ATTACHMENT A

Central Yavapai Highlands
Water Resources Management
Special Study

Plan of Study

1.0 INTRODUCTION

1.1 PURPOSE OF THE PLAN OF STUDY

This Plan of Study (POS) is to be used as a guide for the preparation of a water resources management supply study for the Central Yavapai Highlands of Arizona (see page 7, Figure 1: Map of the Study Area). The POS will:

- Chart the course of action that will be followed.
- Suggest the general extent of the activities related to preparing the study reports.
- Identify major milestones.
- Identify and define significant technical components.
- Develop an overall schedule and cost for conducting the study and preparing the reports.

As the study progresses, it may be necessary to modify, or add to, the current identified items and proposed actions and this POS.

1.2 PURPOSE OF THE STUDY

The intent of this study is to identify water resources and water management strategies that include a range of alternatives designed to meet future water supply needs of communities in the Central Yavapai Highlands, Arizona. This will be an appraisal level assessment and, as such, will utilize existing information in its conduct to the maximum extent available. The Yavapai County Water Advisory Committee (WAC), Arizona Department of Water Resources (ADWR) and others have conducted significant studies relevant to water supplies and un-met demands in the Central Yavapai Highlands.

The study will accomplish the following:

- Summarize and clarify needs, objectives, constraints and opportunities.
- Identify stakeholders in the development of this study to the extent appropriate for an appraisal level analysis.
- Use science and engineering analyses to report a comprehensive range of water-supply alternatives and demand management practices, which will take full advantage of identified opportunities within constraints.
- Present the most cost-effective set of water-supply alternatives to alleviate identified problem(s).
- Minimize adverse environmental impacts through proper consideration during alternative formulation and/or development of mitigation plans as appropriate.

1.3 AUTHORITY

Authority to conduct this study is found in the Reclamation Act, (Act of June 17, 1902, ch. 1093, 32 Stat. 388), as amended.

1.4 EVENTS LEADING TO STUDY INITIATION

The ability to provide reliable long-term water supplies is a long-standing challenge in the central Yavapai region due to water supply/demand and legal issues. Questions related to these issues have been asked repeatedly in the population centers of central Yavapai County; however, this is the first study on a regional scale that will assess demands, supplies and future-supply alternatives. As evidenced by historical events and hydrologic data, the areas included in this study are linked through water resource issues.

Most data collection in the region has occurred since the mid-1960s; however data collection has been more intensive in some areas than others. In 1975, several areas were recognized in estimates of dependable supply, water use, and overdraft. The Little Chino subbasin was in the highest confidence category with an overdraft estimate of 7,000 AF followed by Big Chino, Agua Fria, and Verde Valley with overdraft estimates of 5,000 AF, unknown, and unknown respectively (Arizona Water Commission, 1975).

The Prescott Active Management Area (Little Chino and Upper Agua Fria subbasins) was established as part of the 1980 Groundwater Management Act due to being a geographic area in which intensive groundwater management was needed due to large and continuous groundwater overdraft (ADWR First Management Plan, 1984). The Prescott Active Management Area is a groundwater basin with State-enforced restraints on access to groundwater and only one identified legally available alternative supply – the neighboring Big Chino subbasin. Attempts to access this supply have led to disputes regarding impacts to the nearby Upper Verde River and downstream water rights in the Verde Valley.

The Verde Valley subbasin is in the State's lowest management level, but an assessment in 1994 recognized that based on DES projections that the population could increase by roughly 200 percent through the year 2040 (ADWR, 1994). Further, the Verde River Watershed Study, 2000 states,

> "The Verde River hydrologic system is very dynamic and yet very fragile. Although this study estimated that the current state of the Big Chino portion of the Upper and all of the Middle Verde are in steady state, the actual status of the water resources within the entire Verde Watershed is unknown."
>
> "In the Middle Verde more data needs to be acquired and analyzed in order to prepare a useful and definitive tool for the communities to plan their future. Analysis of long-term water supplies and demands needs to be performed.
>
> "Planning issues should include the identification and approval of further technical studies to determine the actual status of the water resources, identification of current and alternative water supplies, identification of current and future demands based upon projected growth and their impacts on the water resources, identification of legal, political and economic issues encompassing source and use of current, future and alternative water resources."

Faced with growth pressures, an abundance of private, developable land and concerns about water supplies and impacts, area leaders formed the Yavapai County WAC as a regional cooperative forum to develop wise water management approaches. The Water Advisory Committee formed in 1999 by Yavapai County Resolution No. 1163 (currently amended by Resolution 1425). The Committee's mission is:

"The Yavapai County Water Advisory Committee is committed to preserving sustainable water resources for future generations while enhancing the economic viability of our County. We are dedicated to meeting the long-term water resource needs of our customers - the citizens of the Yavapai County region. We will accomplish our goals by developing and enacting a total water management strategy through a consensus of our coalition members."

This is a regional group which through the combination of financial resources has contracted solely or has been a contributor for additional regional hydrologic studies that have focused on scientific discovery. The committee also produced conservation, water management, and projection documents. While the documents and supporting data have lead to significant understanding of the resource and the demands, they have not taken the group as far as is required to have a regional solution. All products of this committee to date will serve as important components of this appraisal level study.

The communities included within the study area range from approximately 3,000 to 6,500 feet in elevation. Recent studies estimate that due to the inherent arid conditions, only 1-4 percent of annual precipitation recharges the regional aquifers (Blasch, 2005). Climate conditions and anthropogenic needs have reached a level where water importation will be necessary in the next few years to service portions of the study area if management objectives will be achieved.

The study is being initiated because the communities, the State, and Reclamation have shared knowledge of the issues and each communities needs. Through the information gathered over the preceding years, it is apparent that the communities are linked through water resource issues. A common goal of the interested parties is to secure long-term water supplies for the citizens based on factual information. An understanding of the regional context and a reasoned assessment of potential available alternatives will help achieve the goal.

1.5 PROBLEMS AND NEED FOR THE STUDY

By examination of data such as hydrologic conditions, weather patterns, endangered species locations, and population growth trends, the central Yavapai region has been identified by Reclamation as an area with "highly likely" conflict potential by the year 2025 (see 8.0 REFERENCES). Additionally, local governments and planners have recognized multiple issues facing the region that create the need for proactive planning in order to avoid and resolve water-resource-related conflict.

Issues that have led to conclusion that an appraisal level study is appropriate at this time include the current understanding of the hydrogeologic system (e.g. climate, water budgets and aquifer characteristics); State water law (AMA and

non-AMA areas), population trends; potential groundwater and land use; water rights; habitat and riparian areas; long-term economic viability; and maintenance of local input for viable water resource alternatives.

The study is needed to succinctly gather, organize, and analyze the water supply and demands in order to understand the region's condition in 2050. If shortages are determined, it will be necessary for the study to work with the local stakeholders to develop future water alternatives.

1.6 OPPORTUNITIES, ISSUES AND CONSTRAINTS

Many opportunities will be identified and assessed in this study. While many are already well understood, Reclamation and the Project Management team will meet with the stakeholders in order to develop opportunities as the study proceeds. Opportunities to satisfy the primary needs as described above include but are not limited to (in no particular order):

- Exchange of out-of-region sources.
- Development of surface water resources.
- Improvement of forest management and productivity of watersheds in the study area.
- Storage of excess water.
- Make recommendations regarding groundwater management strategies.
- Identification and development of potential recharge sites.
- Generation and implementation of comprehensive water conservation, reuse and demand-side management for communities, recreation and other developments.
- Increase wastewater reuse including process water recycling, gray-water reuse, and onsite and centralized options for wastewater reclamation and reuse.
- Increased use of supplies such as collection of runoff from impervious surfaces and snowmelt.

The study will also examine issue and constraints. Issues and constraints associated with the above opportunities include but are not limited to:

- Groundwater is the most reliable and relied-upon source of water in the regional study area. However, the administration and management of groundwater varies tremendously from one basin to the next. In some groundwater basins, data related to understanding the ground-water and surface-water resources are lacking and may be difficult to obtain. Developing hydrogeologic data necessary to quantify the impacts of ground-water development on the region's aquifers is a substantial issue and constraint.

- Constraints related to the economic viability and public acceptability of new development, conservation and reuse development.

- Issues related to the adverse impacts to surface-water resources; e.g. surface water/groundwater interface (as defined by State and Federal law.), resulting from proposed new development for both surface and groundwater resources.

- Constraints associated with the protection of cultural resources and wildlife species, endangered, threatened or otherwise and their habitat. .

- Constraints associated with the size of the study/service area making distribution of water from a single source to meet all demands a potentially expensive and challenging proposition.

1.7 STUDY OBJECTIVES

Following is a list of objectives that support and help achieve the purpose and needs of the study as stated above:

- Identify stakeholders and other entities that have an interest in the development of reliable water supplies for the region. Establish expected cost sensitivities of each stakeholder during the project period.

- Continued public awareness with regards to water issues within the study area.

- Document, for each demand area, existing conservation, reuse and demand management practices and characterize each practice as it relates to cost benefits per unit of water.

- Quantify current and future water demands of the regional study area to include rural developments to the extent they can be determined.

- Conduct a water supply and reliability assessment, looking at potential water sources, including surface and groundwater, local and imported, water use efficiency, water conservation and alternative supplies. Report the impact of drought on current supplies and to the extent possible, impacts to future supply alternatives.

- Quantify potential contributions to the local and regional water supply options such as increased wastewater reclamation, water recycling, gray water reuse, rainwater collection, etc.

- Coordinate and incorporate various groundwater investigations and modeling activities.

- Formulate alternatives and establish criteria for a recommended plan selection that will meet the identified needs and accommodate existing opportunities. Include both structural and demand management solutions in the formulation process. Include conceptual design and cost estimates for alternatives including the cost allocations for each entity (construction costs, O, M&R) identified.

- Identify and report potential funding sources for implementation of the preferred alternative(s). Determine if a federal program is appropriate for implementation.

- Assess impacts, both positive and negative, (environmental, economic, growth) associated with alternatives for providing regional water supplies.

- Recommend a set of water supply and demand management options based on an appraisal level evaluation of the alternatives for their ability to meet the study purpose and needs and satisfy the established impact evaluation criteria.

- Develop methods to protect and preserve regional water resources.

- Identify data gaps that limit the extent to which the potential viability of promising alternatives can be determined, and recommend additional data collection that should be conducted at the Feasibility level to reduce these uncertainties.

- Develop recommendations and constraints for feasibility level investigation.

1.8 DESCRIPTION OF THE STUDY AREA

The Study Area will consist of a part of central Yavapai County that includes the Prescott AMA, the Big Chino area, and the Verde Valley area. The study area includes known areas of high potential growth and commensurate water demands in central Yavapai County. These areas include the Cities and unincorporated areas within the Prescott Active Management Area (i.e. Prescott Valley, Prescott, Chino Valley, Dewey Humboldt and County lands), the potential development areas in the Big Chino Valley (e.g. Williamson Valley area, potential large ranch developments, and the Paulden area) and the areas of high potential growth in the Verde Valley (e.g. Camp Verde, Cottonwood, Sedona, Clarkdale, and unincorporated areas).

Study efficiency, the overall cost of the study, desired completion date, and existing Reclamation line-items for other basins were also considered in establishing the study area. Modifications may occur to this Plan of Study if deemed appropriate by the Project Management Team.

Figure 1 is a map that shows the County boundary and the approximate study area boundary. Except for a portion of the Prescott AMA in the Agua Fria River watershed, the study area is entirely within the Verde River watershed.

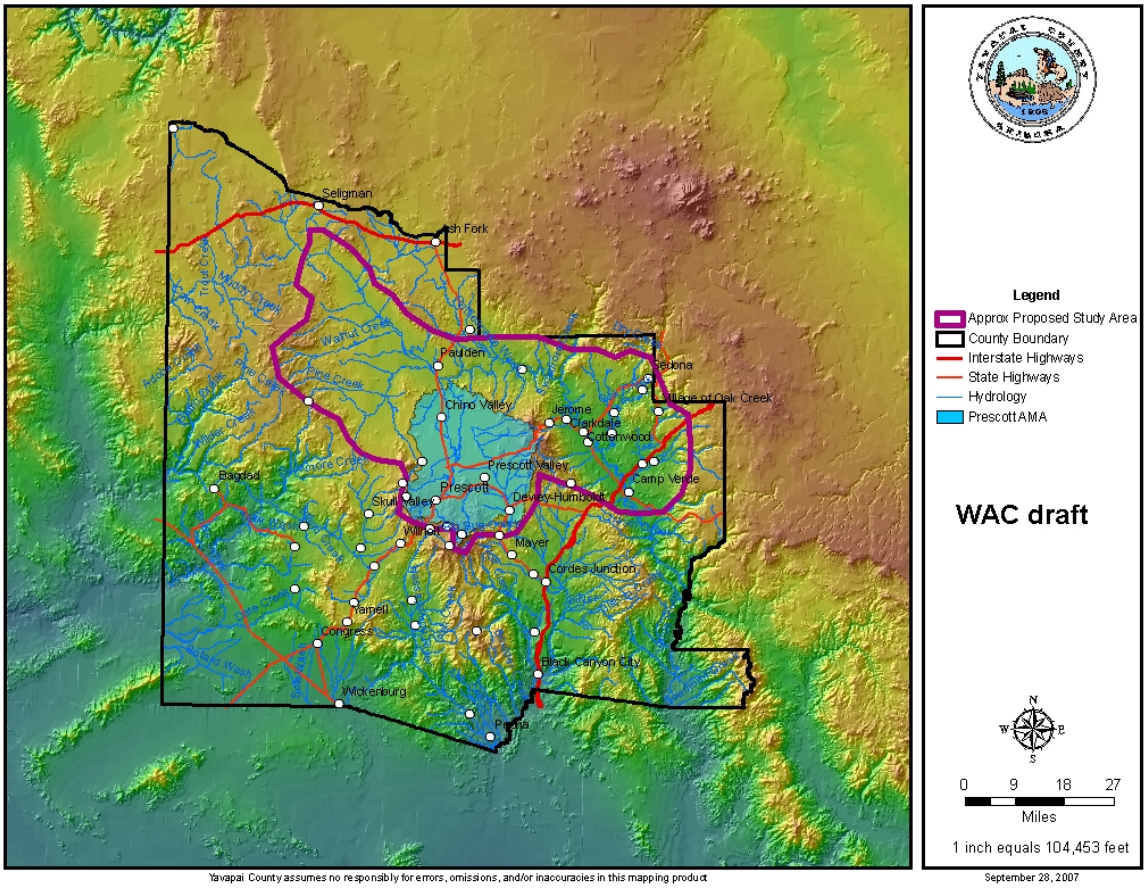

Figure 1: Map of the Study Area

1.9 CURRENT RELATED ACTIVITIES

Several ongoing activities and recently completed activities are related to the appraisal level study as described in this plan. These include maps, models, data, and reports.

The participating entities have a wide variety of existing maps and mapping capabilities that will be utilized for the study.

Other current sources of information include recent and ongoing work by H3J Consulting regarding population trends, distribution, and water-use projections to 2050. The results of this work will be available by the end of 2007. Other water-use projections for the Verde Valley have been prepared and can be cross referenced with the H3J Consulting work.

Water budgets for areas within the study area have been prepared by ADWR and USGS. The water budgets are being revised as new data becomes available. Northern Arizona University (NAU) is beginning a study for the WAC of the Verde Valley by assembling a geo-referenced database of surface water information. Additionally, ADWR maintains databases that may be utilized in the study. Other entities such as the municipalities, private water companies, and the Salt River Project may have data to contribute.

Recently, ADWR and NAU have collaboratively revised and updated a groundwater model for the Prescott AMA. The USGS is working in conjunction with ADWR and the WAC on a regional groundwater flow model which includes the study area. Preliminary model runs should be available by spring 2008.

Several reports have been prepared that will provide valuable information to the study including critical geohydrologic information (USGS, ADWR), water management strategies (WAC), and conservation strategies (WAC).

Additionally, other appraisal level studies in the region may be of use to this study (e.g. the Coconino Plateau Water Resource Study).

1.10 DEFINITIONS

ADWR - Arizona Department of Water Resources.

AFA - acre-feet per annum.

Reclamation - Bureau of Reclamation.

CAP - Central Arizona Project.

Conjunctive Use - mixing water from different sources such as groundwater and surface water.

Cooperating Partners - Yavapai County and any others added to the Agreement at a later time by the mutual agreement of the existing partners. The term “Partners” in this context is not intended to mean or imply the legal relationship known by that term. The term is merely one of convenience for purposes of this Agreement.

EPA - Environmental Protection Agency

Final Study Report - the work product by that name that is produced by this Study

M&I - Municipal and Industrial.

MOU - Memorandum of Understanding

NEPA - National Environmental Policy Act.

NHPA - National Historic Preservation Act

O,M,&R - Operation, Maintenance, and Replacement.

POS - Plan of Study

Special Study – Special studies address a variety of activities that are required to make responsible resource management decisions. Special studies are usually undertaken with non-Federal entities to address specific problems or opportunities. Reclamation, as a participant, has the obligation to explore the Federal role in the study.

Study Area - The area of land that will be the focus of the study. That is, the area of land within which existing and future water-demand analyses will be performed and alternatives will be created to serve.

Study Manager - The person provided by Reclamation pursuant to Article 7 of the cost share agreement.

T&E - Threatened or Endangered Species.

USGS - United States Geological Survey

2.0 STUDY APPROACH

2.1 SOURCES OF INFORMATION

The intent of this study is to use existing information to the maximum extent possible. A bibliography of existing studies will be included.

2.2 CONCEPTUAL METHODOLOGY

All tasks carried out for this study should make maximal use of existing studies and information.

- Collect and evaluate existing data associated with the current supply, usage and conservation of water within the project area.

- Discuss with water suppliers in the project area their current sources of supply, their demands (including seasonal variances), how their systems meet those demands, conservation technologies utilized, and their anticipated development alternatives in lieu of future Federal development.

- Conduct an evaluation of the water supply, reliability, and condition of the existing community and rural domestic water systems within the study area to determine the capability of the current infrastructure to be upgraded and expanded to anticipated demands.

- Conduct an evaluation of various demand management options and alternative water supplies, including wastewater reclamation, recycling, gray water reuse, and rainwater collection.

- Water demands to year 2050 are to be determined and documented by type, quantity, quality, reliability, and source of supply.

- Document the quantity and quality of the surface and groundwater resources within the study area. Water availability assessments utilizing approved evaluation criteria will be completed at an appraisal level to establish whether the sources of supply can be developed to meet demands allocated to that supply source.

- Utilizing the results of the previous tasks, and any relevant options identified in neighboring water supply studies, a series of water supply development projects and/or technologies (including conservation, reuse and demand management) will be identified. The projects identified must be able to deliver high quality, reliable water supplies to the designated participating entities in the study while meeting specific source of supply and environmental impact criteria. Preliminary construction and O&M costs will be developed for all the selected alternatives and the cost of delivered water to each entity shall be estimated and reported as a price per thousand gallons.

- Identify potential significant environmental, social and cultural resource impacts associated with alternatives. Also, identify "trends" at end of study period (e.g. Migration of saline or brackish groundwater, increase in water level decline, etc.)

- Identify the most cost-effective set of projects and/or technologies which meets the objectives of the study within identified policy and environmental constraints.

3.0 SPECIAL CONSIDERATIONS

3.1 ADDITIONAL CONSIDERATIONS

In selecting alternatives for study pursuant to this Agreement, the parties will consider the following additional issues: Threatened and endangered Species, cultural resources compliance concerns, social issues, and state water rights programs.

4.0 TECHNICAL EVALUATIONS

All work carried out for this study should maximize use of existing studies and information, with new analyses or data collection undertaken only when a review of existing work reveals it to be incomplete or inadequate for use in this study. Coordination should occur as needed with various agencies, previous consultants and other interested parties in the study for the purpose of obtaining additional information and unpublished data.

4.1 WATER DEMAND

Document water demands to design year 2050 by type, quality, reliability, and source of supply.

4.1.1 Issues and Assumptions

(1) Population estimates for the study area are to be determined. These values will be estimated by using previous study projections. Consideration will be given to the seasonal populations and legal constraints associated with population projections in the service area.

(2) Water demands shall include Municipal, Industrial, Agriculture, Ecological, Recreational, Tribal, Energy, and others.

(3) Peaking factors shall be determined for each demand area.

(4) Issues with regards to the acceptability, infrastructure and legal limitations of meeting demands with reclaimed water shall be documented.

(5) Continuing education of an educated and interested public regarding water resource issues within the region.

4.1.2 Tasks

4.1.2.1 M &I Water Uses

- Document and quantify existing M&I water uses and future demands throughout the study area.
- Tie each community or entity to specific sources and/or alternatives of supply. (e.g. point of diversion, groundwater source, conservation practice, conservation technology.)

4.2 WATER SUPPLY

Assess the quantity and quality of the surface water, groundwater & alternative water resources of the study area.

4.2.1 Issues and Assumptions

(1) Surface, groundwater and alternative water resources will be assessed primarily through the use of previous and on-going studies.

(2) Supplies shall also include reuse of effluent and potential supplies resulting from implementation of conservation measures and demand management.

(3) Impact evaluation criteria -- The analyses of all water supply alternatives will be carried out using appropriate “impact evaluation criteria.” These criteria (i.e., OSM, State law, Tribal water code, municipal water codes, etc.) will be utilized to evaluate the acceptability/viability of each alternative.

4.2.2 Tasks

4.2.2.1 Ground Water.

- Identify and select key previous studies and models for review and utilization for the study. Summarize study conclusions and identify areas of concern. Evaluate existing groundwater models and select appropriate model for use in this study. Propose additional modeling as appropriate.

- Review impact evaluation criteria.

4.2.2.2 Surface Water and Conjunctive use.

- Identify and select previous key studies and models for review and utilization for the study.

- Evaluate hydrology, water supply, and water quality findings within relevant water resource areas of concern.

- Develop conclusions as to whether water is available for future water use from each surface water source or surface/alluvial aquifer source.

- Identify areas suitable for recharge and water banking to the extent they exist.

4.2.2.3 Alternative water resources/supplies

4.3 ALTERNATIVE FORMULATION

Identify water supply development alternatives and/or technologies to deliver high quality, reliable water supplies to the designated communities and other participating entities in the study while meeting specific source of supply and environmental impact criteria.

4.3.1 Issues and Assumptions

(1) Project life - costs and benefits should be completed for a 50-year period.

(2) Impact evaluation - The impact evaluation criteria selected for use in Task 4.2 shall also be used for Task 4.3.

(3) Completeness of plan - To the extent possible, viable alternatives should completely satisfy water demand as determined in this study. Recommendations associated with the identification of data gaps, interim alternatives, and conservation practices.

4.3.2 Tasks

4.3.2.1 Analyze Water Supply Availability and Specific Water Development Plans.

- Establish alternative water supply projects to meet designated needs, giving consideration to provision of a reliable water supply, impacts, utilization of competent and cost-effective facilities and sites, mitigating flooding and sedimentation problems, meeting environment concerns, conservation measures and reasonable costs of water treatment, etc.

- Water development plans are to include analysis of demand management options and alternative water supplies, including reuse, recycling, and conservation

- Document major cost items at an appraisal level, including treatment plants, transmission lines, conservation systems, pump stations, power lines, and reservoirs for each alternative water plan.

- Make preliminary analysis of most cost effective alternatives. Identify level of demands unmet by recommended projects.

- Documenting water supply alternatives considered and eliminated from further analysis, and state reasons for elimination.

- For each alternative evaluate power demands of each alternative, possible power source, cost, and reliability.

4.4 ALTERNATIVE ANALYSIS

4.4.1 Environmental Analysis

Issues and Assumptions: Potential environmental impacts will be addressed in this study to the extent they are likely to be a key factor in the development of a range of potentially viable alternatives. In the case of severe impact on specific resources, potential mitigation requirements and appraisal level costs will be identified. The key requirement is to identify issues which could potentially eliminate an alternative plan based upon its effect on a specific resource, or that would significantly increase overall project costs by excessively increasing mitigation costs.

(1) (Review existing documents for accuracy and completeness.

(2) Identify baseline conditions and complete analyses, as needed to identify potential environmental issues for each alternative. Identify potential mitigation of adverse impacts, as appropriate.

4.4.2 Economic Analysis

(3) Estimate the cost-benefits of the potentially viable alternatives analyzed over a 50-year period.

(4) In addition to domestic and industrial water benefits, consider and estimate, where appropriate and possible, the impacts of other water uses.

(5) Estimated costs of alternatives on a $/1000 gallon basis, and evaluate capacity to pay.

4.4.3 Legal and Institutional Analysis

Legal and institutional issues associated with each alternative will be identified and analyzed.

4.5 ALTERNATIVE EVALUATION

Evaluation of Alternatives -- Evaluate the alternatives using Reclamation's four tests of viability: completeness, effectiveness, efficiency, and acceptability. An alternative will not be considered further if it fails to meet one or more criteria. Criteria specific to the components of this study will be jointly developed for each test and applied to the plan selection process in the form of a matrix. This presentation will allow for the direct comparison of the alternatives and the

selection of the most viable. A no action alternative will be developed to project a future without alternatives.

The Technical team will develop, in consultation/coordination with participating entities, as appropriate, an initial set of selection criteria, including weighting factors to apply to the criteria. The performance of an alternative will be measured against the weighted criteria and will be displayed in a matrix along with other technical evaluation results deemed appropriate for comparison purposes.

Completeness: The extent to which a given alternative plan (which may include a mix of multiple supply and demand management projects) provides and accounts for all necessary investments or other actions to ensure the realization of the planned effects. This may require relating the plan to other types of public or private plans if the other plans are crucial to realization of the contributions to the objective. Each alternative will be analyzed to assess whether it would respond to the study purpose and objectives without further investments or implementation of other plans not assumed to be already in place.

Effectiveness: The extent to which an alternative plan alleviates the specified problems and achieves the specified opportunities as stated in the study purpose and needs.

Efficiency: The extent to which an alternative plan is the most cost-effective means of alleviating the specified problems and realizing the specified opportunities, consistent with protecting the environment

Acceptability: The workability and viability of the alternative plan with respect to acceptance by the communities and entities participating in the study. Estimates of the extent of potential support for, or opposition to, implementation of the alternatives by affected parties will be used to measure acceptability.

Recommended Alternatives -- Develop a recommended set of water supply alternatives and/or technologies based on the results of the individual project analyses and associated impact analyses on environmental and other resources.

- All viable alternatives must demonstrate that a firm water supply can be delivered.

- Document the basis for the recommendations, including the comparative performance and impacts of the selected and rejected alternatives.

5.0 STUDY ORGANIZATION

5.1 LEAD ENTITY

Bureau of Reclamation - A Reclamation study manager will manage and direct Reclamation and Cooperating Partner activities and coordinate/facilitate the participation of other entities and interested publics.

5.1 OTHER ENTITIES AND PUBLICS

The following is a partial list of entities, organizations, and groups expected to, or might have an interest in all or part of this study.

5.2.1 Government Sponsored Water Organizations

(1) Yavapai County WAC)
(2) Northern Arizona Municipal Water Users Association (NAMWUA)
(3) Groundwater Users Advisory Council (GUAC)
(4) Upper Verde River Watershed Protection Coalition (UVRWPC)
(5) Verde River Basin Partnership (VRBP)
(6) Upper Agua Fria Watershed Partnership
(7) Central Yavapai Water Conservation Partnership (CYWCP)
(8) Yavapai County Local Drought Impact Group (Governor's Drought Initiative)
(9) City of Prescott Water Allocation Committee
(10) City of Prescott Water Conservation Committee
(11) Town of Dewey-Humboldt Environmental Committee
(12) Natural Resources Committee (Verde Valley Cities and Towns)
(13) Clarkdale Water Advisory Committee
(14) Northern Arizona Council Of Governments (NACOG)
(15) Maricopa Association of Governments (MAG)
(16) Arizona Hydrologic Society (AHS)
(17) Statewide Water Advisory Group (SWAG)

5.2.2 Citizen's Water Groups

(18) Verde Watershed Association (VWA)
(19) Citizens Water Advocacy Group (CWAG)
(20) Verde River Citizens Alliance (VRCA)
(21) Sustainable Arizona
(22) Arizona Water Consortium

5.2.3 Groups that address Water as a part of their mission

(23) Arizona Water Protection Fund
(24) Cocopai RC&D (Resource Conservation and Development Area)
(25) NRCDs (Natural Resource Conservation Districts)
  (a) Verde NRCD - Verde Valley
  (b) Chino Winds NRCD – Big and Little Chino Valleys and Cordes Jct to New River
  (c) Triangle NRCD - Skull Valley, Kirkland, Yarnell
(26) League of Women Voters Sedona/Verde Valley
(27) Keep Sedona Beautiful
(28) Friends of Cottonwood
(29) Williamson Valley Corridor Plan Committee
(30) Responsible Residents of the Red Rocks
(31) Yavapai Cattlegrowers Association
(32) Hyde Mountain Vista Group
(33) Citizens for Reasonable Growth
(34) Paulden Area Community Organization (PACO)
(35) Prescott Creeks
(36) Arizona Water Well Association
(37) Open Space Alliance of Central Yavapai County
(38) The Nature Conservancy
(39) Center for Biological Diversity
(40) Sierra Club
(41) Audubon Society

5.2.4 Water Providers

(1) Prescott Valley Water District
(2) Prescott Valley Municipal System
(3) City of Prescott
(4) Town of Chino Valley
(5) Chino Meadows II Water Company
(6) Appaloosa Meadows Water Company
(7) Wilhoit Water Company
(8) Quail Ridge Domestic Water Improvement District
(9) Chino Valley Irrigation District
(10) City of Cottonwood
(11) Town of Clarkdale
(12) Town of Jerome
(13) Arizona Water Company (Sedona, Big Park, Rimrock)
(14) Camp Verde Water System (Private)
(15) Private Water Companies (approximately 50)

(16) Verde Valley Ditch Companies (approximately 20)
(17) Exempt Well owners
(18) (Water Well Driller Association

5.2.5 Tribal, Federal and State Agencies involved with Water

(19) Arizona Department of Water Resources
(20) Arizona Department of Environmental Quality
(21) Arizona State Land Department
(22) Arizona Game and Fish Department
(23) US Geological Survey
(24) US Bureau of Reclamation
(25) US Fish and Wildlife Service
(26) US Army Corps of Engineers
(27) US Bureau of Land Management
(28) US Forest Service
(29) Yavapai-Prescott Tribe
(30) Yavapai-Apache Nation

5.2.6 Other out-of-area Water Groups/Organizations

(1) Arizona Water Resources Research Center - University of Arizona
(2) Coconino Water Advisory Council

5.2.7 Non-water focused Groups/Organizations

(1) Chambers of Commerce
(2) Association of Realtors
(3) Developers and Contractors

5.2.8 Universities and Colleges

(1) Northern Arizona University
(2) Prescott College
(3) Yavapai College

5.3 MULTIDISCIPLANARY TEAM

5.3.1 Structure

The study partners, Reclamation, the Yavapai County WAC and ADWR, will assemble a Technical Working Group (TWG) to support the study through technical assistance/information and product reviews. Designated representatives will have the technical expertise necessary to meet the

requirements of the study. The TWG will be made up of technical experts in various disciplines and will likely consist of staff from many of the participating entities listed above as appropriate.

5.32 Responsibilities

TWG members will be responsible for specific tasks as assigned by the study manager and as outlined in this POS and associated work plans as they are developed. TWG members will perform or assist in the performance of the following technical functions:

- Provide technical information and data as needed and requested by the Reclamation study manager.

Perform specific analyses or tasks as needed and requested by the Reclamation study manager.

- Serve as member of subteams as appropriate to deal with problems in their area of technical expertise.

- Provide peer and technical reviews on work products provided by the Phoenix Area Office at the direction of the Reclamation study manager and in accordance with agreed upon schedules. Study reports will be reviewed for technical accuracy and adherence to the purpose and needs of the study and provide comments and recommendations.

6.0 DELIVERABLES

6.1 PREPARATION OF REPORTS

- Draft and final reports will be prepared documenting the findings of the study, including analyses of existing and future water demand, supply reliability, potentially viable water supply alternatives and associated potential impacts, alternatives considered and eliminated from further consideration, and recommendations and conclusions regarding a preferred set of alternatives having the highest potential for meeting the purpose and needs of the study.

- Included in the report will be a summary of needs by location, potential sources, reliability, and projected costs including delivery

6.2 PREPARATION OF SUPPORTING DOCUMENTS

All technical disciplines will generate supporting documents as appropriate to cover the details of their individual evaluations.

6.3 COORDINATION ACTIVITIES

Includes the possible development of monthly written status reports, weekly telephone conferences, meetings at major milestones not to exceed one per quarter, etc.

7.0 PROGRAM ANALYSIS

The schedule and cost estimate presented below represents a very high level of stakeholder input and involvement. The schedule may be revised as information is obtained and the study progresses.

7.1 Tasks

Phase I (5 months, allowance $75,000)

1. Study Area
   (a) Define Area
   (b)Develop list of water providers

2. Water Demand (evaluated for each water provider)
   (a) Present Population
   (b) Future Population
   (c) Present Water Demands
   (d) Present Water Resources (source and amount)
   (e) Future Demands

Question: Are there demands that will be unmet in 2050? Where? How much?

Phase II (9 months, allowance $200,000)

1. Water Supply Assessment (in addition to present water resources)
   (a) Surface Water
   (b) Ground Water
   (c) Reuse
   (d) Conservation
   (e) Other

Phase III (16 months, allowance $250,000)

1. Alternative Formulation
2. Alternative Analysis
   (a) Environmental

(b) Economic
(c) Legal and Institutional

3. Alternative Evaluation
(a)Completeness
(b) Effectiveness
(c) Efficiency
(d) Acceptability

Question: Is there at least one alternative that can meet the unmet demands?

Question: Is there a Federal Interest in the identified alternatives?

Phase IV (6 months, allowance $75,000)

1. Final Report Formulation
(a) Draft Report Development
i. Draft Review and comment
(b) Final Report Development
i. Review and comment
(c) Publish Final Report

8.0 REFERENCES

Summary, Phase 1- Arizona State Water Plan, Inventory of Resource and Uses, 1975

Management Plan, First Management Period: 1980-1990 1984

Verde River Watershed Study, 2000

USGS

Prescott AMA Model Update, 2006

VV Water Use Projections

WAC reports

Hoyt reports

USBR, August 2005, Water 2025 Preventing Crisis and Conflict in the West, Status Report (http://www.doi.gov/water2025/Water%202025-08-05.pdf)