

## **TIPS Steering Committee Meeting**

### **Office of Surface Mining**

May 3-5, 2005

Downtown Embassy Suites Hotel, St. Louis, MO

#### **List of Attendees:**

Jeff Jarrett (OSM)  
Al Klein (OSM)  
Billie Clark (OSM)  
Len Meier (OSM)  
Mike Sharp (OK-AML)  
Tim Wilson (KS)  
Neil Harrington (MT)  
Rick Koehler (NM)  
Greg Melton (AR)  
John Riley (CO)  
Gerald Collins (VA)  
Larry Evans (WV)  
Mark Schlimgen (TX)  
Scott Roberts (PA)  
Willis Gainer (OSM)  
Bob McKenzie (OSM)  
Erv Barchenger (OSM)  
John Craynon (OSM)  
Tim Derringer (OSM)  
Roy Morrison (OSM)  
Pete Rutledge (OSM)  
Van Weaver (OSM)  
Sarah Donnelly (OSM)

#### **Welcome and Introductions: Billie Clark**

- Welcome to the 2005 TIPS Steering Committee Meeting

#### **Welcome to St. Louis and MCR: Charles Sandberg**

- Sandy welcomed the Steering Committee members to St. Louis and to the Mid-Continent Region. A tour of the MCR office in Alton and presentations from MCR staff were conducted prior to the official start of the meeting.
- Sandy asked that as the Steering committee discusses upcoming TIPS initiatives, they consider where the instructors and/or staff will come from to make these activities possible.

### **Introductions and Agenda Review: Al Klein**

- The Steering Committee is going to become more involved in the TIPS Strategic Planning process.
- What are the Steering Committee's thoughts on metrics to measure the success/value of the TIPS Program? This will be needed to help justify the continued existence of TIPS.

### **Office of the Director: Jeff Jarrett**

- Over the next 3 years, there could be significant budget cuts.
- There is a need to justify the TIPS Program in order to maintain/increase funding levels.
- Thanks for work you do.

### **Overview of TIPS Activities – Decision Points, TIPS Future: Billie Clark**

- Steering Committee Membership/New Members
- Organization Happenings
- New TIPS Team Members
- Administration/IT Issues
- Major Accomplishments
- Efforts Underway
- New Frontiers
- Major Planning – Management Activities

### **Overview of Meeting: Len Meier**

- Agenda Review
- Thanks to Bea Hill for her hard work in setting up travel, putting binders together, and working with the hotel on the meeting facilities for everything.

### **Steering Committee Members – Constituent Reports**

#### **Mike Sharp (OK-AML)**

- Mike represents AML programs in 23 States and 3 Tribes.
- Mike reports that TIPS has a very positive and significant impact to AML Programs. Specifically, the training and technical assistance in ESRI, Autodesk Map, and SurvCADD, the ESRI Online Courses, and Mobile Computing are very helpful. AML Programs would like to see more outreach to the states, similar to the TIPS Geospatial Conference in December 2004. The AML programs would also like to see continued coordination between TIPS and NTTP to integrate TIPS software into existing NTTP courses. AML managers and program staff also request more forums and meetings.

#### **Tim Wilson (KS)**

- Tim Represents KS, MO, and IA
- Due to the current status of the Missouri coal program, there has been very little interaction with MO. They have used up the last of their AML funding, and there is a possible movement on the part of MO to take their program back.
- Iowa has purchased their own tablet computer to get started in mobile computing. They will be attending training this year, and might request an on-site mobile computing course late in the year. Iowa is waiting for approval to take ESRI online training, and to date they

have a high completion rate. Todd Coffelt will consider teaching TIPS courses. (Len Meier will Contact Todd)

- Kansas is using and completing the ESRI Online Courses. They currently maintain their own AutoCAD and SurvCADD Licenses, and use one or two TIPS licenses to supplement. Kansas inquired about the distribution schedule for CAD products (Autodesk Map 2005 or 2006). They have received a GeoXT from TIPS, and are having difficulty using ArcPAD on this device. They have changed over to Terrasync without problems. They requested onsite assistance to get ArcPAD running. Len Meier will follow up on this. Marvin Barnaby was offered as a possible AutoCAD/SurvCADD instructor.

### **Neil Harrington (MT)**

- Neil represents WY, AK, and MT for WIEB
- In Wyoming, Rick Chancellor (Cheyenne) reported the TIPS has been very responsive to their needs, and looks forward to expanding on the services in the future. John Erickson (Lander) has been very pleased with the support that has been received from his service manager. John has requested mobile computing assistance in the areas of selecting a tablet and integrating their current activities with GPS. Mark Taylor (Sheridan) requests on-site assistance with ArcPAD. Mark also has suggested that TIPS look into using system similar to Microsoft NetMeeting to conduct real-time support. This would allow visual support from a remote location. Mark reports that the TIPS telephone and on-site assistance has been very good, and they now have all of their hardware and software up and running.
- Alaska would like to see more remote sensing data (LiDAR, IKONOS, Quickbird, etc.) made available to assist with pre-mine baseline establishment. Alaska would also like to see more advanced training opportunities made available. They suggested that TIPS develop a 3-5 year plan starting with entry level training and progressing through more advance levels
- Montana has a new GIS specialist who needs AutoCAD training. They also would like to see TIPS conduct refresher training to bring people up to date with changes in software. On-site or 1-on-1 training using real working data in AutoCAD, ArcGIS, and the use of GIS in inspections to record site changes would be very helpful. One engineer in Montana suggested that TIPS develop more in-depth SurvCADD training, while another has inquired about the possibility of including Vulcan in the TIPS core software.

### **Rick Koehler (NM)**

- Rick Represents NM and UT for WIEB
- New Mexico would like to thank OSM and TIPS for the things they provide. The training has been great from both TIPS and NTPP. The ESRI online training is used very heavily. New Mexico has developed a GIS system that would not have been possible without TIPS hardware, software and support. There has been a shift in IT/TIPS interaction in New Mexico that is similar to what is happening in many states. The technical staff is not handling the TIPS software installation, and the IT staff who have taken over that role have no knowledge of the programs, and cannot provide adequate support. With this in mind, should TIPS revise the role of the State TIPS Coordinator? Monte Anderson (Hydrologist) was offered to participate in the TIPS GeoFluv review team
- Utah suggested that TIPS consider contracting out online/self paced course development/hosting. This has already been done with Galena, AMD Treat. There are several software packages that are used by mining companies/consultants that are not

available to the States. States are not able to evaluate the information submitted by companies that use these programs. Can TIPS survey the states and the industry to see what software packages are being used and consider providing these programs with at least a reviewing capability? These would be environmental modeling types of programs for surface water, ground water, geomorphology, etc. Utah has developed self paced E-courses on moving from CAD to ESRI, including exporting, attributing, and topology checking. Bob Welsh requested that any and all job aids of this type be sent to him for possible use by the TIPS training program.

### **Greg Melton (AR)**

- Greg represents AR, OK, and AL
- Greg provided a very eloquent presentation that is summarized here. Most users prefer classroom training over online. All programs are making good use of the TIPS software. CAD programs seem to be the most heavily used, with GIS applications a close second. Most of the other TISP software sees little use in these states. All TIPS hardware is heavily used and greatly appreciated. Some programs depend on TIPS for this hardware as they could not get it on their own. OK RA has a need for a large format scanner and mobile computing assistance/training. AL AML needs a map scanner, and AL RA needs help with their digitizer. AR would like a tablet PC, preferably ruggedized. Shellie Willoughby (OK-AML) has been offered as a potential instructor for ESRI or ERDAS courses. Dianne Osborne will follow up.

### **John Riley (CO)**

- John represents CO and ND for WIEB
- Colorado would like to thank TIPS, NTPP, and OTT for great support to CO Coal program. They have used resources from all 3 programs. These services have been very beneficial in helping with mine fires, providing ESRI training, and in the area of Mobile Computing.
- In North Dakota, Dave Bickel expressed concerns with the overall TIPS program. He would like to continue the rapid response hardware and software support from that has been received from OTT. While TIPS has provided the foundation, OTT has sparked innovation. The TIPS Service managers and steering committee don't provide for frequent communication, and he likes the quick response from OTT. Al Klein responded by saying that there has been no change to the OTT in the west. While the program's funding has not been increased, it has not been cut either.

### **Gerald Collins (VA)**

- Gerald represents (VA, MD, OH)
- Maryland is very satisfied with the support they receive from the TIPS program. They would like to see the continuation and expansion of the ESRI on-line courses.
- Virginia had 343 software hits last quarter. This was primarily made up of ArcGIS, ArcGIS Extensions, SedCAD, SDPS, Aquachem, and Groundwater Vistas. Virginia has maintained their own individual ArcView licenses, but are in the process of moving to TIPS provided ArcGIS (ArcView 9.0). Their main use of this software is for permit review, and they are seeing a large increase in license usage. Their overall TIPS software usage is widely varied. Virginia can offer us Mr. Richard Davis and Mr. Leslie Bright as potential ESRI

instructors. Virginia expressed a need for a new plotter.

**Larry Evans (WV)**

- Larry represents WV.
- West Virginia is seeing increased usage of CITRIX based ArcGIS. They have migrated their spatial data to Linux ArcSDE/Oracle environment. West Virginia has used NextMap to obtain ORI, DSM and DTM data for 9 counties. They are seeing limited mobile computing use. They have completed an Enterprise Water Quality Database (EQuIS)

**Mark Schlimgen (TX)**

- Mark Represents TX, LA, and MS
- Mississippi does not use the TIPS provided software licenses as they have their own copies that they maintain. They appreciate the training opportunities that TIPS provides, and would like to obtain a handheld Mobile Computing device.
- Texas uses the TIPS software very heavily. They also provide 3 instructors to the TIPS program. They have received 2 mobile computing devices from TIPS. The Fujitsu tablet PC has issues operating in high heat conditions, and does not perform as well as a Toughbook in a high dust environment. Texas appreciated the opportunity to send 5 attendees to the Geospatial Conference.

**Bob McKenzie (OSM)**

- Bob represents the Appalachian Region
- Bob reports that TIPS students are not getting the courses that they thought they signed up for. The courses are either too advanced, too basic, or the subjects they expected are not being taught.

**Scott Roberts (PA)**

- Scott represents PA, KY, IL, IN
- Scott attended the IMCC meeting last week in Philadelphia where the TIPS, NTTT, NTTP programs were all well received. There will be a Manganese Workshop held in PA in May, and an Acid Mine Drainage Workshop held in PA in August. Visit <http://www.treatminewater.com> for details of the AMD conference. PA believes that OSM/TIPS is the right place for any US Mine Mapping initiatives. Tablet computers are liked by hydrologists and geologists, but they are too large for inspectors. PA conducted a tour of Anthracite mines for OSM Staff, and provided a PowerPoint show on robotic mapping and inspection of mines.
- Illinois is seeing an increase in underground mine permitting activity. This creates many needs in terms of storage and access capabilities for large datasets.
- Indiana is going through changes in upper level management and has no good feel for needs at this time.
- Kentucky has been experiencing a great deal of staff turnover.

**Willis Gainer (OSM)**

- Willis represents the Western OSM Field Offices and the Crow, Hopi, and Navajo Tribes
- Albuquerque Field Office has 6 inspectors using GPS on inspections. They have provided training for tribal inspectors. There is advanced training on Geo-XT scheduled for

August in Farmington. AFO is working with Dianne Osborne on obtaining remote sensing data. They have established GIS/Field Liaison who is responsible for incorporating field data, transferring data to WR for incorporation into the Western GIS, and creating a handout with screen captures of typical field collected data. AFO is currently field testing a Fujitsu Tablet PC with a rugged case.

- Casper Field Office is using a Geo-XT. They are receiving a map scanner from Denver for use in creating a GIS. They request training in scanning and plotting.
- The Crow Tribe is experiencing a high amount of staff turnover due to Tribal elections. They are assisting with inspections and GPS Data Collections, and would like to get a Geo-XT.
- The Hopi Tribe is seeing limited mining activity at this time. They would like to receive GIS training.
- The Navajo Tribe has received TIPS assistance with networking their AML offices. They have developed a GIS of all AML sites. They Navajo Title V program is assisting with GPS and inspections. John Stucker would like to see a list of TIPS recommended GPS Equipment

#### **Erv Barchenger (OSM)**

- Erv represents the OSM Mid-Continent Region
- Erv reports that everything is going fine in the MCR field offices. MCR staff are working on mobile computing/inspection/GIS. MCR PSD staff are not taking much training, but they do appreciate being able to get students into classes at the last minute. MCR provides several TIPS instructors and Service Managers. Erv expressed a concern that there is enough staff to provide TIPS services that states request and need. Reorganization is taking people away from TIPS, while running the MO program has cut into TIPS services. We need more people to continue TIPS at the current levels.

#### **John Craynon (OSM)**

- John represents OSM Headquarters
- TIPS use is very limited in HQ. Steve Parsons is very active in TIPS training and support. There is an interest in combining/integrating TIPS and NTTP training. They are also working with AMLIS to get them working with TIPS. John reported on the UG Mine Mapping Initiative. OSM will continue to work with the states. On June 1-2 in Pittsburgh, OSM and IMCC will hold a mine mapping benchmarking meeting. Funds have been requested for FY 06 to upgrade the Mine Map Repository. There is an intern working on sharing Mine Map data. Tim Wilson expressed a need for a large format camera in the MMR. Scott Roberts reported that PA is working with IN Univ. PA on acquiring a large format camera. In FY05, OSM received \$1,000,000 to do a 2 year study on coal with NAS. The project will look at the government way of doing coal reserve estimates.

#### **Tim Dieringer (OSM)**

- Tim represents the AR field offices
- Tim was a late addition to the Steering Committee, and was not able to coordinate with the other Field Offices. He expressed a need for field offices to be able to use information in the office. There is a need to greatly improve the GIS data entry and editing process. Tim

expressed his thanks for the Mobile Computing Workshop in the Knoxville Field Office.

**Roy Morrison (OSM)**

- Roy represents OSM HQ – OCIO
- Roy reported that there will be several changes coming to OSM IT Infrastructure. Many of these are DOI initiatives. OSM will be moving to VPNS, which will give every OSM location at least a T1 Connection. There are a number of security issues coming in the near future along with a move to Microsoft Exchange for OSM email.

**Pete Rutledge (OSM)**

- Pete represents the OSM Western Region
- Billie Clark reported for Pete Rutledge that TIPS is providing support for the Black Mesa EIS. The WR has developed a Western GIS that will be administered by Alan Wilhelm. They are in the process of establishing a Permitting and I&E Geospatial System.

**Vann Weaver (OSM)**

- Vann represents the OSM National Technology Transfer Team (NTTT or NT<sup>3</sup>)
- Vann reported that the NTTT was sanctioned 2 years ago to determine needs for tech transfer initiatives. At their last meeting, they reviewed and voted on 16 applied science proposals that had been solicited through the Regional Tech Transfer Teams. The proposals were then ranked, and they selected 6 proposals for funding plus funding of one publication. A draft of the FY 06 Solicitation is in the works. Vann reported that AMDTreat started as Regional Tech Transfer Initiative and was then given over to TIPS to support and provide training. Vann again plugged the upcoming AMD Conference in Pittsburgh, where they expect 300 attendees.

**Sarah Donnelley (OSM)**

- Sarah represents the OSM National Technical Training Program (NTTP)
- Sarah provided a slideshow and handouts outlining the NTTP program's major accomplishments, new courses, and the NTTP/TIPS 5 Year Program Planning Survey. NTTP is working on Course Clusters to group available courses by functional area.

**TIPS Recognition Award: Billie Clark**

Karen Pierson received the 2005 TIPS Recognition Award.

**License Usage Summary and Questions: Mary Greene**

Mary presented a PowerPoint slideshow detailing Software usage. Mary presented a recommendation to upgrade to KeyServer 6 for a cost of \$3132.00

**Decision:** none opposed, TIPS will proceed.

**Training Program Summary and Comments: Bob Welsh**

Bob Provided a PowerPoint Slideshow summarizing the TIPS Training activities.

**Discussion Points:** How can TIPS improve on Training Delivery

Conduct blended learning (classroom and online) with management involvement

How do we tell students to access the online courses?

1. Constantly changing vendor sites cause problems
  2. Instructions are out of date by the time students attempt to access.
- Set online students away from their normal work location to complete training
  - TIPS/training discussion during general session of AML Conference
  - Allow multiple registrations for online ESRI Workshops
  - Form letter to managers detailing time commitment for ESRI online students with average completion time included
  - Conduct blended learning with instructors conferenced in from a remote location

#### **Proposed new class – Building an Enterprise GIS: Larry Evans**

- Larry has developed an Enterprise GIS course for Marshall University. The course covers Database design, airborne imagery, datums, and infrastructure. This information could be presented as a 1-2 day “Lessons Learned” question and answer session, or pared down to be presented at the next geospatial conference.

#### **Large Watershed Modeling: Steve Parsons**

- WMS is the most promising large watershed candidate. Corps funding keeps drying up, but training may be available July 19 – 22. The team will wrap up evaluation after the training.

#### **Rock Works Software Analysis and Recommendation: Paul Behum**

- Recommended a limited deployment of Rockworks for additional testing prior to full scale deployment. Contact NM and VA for potential reviewers.
- **Decision: Proceed with procuring additional licenses for further evaluation.** Condition any final decision/recommendation on being able to use KeyServer to distribute.

#### **Remote Sensing: Dianne Osborne**

- Dianne provided a PowerPoint Slideshow outlining the TIPS Remote Sensing Program.

#### **Mobile Computing: Len Meier**

- TIPS is still looking at new mobile computing units and we have not found the perfect ruggedized system yet. The ones we have tested work well within the environments they are intended for.
- Fujitsu ruggedized cases by Otterbox are being prototyped. May have overheating problems in the summer.
- Still testing new hardware, computers and GPS.
- Mobile Computing Team has grown.
- GIS Analyst ESRI/Trimble Pathfinder Office running in ArcMap. Port data into ArcGIS directly.
- New hardware Trimble Geo XH Bluetooth GPS.

#### **DOI/OSM Geospatial Activity: Bill Card**

Briefing on departmental and bureau geospatial activities followed by Steering Committee discussion of future OSM/State geospatial coordination efforts.

- Proposed formation of an OSM Geospatial Team
- Could we look at BLM and State “teams” that may be operating already?
  - WV is already providing a VPN connection to Charleston FO for one way GIS information access.
  - How are some of the State/Multi State GIS groups (clearing houses) already working with other Federal agencies (EPA, Security)?
- Overall it sounds like some States possibly think that we have enough Teams and maybe OSM needs to work on this issue and keep the States informed.
- NAAMLPL would be interested in the Team.
- Maybe we could get IMCC, WIEB and others to participate on the Team.
- You need top level buy in on this Team from the States and OSM.
  - Larry Evans would participate.
  - AR – Tom Mastorocco,
  - PA - Robin Lightey,
  - NM - Rick Koehler?
- Approval from OSM managers and CLT to form a geospatial team? Director Jarrett’s response: “You don’t need their approval; you’ve got mine!”
- Director suggested if we could get a geospatial based minority college involved, we could use up to \$50,000 per year to help work on this Team or group
- Decision: Finish scoping, brief upper management, and proceed.

#### **AMD Tread 4.0 Major Revisions to the Program: Bob McKenzie**

- Bob presented a PowerPoint Slideshow detailing the major revisions in AMD Treat 4.0.

#### **TIPS 2005/2006 Budgets: Steve Trujillo**

- Steve presented a PowerPoint Slideshow detailing the TIPS 2005 and 2006 budget
  - Director Jarrett asked the committee to avoid thinking in terms of future costs avoided as we move forward through the budget/strategic planning process. This can lead to problems as the budget process moves forward.
  - Len Meier asked the state representatives how to answer the question when asked why TIPS is buying hardware for states when they are funded through Grants.
    - Greene, Koehler, Collins, Osborne, Evans, Schlingen all raised the issue of computing hardware needs to run TIPS software are not being met by mandated computer configurations that they are allowed to buy.
    - Director Jarrett mentioned the issue of consistency, i.e. software licenses centralized through TIPS vs. each state procuring their own licensing using grant money.
    - OSM can purchase equipment cheaper than individual states, economy of scale.

#### **E-TIPS Expert Tools: Diane Osborne**

Dianne provided a slideshow outlining the development of E-TIPS Expert Tools

- Can these be tied in with EGIM/Enterprise GIS team?
- TIPS needs to solicit through the Service Managers for what tools need to be developed

Virginia Electronic Data Integration and Management in SMCRA Programs: Gerald Collins

- Gerald provided a slideshow on integrating and managing electronic data for SMCRA

## TIPS Strategic Planning

### Bill Card – Introduction – power point slide show

- Discussion
  1. Koehler – Does TIPS need to flesh out the plan more, i.e. assignees, due dates, etc.?
  2. This is a dynamic plan, reviewed and updated yearly, projecting out for 5 years.
  3. Comments from SC member in next 2 weeks latest.

### Bill Joseph - Objective 1.1: Provide the electronic tools needed by states, tribes, and OSM offices (including new technologies and tools) slide show

- Discussion
  1. Evans –TIPS needs to look into technologies to derive elevation (relief) for cut fill quantities, laser scanning, lidar (aerial and ground based), ifsar, etc.
  2. Robotics for mine mapping/investigation
  3. Welsh – Geophysical/Geochemical software and detection methods
  4. Weaver – EM Airborne technologies DOE study for UG mine voids
  5. Schlimgen – Recommendation process for addition/removal of core software
  6. Weaver – bullets under maintaining core software
  7. Wilson – States need time to prepare for software distribution on DVD
  8. Osborne – what is the performance measure for remote sensing data, planning, etc.

### Lisa Kosareo -- Objective 1.2: Provide assistance needed by States, Tribes, and OSM offices. Slide show

- Discussion
  1. Collins – Should forms be e-forms or hard copy
    - ✓ Currently emailed out, sometimes faxed back, usually e-mailed back.
    - ✓ Committed to OMB to have online forms in next 3 years
  2. Joseph – how can the form be revised to capture actual performance during tech asst
  3. Donnelley – NTTP 3 month follow up with specific impact questions
  4. Koehler – is providing 100% of assistance requested going to hurt TIPS in the future.
  5. Roberts – look at areas where assistance is underutilized
  6. Barchenger – not meeting 100% of needs, it is 100% of requests. Need to look at performance of the assistance.
  7. Weaver – to the extent practicable...
  8. Koehler – 100% response to requests?
  9. Welsh – measure effectiveness versus needs met
  10. Weaver – improve Tech Trans through interaction through NTTT and RTTT
  11. Clark – should we do another forum, and if so when, how often
    - ✓ Roberts 4 years coal expo NMA Sept 2008
    - ✓ Problem with high registration fees associating with large conferences

### Bill Joseph Objective 2.1: Provide SMCRA-centered instructor-led training in the use of TIPS tools. Slide Show

- Discussion
  1. Will online courses be accredited?

2. Roberts – add to end of each course, where to go from here type of thing
3. Schlimgen – combined Catalog of TIPS & NTTP with links between related courses
4. Welsh – Blurring/blending of training and Tech assistance as people look for ways to gain knowledge/job aids without classroom training and as e-learning comes along.
5. Melton – onsite training requirement for a full class may not be applicable for a small program. Rewording of statement necessary

**Bill Joseph Objective 2.2:** Provide e-training in the use of TIPS tools. Slide Show

- Discussion
  1. McKenzie – Provide e-learning to focus on underlying concepts i.e. acidity prior to AMD-Treat
  2. Rewards for completion of e-learning modules
  3. E-learning as pre-requisites for classroom training
  4. Provide outreach to managers on time requirements for e-learning.
  5. Provide a statement from the Director in support of e-learning and requesting management provide support of e-learning
  6. Parsons – web based presentation with phone conference worked well for large watershed information

**Lisa Kosareo:** Finalizing and Maintaining the Strategic Plan Slide show

- Discussion
  1. No further discussion on this topic

**Can TIPS Continue To Exist? Metrics for quantifying outputs for the Capital Planning Process:** Lou Hamm

Lou provided a slide show asking for Steering Committee input on this issue

- Discussion
  - Weaver – Annual evaluation form sent to State Programs to assess the overall effectiveness of TIPS
  - Roberts -- as evidenced by increased coal production for less RA funding
  - Bond release? Not controlled by state
  - Annual Report data could be used as a base for metrics
  - Permits issued vs \$1000 RA funding
  - Vendor training vs TIPS Training costs
  - Roberts – Using AMD Treat, PA has gotten approx \$1,000,000 in perpetual bond funding from operators
  - Is the Squeeze worth the juice.
  - Work with vendors and/or software users on how long it would take to do things by hand without TIPS software i.e. how long to do a reclamation design without SurvCADD
  - ROI on remote sensing savings vs traditional surveying
  - UG Mine Mapping
  - Landsat vs GPS mapping of mine perimeters in VA
  - OK AML Emergencies – OK was able to produce geo-referenced mine maps in less than an hour vs traditional surveying
  - T&E in KS – no loss of habitat even with abating AML problems.

- Savings per ton or acre or ??
- TIPS Efficiency award?? AML Conf??? efficiency gained? Money saved??
- OMB input on other programs that are similar to what TIPS is doing?? How are they handling this?

**Meeting Wrap Up:** Billie Clark

- Consider the Metrics, and provide any ideas/numbers to Billie Clark
- 5 new instructors for TIPS courses identified
- New hardware requests have been captured and added to current list
- A TIPS Geospatial team will be formed
- Next meeting May 9-11, 2006