Project Goals, Objectives, and Approach

To set the goals, objectives, and approach for technology transfer, it was important to identify the primary customers for our center activities. From the start of the center in November 2001, it has been decided that activities would focus on abandoned mine lands (AML). This makes our primary customers the federal and state agencies that deal with abandoned mine lands. Consequently, technology transfer has focused on these agencies before it reaches out to industries or other public agencies that deal with active mining operations.

A number of factors make the choice of concentrating on AMLs the place to start. First, the superfund sites in the United States that contain mining sites all contain AMLs. Also, in the respect that all technologies that are developed for AMLs would have to be low cost, low maintenance solutions, these would naturally be attractive to other parties. Finally, one of the problems with developing innovative treatment technologies is convincing regulators to accept the risk of trying such solutions. If this center can work with the state and public agencies in developing such technologies, then regulatory acceptance in other situations will be more straightforward.

With these customers in mind, the goal of technology transfer within the RMRH SRC is to take the research results gained within our center, bundle them with related technologies developed in other research settings, and then disseminate the results and develop these technologies through the demonstration phase and to full-scale operations. For some of the other HSRCs working on organic contaminants in water and soil this goal has been achieved and this has helped these centers to gain some self-sufficiency.

Certainly this goal will not be met within the next year. So the working objectives of technology transfer contain activities for laying the foundation for technology development. They include:

1. To contact the primary agencies that have to deal with AMLs, determine their primary technical needs for dealing with these sites, and then make certain that these needs are included in the yearly request for proposals. The agencies would include: the US EPA, the Bureau of Land Management, the U. S. Forest Service, the National Park Service, and the Office of Surface Mining.

2. To contact committees and societies whose activities are closely related to ours, explain to them the activities of our center, and find out how we can cooperate and provide assistance. Committees and societies with which we should make continuous interaction...
include: the American Society of Mining Reclamation (ASMR), the Acid Drainage Technology Institute (ADTI) metals mining group, the National Association of Abandoned Mine Land Programs, the Environmental Division of the Society of Mining Engineers, and MSE Technology Applications.

3. To find public and private organizations with which we can bundle results and find joint ways to present and promote our technologies.
4. To find situations where we can go to the demonstration phase either with our own results or with related technologies that have been developed by other organizations.

The approach for meeting these objectives requires informing individuals within agencies, committees, and societies of the activities of RMRHSRC. If the person falls in the customer category, find out what they consider to be the primary technical needs for remediating AML sites. If the person represents an organization with which we should cooperate, determine how that cooperation could be achieved. If the person represents an organization that is developing related technologies, then determine how we can help bundle our technical expertise with theirs so that it stands a better chance of being taken to the demonstration stage. As this information is accumulated, individuals and organizations are recruited to combine with our center to plan and carry out presentations and workshops for societies and agencies in the hope that situations can be found for demonstration programs. It is clear that this approach involves making considerable contacts, preferably as personal visits. Fortunately, many of the individuals to be contacted are in the Denver area. However, the technology transfer budget does contain a considerable travel allotment for trips to meetings. It is the opinion of the principal investigator that the activities carried out during this period and those that are planned for the next project year reflect these goals, objectives and approaches of the technology transfer portion of the center. However, if members of the Technology Transfer Committee see places for improvement, suggestions are most welcome.

This Year’s Activities

A. Related to objective 1 on contacting agencies that are primary customers, the following activities were conducted:

- I attended meetings with personnel from Region 8 of the EPA in December, January, March, and April. These meetings concerned sorting out the TOSC and TAB functions with the people in Region 8 who carry out these activities. Also, meetings with superfund coordinators on priority site activities were conducted.
- In February, I had an extensive meeting with Joe Galetovic of the Office of Surface Mining. As many of you know, Joe represents many other organizations besides OSM. I determined his technical concerns on AML sites and submitted these to Charles Shackelford for inclusion in the April request for proposals.
- In February and March, I had a number of conversations with Karl Ford concerning the activities of the National Science and Technology Center of the BLM. Topics focused on activities in Leadville and what he considered the research needs of the BLM with respect to AML sites. The research concerns were submitted to Charles Shackelford for inclusion in this year’s request for proposals.
In April, I served as a reviewer for the Mine Waste Technology Program proposals for the EPA. As well as ranking the 36 proposals, I am using the list of organizations as a good source of contacts for possibilities for bundling technologies.

B. Related to objective 2 on contacting and interacting with related societies and committees, the following activities were conducted:

- In February, I attended the Annual Meeting of SME to meet with the leaders of the environmental division and to develop contacts with the National Park Service and the US Forest Service. Also in conjunction with that meeting, I met with the ADTI Metals Mining Sector to explain the activities of our center and to determine how we could cooperate with them. The ADTI members were most cordial and adopted a resolution to work with our center in any way possible.
- Throughout the spring I assisted the staff at CSU in designing and initiating a website and in designing and publishing a center brochure. Both these publicity vehicles are finished and are being used.
- In June, I attended the Annual Meeting of ASMR and presented a paper on the activities of RMRHSRC.

C. Related to objective 3 on combining our results with those of other organizations, the following activities were conducted:

- Throughout the spring, Jim Ranville and I have been interacting with people from the USGS with regard to work that both of us have been doing on assessing the hazards of mine waste piles and stream sediments. This has resulted in another proposal submitted to the center. Also, our center is committed to combining with the USGS to present a workshop on mine waste piles at the Billings/ASMR Conference in June 2003.
- Karl Ford and I plan to use the current list of the Mine Waste Technology Program proposals in our assessment of possible technologies to be used for demonstration projects on BLM AML sites.
- I negotiated a partnership between Jim Gusek of Knight Piesold and Barnaby Watten and Phil Sibrell of the USGS, Kearneysville, WV. This combine presented a proposal and presentation to the committee that is trying to find an innovative method for treating the St. Michael’s mine discharge, a high flow, severe chemistry mine drainage in southern Pennsylvania.

D. Related to objective 4 on finding situations for going to the demonstration phase, the following activities were conducted:

- In March, I visited with the faculty and students of the Colorado Mountain College in Leadville to review the passive treatment demonstration project that they conducted in the fall of 2001. I explained the activities of the RMRHSRC and we explored ways on how we could cooperate on demonstration projects in the Leadville area.
- Throughout the spring I have been exploring schemes with Karl Ford of the BLM on how we could get some demonstration treatment projects started on AML sites controlled by the BLM. These conversations on how the activities of our center related to the activities of the BLM resulted in the submission of a joint demonstration proposal to our center and to the BLM.
Next Year’s (8-1-02 through 7-31-03) Activities

A. Related to objective 1 on contacting agencies that are primary customers, the following activities plan to be conducted:
   • Make contact with representatives of the National Park Service and the US forest Service to inform them of the activities of our center. Determine if we can be of any immediate help. Solicit from them their primary technical needs for dealing with AML sites, and then make certain that these needs are included in the yearly request for proposals.
   • Determine whether there are any other primary customers from whom our center should continuously solicit suggestions.
   • Maintain the contacts with OSM, BLM and MWTP, especially with respect to determining their technical needs for inclusion in next year’s request for proposals.

B. Related to objective 2 on contacting and interacting with related societies and committees, the following activities plan to be conducted:
   • Attend the September meeting of ADTI and help to create a poster for the organization that can be used at meetings.
   • Attend the Annual Meeting of the National Association of Abandoned Mine Land Programs in Utah in September. Present papers on the activities of the RMRHSRC and on passive treatment of mine drainages. Determine the best possible way to interact with the state AML agencies. Determine if the organizers for the 2003 meeting would consider including the workshop on assessing the hazards of mine waste piles.
   • Attend the SME and ADTI meetings in February in Cincinnati to continue the cooperation with these organizations. While in Cincinnati, visit with the MWTP people at the EPA to determine how we can best cooperate with them.
   • Plan the mine waste pile workshop and the half day symposium on RMRHSRC activities for the Billings / ASMR Conference in June.
   • Plan a passive treatment workshop for the ICARD meeting in July 2003. Also, present a paper on the activities of the RMRHSRC at the ICARD Meeting

C. Related to objective 3 on combining our results with those of other organizations, the following activities were conducted:
   • Establish a working relationship with MSE Technology Applications to see how we can bundle our research and development results and present them to organizations for possible demonstration projects.
   • In conjunction with the USGS, design and conduct the workshop on waste rock piles for the ASMR / Billings Conference.
   • In conjunction with Jim Gusek of Knight Piesold design and conduct a workshop on passive treatment for the ICARD Conference in July. This workshop also might be given at the next Tailings and Mine Waste Conference.
   • Look for opportunities to bundle the knowledge that the members of our center have on As and Se with some other organizations that are interested the fate and transport of these two elements

C. Related to objective 4 on finding situations for going to the demonstration phase, the following activities plan to be conducted:
• Continue to explore demonstration situations with the agencies that are the primary customers of the center. Include in this exploration MSE Technology Applications.
• Review the activities of the other HSRC centers to determine whether any of their activities would benefit from our expertise in treating metals contamination.

Publications

A. Publications primary to the RMRHSRC activities

B. Publications related to RMRHSRC activities

Presentations

A. Presentations primary to RMRHSRC activities

B. Presentations related to RMRHSRC activities

**BUDGET FOR TECHNOLOGY TRANSFER ACTIVITIES**  
**PERIOD 11-01-02 TO 11-01-03**

Salary for Thomas Wildeman $10,000

Travel 6,000

Computing, copying, and office expenses 2,000

Subtotal 18,000

Overhead 9,180

Total cost for activities $27,180