

APPENDIX D

**SUMMARIES OF SWAP DESIGN TEAM, CITIZEN'S ADVISORY TEAM, AND
TECHNICAL ADVISORY TEAM MEETINGS**

MEETING SUMMARY

STATE OF COLORADO SWAP DESIGN TEAM

January 12, 1998
1:00 p.m. - 4:00 p.m.

OVERVIEW

The kickoff meeting of the Colorado SWAP Design Team was held on January 12, 1998 in the Board Room of the Colorado Department of Public Health & Environment. The group was selected to advise the Water Quality Control Division on the design and development of the Source Water Assessment Plan (SWAP). An attendance list appears below.

The SWAP Design Team will define the strategy Colorado will employ to involve the public in source water protection; to delineate source water protection areas (SWPAs) around public water supplies; to conduct contaminant inventories within the SWPAs, and to determine how susceptible the water supply is to the contaminants identified.

The Design Team represents a variety of interests and stakeholders in the SWAP process, their participation is essential to the successful development and implementation of the state's strategy for source water protection.

Attendees

<u>Name</u>	<u>Agency/Organization/Interest</u>
Doug Cain	USGS/Hydrology/Arkansas Basin
Bobbi Canfield	CO Rural Water Assn/Small Utilities
Jo Clark	Upper Arkansas Restoration Project
Russ Clayshulte	DRCOG
Katherine Foster	USFS/Lower Colorado Basin
Jennifer Harris	U.S. EPA Region VIII
Gale McGaha Miller	City of Fort Collins/Water Utilities
Carmi McLean	Clean Water Action
Rich Muza	U.S. EPA Region VIII/Hydrologist
Greg Trainor	City of Grand Junction/Water Utilities
George Weber	CU Colorado Springs/ Community Development

INTRODUCTIONS AND DEFINITION OF TASK

Following introductions and some housekeeping items, the meeting began with a review of Source Water Protection and the requirement, contained in the 1996 amendments to the federal Safe Drinking Water Act, that each state develop a plan that outlines how source water protection will be developed and implemented in the state. The SWAP guidance issued by EPA defines the critical elements described above that that each state plan must contain (public participation, delineation, contaminant inventory, and susceptibility). The Design Team has been assembled to advise on the development of each of these elements.

PUBLIC PARTICIPATION

The team discussed strategies and approaches for meeting this requirement, considered by the EPA to be the most important one. Suggestions included statewide press releases, fliers, and newsletters, briefing papers, fact sheets and workshops. A suggestion was made that we start at the grassroots and cultivate interest among the groups that are already active in various river watch and watershed initiatives. We discussed who the stakeholders and players should be, and how to involve them. It was recommended that we use existing networks and develop some of our own. There was some discussion on involving agricultural groups and what other interests should be present on the SWAP Design Team.

DELINEATION

The Team reviewed the recommendations that the EPA had developed on delineation of source water protection areas (SWPAs), and discussed how these might be applied in Colorado. Recommendations that came forth included the caution to keep the areas of a manageable size, to use a tiered approach, moving from the simple to the more complex, and to look at the origins of the drinking water source - starting at the headwaters, normally high quality classifications, and moving downstream. The need to factor in the stream segments on the 303(d) list and identify those that are water supplies was also discussed. How to address transmountain diversion of drinking water arose in the context of defining source water protection areas and enlisting public support to protect them when the source is located a significant distance from the users.

GOAL STATEMENT AND OBJECTIVES

It was suggested that the group use the next meeting to define a goal statement and look at objectives to accomplish it.

ACTIONS

- * WQCD will identify agricultural interests ie. a crop producer and/or a grazing person to join the Design Team
- * Group and WQCD will consider goal and objectives for state SWAP

NEXT SWAP DESIGN TEAM MEETING

Monday, February 2, 1998, 1:00 to 4:00 p.m., Board Room, CDPHE

**MEEETING SUMMARY
STATE OF COLORADO SWAP DESIGN TEAM**

FEBRUARY 2, 1998

1:00 p.m. - 4:00 p.m.

Board Room

Colorado Department of Public Health & Environment

OVERVIEW

The second meeting of the Colorado SWAP Design Team was held on February 2, 1998 in the Board Room at the Colorado Department of Public Health & Environment. The focus of the meeting was to examine SWAP approaches employed by other states, and to look into various methods of delineating source water protection areas that would be appropriate for Colorado. The Design Team members had received a copy of state DWSRF source water assessment set-aside work plans forwarded by the USEPA. A list of those in attendance at the meeting appears in Table 1. below.

The announcement was made that Robert Ray, with the Northwest Colorado COG, would not be able to participate on the Design Team, and that a replacement would be sought. In addition, a crop producer to represent agriculture had not yet been identified, and a grazing representative, thought to be available, had left the area. A concerted effort will be made prior to the next Design Team meeting to identify an agricultural representative, and to replace Mr. Ray.

Table 1. Attendees

Name	Agency/Org/Interest
Doug Cain	USGS/Hydrology/Arkansas Basin
Bobbi Canfield	CO Rural Water Assn/ Small Utilities
Jo Clark	Upper Ark Restoration Project
Russ Clayshulte	DRCOG
Katherine Foster	USFS/Lower Colorado Basin
Gale McGaha Miller	City of Fort Collins/Water Utilities
Rich Muza	USEPA Region VIII/Hydrologist
Pat Nelson	Colorado Mining Association
Dave Pusey	WQCC/Industry
Greg Trainor	City of Grand Junction/Water

Guest:

John Payne	WQCD, DW Waiver Program
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Staff: Kathleen Reilly

GOALS/APPROACHES FOR COLORADO

The Team members recommended that we promote programs to assist the local PWSs in developing the SWPPS, recognizing that development of a source water protection plans at the public water supply level will be voluntary. The goal of the New York State work plan was touted as direct and clear, and many liked the commitment to maximize use of existing information. It was suggested that we realize this goal by integrating other programs with water quality objectives currently in operation at the state and local levels.

OBJECTIVES

The objectives of the SWAP, and the commitment expressed by the Team was to fulfill the elements contained in the SDWA amendments. These are: public participation, devising ways of educating people and soliciting their participation in the process; delineation of source water protection areas, starting with the most downstream water diversion; inventorying contaminants within the delineated source water protection area; and determining the susceptibility of the public water supply to contamination from the sources identified.

APPROACHES

Recognizing the magnitude of the SWAP task given the size and geographic diversity of Colorado, the team next focussed on the approaches that might be employed to realize the stated objectives. The suggested approaches included identifying the source water protection areas (SWPAS) as part of the SWAP, and the large providers within them; examining the principal sources of pollution within a SWPA, and identifying and mobilizing the key stakeholders to conduct the contaminant inventory and determine susceptibility.

It was recommended that we look at overlapping SWAP areas, and assess the data needs for the program. Determining what data is available and what will need to be assembled is an important element of the overall project.

IDENTIFYING SWPA'S

In an effort to get a handle on delineation of SWPA'S, the Team suggested that the following information be assembled:

- * monitoring data;
- * # of providers in a delineated area;
- * areas of high water quality; areas with ongoing watershed activity;
- * most downstream drinking water diversion in each basin

APPROACHES FOR LOCAL SOURCE WATER PROTECTION PLANS

There was consensus that the state SWAP should be a simple guidance document, that would meet the EPA requirements, with the details left to the local public water providers. It was noted that in developing source water protection areas on a large scale, different approaches would need to be employed for the surface water dependent areas (the urban front range, and most of the western slope), and the ground water dependent areas (the eastern plains and the San Luis Valley). It was reiterated that a tiered approach that looked at the headwaters and the aquifers might be a successful way of dealing with this dichotomy. The need to address the differing requirements between the SDWA and the CWA relative to water quality protection and drinking water protection was also raised.

The difficulty attendant to the size of many SWPAs was discussed and the recommendation made was to try and keep them manageable in order to foster local involvement and ownership. To ensure consistency and compatibility in data collection, it was suggested that a central repository be established that would be easily accessible by all participants, and that a concerted effort be made to make data sharing easier.

ORGANIZING ACTIVITIES

The following activities were suggested to assemble and organize the information needed to begin defining the SWPAs.

obtain a USGS Hydrologic Unit Map of Colorado identify principal stakeholders in different basins develop a "how to" process for stakeholders identify basins where nothing is happening now examine where bulk of water in a given SWPA comes from

The Team discussed means of fostering local participation in the source water efforts. It was recommended that in addition to identifying active watershed groups, that we determine who is doing assessments and the reliability of the techniques employed; and encourage locals to prioritize concerns within the source water protection area. To help ensure continuity, it was suggested that a permanent steering committee or Basin Advisory Group be formed in each area with established criteria for membership and functions.

The closing discussion focussed on what locals need to get the job done, and raised the issue of recognizing the role of the TMDLs in the SWAP, the linkages between activities, sources and constituents, and how best to mobilize resources to address them.

ACTIONS

- WQCD will obtain HUG map and identify diversions
- WQCD will identify watershed groups & available data

NEXT SWAP DESIGN TEAM MEETING

Monday, March 2, 1998, 11:00 a.m. to 4:00 p.m. Board Room, CDPHE

MEETING SUMMARY

STATE OF COLORADO SWAP DESIGN TEAM

March 2, 1998
11:00a.m. - 4:00 p.m.
Board Room

Colorado Department of Public Health & Environment

OVERVIEW

The March meeting of the Colorado SWAP Design Team was held on March 2, 1998 in the Board Room of the Colorado Department of Public Health & Environment. A list of those in attendance appears below in Table 1.

MISSION, GOALS & OBJECTIVES

The Design Team discussed the mission, goals and objectives of the SWAP, and adopted those developed by Russ Clayshulte with minor modifications. This action was followed by a brief discussion on delineation and strategies for public participation.

TMDL PRESENTATION

Sarah Johnson, Manager of the Division's Assessment Unit, explained the state's 303(d) list of water quality limited stream segments that will require Total Maximum Daily Loads or TMDL'S. The Division developed the list of waters for which technology-based effluent limitations and other required controls are not stringent enough to implement water quality standards. Action on the list, preparatory to submittal to the U.S. EPA, will be the subject of a public hearing before the WQCC on March 10th. Sarah went on to explain that the TMDLs to be developed from the 303(d) list may be simple or complex, depending on the factors contributing to the inability of the water body to meet water quality standards.

DELINEATION STRATEGY

A number of suggestions were made for defining Colorado's delineation strategy, among them locating high quality waters and those in wilderness areas, those affected by Superfund sites, and those on the 303(d) list. Mining sites will indicate areas of mineralization. A brief discussion was held on how to approach delineation, i.e. geographic or by stakeholders, drawing a box around the water supply, and then getting a response from the stakeholders. A suggestion was made to send out sub-basin maps to the public water suppliers and other interested parties for response and comment. It was suggested that the staff write up the methodology for delineation, defining how it will be done. Russ Clayshulte and Bobbi Canfield offered to assist with this task, and will meet prior to the next Design Team meeting.

MEETING SUMMARY

STATE OF COLORADO SWAP DESIGN TEAM

May 4, 1998

11:00 a.m. - 1:00 p.m.

Snow Room

Colorado Department of Public Health & Environment

OVERVIEW

The focus of the May meeting was to finalize the Mission, Goals and Objectives statement and to complete the delineation strategy. Agreement was reached on the mission, goals and objectives statement; a copy of which is attached.

The Design Team spent most of the meeting discussing the delineation strategy. The approaches developed by Russ Clayshulte and Kathleen Reilly were reviewed and discussed. The decision was made to use the principal river basins as the departure point for delineation of the source water protection areas (SWPA's). Starting at the headwaters and progressing downstream, the source water protection areas will be defined by hydrologic units and sub-units, taking into account features such as high quality water classifications and wild and scenic river designations. This information will be very useful in determining the vulnerability of the SWPA's to contamination, and will assist with the grouping of water providers and other stakeholders within a basin or sub-basin.

In addition to geographically defined hydrologic units, we will also use boundaries established by local and regional watershed initiatives, and will encourage participation by these groups in the development of the source water protection areas.

The wellhead protection principles, described in the state's Wellhead Protection Program, will be used to define the source water protection areas for the eastern high plains and the San Luis Valley, both of which are solely dependent on ground water as a source of drinking water.

SWAP WEB PAGE

Kathleen reported that EPA has set aside \$1,500 to assist with the design of a web page for the SWAP. Dave Ross, who is with the Department's Information Technology Services Section gave the Team a demonstration of how SWAP could be integrated into the state's home page. The Design Team then discussed what information should be included on the web page. Suggestions included a list of the Design Team members with Kathleen as the contact; a schedule and summaries of the meetings; the mission, goals and objectives. Before launching into the design, it was recommended that we first look into what is currently contained in Surf Your Watershed, a web page developed by the EPA.

Who would provide information for the web page was raised, as was the need for quality control of the information. The decision was made to have the SWAP Coordinator serve as the contact for information, and to solicit information from interested watershed groups and other stakeholders. She will work on the development of the web page for the next meeting.

The following table lists the attendance at the meeting.

NAME	AGENCY/OR/INTEREST
Ben Alexander	City of Ft. Collins
Bobbi Canfield	CRWA
Jo Clark	Upper Ark Restoration Project
Russ Clayshulte	DRCOG
Craig Eisen	TetraTech
Bill Leon	CCDD, CU, Colorado Springs
Gale McGaha Miller	City of Ft. Collins
Carmi McLean	Clean Water Action
Dave Merritt	CRWCD, Glenwood Springs
Rich Muza	EPA Region 8
Pat Nelson	CMA
Dave Pusey	WQCC
George Weber	CCDD, CU, Colorado Springs
Al West	Rural Community Assistance Corp

Staff:

Bill McKee, Dick Parachini, Carl Norbeck, Greg Parsons,
John Payne, Kathleen Reilly

ACTIONS

- * WQCD will work on design of the web page
- * Staff will begin drafting the delineation chapter

NEXT SWAP DESIGN TEAM MEETING

Tuesday, June 2, 1998, 11:00 a.m. to 4:00 p.m. Capitol Hill Community Center, 1290 Williams Street,
Denver

**MEETING SUMMARY
STATE OF COLORADO SWAP DESIGN TEAM**

**June 2, 1998
11:00 a.m. - 4:00 p.m.
Capitol Hill Community Center
1290 Williams Street
Denver, Colorado**

OVERVIEW

The Colorado SWAP Design Team met on June 2, 1998 at the Capitol Hill Community Center in Denver. The primary focus of the meeting was the delineation process, contaminant source inventories, and public participation. The Design Team outlined the delineation process and developed a flow chart illustrating the process that will be recommended. The philosophy and strategy for the public participation element were also defined.

An announcement was made that the Division will hire someone for a six month period to assist with the SWAP activities during the development phase. The person should be selected and on staff in June or July.

At EPA's recommendation, the Division has applied for two additional grants, one to support enhanced public participation in SWAP, and another to foster interstate coordination on SWAP activities. Copies of the applications were circulated to the Design Team.

DELINEATION

The Design Team reviewed the draft delineation chapter and outlined how to develop the process for delineation. It was recommended that we begin with the hydrologic units as defined by the USGS maps, identify the headwaters within each basin and locate each of the public water system intakes. Kathleen agreed to flesh out the outline prior to the next meeting. Dave Pusey developed a flow chart that illustrated the delineation process and the role of the stakeholders in it. This too, will be available for the July meeting.

CONTAMINANT SOURCE INVENTORIES

Methods for conducting the contaminant source inventories were discussed. Those recommended included

1. Canvassing with the list of potential sources.
2. Windshield surveys of the area.
3. Checking directories, data bases and aerial photos.
4. Conducting interviews (phone, mail & face to face).
5. Assembling information on history of activities from newspapers, archives, local museums, and interviews with long term residents and business owners.

Options for who might be responsible for conducting the contaminant source inventory included: stakeholders, the public water system, governmental entities and consultants.

The Design Team agreed that conducting the contaminant inventory was a good opportunity to involve the community in the SWAP effort. They discussed the need to equip citizens with some basic information about drinking water however, and recommended that some training or education precede citizen involvement so that people had a better understanding of drinking water and how the listed activities could contaminate it.

PUBLIC PARTICIPATION

The Team discussed the philosophy and strategies for involving the public in the SWAP process. They recommended that the approach be all inclusive, and that efforts be made to reach out to a broad spectrum of citizens. Strategies for building awareness about the need to protect drinking water and involving people included identifying key players within the community or source water protection area, working with them to define issues and build support, reaching out to vulnerable groups, i.e. those with compromised immune systems, the elderly, young children, etc.

Methods to employ included using the consumer confidence reports to notify consumers about SWAP and how to become involved, and developing a variety of media options such as public service announcements on TV and radio, and sponsoring statewide drinking water fairs at key locations around the state.

ACTION ITEMS

- * Develop process from delineation outline - Kathleen
- * Develop final assessment chapter - Kathleen
- * Develop final draft on public participation - Kathleen

ATTENDANCE

Jo Clark, Upper Arkansas Restoration Project; Russell Clayschulte, DRCOG; Jennifer Harris, EPA; Bill Leon, CCDD, CU, Colorado Springs; Carmi McLean, Clean Water Action; Pat Nelson, Colorado Mining Association; Dave Pusey, WQCC; George Weber, CCDD; Al West, Rural Community Assistance Corp.

Guest: Andrew Legg, City of Thornton

Staff: Jerry Biberstine, Dan Beley, John Payne, Kathleen Reilly

NEXT SWAP DESIGN TEAM MEETING:

Wednesday, July 15, 1998 11:00 a.m. to 4:00 p.m. Board Room, CDPHE, 4300 Cherry Creek Drive South, Denver

MEETING SUMMARY

STATE OF COLORADO SWAP DESIGN TEAM

JULY 15, 1998
11:00 A.M. - 4:00 P.M.

Board Room
Colorado Department of Public Health & Environment

OVERVIEW

The focus of the July meeting was to review the source water assessment portion of the SWAP, and to put in relatively final format the delineation and contaminant inventory chapters. The public participation chapter was treated separately. The observation was made that the philosophy and approach were clear, but that we had to describe how the various tasks would be done. It was suggested that the SWAP submittal be organized to address the EPA requirements, and be formatted as a guidance document for the local water provider as well.

RECOMMENDATIONS ON DRAFT DOCUMENT

The Design Team spent the majority of the time going over the draft SWAP document and making recommendations on content, emphasis and format. Staff will be working these into the next draft. There was considerable discussion on the format of the SWAP, and whether or not it could be arranged to both meet the EPA requirements and serve as a guide for the local water providers interested in developing source water protection plans. It was recommended that it could be set up to serve both purposes. Staff agreed to work on organizing it in this manner.

There was discussion on the data that must be gathered for the SWAP. Key among them the location of the surface water intakes and the ground water wells for the public water systems. Once collected, this information would be placed in a GIS format and be available electronically. Gale McGaha Miller with the City of Fort Collins took issue with this proposal, pointing out that making this information available over the internet would violate the security that many systems maintain to insure the safety of their water supplies from vandalism and possible terrorist acts. This is a valid point and will be raised with the EPA.

PUBLIC PARTICIPATION

Kathleen reported on the national conference she had attended July 9th to the 11th at Carmi McLean's recommendation. It was held in St. Louis and was jointly sponsored by the Clean Water Fund and the Mississippi River Basin Alliance. Environmental groups from across the country sent representatives.

Many people expressed concern about the ability of the states to adequately meet the public participation requirements outlined in the EPA guidance, and work sessions were devoted to developing practical approaches to ensure that this will happen. It was very helpful to hear what is going on in other states from the perspective of the environmental groups, and to learn of their expectations for SWAP. Colorado's proposed approach to involving the public in the development and implementation of the SWAP was well received.

The Design Team reviewed the public participation outline and made recommended changes to the stakeholder groups and to the outreach proposal, these will be incorporated into the next draft.

This was a very productive meeting and concluded with the recommendation that the staff take the concepts developed and begin writing in earnest. It was pointed out that California and Arizona's plans are available on the EPA web site and that they might be useful in organizing Colorado's SWAP. Staff agreed to look into this.

ACTION ITEMS

- Incorporate recommended changes for next draft - Kathleen
- Pull together list of data bases of regulated activities for the contaminant inventories - Kathleen

ATTENDANCE

Doug Cain, USGS, Pueblo; Jo Clark, consultant, recently with the Upper Arkansas Restoration Project; Russell Clayschulte, DRCOG; Katherine Foster, USFS, Durango; Jennifer Harris, U.S. EPA Region VIII; Joe Kelley, City of La Junta; Gale McGaha Miller, City of Fort Collins; David Merritt, Colorado River Water Conservation District; Pat Nelson, Colorado Mining Association; Bobbi Norwood, CRWA; Greg Trainor, City of Grand Junction; Shawna Wooten, CRWA

Staff: John Payne, Dick Parachini, Kathleen Reilly

NEXT SWAP DESIGN TEAM MEETING:

Thursday, August 20, 1998, 11:30 a.m. to 4:30 p.m. Board Room, CDPHE, 4300 Cherry Creek Drive South, Denver.

**MEETING SUMMARY
STATE OF COLORADO SWAP DESIGN TEAM**

August 20, 1998

11:30 a.m. - 4:30 p.m.

Board Room

Colorado Department of Public Health & Environment

OVERVIEW

The August meeting of the SWAP Design Team was held on Thursday, August 20, 1998 in the Board Room of the Colorado Department of Public Health & Environment. The focus of the meeting was the data needs for the SWAP and how best to meet them. The discussions on gathering and organizing the data for delineation of the SWPAs, the contaminant inventories, and the susceptibility analyses reinforced the team's decision to use a tiered approach for SWAP. The tiered model will allow the state to start with available information to meet the requirements of the Safe Drinking Water Act, and then to expand and build as capabilities improve and expand. Recommendations on how and where to hold the public meetings were made, and a definition for susceptibility analysis was decided on and adopted.

COORDINATOR'S REPORT

Kathleen reported that the search for an assistant to help with the outreach efforts is almost complete and that a candidate would be hired by the next meeting. She outlined the number of presentations that have been requested on SWAP, and the schedule for August. She and the watershed coordinators will be participating in a series of workshops sponsored by the Division of Local Government (DLG) to inform local water providers about the requirements of the 1996 amendments to the SDWA. WQCD staff will address SWAP and DLG will review funding sources and the consumer confidence report (CCR) requirement that goes into effect in October, 1999. She discussed the outcome of a recent meeting with the WQCD management staff on the data gathering for SWAP. Management is concerned about the magnitude of the data gathering task, the very tight timeline within which it must be completed (2001), and the fact that the state bears the responsibility to see that it is completed. The key steps that are the topic of today's meeting were outlined.

She concluded with the announcement that the EPA had contracted with the USGS to get the locations of the surface water intakes for the 65 largest PWSs in Colorado. The USGS staff will be contacting the systems and will be using the global positioning units (GPS) where needed, to get accurate readings. The task was to have been completed by August 15th, and the USGS has agreed to make the data available to the WQCD for the drinking water data base and for SWAP. Being able to get this information is welcome, however, concern was expressed about how the state learned about the project.

DATA NEEDS AND HOW TO MEET THEM

The Team went over the six steps that had emerged from the WQCD Management meeting on the key steps to implement the SWAP. These included:

- * compiling GIS location data for wells, intakes, outfall, etc.
- * digitizing the sub-watersheds to 11 to 14 digit level;

- * verifying the location of PWSs within the sub-watersheds;
- * assembling contaminant inventory data for GIS display;
- * conducting public outreach.

The Design Team discussed the data needs; who had what data, and how it could be made available for the SWAP. It was reiterated that Colorado use a tiered approach, starting with the information that can be readily assembled, and expanding as more information becomes available and our ability to work with it improves.

The Team recommended that the state use the SWAP set aside funds to attract partners to assist with the data gathering efforts needed to support the three (3) key elements of the SWAP (delineation, contaminant inventory and susceptibility analysis). Recommended partners included the regional COGs (councils of government), RC&Ds (resource conservation and development councils), the latter were suggested to cover parts of the state not included in a COG. Watershed initiative groups were also recommended.

The Team agrees that the first level of delineation will be the hydrologic units or sub-units developed by the USGS, these will be refined as additional information becomes available, or other groups indicate a willingness to assume responsibility for developing a source water protection plan with different boundaries. The Colorado Rural Water Association representatives were asked if CRWA would be willing to assist small surface water providers with source water assessment and protection similar to the support they now provide for wellhead protection. Bobbi and Shawna agreed to look into it.

For the contaminant inventory, it was agreed that we would continue to use the list of activities developed for wellhead protection as a preliminary step, and that the data bases maintained by the various state and federal agencies would be assembled to get a more complete picture of the potential contaminant sources within the SWPAs.

The susceptibility analysis will be determined from the results of the contaminant inventory. The community will rank the potential contaminant sources as high moderate or low threats to the water source, based on a set of criteria. Factors recommended for consideration in ranking include the amount and toxicity of the contaminant(s) identified, its proximity to the water source, its environmental fate and transport properties, adequacy and safety of storage and handling, capabilities of the community or PWS to manage and contain it, etc.

PUBLIC PARTICIPATION

The Team discussed the number and location of public meetings on SWAP, and what the format and goal of the meetings should be. It was recommended that there be at least one per watershed. Gale McGaha Miller asked if the staff could make a presentation on SWAP at the Big Thompson Watershed Forum on September 25; Kathleen agreed to. It was suggested that the state have a plan and schedule for these meetings and the types of audiences they would try to attract.

A fact sheet on SWAP is being developed along with promotional literature to attract citizen involvement. We are also using opportunities to participate in organized workshops, conferences etc. to deliver presentations on SWAP. A calendar of these events is maintained and will be appended to the SWAP.

Carmi McLean announced that the Colorado Clean Water Fund had received a \$30,000 grant from EPA to organize and hold a region-wide conference on SWAP. It is tentatively scheduled for the first weekend in December, and will likely be held in the Denver area. The goal will be to attract people from all of the region 8 states, (ND, SD, MT, WY, CO and UT). Targeted attendees include citizen action and environmental groups, watershed imitative groups, neighborhood groups, faith communities, etc. She will be looking for presenters and lists of organizations/groups to invite.

ACTION ITEMS

- * Compile list of groups for C.F. conference Kathleen
- * Complete draft SWAP Kathleen
- * Draft fact sheet Kathleen
- * Identify data bases and where they are
- * Define consortiums that might partner on SWAP
- * Examine differing requirements for surface & go providers

ATTENDANCE

Doug Cain, USGS, Pueblo; Jo Clark, Stewardship Initiatives;
Russell Clayshulte, DRCOG; Katherine Foster, USFS, Durango; Joe Kelley, City of La Junta; Carmi McLean, Clean Water Action; Gale McGaha Miller, City of Fort Collins; Dave Merritt, Colorado River Water Conservation District; Rich Muza, U.S. EPA Region VIII; Bobbi Norwood, Colorado Rural Water Association; Greg Trainor, City of Grand Junction; George Weber, CCDD/UC Colorado Springs; Shawna Wooden, Colorado Rural Water Association.

Guests - Gary VanDerSlice, EnecoTech; Martello Hutchinson and Lisa Johnson, U.S. EPA Region VIII; Don Anderson, Wright Water Engineers

Staff - Kathleen Reilly, John Payne

NEXT SWAP DESIGN TEAM MEETING:

Monday, September 21, 1998, 11:00 a.m. to 4:00 p.m. Sabin Room, CDPHE, 4300 Cherry Creek Drive South, Denver.

MEETING SUMMARY
STATE OF COLORADO SWAP DESIGN TEAM

September 21, 1998
11:00a.m. - 4:00 p.m.
Sabin Room

Colorado Department of Public Health & Environment

Overview

The September meeting of the SWAP Design Team was held on Monday, September 21, 1998 in the Sabin Room of the Colorado Department of Public Health & Environment. The focus of the meeting was the review of the latest draft of the Source Water Assessment Plan, and the public participation plans. Team members provided valuable input on many of the practical aspects of the SWAP, and had numerous questions and comments about approval and implementation. Among the actions taken was the recommendation that the Colorado SWAP be an acronym for Source Water Assessment and Protection to embody the two key activities. Recommendations were made on revisions to the Fact Sheet that had been developed as a means of informing the general public about SWAP. The Team suggested that the draft, with recommended revisions, be distributed to the PWSs and professionals, and that a another flyer be developed for the general population. A number of changes to the SWAP logo were also recommended. A schedule for the public meetings on the draft, to be held in the four (4) watersheds, was developed along with suggestions on getting people to attend.

Data Collection for SWAP

Kathleen reported that the Department's GIS Coordinator has applied for a grant from the USEPA to bring about coordination among the environmental data bases. If the grant is awarded, it will allow for more effective integration and use of the various environmental data sets. Currently, this information is stored in tabular databases in many different locations. As a result, there is a lack of consistency from one set to another. The proposal will improve the data quality, connectivity and accessibility among the data sets. This will be particularly beneficial to the contaminant inventory element of the SWAP, which will need to assemble the various data sets on the locations of activities that could be of concern to the public water supply.

Draft SWAP document

The Team went over the draft of the SWAP document and recommended a number of changes, key among them were format and emphasis changes. It was recommended that given that the program is organized by watershed, that watershed be defined and described in greater detail. The observation was made that the document is weighted too heavily on ground water sources, and that equal time needs to be given to surface water. The team agreed that the background section should be expanded to focus on the unique features of Colorado such as the fact that it is a headwater state, with most of the water flowing out and very little flowing in. There were recommended changes to the various figures throughout the document and some discussion on the appendices. Staff agreed to work on the changes.

Public Outreach Update

Kathleen reiterated that this element of the SWAP will be scrutinized by the EPA review team, and that it must meet the minimum requirements outlined in the Guidance. The Team had a number of recommendations on the Fact Sheet that had been developed for general dissemination. A number of changes were recommended and the suggestion made that the Fact Sheet be distributed to the public water systems and to other technical-oriented groups. It was felt that another flyer would need to be developed for the general public. A considerable amount of time was spent discussing how to design this and to what reading level it should be written. The consensus was to make it simple and informative with a focus on inviting people to get involved in protecting their drinking water. Staff will work on the recommended changes.

At the last meeting, the Design Team had agreed that it was important to hold public meetings around the state to inform people about the SWAP initiative and to solicit their input on how to make it work. A list of proposed locations for the meetings was developed with the aim of drawing people from a 20 to 30 mile radius. The Design Team recommended that the number of meetings be reduced given the deadline for submittal. They suggested holding one or two meetings per watershed and meet the requirement through collaboration with other groups who have organized annual meetings, conferences, workshops, newsletters etc. Use these as vehicles to disseminate the word further. The staff has been using conferences, workshops, water festivals etc. and is maintaining a log of those at which presentations are made. This will become an appendix to the SWAP plan to illustrate the outreach efforts.

Action Items

The Design Team decided to accelerate the meeting schedule in order to provide timely feedback on the SWAP document and respond to technical and procedural issues. The next meeting will be on Tuesday, October 6, 1998. Staff will try to have the recommended changes incorporated into the next draft. Team members were asked to get any additional comments and/or suggestions to Kathleen or to Kim Parker who recently joined the staff as outreach coordinator.

Attendance

Jo Clark, Stewardship Initiatives; Russ Clayschulte, DRCOG; Joe Kelley, City of La Junta; Carmi McLean, Clean Water Action; Gale McGaha Miller, City of Fort Collins; Dave Merritt, Colorado River Water Conservation District; Bobbi Norwood, Colorado Rural Water; David Pusey, Water Quality Control Commission; George Weber, Center for Community Development and Design, CU, Colorado Springs; Al West, Rural Development; Shawna Wooten, Colorado Rural Water

Guest: Gary VanDerSlice, EnecoTech; **Staff:** Kathleen Reilly, Kim Parker, Jerry Biberstine, John Payne, Dan Beley

Next SWAP Design Team Meeting

Tuesday, October 6, 1998 11:00 a.m. to 4:00 p.m. Cherry Creek State Park, 4201 S. Parker Road, Aurora

Adjourned 4:00 p.m.

**MEETING SUMMARY
STATE OF COLORADO SWAP DESIGN TEAM**

**October 6, 1998
11:00 a.m. - 4:00 p.m.
Meeting Room
Cherry Creek State Park**

OVERVIEW

The Colorado SWAP Design Team met on October 6, 1998 in the meeting room at Cherry Creek State Park, 4201 South Parker Road, Aurora, Colorado. The Design Team reviewed the latest draft of the SWAP and focused on the public participation and susceptibility analysis elements. John Giedt, EPA Region VIII Director for SWAP, shared the outcomes of meetings in Casper, Wyoming and in Sacramento, California on SWAP, and described what will be contained in the EPA Guidance on Susceptibility Analysis. The draft guidance is due to be released within a week or two of the meeting.

It was reported that EPA headquarters officials re-emphasized that an adequate treatment of the public participation element is critical to approval of the state SWAPs. In addition, the initial review of the state plans will be complete, and states will be spared having to address new items at each stage of the review.

Coordinator's Report

The Ground Water Protection Council (GWPC) held its annual meeting in Sacramento at the end of September. A significant portion of the agenda was dedicated to SWAP. State representatives were given opportunities to share experiences in developing the SWAP and to learn from other states. The GWPC is developing a nationwide data base on SWAP for use by the states. Each of the EPA regions were represented at the meeting as was headquarters. The states learned that all plans will be reviewed at headquarters as well as at the regional level. A commitment was made to make the initial review as complete as possible, and to avoid having the states address new issues at each stage of the review. The EPA has nine months following submittal to complete the reviews, however if a submittal is incomplete, the clock stops. Release of the set aside funds will be contingent on the timely submittal of a plan that can be "endorsed as approvable". This will be determined during a preliminary review.

The two elements that will be carefully reviewed are public participation and susceptibility analysis. The recommendation from the headquarters staff was to address these two elements in adequate detail. In particular, the methods to determine susceptibility will need to be described and a ranking system employed. All states will be seeking an extension to 2003 to complete the assessment; the original deadline is 2001.

Public Outreach Update

The public outreach and participation efforts have been expanded upon in the current draft. The web site is being enhanced to be more interactive and will include features that will allow us to track its usage. The public outreach meetings have been scheduled; two will be held in October and two in November. Time constraints limit the first set of meetings to one per watershed. We anticipate adding sites as the program evolves. The staff will be working with Clean Water Action on the SWAP public participation meeting they are planning in January, 1999.

Review of the draft SWAP

John Giedt, EPA Regional Director for SWAP, was present to go over the necessary elements of the SWAP and to explain the review process that EPA will use in approving the state plans. His input was extremely valuable in outlining the key features of the SWAP, and describing what the EPA will be looking for in the submittals.

He reiterated that the key elements will be public participation and susceptibility analysis, and mentioned that the EPA will be taking a critical look at the implementability of the proposed elements, i.e. delineation and susceptibility analysis. He recommended that we take pains to adequately address the non-community systems along with the community, and that we demonstrate the coordination with other programs such as storm water and comprehensive ground water protection efforts as well as the 305(b) water quality status report, and the list of impaired streams 303(d). Other recommendations included cautious use of the arbitrary radius as a means of delineating source water protection areas for ground water systems, and defining how to involve the different stakeholder groups. He recommended that we address involving the tribes and the other governmental units, i.e. federal, county and local, as well as special interests.

Specific suggestions included adding greater detail to the explanation of the SWAP process; using the nested approach to describe the anticipated cooperation among providers, and developing checklists and flow charts for the convenience of the providers.

Susceptibility Analysis

This discussion focussed on the necessary elements to include and how to determine the high, medium and low rankings in a consistent manner. John Giedt announced that the draft guidance on susceptibility analysis was due to be released within the week and recommended that we wait until it is available.

Wrap Up

The recommendations will be incorporated into the next draft along with the input received at the public meetings. The susceptibility analysis guidance will be distributed for comment as soon as it is received.

Next Meeting

Monday, November 23, 1998, 11:00 a.m. to 4:00 p.m. Location to be determined.

Attendance

Jo Clark, Stewardship Initiatives; Russ Clayshulte, DRCOG; Gale McGaha Miller, City of Fort Collins; Bill Leon, Center for Community Development and Design, CU, Colorado Springs; David Merritt, Colorado River Water Conservation District; Dave Pusey, WQCC; Gary VanDerSlice, EnecoTech; George Weber, Center for Community Development & Design, CU, Colorado Springs; Al West, Rural Community Assistance Corporation; Shawna Wooten, CRWA; Guest: John Giedt, U.S. EPA Region VIII

Staff: Kim Parker, Kathleen Reilly

**MEETING SUMMARY
STATE OF COLORADO SWAP DESIGN TEAM**

**November 23, 1998
11:00 a.m. - 4:00 p.m.
Meeting Room
Cherry Creek State Park**

OVERVIEW

The Colorado SWAP Design Team met on November 23, 1998 in the meeting room at Cherry Creek State Park, 4201 South Parker Road, Aurora, Colorado. Kathleen gave the Coordinator's Report, recapping the activities of the State since the October meeting. Kim gave a summary of the four public meetings, including the number and type of attendees, how participation was encouraged, and the most commonly asked questions. The Design Team reviewed the latest draft of the SWAP and focused on the susceptibility analysis elements. Russ Clayshulte and the State proposed two different methods for approaching susceptibility which were discussed.

Coordinator's Report

Kathleen mentioned that the MOU between federal land management agencies regarding SWAP has been finalized and is now official. This is an important step to have in place as it will help to bring about the cooperation and involvement of the federal land management agencies in particular. Colorado will have a number of SWPAs that will include federally-owned and managed lands; having the agreement in place should make the negotiations move more smoothly.

Public Outreach Update

A total of 91 people attended the four meetings, 17 at Montrose, 28 at Glenwood Springs, 38 at Denver, and 8 at Pueblo. The two West Slope meetings were advertised by calling a large percentage of the community PWS and faxing interested PWSs meeting information and the SWAP fact sheet. Several of the major daily papers printed articles on the meetings and encouraged a few people to come. Representatives from cities, towns, counties, PWSS, federal agencies, a few private citizens, and CDPHE employees attended the meetings. CDPHE employees were not considered in the above attendance tally. The two Front Range meetings were advertised with a mass mailing to all community PWSS, and press releases were sent to all eastern Colorado daily papers, TV stations, and radio stations. The Denver meeting was attended by Denver area municipalities, PWSS, federal agencies, and a few private citizens. The League of Women Voters and reporters were well represented at the Pueblo meeting, a few PWSs were also in attendance. In addition to the list of frequently asked questions discussed, Russ Clayshulte added a few of his impressions about the Denver meetings. A complete list of comments received at the meetings and lists of attendees will be included as an appendix in the SWAP Plan.

Carmi McLean gave a quick overview of the Regional SWAP conference that Clean Water

Action will be hosting on January 9, 1999. She presented the preliminary conference agenda and requested feedback and ideas. She also requested that Design Team members provide her with their mailing lists so that she could use them to distribute the conference invitations. She also requested that if any of the Design Team members know of out of state water quality "spark plugs", or people who could mobilize and encourage a number of concerned citizens to attend the meeting, to provide her with contact information.

Review of Proposed Susceptibility Analysis Methods

While the consideration to detail in the State's proposed plan was applauded, it was determined that this approach was still too simplistic. It was felt that factors related to surface water needed to be more realistic and more apparent. Methods to incorporate multiple contamination sources were also missing, as were ways to account for synergistic effects of pollutants. Additionally, known problem areas such as 303(d) listed streams and TMDLS, and known high quality areas related to use classifications were not taken into account in this process. It was also felt that the document used several terms such as susceptibility and threat interchangeably which could be confusing. It was felt that each term should be assigned a specific place and meaning in the susceptibility analysis to prevent such confusing while allowing complex situations to be communicated.

Katherine Foster was able to summarize briefly the crux of the issue. She outlined a possible plan to take the list of contaminants and contaminant sources assembled in the inventory step, factor in human health hazard, probability of spill or contamination event, setting vulnerability, and system integrity to arrive at an overall susceptibility rating using matrices. She volunteered to work with the State in refining her idea.

Feedback from Rich Muza on the current EPA Susceptibility Analysis Document (SAD) indicated that EPA was revising their SAD to clarify some of the points which were unclear. He indicated that EPA was looking for a system to evaluate susceptibility, which would be applied consistently statewide. EPA realizes that the same approach applied in two communities may not yield the same result, but the procedures need to be consistent. He was also able to clarify that susceptibility analysis must be conducted on pre-treatment water and that treatment capabilities, while important, may not affect the outcome of the susceptibility analysis.

Essential Elements

Rich also mentioned that the SWAP plan needs to be in the form of guidance to PWSs to conduct their own assessment and develop protection plans. He stated that this guidance may be in draft form as of the submittal, but that sufficient details must be included such that EPA will be able to determine the intent and direction that the State will be taking. EPA must also see the State's strategy for implementation during the assessment and protection plan phases. He promised to provide the State with a complete list of comments on the October draft, including areas that need clarification, expansion, or items that had been omitted.

Next Steps/Next Meeting

The next meeting will be held on January 5, 1999, from 11:00 am to 4:00 p.m., at the CH2M Hill offices in Englewood. Pat Nelson graciously offered to provide the meeting space.

Attendance

Troy Bauder, C.S.U. Agriculture Extension Service; Jo Clark, Stewardship Initiatives; Russ Clayshulte, DRCOG; Katherine Foster, USDA Forest Service; Gale McGaha Miller, City of Fort Collins; Carmi McLean, Clean Water Action; David Merritt, Colorado River Water Conservation District; Rich Muza, EPA Region VIII; Pat Nelson, CH2M Hill; Dave Pusey, WQCC; Gary VanDerSlice, EnecoTech; George Weber, Center for Community Development & Design, CU, Colorado Springs; Guest: John Kolanz, City of Greeley Staff. Kim Parker, Kathleen Reilly

Adjourned 4:00 p.m.

MEETING SUMMARY

STATE OF COLORADO SWAP DESIGN TEAM

January 5, 1999
11:00 a.m. - 4:00 p.m.
CH2M Hill, Meeting Room
100 Inverness Terrace East
Englewood, CO 80112

OVERVIEW

The Colorado SWAP Design Team met on January 5, 1999 in the meeting room at CH2M Hill, 100 Inverness Terrace East, Englewood, Colorado. The Design Team discussed the December draft of the SWAP Plan. Rich Muza presented EPA's comments regarding the October draft, and went over what EPA would need to see in the final draft that was not present, and identified EPA "red flags". The majority of the meeting was spent discussing the proposed susceptibility analysis procedure. It was decided that the Design Team continue to meet as needed while the state guidance document, or 'cookbook' is being developed.

Coordinator's Report

Kathleen opened the meeting by giving a rundown of activities that had been done since the last meeting. First and foremost, the Colorado Department of Health and Environment now has a new Director, Jane Norton. Comments and suggestions from the November meeting have been incorporated into the December draft of the SWAP Plan. Examples of items which were added or otherwise addressed are: balancing surface and ground water issues within the document, nested delineation, strengthening of the iterative approach language, and Colorado's take on how SWAP will be implemented. The chapters have been reorganized and tables, figures, and appendices are still being assembled, but the document is coming together.

Topics discussed in the new implementation section were how the \$1.6 million will be spent, which activities contractors will be used for and which will be done in-house, and workload distribution within the Division. The Division has decided to delineate Source Water Assessment Areas (SWAAs) in-house, as well as possibly some of the contaminant inventory process, using the Department of Health GIS staff. Division watershed coordinators will be primarily responsible for outreach and assistance to public water systems (PWSs) during the SWAP assessment phase, as well as initiating community interest in developing protection plans. It is not anticipated that the Division will be adding any full time employees to handle the workload related to SWAP.

The Citizen's Advisory Team and Technical Advisory Team meetings have been scheduled and will be held on January 6 and 11, respectively. Feedback from these groups will be incorporated into the next draft of the document. The Design Team suggested that a separate meeting be held with CACI, CCI, municipal leagues, waste water treatment facilities, federal land management agencies, certification boards, etc., rather than relying strictly on Design Team, Technical Advisory Team, and Citizen Advisory Team members to represent the needs and interests of these groups.

Kathleen also mentioned that many people discussing the SWAP assessment phase believe that \$1.6 million dollars will not be sufficient to complete a statewide assessment. Pat Nelson asked if it is possible to augment the SRF set aside money with other sources of funding, such as other grants. Rich Muza indicated that there may be increases in both 106 and 319 monies nationally, but that he was uncertain as to how much money EPA Region VIII and Colorado might be getting. Kathleen reiterated that it is hoped that some of the larger partners will be able to assist with funding, time, or other resources to help make the \$1.6 million stretch as far as possible. It is hoped that the prototype, or pilot, PWS assessments will provide an estimate of how much each step in the assessment should be expected to cost.

EPA Comments on October Draft

Rich Muza and Marcella Hutchinson, from EPA Region VIII, had a chance to review the October draft in detail, and had developed a list of items which they felt needed to be strengthened, added, or amended. Rich had sent this list to Kathleen, allowing her to incorporate the majority of these items into the December draft. Rich stated that, in general, the document looked great.

Specific items he mentioned that needed improvement were Colorado's implementation strategy and the susceptibility analysis procedures. He suggested that a discussion of the implementation strategy be added where the roles of the watershed coordinators, the Division, and contractors are clearly defined. He also mentioned that the document contained too little or confusing detail about the susceptibility analysis procedure. For example, the December draft does not clearly indicate how zones of primary concern for the contaminant inventory and susceptibility analysis will be determined. Will surface water systems use time of travel or boundary zones around the intakes to determine the zones of primary concern? Maximum and minimum values need to be set regardless of the method chosen. Additionally, will all systems be treated the same during the susceptibility analysis? The document indicated that small systems will be treated differently than larger systems. If this is the case, small systems must be clearly defined (i.e., less than 500 customers served).

Rich also mentioned that the document must clearly state that Colorado will be requesting the 18 month extension period and provide justification for the request. Rich indicated that EPA will be delaying the official approval of the SWAP plan until November 1999 to allow the states the maximum amount of time for implementation. EPA plans to allow the set aside funds to be used once the SWAP plan has been given 'intent to approve' status, or after the state workplan for the use of the set aside funds has been approved.

Susceptibility Analysis

Katherine Foster presented the susceptibility analysis procedure that had been proposed at the November Design Team meeting and fleshed out during a series of conference calls and emails between Katherine, Kathleen, and Kim. The proposed procedure involved determining the hazard of the contaminant, the likelihood of a spill, system integrity, and setting sensitivity. These factors were then combined in a series of matrices to determine the vulnerability of the PWS to the contaminant/contaminant source combination being analyzed. When vulnerabilities for all contaminant/contaminant source combinations identified have been determined, the overall susceptibility of the PWS to classes of contaminants or types of contaminant sources can be determined. Katherine also presented an example of a susceptibility analysis using a high elevation watershed with only recreational trails and wildlife and domestic livestock grazing.

The analysis procedure generated a large amount of discussion. The following items were discussed for each of the 4 factors in the analysis:

Contaminant Hazard: Kim would find out from Hazardous Materials or EPA if any contaminant classifications have already been done. The Design Team decided that the state should use a classification system that had already been developed rather than ‘reinvent the wheel’.

Likelihood of Spill: It was decided that Likelihood of Spill should be changed to likelihood of occurrence or release, to avoid a point source bias. Check 303d listed stream segments for that drinking water contaminant as indication of likelihood of release.

Integrity of System: It was brought up that the conveyance from the intake to the water treatment facility (raw water distribution system) was not represented in the source water assessment area, and should be, especially if the conveyance is open.

Setting Sensitivity: For surface water systems, response time to shut system down needs to be considered when determining the zone of highest concern upstream from the intake. Russ mentioned that time of travel from the apex of the Clear Creek watershed to its confluence with the South Platte only takes 6 to 12 hours. A certain distance upstream from the intake (i.e., 5 miles) was suggested as an alternative for time of travel for determining the zones of concern. Both intermittent and perennial stream systems should be considered. Distance from the stream should factor in the density of vegetation, the topography, infiltration rate (overland flow potential), and the width of the flood plain (100 yr. flood plain). Russ proposed that 2 zones be used to determine the distance to the drainage network based on whether or not a source of contamination was located within the 100 year flood plain, or alternatively, a fixed distance (1,000 ft.) on either side of the stream.

For wells, the zones of concern were left the same as that used in the Wellhead Protection Program (5 year time of travel). It was suggested that other zones of concern be established, such as the area immediately surrounding the wellhead, to reflect the varying levels of concern for different aquifer situations.

Check 303d listed stream segments for any drinking water contaminant as indication of setting sensitivity. Concern was expressed that this would be double counting. It was decided that it would not be double counting provided that it was clear in each case exactly how that information would be used and what would be inferred from it. In the likelihood of release factor, this information would determine whether or not an individual contaminant has been released and detected in that stream. In setting

sensitivity, this information will be used to evaluate the ability of any contaminant in that setting to enter the water system or aquifer.

Susceptibility Determination: There should be a step added where PWSs can discuss treatment capabilities, natural vs. manmade sources of contamination, susceptibility to classes of contaminants or types of contaminant sources, regulated and non-regulated contaminants, BMPs, limitations and strengths of systems, etc. It was decided that the appropriate place for this type of information was in the susceptibility determination step, and could be easily addressed by a narrative statement. This narrative would also be able to address cumulative contaminant effects and contaminant quantity issues. Synergistic, or additive, effects of the contaminants will not be addressed in this iteration of the susceptibility analysis.

Miscellaneous Suggestions: Susceptibility analysis needs to be kept simple to encourage its use by PWSs and communities. Some Design Team members thought that the outlined analysis was already too complicated. To ensure that the process is as easily understood as possible, all terms used in the susceptibility analysis need to be defined. Similarly, someone should go through the document and make sure that term usage throughout the document is consistent with the definitions. It was mentioned that the link between contaminant sources and contaminants needs to be strengthened. In addition, if there is no information to evaluate the level of concern for one of the major factors used in the analysis, a high rating should be assumed, as this is the most conservative, protective approach. Lastly, if PWSs wish to conduct a more detailed analysis, for example including fate and transport modeling, they should be allowed to do so.

Wrap Up

The recommendations and input received from the Design Team and EPA regarding the October and December drafts and the susceptibility analysis procedure will be incorporated into the next draft. Meeting notes and a copy of the SWAP Plan, which was submitted to EPA, will be sent to each Design Team member as soon as possible.

Next Meeting

The decision was made to convene the Design Team as needed throughout the coming year to allow the Design Team to lend its expertise to the development of the state guidance document, or ‘cookbook’. The next meeting date and location are TBA.

Attendance

Troy Bauder, CSU Cooperative Extension Service; Jo Clark, Stewardship Initiatives; Russ Clayshulte, DRCOG; Katherine Foster, USDA Forest Service; Rich Muza, EPA Region VIII; Pat Nelson, CH2M Hill; Dave Pusey, WQCC; Gary VanDerSlice, EnecoTech; George Weber, Center for Community Development & Design, CU, Colorado Springs; Shawna Wooten, CRWA

Staff: Kim Parker, John Payne, and Kathleen Reilly

MEETING SUMMARY
STATE OF COLORADO SWAP DESIGN TEAM

DATE: March 10, 2000
TIME: 10:30 AM - 3:00 PM
PLACE: Sabin Room
Colorado Department of Public Health & Environment
4300 Cherry Creek Drive South, Denver, CO 80246

ATTENDEES:

<u>Name</u>	<u>Affiliation</u>
<i>Design Team:</i>	
Earl Cassidy (for Doug Cain)	USGS
Gary VanDerSlice	EnecoTech
Marcella Hutchinson	EPA, Region VIII
Rich Muza	EPA, Region VIII
George Weber	CCDD/CU
Ben Alexander	City of Fort Collins
Gale McGaha-Miller	City of Fort Collins
Pat Nelson	Colorado Mining Association
Jennifer Dana (alternate for P. Nelson)	
Joe Kelley	City of LaJunta
Eileen List (for Greg Trainor)	City of Grand Junction
<i>Guests:</i>	
Michelle Wind	Brown & Caldwell
<i>CDPHE Staff:</i>	
Gary Karst	
Kathleen Reilly	
John Payne	
Randy Ristau	

Overview

A meeting of the SWAP Design Team was held to update the Team members on the progress made to date, to introduce Gary Karst, the newly appointed SWAP Coordinator, and to discuss the recommended changes to the susceptibility analysis rating matrices that will be included in the finalized SWAP program plan. The Design Team had been instrumental in developing the matrices that were included in the initial draft submittal, and EPA requested that the State seek feedback and concurrence from the Design Team prior to including them in the finalized program plan.

There was general concurrence that the changes made to the matrices would reduce the number of “high” ratings that were emerging under the original design. Most of the Design Team members viewed this as a desirable outcome. Discussion then focussed on procedural issues and the problems that would be encountered with a variety of items. Key among the topics discussed were the proposed size of the susceptibility analysis buffer zones relative to the scale of the maps; the use of the assessment data by the PWSs; the format for notifying the public of the results of the assessments; and the difference in complexity between surface and ground water systems. The Design Team made some very constructive suggestions, many of which will be taken under advisement and possibly incorporated into the finalized SWAP program plan prior to distribution.

Discussion on Proposed Changes to Susceptibility Analysis

Gary Karst introduced himself to the Design Team, and then had the Team members introduce themselves. He explained the reason for the meeting and began by describing the problem he had encountered in applying the original rating system during the development of a susceptibility analysis case study that will be incorporated into the finalized SWAP program plan. Using the original rating matrices, an abnormally high number of the vulnerability ratings were emerging as HIGH. He attributed this phenomenon to the practice of lumping many of the various possible scenarios together. He explained that he had expanded the vulnerability matrix to assess each individual scenario separately and made adjustments to the individual vulnerability ratings to better reflect the situation that was being evaluated. This resulted in reducing the abnormally high number of HIGH vulnerability ratings. He then described how he did this. As a result of these adjustments, he was able to cut the number of high ratings almost in half for both surface and ground water systems.

The discussion that followed focused on the use of the ratings and on the assumptions of whether the sizes of the proposed zones would be adequately protective of the water source. EPA agreed that there may be some inherent risk, and recommended having a water system “walk through” the analysis for their own system using the proposed new ratings to convince themselves.

Discussion continued on the use of the proposed vulnerability ratings, and whether the widths of the susceptibility analysis buffer zones were considered adequately protective, especially with respect to surface water systems. George Weber expressed concern about the width of the buffer zones, especially that the proposed 200-foot-wide zone. He believed that this zone gave a false perception of protection, and that this zone would be hard to detect on a map at a small scale (e.g. 1:100,000 scale). This was noted and Gary agreed to consider increasing the size of this zone on each side of the stream. Currently, the State is considering widening Zone 1 to 1,000 feet on each side of a stream, which is similar to what several other states have proposed according to EPA.

Ben Alexander raised several issues concerning the use of the assessment results and data by PWSs, how the results will be made specific to the system, access to the information generated, and how it will be conveyed to the consumers. Gary explained how the State would proceed with using outside contractors to conduct the assessments and how a centralized database would be developed by extracting specific information from the state and federal regulatory databases. This would allow each contractor conducting the assessments would be utilizing the same data from a common database. He added that the eventual intent was to have the contractors utilize this data and present the results in individual assessment reports in a format that was readily understandable by the public. He assured the Team members that the information collected will be provided to the PWS for review and comment prior to release.

Gary VanDerSlice recommended reorganizing the proposed vulnerability matrix so that the most sensitive settings appear at the top and the least at the bottom. He pointed out that by doing so, the user should start to see spatial relationships start to develop with respect to which settings will receive HIGH vulnerability ratings. He also pointed out that the land use maps would be useful in revealing some of these same spatial relationships. Gary Karst said that he recognized this potential in revising the vulnerability matrix and would reorganize it as suggested.

A number of Design Team members stressed the need to have local residents involved in the contaminant inventory in order to pick up sources of concern that would not show up in the state and federal regulated databases. There was general consensus on this point. It was also suggested that ground truthing for the contaminant inventory and involving local citizens to the extent possible would be very beneficial. There was general agreement on this, however it was pointed out that it might not be possible on a wide scale given the time schedule within which the assessments for all PWSs must be completed.

Discussion on Criteria Lists for Contaminant Inventory/Susceptibility Analysis

After breaking for a quick lunch, the meeting was re-convened to discuss and develop criteria that will be used in evaluating the threat and risk factors for the susceptibility analysis. Gary Karst discussed that it was the State's intention to develop these criteria/check lists to be included in the upcoming SWAP guidance document that will outline the methodology of conducting a SWAP assessment. To that end, Gary said that the State needed help in developing criteria to evaluate (1) the contaminant hazard factor, (2) the likelihood of release factor, (3) the structural integrity of the water system factor, and (4) the setting sensitivity factor.

CONTAMINANT HAZARD CRITERIA

Gary quickly summarized the problem presented in the worksheet and opened the discussion up for suggestions from the Team. Joe Kelley asked how the various potential contaminants would be identified and, subsequently, how the PSOC would be classified. Gary said the State was hopeful that the state/federal databases would provide some information on the type (and possibly quantity) of potential contaminants present at a PSOC. He also mentioned that it was possible that surveys of the PSOCs could be conducted by the PWS and/or local public groups to identify the potential contaminants present. He warned that could be quite time-consuming if there were numerous PSOCs within the source water area. However, this method may be necessary for PSOCs identified on the local level. Gary mentioned that if information on potential contaminants could not be ascertained, that the State would have to default to the contaminants historically attributed to the PSOCs listed in Appendix E of the

program plan. Again, the problem that arises is that if several different classes of contaminants (A, B or C) are present, how do we come up with an overall rating for the PSOC?

Joe Kelley indicated that he would prefer to be conservative in coming up with the overall rating. If Class A contaminants are potentially present at a PSOC, even if Class B and C contaminants are present, it should be viewed as a Class A contaminant hazard. Gary cautioned that if historical information, such as that contained in Appendix E, was used to classify the PSOCs, all of the PSOCs could be classified as Class A contaminant hazards.

Marcella Hutchinson suggested developing a default classification system for PSOCs based on the historical information presented in Appendix E as a first cut. Several Team members tended to agree since much of the work to identify contaminants at the various types of PSOCs has been done, as Gale McGaha-Miller pointed out. Most members agreed that it may be too time-consuming to expect to do surveys of each facility, though this may be necessary to some extent, especially for PSOCs identified locally by the PWS and/or local citizen volunteer groups. Ben Kelley suggested that a checklist be developed for use at the local level so that the PWS and/or citizen groups will know what to look for. With respect to determining which PSOCs are Class A contaminant hazards versus Class B or Class C contaminant hazards, the group generally agreed that the number and/or quantity of each contaminant would need to be considered if such information was easily available. Otherwise it would have to depend on the relative number of contaminants potentially present as defined in Appendix E.

Several group members were concerned that some PSOCs may have more than one potential source present (and therefore more than one contaminant hazard) and how would that be treated. The concern, as stated by Ben Alexander, is that the State doesn't limit the search to just the primary or known threats that appear on the "radar screen". Gary stated in that event, the State would try to identify which of the sources presented the greatest hazard contamination threat (i.e. health threat) for purposes of conducting the susceptibility analysis. Several Team members suggested that information about the other sources at a given facility be retained in the backup data (i.e. metadata) for purposes of increasing public and PWS awareness of these additional potential sources. Gary agreed that this could be done and would be referenced in the assessment report if the PWS so chooses.

LIKELIHOOD OF RELEASE CRITERIA

Gary quickly summarized the problem presented in the worksheet and opened the discussion up for suggestions from the Team. Much of the Team's discussion centered on whether to develop checklists of protective/preventative measures and/or best management practices (BMPs) for the various categories of PSOCs or to develop alternative methods for evaluating the likelihood of release from a given PSOC.

Gary indicated that for regulated PSOCs, the State expects that general information on some of the measures and/or BMPs may reside in the state/federal databases. This may be the result of reporting requirements for various facility types (e.g., spill prevention plans) and/or the compliance history at a facility (e.g., has there been a release?). Gary mentioned that it may be too time-consuming and cost prohibitive to conduct physical site inspections or surveys of all identified PSOCs (either by the State contractors, the PWS or the citizen volunteer groups), but indicated that it may be necessary to some degree to conduct these for PSOCs identified locally. This in turn led to group discussions on the need to ground truth the PSOCs and the likelihood of this happening for all PSOCs.

Marcella Hutchinson and Rich Muza suggested in the first iteration (i.e., for the regulated PSOCs identified from the state/federal databases) to base the likelihood of release determination on the compliance record of the PSOC. As a result, it may make more sense to look at default ratings similar to those proposed for the system integrity analysis (e.g. UNLIKELY, LIKELY/KNOWN or UNKNOWN) rather than use the currently proposed rating system (LOW, MODERATE or HIGH). They also mentioned that the default ratings might want to be based on the hazard contaminant classification for the PSOC. This concept generally was well received by the Team.

In the second iteration where the PWS reviews the information assembled by the State and potentially supplies additional information at the local level, Marcella suggested incorporating information on protective/preventative measures and/or BMPs, where this information can be easily obtained. Gary suggested that where information on protective/preventative measures and/or BMPs could be easily obtained from the state/federal databases, it should be considered in determining the rating during the first iteration. This iteration would probably require development of criteria checklists to aid the PWS and/or citizen volunteer groups in collecting this information.

With respect to developing checklists, Pat Nelson indicated that many of these measures and/or BMPs could be referenced from BMP manuals on storm water runoff management. This concept and source was also proposed in written comments supplied by Eileen List (for Greg Trainor), who was unable to attend the meeting. Eileen also suggested several other sources that could be tapped to develop these lists including Spill Prevention Control and Countermeasure (SPCC) plans that are specific to various categories/sources. Eileen mentioned that SPCC plans are supposed to be given to Local Emergency Planning Committees (LEPCs) as a requirement of the Community Right-to-Know Act. She also indicated that LEPCs would be a good resource for PWSs to use in identifying local PSOCs that may not appear in the state/federal databases.

STRUCTURAL INTEGRITY CRITERIA

Since the meeting was behind schedule, Gary quickly summarized the problem at hand and indicated that defining criteria for this factor was probably more straight forward than the other factors. The group generally agreed with this conclusion and thought that the primary criteria had been identified sufficiently in the program plan. This included such criteria as age of the structure (well or intake), physical condition of the structure, maintenance of the structures, etc. As a result, the Team deferred to the State to develop a final checklist of criteria to be considered by the contractors and PWSs in evaluating this factor.

After developing the checklist of criteria to consider, the PWS will need to take the lead in collecting this information on their system. One possible source of information that might be valuable in assessing these criteria could be the sanitary surveys that are conducted on the community and non-community water systems throughout the state. Where this information is incomplete, the PWS would have to collect the information needed to evaluate this factor.

SETTING SENSITIVITY CRITERIA

Gary quickly summarized the problem presented in the worksheet and opened the discussion up for suggestions from the Team. Since the problem revolved around ground water systems, the State was concerned with identifying geologic factors that could be used to qualitatively evaluate the transport of

contaminants in the subsurface. Gary stressed that information concerning these factors should be easily accessible.

Gary asked Earl Cassidy (representing Doug Cain-USGS) if the USGS had any sources of information that could be useful. Earl identified some possible studies in-state that might provide some useful information. A couple of the other group members identified a vulnerability study funded by EPA several years ago as a possible source for this information. Gary VanDerSlice also mentioned a study conducted by the State with respect to vulnerability of Colorado aquifers to pesticides as a source. Gary Karst indicated he was aware of the study and would look into this further. Maps supposedly produced for these studies might provide easily accessible information concerning such criteria as the depth to water or the presence (or absence) of physical features that might enhance or slow the transport of contaminants. Gary Karst also stressed that geologic information from driller's logs should be used to supplement this kind of information.

**MEETING SUMMARY
STATE OF COLORADO SWAP
CITIZEN'S ADVISORY TEAM**

**January 6, 1999
10:00 a.m. - 1:00 p.m.
CDPHE Board Room
4300 Cherry Creek Dr. S.
Denver, CO**

OVERVIEW

The Colorado SWAP Citizen's Advisory Team met on January 6, 1999 in the CDPHE Board Room at 4300 Cherry Creek Dr. S., Denver, CO. Kathleen gave an overview of the Colorado Source Water Assessment and Protection (SWAP) Program. A discussion of SWAP concepts and details followed. The remainder of the meeting consisted of an idea session focusing on raising public awareness about SWAP and public outreach.

Overview of the SWAP Plan

Source Water Assessment and Protection is intended to be a community oriented, preventative approach to protecting drinking water quality. SWAP was created by the 1996 Safe Drinking Water Act Amendments, and each state is required to develop a plan which will suit its individual needs. These plans must then be submitted to the U.S. Environmental Protection Agency by February 8, 1999.

SWAP was designed with public participation at its center. The state of Colorado feels that the success of the SWAP program will depend on high levels of public awareness and involvement. It is therefore extremely important to develop a SWAP program that will suit the needs and address the concerns of all of Colorado's citizens.

SWAP has two phases, one of which is mandatory, and the other voluntary. The first, or assessment phase, must be completed for each of Colorado's 2201 public water systems (PWS) by May of 2003. The following four steps must be completed during the assessment of each PWS:

1. Delineation of the source water area. For surface water systems, the entire watershed above the intake will be considered the source water area. Ground water systems will determine an area around the well or well field that is based on a five year time of travel for water through the aquifer. A map of the source water areas for both surface and ground water systems will be created using Geographical Information Systems (GIS).
2. Inventory of significant possible sources of contamination (PSOC). The state will begin by locating operations, activities, or land uses which produce, use, or store regulated contaminants. This information is currently located in many different federal, state, and county databases. These PSOCs will be indicated on the source water area map for each PWS and then provided to the PWS. The PWS and interested community members can then add information about sources not listed in the state and federal databases. The combined information will provide a relatively complete inventory of the PSOCs within the source water area.

3. Susceptibility analysis. This step evaluates the susceptibility of the PWS to the PSOCs identified in the contaminant inventory. Aspects which will be examined include the integrity of the well or system delivering water to the treatment plant; the sensitivity of the setting (how easily can the contaminant move from the source to the water); the likelihood that the contaminant could be released in harmful quantities; and how harmful the contaminant is to human health.
4. Report of results. Results of the assessment phase must be reported to the public. Several options are available. It is possible that the results will be published in the form of a mailing by the PWS, a bill insert, or as an addendum to the Consumer Confidence Report, which will given annually to all PWS customers as of October, 1999. Other options like posting the results in a central location or publishing the results in local papers may be more appropriate for smaller systems. In addition, the state will have a web site that will provide assessment results for all Colorado PWSs.

The second, or protection phase of SWAP, is voluntary. During this phase, communities and PWSs are encouraged to develop protection plans for their water supply with the information provided by the assessment. The state of Colorado has made a commitment to provide assistance and guidance to communities wishing to develop protection plans for their water supplies.

Public Outreach Ideas

Kathleen outlined some of the public outreach efforts that the state has undertaken so far. These include over 40 presentations to a wide variety of groups in all parts of the state. A regional public meeting to present the state's SWAP Plan and invite discussion was held in each of the four major watersheds of the state and attracted a total of 100 participants. A meeting put on by Clean Water Action, which attracted people from neighboring states and discussed how to encourage public participation in SWAP, was held on January 9, 1999 in Denver, CO. The State has also developed a fact sheet, which it has given out at meetings, mailed, and faxed out to people invited to meetings or who requested information on SWAP. The state has also designed a web page on which the latest information about SWAP and eventually the assessment reports for all PWSs will be available (<http://www.cdphe.state.co.us/wq/sw/swaphom.html>). The state has also sent press releases to daily newspapers and radio stations and developed a logo to increase program recognition.

Kathleen then listed some of the obstacles for getting people involved in SWAP, such as the high quality of Colorado's drinking water. It is difficult to communicate that a problem exists or could exist in the future when few people have experienced adverse effects as a result of drinking water contamination. Another factor is the short timeline in which SWAP must be implemented. It is difficult to get a program built up and familiar enough to people that they will want to become involved on such a tight timetable. SWAP's emphasis in on public participation, outreach, and education should counteract these potential problems and raise confidence in the program, encouraging people to become involved.

Team members listed some entities or groups that should be notified and kept up to date on SWAP activities including counties, municipalities, federal land management agencies, watershed or reservoir interest groups, chambers of commerce, tourism boards, and special needs populations, among others. Methods to involve these groups and others that were mentioned were:

1. Publishing questionnaires in local papers. This would aid in raising peoples' awareness as well as encouraging people to act as scouts to help identify possible sources of contamination. It may help increase the public's sense of ownership in their particular source water areas. A list of activities to look for could be printed with the survey or questionnaire.
2. Put signs up along recreational paths that follow or cross waterways. Messages such as "This is Denver's Source Water Area, please be careful" could increase public awareness of the SWAP program, and encourage a sense of ownership and pride in designated source water areas by people who frequent the area and/or consume the water.
3. Treat watershed initiative groups as 'franchises'. Provide them with a packet of materials and empower them to assist the state in developing SWAP programs on the local level. This would also help to increase the sense of ownership among locals, as well as provide the state with much needed help in collecting data and developing interest in SWAP.
4. Use fire departments and emergency response personnel as resources. They know the community and can help spread the message at local events such as pancake breakfasts and other fundraisers or community events.
5. Present at schools, water festivals, and to student interest groups such as DOW River Watch. Be sure to present both the problem and the solution.
6. Target the involvement of special interest groups that value the quality of water for their livelihood or recreation such as river rafters or fishing enthusiasts.
7. Employ marketing professionals to come up with effective and memorable slogans.
8. Advertise at DIA, or along major highways coming into the state, targeting visitors, hunters, and tourists, particularly from neighboring or downstream states. "The water you pollute here may come out of your tap when you get home! Please be careful with our water!"
9. Link water quality and quantity concepts to foster protection and conservation, reinforcing that water is a vital resource and must be taken care of accordingly.

Action Items

1. Additional concerns that were raised include the necessity for developers and planners to be aware of SWAP efforts and established protection plans when new projects are being designed. Housing additions, road widening, and other development activities can have a tremendous impact on water use patterns, contaminant sources, etc. The state will add these groups to its list of groups to be targeted for outreach.
2. It should be communicated to the public that most treatment plants cannot consistently filter out turbidity and the associated contaminants. This is of real concern to immune compromised or immune suppressed individuals because of their inability to tolerate even low levels of contamination in drinking water. Microorganisms and other contaminants in drinking water should be of concern to healthy individuals as well. Chronic exposure to even low levels of contaminants can tax a healthy immune system to the point where a person may experience health problems at contaminant levels much lower than otherwise expected.
3. It was recommended that the state look into strengthening the regulations for bottled water.
4. It was suggested that logging should be added to the list of private interests listed in the SWAP draft, as they may be a possible source of contamination.
5. The state will also follow up on the above listed ideas for increasing public participation.

Next Meeting

It was agreed that the Citizen's Advisory Team would convene its next meeting this summer after the plan has been submitted to and approved by the U.S. Environmental Protection Agency. The state will provide team members with a copy of the submitted SWAP plan, and the approved plan, if different. Members of the Citizen's Advisory Team will be sent notice of the next meeting one month in advance. Teleconferencing will be an option for the next meeting.

Attendance

Rob Buirgy, Big Thompson Watershed Forum; Candy Burbridge, DOW River Watch Student; Skip Crowe, Rancher; Dean Hawley, Transplant Patient; Roy Laws, Jefferson County Dept. Of Health and Environ.; Joe Mauro, Colorado AIDS Project; Nicholas Nossaman, M.D., Homeopathic Medicine; Jim Settles, Jefferson County Public Schools; Kathryn Spencer, Hospital Shared Services; Dean Witzel, Ag. Producer.

Staff: Kim Parker, Kathleen Reilly

**MEETING SUMMARY
STATE OF COLORADO SWAP
TECHNICAL ADVISORY TEAM**

**January 11, 1999
11:00 a.m. - 3:00 p.m.
CDPHE Board Room
4300 Cherry Creek Dr. S.
Denver, CO**

OVERVIEW

The Colorado SWAP Technical Advisory Team met on January 11, 1999 in the CDPHE Board Room at 4300 Cherry Creek Dr. S., Denver, CO. Kathleen gave an overview of the Colorado Source Water Assessment and Protection (SWAP) Program. A discussion of databases that may be useful in the SWAP assessment phase and ownership of the databases followed. Additional data concerns, databases needed for the delineation of source water assessment areas, and action items were also discussed.

Overview of the SWAP Plan

Source Water Assessment and Protection is intended to be a community oriented, preventative approach to protecting drinking water quality. SWAP was created by the 1996 Safe Drinking Water Act Amendments. Each state is required to develop a plan that will suit its individual needs. These plans must then be submitted to the U.S. Environmental Protection Agency by February 8, 1999.

SWAP was designed with public participation at its center. The state of Colorado feels that the success of the SWAP program will depend on high levels of public awareness and involvement. It is therefore extremely important to develop a SWAP program that will suit the needs and address the concerns of all of Colorado's citizens. The state has made significant efforts to involve the public during the design of the Colorado SWAP, and will also involve them in during the implementation of SWAP.

SWAP has two phases, one of which is mandatory, and the other voluntary. The first, or assessment phase, must be completed for each of Colorado's 2201 public water systems (PWS) by May of 2003. Most of Colorado's PWSs are small ground water systems serving between 25 and a few hundred consumers. The majority of the population, however, is served by a much smaller number of surface water systems. Assessment of Colorado's water supplies is further complicated by the presence of numerous trans-basin diversions that transport water from the Western Slope to population centers on the Front Range.

PWSs can be broken down into community and non-community systems. Community (residential) systems serve at least 25 year-round residents or have at least 15 service connections used by year-round residents. Non-community systems are non-residential systems which serve at least 25 people per day for more than 60 days a year and are classified as either a non-transient or transient water system. A non-transient, non-community water system regularly serves 25 or more of the same people for at least six months per year (schools, workplaces, hospitals, etc.). A transient, non-community water system serves 25 or more different people for 60 or more days per year (restaurants, motels, campgrounds, etc.).

The assessment of a PWS will involve four steps:

1. Delineation of the source water area. For surface water systems, the entire watershed above the intake will be considered the source water area. Ground water systems will determine an area around the well or well field that is based on a five year time of travel for water through the aquifer. A map of the source water areas for both surface and ground water systems will be created using Geographical Information Systems (GIS). While each PWS will delineate its entire watershed, partnering with PWSs that share source water assessment areas in the subsequent steps will be strongly encouraged to reduce the workload for individual PWSs.
2. Inventory of significant possible sources of contamination (PSOC). The state will begin by locating operations, activities, or land uses which produce, use, or store regulated contaminants. This information is currently located in many different federal, state, and county databases. These PSOCs will be indicated on the source water area map for each PWS and then provided to the PWS. The PWS and interested community members can then add information about sources not listed in the state and federal databases. The combined information will provide a relatively complete inventory of the PSOCs within the source water area..
3. Susceptibility analysis. This step evaluates the susceptibility of the PWS to the PSOCs identified in the contaminant inventory. Aspects which will be examined include the integrity of the well or system delivering water to the treatment plant; the sensitivity of the setting (how easily can the contaminant move from the source to the water); the likelihood that the contaminant could be released in harmful quantities; and how harmful the contaminant is to human health.
4. Report of results. Results of the assessment phase must be reported to the public. Several options are available. It is possible that the results will be published in the form of a mailing by the PWS, a bill insert, or as an addendum to the Consumer Confidence Report, which will given annually to all PWS customers as of October, 1999. Other options like posting the results in a central location or publishing the results in local papers may be more appropriate for smaller systems. In addition, the state will have a web site that will provide assessment results for all Colorado PWSs.

The second, or protection phase of SWAP, is voluntary. During this phase, communities and PWSs are encouraged to develop protection plans for their water supply with the information provided them from the assessment phase. The incentives vary depending on the PWS. Smaller systems that apply and qualify for waivers may realize a significant savings in monitoring fees, which can be a strong financial incentive. Larger systems may develop protection plans to provide another layer of protection for their systems, or in response to public pressure. The state of Colorado has made a commitment to provide assistance and/or guidance to communities wishing to develop protection plans for their water supplies.

Additional Items

Information within the databases listed below will necessarily be dynamic and not static. Many of these databases will need to be updated, expanded, or changed on a regular basis. If a 'master database' were created for SWAP, it would require a major effort to assemble and maintain. Databases should also be prioritized in order of importance to the completion of SWAP assessments. It would also be helpful to identify when in the assessment timeline each database will need to be available. George Weber is working on a national SWAP assessment pilot program, and may be able to provide useful insight into data acquisition and integration questions.

Immediate Data Needs For Delineation of Source Water Areas and Ownership

Location data for wells, intakes, and diversions	CDPHE-WQCD, SEO, Watershed Initiative Groups
11 and 14 digit hydrologic units (?)	NRCS
GIS stream coverages	Which one should be used?
Digital elevation model	SEO, which one should be used?

Action Items

Stakeholders and team members need to develop data ‘wish lists’, listing desired potential improvements in the databases.

SWAP staff will develop a timeline for data needs and transfers.

SWAP staff will determine data standards that will be preferable for use in SWAP assessments.

SWAP staff will develop a table listing databases, ownership, coverage, format, etc. (metadata) and determine how best to facilitate data transfers.

SWAP staff will prioritize databases to indicate which ones are priorities to obtain.

The following databases were identified by the Technical Advisory Team as useful for the SWAP assessment efforts.

Priority	Ownership	Database
0	CDA	Pesticide and agricultural chemical mixing and loading sites
*	CDA	Pesticide and agricultural chemical storage facilities
*	CDA	Restricted use products (commercial or private pesticide applicators)
	CDOT	Gravel mining locations
	CDOT	Locations where contaminated soils may have been used as road fill
	CDOT	Salt and sand/facilities locations
	CDOW	River Watch monitoring data
*	CDOW	Wildlife winter ranges
*	CDPHE-HM	CERCLA/RCRA
*	CDPHE-HM	Landfills, historic and active
*	CDPHE-HM	Large quantity hazardous material generators
	CDPHE-HM	Small quantity hazardous material generators
*	CDPHE-HM	Superfund sites-polygons
*	CDPHE-HM	Toxic Release Inventory sites
*	CDPHE-HM	Uranium mill tailing sites
	CDPHE-HM	Voluntary cleanups, spreadsheet
*	CDPHE-WQ	Biosolid application sites, where, what, and how much applied
*	CDPHE-WQ	CAFOs, as info becomes available, permits issued by 7/1/99
*	CDPHE-WQ	Delineated WHPAs
*	CDPHE-WQ	Finished drinking water quality info
*	CDPHE-WQ	Ground Water Discharge Permits
	CDPHE-WQ	Ground water vulnerability maps
*	CDPHE-WQ	ISDS, large capacity, >2000 gal/day
*	CDPHE-WQ	Land application of wastewater
*	CDPHE-WQ	Point source wastewater permit locations
*	CDPHE-WQ	Pretreatment list
*	CDPHE-WQ	PWS location data, GIS data beginning 11/98
*	CDPHE-WQ	Raw water quality for surface water, aquifers (nitrates and pesticides)
*	CDPHE-WQ	Stormwater permit locations
*	CDPHE-WQ	Surface impoundments, lagoons
*	CDPHE-WQ	TMDL/303d impaired stream segments
*	Counties	ISDS, small capacity, <2000 gal/day
*	Counties	Land use maps
*	DLE-OI	Storage tanks--other than petroleum products
*	DLE-OI	Underground storage tanks-UST/LUST
	DNR-CGS	Water quality data providers
*	DNR-DMG	existing mining/non-mining inventories
	DNR-DMG, FLMs	Abandoned & inactive mines (by county)
*	DNR-OGCC	Oil & Gas distribution lines/pipelines, large
	DNR-OGCC	Oil & Gas distribution lines/pipelines, small see pub. utl. commissions
*	DNR-OGCC	Oil & Gas spills
*	DNR-OGCC	Oil & Gas wells, surface facilities
	DNR-SEO	Climate data
	DNR-SEO	Depth to groundwater in Denver Basin
*	DNR-SEO	Digital elevation model
	DNR-SEO	Gauging stations
	DNR-SEO	Irrigated acres
	DNR-SEO	Soils
*	DNR-SEO	Surface waters, lakes, aquifers, reservoirs, diversion structures
	DNR-SEO	Topographical maps
	DNR-SEO	Watershed boundaries (hydrologic unit codes)
*	DNR-SEO	Well construction/drilling data

*	DNR-SLB	Logging, grazing
*	FEMA	100 yr. floodplains
*	FEMA	Surface water time of travel
*	USDOD	Military installations, bases
*	USEPA	Class V wells
*	USEPA	STORET
*	USFS/BLM	Logging, grazing
*	USGS	Ground water site inventory (pumping rate, construction info)
*	USGS	Stream gauging network, and water quality monitoring info gained from samples
*	USGS	Water quality info, coded by use

Next Meeting

The Technical Advisory Team will convene its next meeting on March 15, 1999, 11 to 3:00 p.m., at a location to be announced. The SWAP staff will provide team members with a copy of the submitted SWAP plan, and begin to collect information on the various databases listed above.

Attendance

Team Members: Julie Annear, Div. of Min. & Geol.; Debbie Baldwin, Oil and Gas Cons. Comm.; Earl Cassidy, USGS; Lisa Johnson, US EPA; Roy Laws, Jefferson Co. Dept. of Health & Environ.; Leah Lewis, State Engineer's Office; Gordon McCurry, CDM; Pat Nelson, CH2M Hill; Matthew Sares, CO Geol. Survey; Valois Shea-Albin, US EPA; Gary VanDerSlice, EnecoTech, Inc.; Rob Wawrzynski, CO Dept. of Ag.; George Weber, CCDD, CU Colorado Springs; Scott Winters, Dept. of Labor & Employment.

Staff: Kim Parker, Kathleen Reilly.

Advising Staff: Mark Egbert, Sandy McDonald, George Moravec, Candy Thompson.

**MEETING SUMMARY
STATE OF COLORADO SWAP
TECHNICAL ADVISORY TEAM**

**March 15, 1999
11:00 a.m. - 3:00 p.m.
USGS Snowmass Rm, Bldg 53
Denver Federal Center
Denver, CO**

OVERVIEW

The Colorado SWAP Technical Advisory Team (TAT) met on March 15, 1999 in the Snowmass Room, Bldg 53, at the Denver Federal Center, Denver, CO. Kim gave an update of happenings involving the Source Water Assessment and Protection (SWAP) Program, and presented the SWAP time line. Mark Egbert outlined progress made over the last two months in regards to details involved in delineation, contaminant inventory, and web enabled GIS map drawing. The list of databases useful for the SWAP assessment phase was refined and expanded. In order to prioritize these databases, the databases needed for the delineation of source water assessment areas (SWAAs) and the contaminant inventory were identified.

SWAP Update

Kim outlined the four major tasks that have been undertaken by the Water Quality Control Division (WQCD) during the two months since the last TAT meeting. First, the susceptibility analysis process, which had just been proposed to the Design Team as of the last meeting, was fleshed out. Second, the writing of the document was completed and submitted on time to the U.S. Environmental Protection Agency (EPA). The WQCD has since received notification that the copy submitted to the EPA was complete and "reviewable". Third, several hundred copies of the submitted document have been printed. Copies have been sent to the Design Team, Citizen Advisory Team, and TAT members. Copies are also being sent to individuals upon request. Fourth, the WQCD hosted the Rio Grande Interstate Coordination meeting in Denver on February 18 and 19. Representatives from New Mexico, Texas, and EPA Regions VI and VIII attended the meeting. Good progress was made in identifying the data transfers that would be needed between and among states. It was also enlightening to learn how states in Region VI were approaching SWAP.

Next, an update on the action items identified during the January meeting was given. Kim presented and went through the SWAP time line, which can be found on page 16 of the SWAP document. Dates targeted for the beginning and completion of each phase of SWAP and the tasks involved were outlined. It is anticipated that the SWAA delineations will be completed by November of 2000. The preliminary contaminant inventory, consisting of an inventory of the state and federal regulatory databases, must be completed by May of 2001. This will allow public water suppliers time to provide local information, and time to incorporate local information into SWAA maps, before the targeted completion of the inventory process in May of 2002. This leaves one year to complete the susceptibility analysis, report the results to the public, and prepare a final Assessment Report to the EPA.

The WQCD also was able to create a table of data elements and ownership discussed at the January meeting. The data elements that were considered to be a priority were marked with an asterisk. It was determined that the preferred standard for data sets used in the SWAP assessment would have metadata which is Federal Geographical Data Committee (FGDC) compliant. However, it is recognized that some data sets already have their own metadata systems, or may not even be in digital form. Consequently, metadata compliant with FGDC standards is preferred, but cannot be required. Since the last meeting, the WQCD determined that creating an overall SWAP database would be impractical from both data management and data ownership standpoints. The best alternative would be to create a SWAP data “clearinghouse” which would be housed on the SWAP web page. The clearinghouse would allow those needing SWAP data to find and utilize the data, while assuring that the data would be the most current possible.

Mark Egbert, CDPHE Center for Health and Environmental Information and Statistics, gave an update on the progress made in determining how the SWAA delineations would be done. The Digital Elevation Model (DEM) which will be employed is the 1:24,000 scale, to allow an easy overlap on 7.5 minute topographic quadrangle maps, which is the scale most available to the public. George Weber inquired if the 1:24,000 scale would be appropriate for larger watersheds which span multiple topographic quads and mentioned that maps currently being used for the Cache la Poudre national pilot are at 1:250,000. Mark agreed that the wide variety of SWAA scales will require a flexible mapping ability, regardless of the scale used during delineation. Delineated SWAAs will be matched against 14 digit hydrologic unit boundaries when this information becomes available, or used in the delineation if currently available. Spatial Analyst will most likely be used to delineate the SWAAs, although ArcInfo is also a possibility. The EPA will be hosting a Spatial Analyst training in May.

To accomplish the delineation and contaminant inventory phases of SWAP, Mark believes that 3 things will be necessary. First, a secured ftp site, or possibly a vpn site will need to be set up, either on an internal server, or through an external provider. This site can be utilized to provide access to SWAP data to only those working directly with the project. This is particularly useful for databases that are ready to be used, but not ready for publication to the general public. Second, an anonymous site will be needed to house data bases which smaller web sites cannot store, or data bases whose owners do not have web sites. Third, web enabled GIS mapping capabilities will be critical to being able to provide accurate and useful maps to the public and the PWSs. The web enabled GIS mapping site may be housed and maintained either by CDPHE or an outside provider. Mark thought that static data bases would require little maintenance, but that data bases which are more prone to change (revisions, updates, etc.) would be more problematic.

Mark’s presentation generated quite a bit of discussion revolving around data currency, discrepancies, and redundancies. Through general consensus it was decided that if each data layer contained an “updated on” date, end-users would know how current the data is. Additionally, some sort of agreement between the WQCD and the data base owners could be arranged to ensure the maintenance of the most current data layers possible for the web enabled GIS maps. Another issue that was raised was how to handle discrepancies between databases, and how these data conflicts would be addressed. Mark thought that discrepancies and redundancies were very possible, but that it should not be SWAP’s place to police data base accuracy. This responsibility should remain with the data base owners. SWAP may very well bring these inaccuracies to light so that they can be corrected.

Priority Data Bases, Ownership, and Date Need By

Delineation

The following data elements are needed immediately, by mid-April, as they are necessary to begin delineation of SWAAs. Owners of data bases containing these data elements are listed.

- 1) Drinking water intakes/wells; CDPHE-WQ
- 2) Digital Elevation Model, Digital Raster Graphics; DNR-SEO, CDPHE-WQ
- 3) Previously delineated Wellhead Protection Areas; CDPHE-WQ, Colorado Rural Water Association
- 4) Transbasin diversions; DNR-SEO, PWSs
- 5) 11 & 14 digit hydrologic unit boundaries (nice to have, not critical); USNRCS
- 6) Ground water site inventory; USGS

Contaminant Inventory

Data bases of the highest priority are those which contain information about acute contaminants (microbiological and nutrient contaminants). These need to be available by February of 2000. These data bases are owned by CDPHE-WQ, COUNTIES, and the USGS and involve the following data elements:

- 7) 303(d) lists; CDPHE-WQ
- 8) Confined Animal Feeding Operations (CAFOs); CDPHE-WQ
- 9) Finished water quality data base; CDPHE-WQ
- 10) Groundwater contamination maps, data (nitrates); USEPA, USGS
- 11) ISDS, large; CDPHE-WQ
- 12) Land application of biosolids (microorganisms and nitrates); CDPHE-WQ
- 13) Lagoons, wastewater; CDPHE-WQ
- 14) Wastewater treatment facilities; CDPHE-WQ
- 15) ISDS, small; COUNTIES
- 16) Land use maps, agriculture; COUNTIES

The second group of high priority databases are those that include data relevant to the contamination sources of concern identified in the SWAP document. Data bases owners suggested by the TAT for each source include:

- 17) Airports; CDPHE-HM, CDOT, DLE-OIS
- 18) Chemical/petroleum processing, SPCC spill plans; CDPHE-Air, -HM, -WQ, DNR-OGCC, USEPA
- 19) CAFOs (see above list)
- 20) Crops, irrigated and non-irrigated (see above list)
- 21) Dry cleaners/dry cleaning; CDPHE-Air, DLE-OIS, LOCAL INPUT
- 22) Gas stations; CDPHE-Air, CITIES (Fire Depts.), COUNTIES, DLE-OIS, LOCAL INPUT
- 23) Historic waste dumps/landfills; CDPHE-HM, COUNTIES, LOCAL INPUT
- 24) Injection wells; DNR-OGCC, USEPA
- 25) Lagoons and liquid waste (see above list); CDPHE-HM
- 26) Managed forests; CDPHE-HM, CSFS, USFS

- 27) Military installations; DLE-OIS, CDPHE-HM (Federal Facilities Program, Formerly Used Defense Facilities), USEPA (Federal Facilities Program)
- 28) Pesticide/fertilizer/petroleum storage; CDA, CDPHE-WQ, CDOT, DNR-OGCC, COUNTIES (Parks, open-space), DLE-OIS, Municipalities (Parks, golf courses, cemeteries), Public Utilities (Power lines), USEPA (FIFRA, TSCA?)
- 29) Septic systems (see above list)
- 30) Underground storage tanks; DLE-OIS
- 31) Wastewater (see above list)

Action Items

1. The WQCD will provide an updated data element table that reflects the changes made before the next meeting.
2. The WQCD will modify the priority rankings in the current table to reflect the priorities set by the TAT.
3. The WQCD will provide each TAT member a copy of the 8 digit hydrologic unit map of Colorado with major cities indicated.

Next Meeting

The Technical Advisory Team will convene its next meeting on April 19, 1999, 11 to 3:00 p.m., at the Colorado Department of Public Health and Environment, Sabine Room, Building A.

Attendance

Team Members: Loren Avis, Oil and Gas Cons. Comm.; Earl Cassidy, USGS; Michelle Delaria, Jefferson Co. Dept. of Health & Environ.; Lisa Johnson, US EPA Region VIII; Gordon McCurry, Valois Shea-Albin, US EPA; Gary VanDerSlice, EnecoTech, Inc.; George Weber, CCDD, CU Colorado Springs; Michelle Wind, Brown and Caldwell; Scott Winters, Dept. of Labor & Employment.

Staff: Carl Norbeck, Kim Parker, Kathleen Reilly.

Advising Staff: Mark Egbert, Sandy McDonald.

MEETING SUMMARY STATE OF COLORADO SWAP TECHNICAL ADVISORY TEAM

**April 19, 1999
11:00 a.m. - 3:00 p.m.
Sabin Rm, CDPHE
4300 Cherry Creek Dr. S.
Denver, CO**

OVERVIEW

The Colorado SWAP Technical Advisory Team (TAT) met on April 19, 1999 in the Sabin Rm at the Colorado Department of Public Health and Environment, Denver, CO. Kim Parker gave a brief update of happenings since the last meeting. The list of priority SWAP databases was refined. The balance of the meeting was devoted to a presentation and discussion of the SWAP Susceptibility Analysis procedure.

Database List

Kim outlined the measures taken to contact all agencies responsible for the identified data bases. As of the current time, only FEMA, the Colorado State Forest Service, and the Colorado Division of Wildlife have not responded to the invitation to serve on the Technical Advisory Team. There has been difficulty in obtaining the information necessary in filling in the database table, such as the database name which contains the data elements, what format the database is in, when it can be accessible, etc. A member of the SWAP staff may need to call each member and request this information individually. The indications of database priority have been updated to reflect the prioritization efforts that took place at the March meeting. There are currently 88 priority database elements. Further prioritization based on availability may be necessary.

SWAP Susceptibility Analysis Presentation

Kim went through the susceptibility analysis procedure as outlined in the SWAP document, Chapter 5. The major steps are: 1) Determine the hazard class of the contaminant/contaminant source; 2) Determine the likelihood of release; 3) Determine threat; 4) Determine the integrity of the water system; 5) Determine setting sensitivity; 6) Determine risk; 7) Determine the vulnerability of the public water system to that contaminant/contaminant source; 8) Determine the susceptibility of the public water system to all contaminants/contaminant sources by combining vulnerability ratings.

The presentation generated some good discussion about the process. In general, the TAT members seemed to think that the susceptibility analysis process had met its goals of being straightforward and easily understood, while technically sound and not data intensive. Gordon McCurry felt that the WQCD needed to develop forms to assist laypeople with the process. Scott Winters mentioned that 'confining layer' was not in the SWAP glossary, defining geographical extent necessary to be considered confining as well as any other assumptions that are made.

It was also agreed that secondary assessments need to be done once every 5 years in general. The type of contaminants found in each source water assessment area (SWAA) or the sensitivity of the setting may be key factors in determining how often second iteration assessments need to be done. Other factors to consider may be how mobile the contaminants are, PWS type, major changes in SWAA, the addition of new water sources, or when major updates in available data occur.

Gordon McCurry indicated that the mobility of the ground water contaminants should be taken into consideration in the susceptibility analysis. For example, Dioxin, PCBs, and creosotes are much less mobile than TCE. Such a modification would require that mobility standards be set. It was also suggested that, due to the large amount of harmful substances contained in urban runoff, that the entire city limits be incorporated into Zone 1. Lastly, it was mentioned that air pollution could impact water resources, and should be considered as a source of water contamination.

Action Items

1. The WQCD will approach CDOT, County Directors of Health, County Health Agencies, Colorado Municipal League, and Colorado Counties, Inc, to give presentations on SWAP.
2. The WQCD will submit newsletters and/or articles to Colorado Environmental Health Association (CEHA), and COGIS. Membership in COGIS may be helpful to the WQCD.
3. The WQCD will complete the database list, including data element names, database names, formats, and accessibility dates.
4. The WQCD will insert confining layer into the SWAP glossary.
5. The WQCD will provide each TAT member a copy of the 8 digit hydrologic unit map of Colorado with major cities indicated.

Next Meeting

The next meeting has been tabled until there are sufficient agenda items to warrant calling a meeting. It is hoped that Mark Egbert will be able to discuss the Clear Creek Watershed Delineation pilot project.

Attendance

Team Members: Julie Annear, Div. of Minerals and Geology; Vicki Kraus, CO Dept. of Transportation; Leah Lewis, State Engineer's Office; Gordon McCurry, Camp, Dresser, & McKee; Connie O'Neil, Weld County Health; Valois Shea-Albin, US EPA; Gary VanDerSlice, EnecoTech, Inc.; Michelle Wind, Brown and Caldwell; Scott Winters, Dept. of Labor & Employment.

Staff: Carl Norbeck, Kim Parker, Kathleen Reilly.

Advising Staff: Mark Egbert, Sandy McDonald, George Moravec.

The following is the updated list of data elements identified by the TAT as useful for the SWAP assessment efforts. Results of the data base prioritization have also been indicated. Two stars indicates data elements which were identified in either group of high priority data bases. Where it was unclear which data base would contain the identified information, an entry into the data element table was made for each data base owner. For example, CDOT was one of the data base owners that should have

information regarding airports. Since no data bases were listed for CDOT pertaining to airports, an airport data element entry was made for CDOT and given a double star. Three stars indicates data elements which will be needed immediately for delineation efforts. Data elements that were marked as priorities prior to the last TAT meeting and were not identified as priorities during the meeting retain a single star. These could be considered ‘nice to haves’, or ‘if they are ready to use, let’s use them’ type data base elements.

Acronyms used in the data element table.

CDA	Colorado Department of Agriculture
CDA-SFS	Colorado Department of Agriculture, State Forest Service
CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife
CDPHE-AIR	Colorado Dept. of Public Health & Env., Air Quality Control Division
CDPHE-HM	Colorado Dept. of Public Health & Env., Hazardous Materials
CDPHE-PP	Colorado Dept. of Public Health & Env., Pollution Prevention Program
CDPHE-WQ	Colorado Dept. of Public Health & Env., Water Quality Control Division
Counties	Colorado counties
Cities/local	Colorado cities, municipalities, or other sources of local information
DLE-OIS	Colorado Dept. of Labor and Employment, Oil Inspection Section
DNR-DMG	Colorado Dept. of Natural Resources, Division of Minerals and Geology
DNR-OGCC	Colorado Dept. of Natural Resources, Oil and Gas Control Commission
DNR-SEO	Colorado Dept. of Natural Resources, State Engineer’s Office
DNR-SLB	Colorado Dept. of Natural Resources, State Land Board
FEMA	Federal Emergency Management Agency
Public Utl.	Colorado public utilities
USEPA	United States Environmental Protection Agency
USFS/BLM	USDA Forest Service/USDI Bureau of Land Management, and any other federal land management agencies
USGS	United States Geologic Survey
USNRCS	USDA Natural Resource Conservation Service

DATA ELEMENTS

Priority	Ownership	Database Name	Data Element
**	CDA		Agricultural chemical storage facilities
**	CDA		Agricultural chemical mixing and loading sites
**	CDA		Restricted use products (commercial or pvt. pest. applicators)
**	CDOT		Airports, nitrates (urea on runways)
**	CDOT		Gravel mining locations
	CDOT		Locations where contaminated soils were used as road fill
**	CDOT		Salt and sand/facilities locations, ed.fink@dot.state.co.us
**	CDOT		Rest area locations
**	CDOT		Pesticide/herbicide storage locations, ed.fink@dot.state.co.us
	CDO		River Watch monitoring data
**	CDO		Wildlife winter ranges
**	CDPHE-AIR	Connie/AIRS	Chemical/petroleum processing
**	CDPHE-AIR	Connie/AIRS	Dry cleaners/dry cleaning
**	CDPHE-AIR	Connie/AIRS	Gas stations
**	CDPHE-HM	CERCLIS	
	CDPHE-HM		National Priority List
**	CDPHE-HM	in-house	Landfills, historic and active
**	CDPHE-HM	RCRIS	Large quantity hazardous material generators
**	CDPHE-HM	in-house	Active Federal Facilities Program
**	CDPHE-HM	in-house	Base Realignment and Closure Sites (BRACS)
**	CDPHE-HM	in-house	Formerly Used Defense Facilities, Ed Larock x 3324
**	CDPHE-HM	in-house	National Priorities List (NPL)
**	CDPHE-HM	RCRIS	Small quantity hazardous material generators
**	CDPHE-HM	GIS	Superfund sites
*	CDPHE-HM	GIS	Uranium mill tailing sites
*	CDPHE-HM	in-house	Voluntary cleanups
**	CDPHE-LARS	ERNS	Emerg. Resp. Notif. database, EMP- Janet Jones x3023
**	CDPHE-PP	in-house	Tier 2, Chemical storage inventory list, ag. chemicals not listed
**	CDPHE-PP	in-house	Toxic Release Inventory sites
**	CDPHE-WQ	BDMS	Biosolid application
**	CDPHE-WQ	PCS, WQCDPTS	Confined Animal Feeding Operation (CAFO's)
***	CDPHE-WQ	in-house	Delineated WHPAs (Colorado Rural Water)
**	CDPHE-WQ	DWIMS	Finished drinking water quality info
**	CDPHE-WQ	PCS	Groundwater discharge permits
**	CDPHE-WQ		ISDS, large capacity, >2000 gal/day
**	CDPHE-WQ	PCS	Land application of wastewater
**	CDPHE-WQ	PCS	Point source wastewater permit locations
**	CDPHE-WQ	in-house	Pretreatment list
***	CDPHE-WQ	DWIMS	PWS location data (intakes, wells)
**	CDPHE-WQ	STORET	Raw water quality for surface water, aquifers
**	CDPHE-WQ	in-house	Raw aquifer water pesticides and nitrates, Brad Austin x3572
**	CDPHE-WQ	SWIM	Stormwater permit locations
**	CDPHE-WQ	PCS	Surface impoundments, lagoons
**	CDPHE-WQ	GIS	TMDL/303(d) impaired stream segments
**	Counties		Gas stations
	Counties		Health Department databases
**	Counties		Historic or active waste dumps/landfills
**	Counties		ISDS, small capacity, <2000 gal/day
**	Counties		Land use maps
	Counties		Listing of PSOCs, changed land uses, etc.
**	Counties		Pesticide/fertilizer/petroleum use by special review
	Counties		Salt and sand locations
	Counties		Small stormwater producers (<5 acres), unlikely to have

**	Cities/local		Dry cleaners/dry cleaning, historic
**	Cities/local		Gas stations, historic
**	Cities/local		Historic landfills/dumps
**	Cities/local		Pesticide/fertilizer/petroleum storage
**	CSU-SFS		Managed forests (pesticide application)
**	DLE-OIS		Aboveground storage tanks
**	DLE-OIS		Airports
**	DLE-OIS		Dry cleaners/dry cleaning
**	DLE-OIS		Gas stations
**	DLE-OIS		Intra- and Interstate oil & gas pipeline holding tanks?
**	DLE-OIS		Military installations
**	DLE-OIS		Pesticide/fertilizer/petroleum storage
**	DLE-OIS		Underground storage tanks-UST/LUST
*	DNR-CGS		Water quality data providers
*	DNR-DMG		Abandoned & inactive mines (by county)
*	DNR-DMG		Active mines
	DNR-DMG		Existing mining/non-mining inventories
**	DNR-DMG		Gravel mining locations
**	DNR-OGCC		Chemical/petroleum processing
**	DNR-OGCC		Injection wells
**	DNR-OGCC		Large oil & gas distrib. lines/pipelines up to first comp./sep. stn.
*	DNR-OGCC		Oil & gas spills
**	DNR-OGCC		Oil & gas wells, surface facilities, produced water/waste pits
**	DNR-OGCC		Pesticide/fertilizer/petroleum storage
	DNR-SEO		Climate data
	DNR-SEO		Depth to groundwater in Denver Basin
	DNR-SEO		Gauging stations
	DNR-SEO		Irrigated acres, Arkansas River Basin
	DNR-SEO		Soils
***	DNR-SEO	HYD3	Lakes, reservoirs @1:100,000
***	DNR-SEO	HYD2	Surface waters, rives, streams, ditches, canals @ 1:100,000
***	DNR-SEO		Diversion structures
	DNR-SEO		Topographical maps
	DNR-SEO		Watershed boundaries (hydrologic unit codes)
*	DNR-SEO		Well construction/drilling/permits data
*	DNR-SLB		Logging, grazing, fire
*	FEMA		100 yr. floodplains
*	FEMA		Surface water time of travel
**	Public Utl.		Pesticide/fertilizer/petroleum storage (use on power lines)
**	USEPA		Chemical/petroleum processing
**	USEPA		Class V wells
**	USEPA		Federal Facilities Program, Bill Murray, GIS efforts?
**	USEPA		Toxic Substances Cntrl Act, check with Kathy Hotovec, HMWM
**	USEPA	FIFRA	
	USFS/BLM		Abandoned & inactive mines
*	USFS/BLM		Aerial photos
	USFS/BLM		Logging, grazing, fire
**	USFS/BLM		Managed forests (pesticide/herbicide application)
*	USGS		Aerial photos
***	USGS		Digital elevation model
***	USGS		Ground water site inventory (pumping rate, construction info)
	USGS		LANDSAT images/data?
	USGS		National Hydrography Database
	USGS	NWIS	Automatic Data Processing System, streamflow data
	USGS	NWIS	Quality of Water Data System

	USGS	NWIS	Water Use Data System
	USGS		Special studies data, publications on web @ http://www.water.usgs.gov
***	USNRCS	GIS	11 and 14 digit hydrologic unit boundaries
*	USNRCS		Aerial photos
**	USNRCS		Erosion inventory
	USNRCS		Location of crop and riparian buffers

Suggested Agenda Items For the Next Meeting

1. Mark Egbert's Delineation Efforts
2. How accurate does location information need to be?
3. If the most recent version of a data base is not accessible (i.e., not on the web) but an older version is, which is more important, using the database or obtaining the most recent copy of the database?
4. How will discrepancies among databases be resolved? For example, if the AIRS database and the UST/LUST database are used, which one should take precedence over the other when duplicate sources are indicated.