stakeholder and public use of the data.

UT: Yes, but a lot of development needs to be completed before this will be possible.

WY: Yes, to some degree this is already being done.

2.4.G. Do you need to share your information with other agencies and industry as part of the permitting process?

AK: Yes.

CO: Yes.

MT: Yes.

NM: Yes.

ND: Yes.

UT: Yes.

WY: Yes.

2.4.H. Do you plan on using your data management system for public information, access and public notices?

AK: Yes, it is ADNR policy to post a copy of the public notice on our web pager.

CO: Yes already do in-house, and plan to over web.

MT: Yes.

NM: Yes some of our data already is public accessible.

ND: Yes.

UT: Yes.

WY: Yes.

2.4.I. Do you need to receive and distribute documents, maps electronically that are too big for sending via email? If so what method would you like to use?

AK: If an electronic file is too large to email we will mail a CD-ROM of the document. Generally during when the applicant submits a permit we will request a number of CDs to be distributed to the cooperating agencies.

CO: No significant problems encountered to date. Department is considering FTP.

MT: Yes. We currently use FTP sites when needed, although there are security concerns about having someone externally (outside of Montana DEQ) access our site.

NM: Yes, we have an FTP site for large file transfers.

ND: Yes. E-mail by simply removing file size restrictions. Web-based transfer.

UT: Yes. We need to develop a secure, web-based file and data system.

WY: This has already been identified as a problem. The size of some of the electronic media we receive is too large for our server and network to handle. This is an area that the agency is aware of and looking for alternatives.

2.4.J. Do you want to publish information directly from your database to staff, other agencies, industry or the public?

AK: Yes.

CO: Reports are currently generated for OSM and various others from our database.

MT: Yes. We currently use FTP sites when needed, although there are security concerns about having someone externally (outside of Montana DEQ) access our site.

NM: Staff already has direct access. It can be provided to industry or the public also.

ND: Yes.

UT: Yes.

WY: Yes.

2.4.K. Do you want to distribute forms that can be sent, completed and filed electronically?

AK: Yes.

CO: Eventually. (Primarily a DMG policy issue).

MT: Ideally.

NM: We do not use any forms, but we could do it.

ND: Yes.

UT: Yes.

WY: Yes and to a limited extent, we are presently utilizing this method.

2.4.L. Do you want to integrate your data with maps to create a GIS (Geographic Information System)?

AK: Yes.

CO: Possible future need for staff support to digitize map resource.

MT: Most certainly. This is of keen interest to many on our staff.

NM: Yes, we have some information already presented as a GIS that is available to the public on the Internet.

ND: Yes.

UT: Yes.

WY: Yes.

2.6. Would you prefer to develop a customized database system to meet your specific state program needs, or would you prefer to participate in the development of a standardized database that all states could/would use?

AK: The Alaska coal program would prefer to develop a database system to meet our specific needs, but one that is created under a framework that has identified elements common to all participating state RAs.

CO: We need to maintain the existing state-specific database.

MT: We will have to use the Montana DEQ database.

NM: We have a custom SQL database developed in .NET.

ND: A customized system is most effective for implementation and some aspects of development, but a degree of standardization could provide certain economies based on the commonalities in application development and would be an asset for multi-state interaction. A customized system is most effective for implementation and some aspects of development, but a degree of standardization could provide certain economies based on the commonalities in application development and would be an asset for multi-state interaction.

UT: Given how the electronic permitting and migration of data from paper to digital has evolved, it is probably better at this time to continue development of custom applications rather than attempting to consolidate into a standardized system. With limited funds and staff, the delays and additional time necessary for development, we could not afford time and staff needed for such collaboration.

WY: At this time it is premature to answer this question. More investigation is required to learn what other states are using to decide if any of these systems would work for our state.

2.6.1. Would a standardized regional system make implementation, budgeting and funding easier or more difficult given the situation in your state?

AK: I think that having a standardized regional system would make funding a system in Alaska more difficult because we would lose additional funding sources from other state agencies that participate in permit reviews.

CO: Difficulties might arise due to state-specific requirements.

MT: More difficult because the IT folks in Montana DEQ do not want us to use any other databases. Thus, I do not see how a regional system would be beneficial to our program.

NM: I'm not sure a regional system would be practical or efficient.

ND: The situation is uncertain in the present environment of mandated IT consolidation – it may vary from being totally unfeasible to being the sole economically viable alternative for continued DBM development.

UT: Perhaps, but it seems that each state seems to have its own specific needs and requirements relative to their own state program.

WY: Again, at this time it is premature to answer this question. More investigation is required to learn what other states are using to decide if any of these systems would work for our state.

3.0 GIS DESIGN, STORAGE, AND DISTRIBUTION

3.1. Do you currently maintain a GIS? If so, please comment on the following:

AK: Yes.

CO: No, we do not have a GIS, but there is a GIS server in the Department.

MT: We do not have a comprehensive GIS. A number of our staff have developed some GIS files for their specific job needs.

NM: Yes, we maintain a GIS.

ND: No.

UT: No response.

WY: Some people use a GIS program to conduct basic analysis and make maps for reports. A division wide GIS is not used. Some GIS data is stored on a server that can be accessed by all LQD staff.

3.1.A. Do you make GIS data available to the public, and if so, how?

AK: We make some data available, but it is generally as requested. If the files are small enough we will e-mail the files to the individual, or if the data is too large we will burn a CD-ROM and mail a copy.

CO: _

MT: No.

NM: Yes - through the Internet using Autodesk MapGuide, a web-mapping product.

ND: _

UT: Data is only provided by request only by phone, e-mail or letter.

WY: The only GIS data that is available to the public is in the form of hardcopy maps that were generated using ArcView or ArcGIS.

3.1.B. How do you store GIS data?

AK: Depending on the data it is stored either on a local hard drive or server.

CO: -

MT: Some staff keep the files on their hard drives. We also have network storage available for these files.

NM: Primarily through a NAS (Network Attached Storage), with some data sets maintained by specific users.

ND: -

UT: On our LAN server.

WY: Currently, GIS data is stored in a directory – file structure on a server that can be accessed by all of the division staff. LQD has a pilot GIS project underway that will store the data in a geo-database.

3.1.C. Do you have standards for maintaining GIS data?

AK: No.

CO: -

MT: No. I think that we need help with this. We need help with developing metadata and cataloging data.

NM: Yes.

ND: -

UT: No.

WY: No.

3.1.D. What is your level of expertise regarding GIS in your program (check all that apply)?

AK: Use consultant/contractor
 GIS expert on staff

- Planner on staff
- Currently have little or no broad expertise base among staff, but expect to gain expertise in the next two years.
- Little or no broad-based expertise and limited prospects for improvement.
- Other: GIS experts in other divisions that can provide limited support.

CO: -

MT: -

- NM:** Use consultant/contractor
 GIS expert on staff
 Planner on staff
 Currently have little or no broad expertise base among staff, but expect to gain expertise in the next two years.
 Little or no broad-based expertise and limited prospects for improvement.
 Other: GIS experts in other divisions that can provide limited support.

ND: -

UT: GIS expert on staff

WY: -x- Currently have little or no broad expertise base among staff, but expect to gain expertise in the next two years.

3.1.E. What software do you use for GIS and/or managing data?

AK: AutoCAD and Arc GIS

CO: -

MT: Mainly ArcGIS. We also have AutoCAD and SurvCAD.

NM: ESRI ARCGIS ArcInfo and ArcView 8.3, with extensions, ArcView 3.2, AutoCAD Map 2004, Autodesk MapGuide 6.3, Leica Geosystems/ERDAS Imagine 8.6, and others.

UT: Arcview 3.3, Pathfinder Office, AutoCad Map, ArcGIS, ArcInfo

WY: ArcView 3.3 and ArcGIS 8.3..

3.1.F. What are the most frustrating GIS problems you are facing?

AK: Limited data availability on a local scale.

CO: -

MT: We have a number of frustrations in the GIS realm. Mine coordinate systems often are not the same as “real world” coordinates. We desperately need expertise for guiding many of us and answering the questions that arise as the staff begins using GIS. We need help with development of GIS files and linking them with databases so that we can get some experience and better understanding of how to use this tool. We are facing a growing need for the ability to backup the large files generated in GIS. Our network managers in IT do not like for us to take up substantial volumes of storage space. We could use more storage space on the TIPS NT server to help with this problem. Or maybe, if nothing else, a DVD writer.

NM: No response.

ND: -

UT: Lack of data, users understanding what data is needed for their jobs.

WY: There seems to be a lack of willingness by industry to provide datasets to LQD in a GIS format. At this point, it is difficult to get industry to voluntarily provide information electronically. There is also a shortage of staff that are proficient in using a GIS. Some staff members are reluctant to learn new software programs. Also, there is not enough time to work on GIS and get everything else completed.

3.2. To what extent do you use electronic data/GIS during permitting related reviews? Who provides the GIS if your agency does not?

AK: We will use GIS coverage to perform analysis. Prepare maps for use in public meetings. Track acreage numbers for disturbance, regraded, seeded, etc..

CO: Our current reviews use paper maps and not GIS.

MT: Some limited use has been made of it. One of two of our staff consult GIS regularly for review and analysis of PMT, drainage reconstruction, etc. It also has been used for CHIA development.

NM: We have received one GIS application associated with a new permit. We are currently working on creating applications for all active mines that could be used for permitting. Many fundamental base layer resources are available through a statewide clearinghouse (RGIS); in addition, cooperative arrangements between agencies often result in access to helpful datasets.

ND: Extensive use is made of spatial/temporal digital data but not from a structured GIS.

UT: Currently not using GIS as part of our permit reviews. Most data currently available is regional/statewide data and is not at the scale or detail necessary for detailed permitting review.

WY: GIS is not currently used by many people during permitting related reviews. Some of the hydrologists attempt to use the data that is available via the Internet to conduct portions of the review.

3.3. If you do not currently have a GIS, is it your goal to have one? Please explain.

AK: N/A

CO: Yes, it is our goal to utilize GIS more. Our GIS use will be layers and accessing data that resides on the departmental GIS server.

MT: I think that many of our staff would like to have a program-wide GIS. But this means that we need someone to design, implement and manage it. Currently, there is no one on our staff to do this. We could probably make use of some outside help dedicated to getting us up and running on this (large) project. The availability of funding for this is at best questionable.

NM: No response.

ND: Yes, we see a GIS as essential for managing the data of our program.

UT: Yes, but extensive development of GIS standards and metadata requirements to incorporate these data into a useable system will be expensive and time consuming especially with limited resources to accomplish this.

WY: No response.

3.4. What future GIS data related activities and/or products do you anticipate using over the next 3-5 years?

AK: We would like to increase our storehouse of aerial and satellite imagery for the premining condition for areas that are likely to be developed. Including transportation corridors. Increase the availability and accuracy of data layers for vegetation, soils, and water quality.

CO: We are currently in the process of creating a GIS layer of point data for all of the mine sites. The point data will be linked to our permit database with other info. It is our future plans to have various GIS layers such as: permit area, ownership, disturbed area, various phase release areas, etc. Combinations of these different layers will be very useful in our permit review and analysis.

MT: I would like to have a program-wide GIS in place within 5 years, but there are no plans for this. Also, the necessary funding and/or personnel to accomplish this would be big question marks.

NM: We expect to have all permitted mines incorporated into our GIS, and in addition, we plan to incorporate data from bond-release locations and older/former mines. A certain percentage of this data will be available to the public over the Internet, although not all of it needs to be.

ND: Increased staff training and implementation of a GIS on the interagency or centralized state/federal government scale.

UT: To at least provide permit areas and mining related activities into a data set to evaluate mining in relation to other land uses and land planning information on a state level.

WY: Hopefully, the pilot project using GIS/GPS will be successful and the LQD will see the benefit of using a GIS system to track bond release. It would be beneficial to utilize GIS data (i.e. aerial or satellite photography, digital topography, etc) for routine enforcement purposes.

3.5. What do you envision as an ideal GIS/data management system for your program?

AK: One that is integrated into a permitting database that allows the permitter to query the database based on map parameters. This system would need to take into account water sampling locations and geochemistry, soil and vegetation mapping, etc.

CO: As above.

MT: A system that would tie in topographic, permit and other maps used in permitting applications with geodatabases that would include hydrology, wildlife, vegetation, bond release, etc. Our program needs help with the “vision” aspect of this as we don’t have a handle on how to go about putting this sort of product together. We would benefit greatly from demonstration of GIS’s that other states have designed and implemented. We have some ideas but we need some guidance.

NM: The present combination of tools we already have ... ESRI ArcGIS, AutoCAD Map, Autodesk MapGuide, Imagine, etc. ... but working seamlessly for even the most "non-techie" staff member. And, an Enterprise-level GIS implemented as a geodatabase.

ND: One that integrates all environmental and administrative data across the state technical community, and one that interfaces seamlessly with CAD and existing administrative databases.

UT: Incorporation of accurate permit maps and permitting data into single process where the information could be readily available to staff and the public.

WY: It is premature to provide this information. LQD is initiating it’s first project using GIS. As the staff work more with GIS and staff become familiar with what can and can not be done, ideas for GIS use will become far more diverse.

3.6. Do you use a Global Positioning System (GPS) for the maintenance of maps, coordinate acquisition, or location?

AK: Yes.

CO: Yes - they are used on individual permit activities but they are not tied into an overall GIS system.

MT: We have and use three GPS units used for surveying locations, boundaries, etc. when needed, but few of the staff are adequately familiar with the hardware and software to be comfortable using it.

NM: Yes.

ND: We are beginning limited and simple use.

UT: Yes.

WY: Some inspectors use GPS units to map out disturbance limits, roads, topsoil piles, etc on their inspections. In some cases, these GPS files are then overlaid on digital topographic maps to generate a map for the inspection report.

3.7. To what extent do you use remote sensing or aerial photography?

AK: We use aerial and satellite imagery as base layers for mine sites pre-mining and during operations. This imagery is also used to check erosional features over the permitted areas. Check to make sure that the operator is within permit boundary.

CO: Remote sensing is not used. Aerial photography is primarily used for inspection purposes, but is also used occasionally for permit review and analysis.

MT: We commonly use digital aerial photographs as a GIS layer. We have not used remote sensing.

NM: We use DOQs, DOQQs, LandSat (beginning to use), and LiDAR, to varying extents in our program. We plan to acquire some additional satellite imagery.

ND: We make use of basic orthophotography as maps and CAD images. We will be starting simple analytical use of aerial photography/remote sensing imagery.

UT: Very little.

WY: Remote sensing is seldom used. Aerial photography is used on a limited basis. Sometimes, the free aerial photos that can be obtained from the University of Wyoming are used to determine locations and disturbance limits.

4.0 OTHER COMMENTS SUCH AS YOUR GREATEST NEED

AK: No comment.

CO: No comment.

MT: Of the three main topics in this survey, our greatest interest is in GIS design, storage and distribution. This is a tool that, if developed, could increase our analytical abilities and would serve as an excellent way to maintain data for use through the life of a mine. It would streamline some permitting activities and be time efficient for many of the reviews that we do.

- NM:** Keep funding current levels. We could not have developed the e-permitting system we have today without assistance from the WRCC Office Technology Transfer. Joe and Linda deserve a lot of credit for coordinating a regional initiative. Please keep Technology Transfer at WRCC.
- ND:** Over the short term, the greatest needs are to continue the data conversion process and to develop an integrated data management/workflow system. Longer term, the development and implementation of an interagency GIS (or regional GIS) is needed for managing much of the data that is part of the regulatory program. However, the possibility of IT consolidation on a statewide basis will greatly affect the directions we take on these projects.
- UT:** The greatest need for Utah to succeed in data migration and the development of electronic permitting is to incorporate these processes into our regular budget and program costs. Continuing to attempt to accomplish this on the side as we must still conduct normal permitting and regulatory work is difficult as we do not have adequate staff and fund to accomplish both regular program needs and migrate to electronic permitting.
- WY:** Resources, both staffing and an increased budget, is our greatest need. It is only with these resources that LQD will be able to utilize the advanced technology currently available.