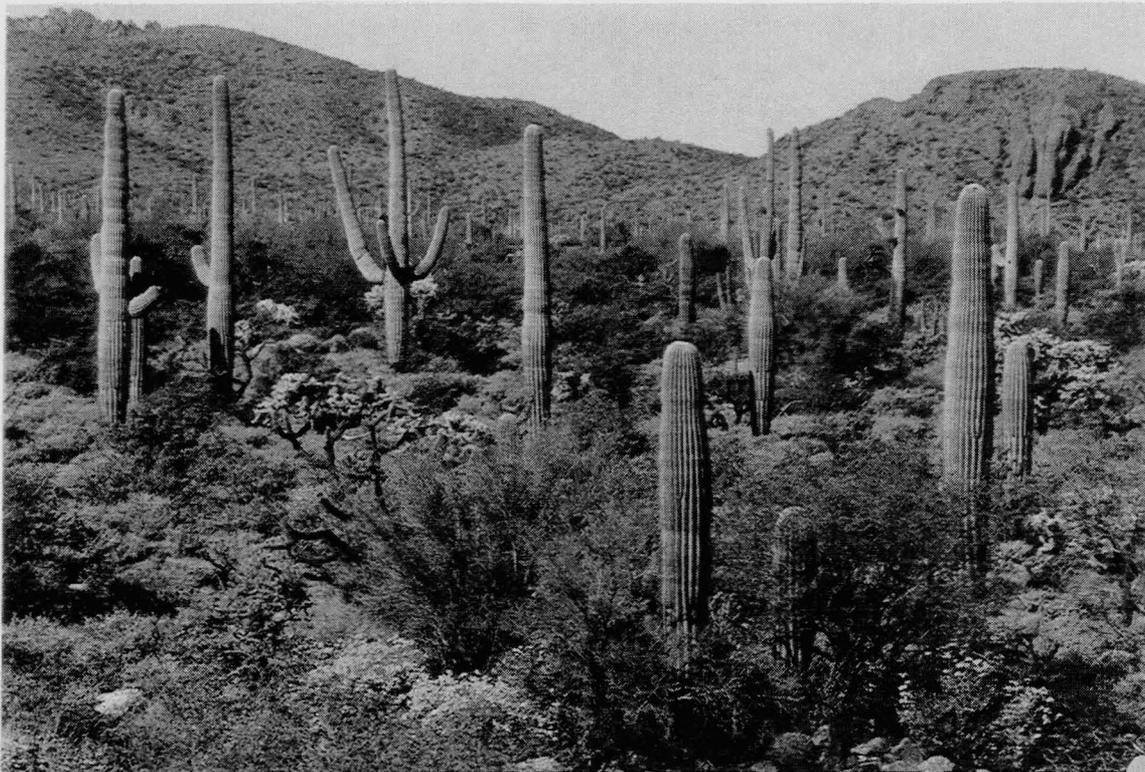




General Investigations

US Army Corps  
of Engineers  
Los Angeles District  
South Pacific Division



**North Scottsdale Drainage Area, Arizona**

**DRAFT  
FEASIBILITY COST SHARING AGREEMENT  
PROJECT STUDY PLAN**

MAY 1996

**A680.315**

**NORTH SCOTTSDALE DRAINAGE AREA,  
ARIZONA  
FEASIBILITY STUDY**

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**DRAFT  
FEASIBILITY COST SHARING AGREEMENT**

AGREEMENT  
BETWEEN THE DEPARTMENT OF THE ARMY  
AND THE  
CITIES OF SCOTTSDALE AND PHOENIX  
FOR THE NORTH SCOTTSDALE DRAINAGE AREA, ARIZONA FEASIBILITY  
STUDY

THIS AGREEMENT is entered into this \_\_\_\_ day, of \_\_\_, 19\_\_, by and between the Department of the Army (hereinafter the "Government"), represented by the District Engineer executing this Agreement, and the **Cities of Scottsdale and Phoenix** (hereinafter the "Sponsors"),

WITNESSETH, that

WHEREAS, the **seventy-fifth Congress, dated June 28, 1938** had authorized the **Secretary of War** to conduct **preliminary examinations and surveys of the Gila River and its tributaries in Arizona** pursuant to **Public Law 761**, and

WHEREAS, the U.S. Army Corps of Engineers has conducted a reconnaissance study of the **flood control of the North Scottsdale Drainage Area, Arizona**, pursuant to this authority, and has determined that further study in the nature of a "Feasibility Phase Study" (hereinafter the "Study") is required to fulfill the intent of the study authority and to assess the extent of the Federal interest in participating in a solution to the identified problem; and

WHEREAS, Section 105 of the Water Resources Development Act of 1986 (Public Law 99-662, as amended) specifies the cost sharing requirements applicable to the Study;

WHEREAS, the Sponsors **have** the authority and capability to furnish the cooperation hereinafter set forth and **are** willing to participate in study cost sharing and financing in accordance with the terms of this Agreement; and

WHEREAS, the Sponsors and the Government understand that entering into this Agreement in no way obligates either party to implement a project and that whether the Government supports a project authorization and budgets it for implementation depends upon, among other things, the outcome of the Study and whether the proposed solution is consistent with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies and with the budget priorities of the Administration;

NOW THEREFORE, the parties agree as follows:

## ARTICLES I - DEFINITIONS

For the purposes of this Agreement:

A. The term "study costs" shall mean all disbursements by the Government pursuant to this Agreement, from Federal appropriations or from funds made available to the Government by the Sponsors, and all Negotiated Costs of work performed by the Sponsors pursuant to this Agreement. Study Costs shall include, but not be limited to: labor charges; direct costs; overhead expenses; supervision and administration costs; the costs of contracts with third parties, including termination or suspensions charges; and any termination or suspension costs (ordinarily defined as those costs necessary to terminate ongoing contracts or obligations and to properly safeguard the work already accomplished) associated with this Agreement.

B. The term "study period" shall mean the time period for conducting the Study, commencing with the release to the U.S. Army Corps of Engineers, Los Angeles District of initial Federal feasibility funds following the execution of this Agreement and ending when the Assistant Secretary of the Army (Civil Works) submits the feasibility report to the Office of Management and Budget (OMB) for review for consistency with the policies and programs of the President.

C. The term "PSP" shall mean the **Project Study Plan**, which is attached to this Agreement and which shall not be considered binding on either party and is subject to change by the Government.

D. The term "negotiated costs" shall mean the costs of in-kind services to be provided by the Sponsor in accordance with the **PSP**.

E. The term "contracting officer" shall mean a representative of the Government with the authority to enter into, administer and/or terminate contracts and make related determinations and findings.

F. The term "fiscal year" shall mean one fiscal year of the Government. The Government fiscal year begins on October 1 and ends on September 30.

## ARTICLE II - OBLIGATIONS OF PARTIES

A. The Government, using funds and in-kind services provided by the Sponsors and funds appropriated by the Congress of the United States, shall expeditiously prosecute and complete the Study, in accordance with the provisions of this Agreement and Federal laws, regulations, and policies.

B. In accordance with this Article and Article III of this Agreement, the Sponsors shall contribute cash and in-kind services equal to fifty (50) percent of total Study Costs. The Sponsors may, consistent with applicable law and regulation, contribute up to 25 percent of total Study Costs through the provision of in-kind services. The in-kind services to be provided by the Sponsors, the estimated negotiated costs for those services, and the estimated schedule under which those services are to be provided are specified in the PSP. Negotiated Costs shall be subject to an audit by the Government to determine reasonableness, allocability, and allowability.

C. The Sponsors understands that the schedule of work may require the Sponsors to provide cash or in-kind services at a rate that may result in the Sponsors temporarily diverging from the obligations concerning cash and in-kind services specified in paragraph B of this Article. Such temporary divergences shall be identified in the quarterly reports provided for in Articles III.A. of this Agreement and shall not alter the obligations concerning costs and services specified in paragraph B of this Article or the obligations concerning payment specified in Article III of this Agreement.

D. If, upon the award of any contract or the performance of any in-house work for the Study by the Government or the Sponsors, cumulative financial obligations of the Government and the Sponsor would exceed \$2,100,000.00, the Government and the Sponsors agree to defer award of that and all subsequent contracts, and performance of that and all subsequent in-house work, for the Study until the Government and the Sponsors agree to proceed, but in no event shall such a deferral exceed two years.

E. No Federal funds may be used to meet the Sponsor's share of Study Costs unless the Federal granting agency verifies in writing that the expenditure of such funds is expressly authorized by statute.

F. The award and management of any contract with a third party in furtherance of this Agreement which obligates Federal appropriations shall be exclusively within the control of the Government. The award and management of any contract by the Sponsors with a third party in furtherance of this Agreement which obligates funds of the Sponsors and does not obligate Federal appropriations shall be exclusively within the control of the Sponsors, but shall be subject to applicable Federal laws and regulations.

### ARTICLE III - METHOD OF PAYMENT

A. The government shall maintain current records of contributions provided by the parties, current projections of total Study Costs, and current projections of each party's share of total Study Costs. At least quarterly, the Government shall provide the Sponsor a report setting forth this information. Total Study Costs are currently estimated to be \$2,100,000.00 and the Sponsor's share of total Study Costs is currently estimated to be \$1,050,000.00. In order to meet

the Sponsor's cash payment requirements, the Sponsors must provide a cash contribution estimated to be **\$1,050,000.00**. The dollar amounts set forth in this Article are based upon the Government's best estimates, which reflect projected costs, price-level changes, and anticipated inflation. Such cost estimates are subject to adjustment by the Government and are not to be construed as the total financial responsibilities of the Government and the Sponsors.

B. The Sponsors shall provide its cash contribution required under Article II.B. of this Agreement in accordance with the following provisions:

1. For purposes of budget planning, the Government shall notify the Sponsors by August 15 of each year of the estimated funds that will be required from the Sponsor to meet the Sponsor's share of total Study Costs for the upcoming fiscal year.

2. No later than **30** calendar days prior to the scheduled date for the Government's issuance of the solicitation for the first contract for the Study or for the Government's anticipated first significant in-house expenditure for the Study, the Government shall notify the Sponsor in writing of the funds the Government determines to be required from the Sponsor to meet its required share of total Study Costs for the first fiscal year of the Study. No later than **15** calendar days thereafter, the Sponsor shall provide the Government the full amount of the required funds by delivering a check payable to "FAO, USAED, Los Angeles" to the contracting officer representing the Government.

3. For the second and subsequent fiscal years of the Study, the Government shall, no later than 60 calendar days prior to the beginning of the fiscal year, notify the Sponsors in writing of the funds the Government determines to be required from the Sponsors to meet its required share of total Study Costs for that fiscal year, taking into account any temporary divergences identified under Article II.C. of this Agreement. No later than 30 calendar days prior to the beginning of the fiscal year, the Sponsors shall make the full amount of the required funds available to the Government through the funding mechanism specified in paragraph B.2. of the Article.

4. The Government shall draw from the funds provided by the Sponsor such sums as the Government deems necessary to cover the Sponsor's share of contractual and in-house fiscal obligations attributable to the Study as they are incurred.

5. In the event the Government determines that the Sponsors must provide additional funds to meet its share of Study Costs, the Government shall so notify the Sponsors in writing. No later than 60 calendar days after receipt of such notice, the Sponsor shall make the full amount of the additional required funds available through the funding mechanism specified in paragraph B.2. of this Article.

C. Within ninety (90) days after the conclusion of the Study Period or termination of this Agreement, the Government shall conduct a final accounting of Study Costs, including

disbursements by the Government of Federal funds, cash contributions by the Sponsors, and credits for the Negotiated Costs of the Sponsors, and shall furnish the Sponsors with the results of this accounting. Within thirty (30) days thereafter, the Government, subject to the availability of funds, shall reimburse the Sponsors for the excess, if any, of cash contributions and credits given over its required share of total Study Costs, or the Sponsors shall provide the Government any cash contributions required for the Sponsors to meet its required share of total Study Costs.

#### ARTICLE IV - STUDY MANAGEMENT AND COORDINATION

A. To provide for consistent and effective communication, the Sponsors and the Government shall appoint named senior representatives to an Executive Committee **consisting of the Los Angeles District Engineer, the Deputy District Engineer for Project Management, the Chief of Planning Division, and the City Manager of the City of Scottsdale, and the City Manger of the City of Phoenix. The first meeting of the Executive Committee shall be within two months of the signing of this Agreement.** Thereafter, the Executive Committee shall meet regularly until the end of the Study Period.

B. Until the end of the Study Period, the Executive Committee shall generally oversee the Study consistently with the **PSP.**

C. The Executive Committee may make recommendations that it deems warranted to the Government on matters that it oversees, including suggestions to avoid potential sources of dispute. The Government in good faith shall consider such recommendations. The Government has the discretion to accept, reject, or modify the Executive Committee's recommendations.

D. The Executive Committee shall appoint representatives to serve on a Study Management Team. The Study Management Team shall keep the Executive Committee informed of the progress of the Study and of significant pending issues and actions, and shall prepare periodic reports on the progress of all work items identified in the **PSP.**

#### ARTICLE V - DISPUTES

Before a party to this Agreement may bring suit in any court concerning an issue relating to this Agreement, the party must first seek in good faith to resolve the issue through negotiation or other forms of non-biding alternative dispute resolution mutually acceptable to the parties.

## ARTICLE VI - MAINTENANCE OF RECORDS

A. Within 60 days of the effective date of this Agreement, the Government and the Sponsors shall develop procedures for keeping books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to this Agreement to the extent and in such detail as will properly reflect total Study Costs. These procedures shall incorporate, and apply as appropriate, the standards for financial management systems set forth in the Uniform Administrative Requirement for Grants and Cooperative Agreements to state and local governments at 32 C.F.R. Section 33.20. The Government and the Sponsors shall maintain such books, records, documents, and other evidence in accordance with these procedures for a minimum of three years after completion of the Study and resolution of all relevant claims arising therefrom. To the extent permitted under applicable Federal laws and regulations, the Government and the Sponsors shall each allow the other to inspect such books, documents, records, and other evidence.

B. In accordance with 31 U.S.C. Section 7503, the Government may conduct audits in addition to any audit that the Sponsor is required to conduct under the Single Audit Act of 1984, 31 U.S.C. Sections 7501-7507. Any such Government audits shall be conducted in accordance with Government Auditing Standards and the cost principles in OMB Circular No. A-87 and other applicable cost principles and regulations. The costs of Government audits shall be included in total Study Costs and shared in accordance with the provisions of this Agreement.

## ARTICLE VII - RELATIONSHIP OF PARTIES

The Government and the Sponsors act in independent capacities in the performance of their respective rights and obligations under this Agreement, and neither is to be considered the officer, agent, or employee of the other.

## ARTICLE VIII - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, nor any resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

## ARTICLE IX - FEDERAL AND STATE LAWS

In the exercise of the Sponsor's rights and obligations under this Agreement, the Sponsor agrees to comply with all applicable Federal and State laws and regulations, including Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.11 issued pursuant thereto and published in 32 C.F.R. Part 195, as well as Army

Regulations 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army."

ARTICLE X - TERMINATION OR SUSPENSION

A. This Agreement shall terminate at the end of the Study Period; provided, that prior to such time and upon thirty (30) days written notice, either party may terminate or suspend this Agreement. In addition, the Government shall terminate this Agreement immediately upon any failure of the Sponsors to fulfill its obligations under Article III of this Agreement. In the event that either party elects to terminate this Agreement, both parties shall conclude their activities relating to the Study and proceed to a final accounting in accordance with Article III.C. of this Agreement. Upon termination of this Agreement, all data and information generated as part of the Study shall be made available to both parties.

B. Any termination of this Agreement shall not relieve the parties of liability for any obligations previously incurred, including the costs of closing out of transferring any existing contracts.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, which shall become effective upon the date it is signed by the District Engineer for the U.S. Army Corps of Engineers, Los Angeles District.

CITY OF SCOTTSDALE

CITY OF PHOENIX

BY \_\_\_\_\_  
(Title)

BY \_\_\_\_\_  
(Title)

DEPARTMENT OF THE ARMY

BY \_\_\_\_\_  
Colonel, Corps of Engineers  
District Engineer  
Los Angeles District

Attachments:

- Appendix A - Certification Regarding Lobbying
- Appendix B - Project Study Plan
- Appendix C - Detailed Study Schedule
- Appendix D - Detailed Study Cost Estimate

**NORTH SCOTTSDALE DRAINAGE AREA,  
ARIZONA  
FEASIBILITY STUDY**

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**APPENDIX A**

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**CERTIFICATION REGARDING LOBBYING**

## CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
  
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan or cooperative agreement, the undersigned will complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
  
- (3) The undersigned will require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients will certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31 U.S. Code. Any person who fails to file the required certification will be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

CITY OF SCOTTSDALE

CITY OF PHOENIX

BY \_\_\_\_\_  
(Title)

BY \_\_\_\_\_  
(Title)

DEPARTMENT OF THE ARMY

BY \_\_\_\_\_  
Colonel, Corps of Engineers  
District Engineer  
Los Angeles District

**NORTH SCOTTSDALE DRAINAGE AREA,  
ARIZONA  
FEASIBILITY STUDY**

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**APPENDIX B**

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**DRAFT  
PROJECT STUDY PLAN**

**23 April 1996**

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## **I. PURPOSE AND SCOPE.**

The purpose of this Project Study Plan (PSP) is to identify the work items, funding schedules, and cost estimates required to complete the Feasibility Phase of the North Scottsdale Drainage Area, Arizona investigation. The Reconnaissance Phase of this investigation was completed 1 May 96, and determined that there may be Federal interest in providing whole fan solutions to the flood control problems being experienced in the North Scottsdale Drainage Area in Maricopa County, Arizona. A Feasibility Study is the vehicle for completing the assessment of Federal interest. The result of the Feasibility Phase will be a Feasibility Report (including an Environmental Impact Statement) that may recommend water resources plans for implementation. The Feasibility Report will contain sufficient planning and layout to enable engineering and design of plans and specifications to start immediately following receipt of PED funds.

## **II. STUDY AREA.**

The study area was defined as the flood zones of Reata Pass, Beardsley Wash, Rawhide Wash, and Flood Zones 5 and 6. The area is bordered by the Central Arizona Project (CAP) Granite Reef Aqueduct to the south, McDowell Mountain to the east, Desert Mountain to the north, and Cave Creek drainage (Cave Creek Road) to the west.

The study area is typical of Sonoran Desert with numerous shallow washes that trend northeast to southwest. Most of the area remains undeveloped and consists of archeological sites and areas of undisturbed native Sonoran desert vegetation and wildlife. Streamflow from intense rainstorms emanates from the confined upstream channels of North Scottsdale's washes and proceeds downstream onto the relatively flat valley area below. Flows leaving the apexes of fans spread onto the upper-fan area, where they may either follow a pre-existing path cut from past flood events or cut a new path down slope. As the topography flattens, the channels widen and become shallower, losing velocity and depositing sediment and debris. Toward the base of the fan, water velocities are reduced as the fan surface becomes more uniform, its slope flattens and water infiltrates the soil surface. In these areas, sheet flow flooding is common.

Scottsdale's Planning and Community Development Department ("PCDD"), Maricopa County Association of Governments (MAG), and the City of Phoenix Planning Department have developed population projections for the area, which are expected to reach build out in 20 to 40 years. A significant portion of this growth is expected to take place within the alluvial fan floodplain boundaries and may impact the areas of archeology, vegetation, and wildlife. As development occurs vegetation and wildlife will be restricted to pockets and corridors where development has not occurred.

The major problems identified for the study area are inundation damages, flood insurance, alluvial fan flooding and the FEMA requirements for flood proofing. Future developments are expected to take place piecemeal, with various sizes occurring at different times and in different

locations. They will be flood-proofed to FEMA standards to be removed from the flood zone. The piecemeal flood proofing and lack of master drainage planning will result in a relatively costly and inefficient flood protection system.

A Federal participation in solutions to the flooding problems would provide the benefits of reductions in the cost of floodproofing, inundation damages, reduction in traffic delays, and flood insurance program administration. It would also provide enhancement to habitat and archeological preservation and opportunities for recreation.

### **III. STUDY ALTERNATIVES.**

In the Reconnaissance Phase of the investigation, several regional flood control plans were considered which are intended to eliminate the alluvial fan type flooding. In turn, the requirements to install extensive flood proofing measures on a piecemeal basis is eliminated. A number of flood protection alternatives were developed in cooperation with the local sponsor and evaluated relative to the effectiveness and acceptability. These alternatives examined included non-structural measures, improvement of existing natural channels, installation of concrete lined channels, and detention basins.

Through evaluation and comparison, a preliminary flood control plan has been formulated to reduce the highest flood related damages in the study area and to maximize net benefits while minimizing adverse environmental and social effects. The proposed flood protection plan consists of the following components: 1) improved natural channels on Reata and Beardsley Washes, 2) a concrete channel adjacent to Pima Road, 3) a detention basin on Rawhide Wash, and 4) concrete channels through Fans 5 and 6. The proposed flood protection plan are expected to eliminate the 100-year flood zone in the study area designated by FEMA and the requirements to install piecemealed floodproofing measures.

The Feasibility Phase of the investigation will continue evaluation of the proposed structural measures for Reata and Beardsley Washes, the Pima Road channel, Rawhide Wash, and Fans 5 and 6. Particular focus will be placed on optimizing the proposed plan and utilizing the existing washes as much as possible so as to preserve the native habitats.

### **IV. GUIDANCE.**

The general guidelines and criteria to be followed while conducting this Feasibility Phase are embodied in the Corps of Engineers Planning Guidance Notebook, ER 1105-2-100. Specific guidelines for detailed studies are outlined in the work tasks given below. The Government will appoint a Study Manager who will be responsible for providing overall policy and general direction. The Study Manager will work to ensure that Corps policy, local sponsor objectives, and the framework provided by the PSP is followed.

## V. LOCAL SPONSOR AND IN-KIND SERVICES

The Cities of Scottsdale and Phoenix are the non-Federal Sponsor of the Feasibility Phase. The local sponsors are required to provide fifty percent of the Feasibility Phase costs. Up to twenty-five percent of the local sponsor's share of the Feasibility Phase costs may be performed by the sponsors as in-kind services. The in-kind services, anticipated to be performed at this time, are detailed within the work items given below. Acceptance of the in-kind services as complete will be made by the Corps of Engineers.

To ensure timely and responsive completion of the in-kind services, the Sponsors will designate a Study Manager who will be responsible for directing the conduct of all in-kind services. Additionally, the local sponsor's Study Managers will transmit information and coordinate with the Government's Study Manager.

## VI. FEASIBILITY MILESTONES.

The start date for the Feasibility Phase and, therefore, all subsequent dates are contingent upon execution of the FCSA and receipt of Federal and local sponsors funds in September, 1996. The Feasibility Phase is to last 36 months. A detailed schedule of specific work items is presented in Appendix B. The specific milestones of the detailed schedule given in Table 1.

TABLE 1		
Milestone	Date	Action
F1	09/96	Begin Feasibility Phase
F2	02/97	Initial Public Workshop
F3	09/97	Feasibility Review Conference (Existing Conditions)
F4	09/98	Feasibility Review Conference (Plan Formulation)
F5	12/98	Submit Draft Feasibility Report and Draft EIS
F5A	03/99	Feasibility Review Conference
F6	04/99	Field Level Coordination
F7	05/99	Final Public Workshop
F8	08/99	Submit Final Feasibility Report and Final EIS
F9	09/99	Division Engineer's Certification/District Engineer's Notice

## VII. WORK TASKS.

The work to be performed consists of a feasibility level of effort according to the task descriptions presented below. Only the major tasks required during the feasibility study are given. The following descriptions are intended to reflect the entire study scope, including work to be performed by the Corps, A-E services, and local sponsors in-kind services. A detailed schedule is given in Appendix B. The costs are summarized in Section VIII.

### A. COORDINATION AND PUBLIC INVOLVEMENT

#### 1. Purpose.

The goals of this task are: 1) promote understanding of the planning, design, and construction processes; 2) obtain public input regarding problems, opportunities, constraints, alternatives, outputs, impacts and costs; and 3) coordinate the planning effort with the efforts other Federal, state, and local agencies.

#### 2. Subtasks.

##### a. Public Involvement Plan.

Public involvement techniques will be decided and a schedule with specific milestones will be developed into a Public Involvement Plan. During the formulation of the Public Involvement Plan, the number and types of meetings, workshops, and newsletters will be determined. A mailing list will be prepared to include all potentially interested parties.

##### b. Conduct Initial Public Workshop (F2 Milestone).

An initial public meeting will be held early in the feasibility schedule to serve to introduce the study to interested parties. Scoping issues, concerns, and opportunities will be discussed. Public input will be obtained and analyzed.

##### c. Information Dissemination.

All interested parties will continue to be informed of the progress of the study through news releases, newsletters, and telephone contacts. Prior to the Final Public Meeting, the Draft Feasibility Report will be released for review and comment by the public.

##### d. Conduct Final Public Workshop (F7 Milestone).

A Final Public Meeting will be held to present the findings of the Draft Feasibility Report and Draft Environmental Impact Statement. Direct input from the public will be obtained for incorporation into the Final Report and Final EIS.

##### e. Documentation.

The end product of the Coordination and Public Involvement Task will be to summarize the information obtained into a Public Involvement Appendix to the Final Feasibility Report.

3. Responsibility.

Planning Section C of the Corps will be responsible for subtasks a, b, c, d, and e. The in-kind services have not been identified yet.

**B. INSTITUTIONAL STUDIES.**

1. Purpose.

The Implementation Studies Task involves determining the financial and legal arrangements required to implement the recommended plans, including methods of financing the project. A financial capability analysis will examine whether or not the Sponsor has the organizational, legal, and financial capability to undertake the required financial obligations for implementing and maintaining the project after it is authorized for construction by Congress.

2. Subtasks.

a. Financial Planning.

This subtask will begin with a review of the reconnaissance study assessment of local financial interest and capability. Cost sharing, alternative repayment options for any incidental project purposes, and other financial options will be defined. Two financing plans will be determined, a federally supportable plan and a locally preferred plan. If there is a difference between these two plans, then the Sponsors will be required to pay any cost differential.

b. Documentation and Coordination.

A draft and final financial and cost recovery section of the feasibility report will be prepared. Analysis and documentation will be reviewed and coordinated.

3. Responsibility.

Programs and Project Management Division of the Corps will be responsible for items a, and b. The in-kind services have not been identified yet.

## C. ENVIRONMENTAL STUDIES

### 1. Purpose.

This purpose of this task is to collect environmental data that will assist in defining the existing and future (without project) conditions. The various alternatives will be evaluated in detail, and potential environmental impacts, environmental commitments and mitigation features will be identified.

### 2. Subtasks.

#### a. Cultural Resources Studies.

This subtask will determine the impacts of the alternative plans on historical, architectural, and archaeological resources. All studies will be conducted in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), and Corps Engineering Regulation 1105-2-100.

1). In consultation with the State Historic Preservation Office (SHPO), the Corps will conduct sufficient archival and field surveys to identify cultural sites within the study's Area of Potential Effect (APE) and will evaluate the eligibility of all cultural sites for the National Register of Historic Places. If any historic sites or properties are found, that need to be tested for cultural significance, the contract cost would be approximately \$50,000 per historic property. A detailed report will be prepared which will describe all cultural resources within the APE and assess the impacts of each project alternative on these resources for inclusion in the EIS. The report will also describe the range of potential mitigation efforts and the associated costs of these studies.

2). If project alternatives are determined to have an adverse effect on National Register listed or eligible sites, the Corps will consult further with the SHPO and will afford the Advisory Council on Historic Preservation (ACHP) and other interested parties an opportunity to comment. If necessary, the Corps may enter into a Memorandum of Agreement with the SHPO, ACHP and non-Federal sponsor to stipulate ways to avoid or reduce the effects of project alternatives on cultural resources. Preservation or mitigation of cultural resources will be considered in more detail for the plan recommended for construction in any advanced planning for the project.

#### b. Fish and Wildlife Studies.

The Fish and Wildlife Studies will be conducted in accordance with the Fish and Wildlife Coordination Act. The work will be performed by a technical team which, at a minimum, consists of the Corps of Engineers, the US Fish and

Wildlife Service (USFWS), the State of Arizona Game & Fish Department, the State of Arizona Department of Environmental Quality. The technical team will perform data collection, species identification, and habitat mapping to arrive at the baseline conditions. The technical team will analyze any project induced environmental effects/benefits. The product of this task is the preparation of a (USFWS) Final Coordination Act Report.

c. Environmental Impact Statement (EIS).

The EIS will evaluate the environmental effects of the alternative plans. Baseline conditions for water quality, fish and wildlife, endangered species, and other pertinent environmental conditions will be adequately described so that an incremental analysis may be performed. Mitigation measures for fish and wildlife and other affected resources will be refined and a monitoring program developed. Any land required for implementation will be identified. Water quality impacts will be determined using a Section 404(b)(1) evaluation. Endangered Species impacts will be determined from biological assessment and consultation with the USFWS. Recreation features will be evaluated.

d. Recreation Studies.

Recreation Studies include determination of existing recreational uses, facilities, and needs; determination of future recreational uses and needs within the project area; development of draft recreation plans for the alternatives (if appropriate); identification of a recommended plan; development of costs and benefits for recreational plans; preparation of materials, including text and plates, for inclusion in the appendix; assisting in plan formulation; development and preparation of a draft cost-sharing agreement for recreation; in-house report review; response to comments; and support to the Study Manager and others during the study phase.

e. Ecological/Biological Support, Coordination, and Documentation.

This subtask will be performed by the Los Angeles District Environmental Resources Branch. The EIS will be coordinated with Federal, State and local governments and agencies as well as interested groups and individuals. Preparation of the EIS will include ecological and biological support staff services, recreational support staff services, cultural resources support staff services, field reconnaissance where required, and coordination of U.S. Fish and Wildlife Service funding for the Coordination Act Report.

3. Responsibilities.

The Environmental Resources Branch of the Corps will be the primary party responsible for completion of all Environmental Studies. This task will also involve work effort and product from the US Fish and Wildlife Service and the Arizona State Historic Preservation Officer. The in-kind services for this task have not yet been identified.

## D. ECONOMIC STUDIES.

### 1. Purpose.

The purpose of economic studies is to analyze and present the potential benefits and costs of a regional flood control solution versus the smaller, piecemeal drainage system. The Economic Studies will be conducted pursuant to the "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G)". The basis of continued participation by the Federal Government is determined using this economic analysis.

### 2. Subtasks.

#### a. Flood Proofing Benefit Analysis.

A detailed estimate of growth within the study area will be performed. The availability of Arizona State Lands will be determined. Costs for installation of flood proofing measures will be determined.

#### b. Recreation Analysis.

An inventory of the existing recreation in the area will be made. The demand for recreation will be estimated. The recreation potential in the project area will be forecast. An analysis will be performed to determine the benefits of providing recreational features in the alternative plans.

#### c. Inundation Damage Analysis.

Due to the limited development within the study area, limited effort will be performed to assess available benefits from inundation damages. Without project overflow maps will be utilized to estimate the probable inundation damage from a given flood event.

#### d. Risk and Uncertainty Analysis.

Because there are limited benefits obtained through inundation damage reduction, limited effort will be performed to assess the risk and uncertainty of with and without project conditions.

#### e. Documentation and Coordination.

All data collected and/or developed will be displayed in an economics appendix to the final feasibility report.

### 3. Responsibilities.

The Economics Section of the Los Angeles District will be responsible for tasks a, b, c, d and e. The in-kind services for this task have not been identified yet.

## E. HYDROLOGIC STUDIES

### 1. Purpose.

Limited hydrologic analysis was performed in the Reconnaissance Phase. The existing data appeared to be conservative. The hydrodynamics of alluvial fans are difficult to predict. The validity of the existing data was not verified using gaged watersheds. Detailed hydrologic analysis will be performed under this PSP to update the hydrology.

### 2. Subtasks.

#### a. Alluvial Fan Modeling.

An alluvial fan model will be established and applied for the various watercourses. Allowance will be made through an overall model to account for the area on the east side of I-10 where the separate alluvial fans appear to coalesce. This model will be used to assist in determination of the without project conditions to include the discharge-frequency at the apex and at the location of expected development within each fan. This model will also be used to examine the extent of overflow areas for determination of inundation damages.

#### b. With Project Modeling.

The with project discharge-frequency will be established for various alternatives for each watercourse. Effects of over design to assist in protection of the environment will be included.

#### c. Sediment and Debris Flow.

An analysis of the sediment and debris flow will be made to assist in prediction of the effects to with project alternatives.

#### d. Hydraulic Modeling.

The analysis of with project alternatives must include the effect the routing of the alluvial fan flows may have on the downstream streams. Assurance that no project induced damages must be determined.

#### e. Documentation.

All data collected and/or developed will be displayed in a hydrologic appendix to the final feasibility report.

### 3. Responsibilities.

The Hydrologic Engineering Section of the Corps will be responsible for performing all work needed to complete this task. The in-kind services have not been identified.

## F. HYDRAULIC STUDIES.

### 1. Purpose.

The purpose of hydraulic studies are to assure that the alternative plans are properly sized to function as intended. This includes allowance for low flows, flooding conditions, sediment transport, etc.

### 2. Subtasks.

#### a. Flood Proofing Design.

Verification of the without project flood proofing design performed under the Reconnaissance Phase will be made. Any changes or updates will be provided making consideration for the various discharges from different watercourses.

#### b. Sediment Transport Studies.

An analysis of the with and without project sediment transport conditions will be performed. Information will be utilized to size debris and/or detention basins, and determine proper toe depth of soil cement alternatives.

#### c. With Project Design Effort.

Various alternatives will be examined to assure they are properly sized and located to eliminate the alluvial fan flooding in the project area. Project features may include detention basins. The effects of over design to allow for mitigation or preservation of the environment will be included.

#### d. Risk and Uncertainty Analysis.

This subtask will be developed so that the viability of the alternatives can be quantified. The analysis will include determination of which input variables result in the largest changes in flood inundations. The analysis will assign risk factors to the sensitivity that will result in a confidence level, i.e. the amount of confidence that the flood inundation depths are accurate.

#### e. Documentation.

All data collected and/or developed will be displayed in a hydrologic appendix to the final feasibility report.

### 3. Responsibilities.

The Hydraulics Section of the Los Angeles District will be responsible for performing all work needed to complete this task. The in-kind services have not been identified.

## **G. GEOTECHNICAL INVESTIGATIONS.**

### **1. Purpose.**

The purpose of the Geotechnical Studies task will be to perform any soils, materials, or geotechnical effort to verify feasibility of alternative solutions.

### **2. Subtasks.**

#### **a. Materials Effort.**

On-site soils will be examined for suitability to use in soil cement, gunite, or concrete mixtures. Classification testing will be performed. Assistance will be provided to assure proper toe depth of soil cement levees.

#### **b. Geotechnical Effort.**

On-site borings will be taken to assure suitability of foundations of soil cement levees and other incidental structures. Field infiltration testing will be performed to assist in estimation of infiltration losses.

#### **c. HTRW Assessment.**

This subtask will summarize and evaluate the existing archival data. A literature and data search of known sites will be conducted. The HTRW work will be documented in a report which will be utilized in the EIS and for project feature siting purposes.

**d. Constructability Analysis.** This subtask will address constructability as related to geologic hazards, excavatability, types of equipment required, special processing/handling requirements, sources of soil cement materials, etc.

#### **e. Documentation, Reviews, and Coordination.**

This subtask will document the Geotechnical studies. Members of the Geotechnical study team will be available to coordinate their work and attend key meetings. This subtask will include publication of all gathered and/or created data and conclusions into a Geotechnical Appendix to the final feasibility report.

### **3. Responsibilities.**

The Geotechnical Branch of the Los Angeles District will be responsible for performing all work needed to complete this task. The in-kind services have not been identified.

## **H. DESIGN EFFORTS.**

### **1. Purpose.**

The purpose of design efforts will be primarily to assist in analysis and location of alternatives.

### **2. Subtasks.**

#### **a. Surveys and Mapping.**

Existing aerial and topographic maps of the various study areas will be obtained. Existing Geographical Information System (GIS) mapping will be reviewed for applicability. New surveys will be performed if needed. Mapping will be utilized for the preparation of plates suitable for inclusion in the feasibility report. The plates will depict both existing and planned facilities.

#### **b. Design Assistance.**

The work will include preparation of preliminary designs and plates, assisting in plan formulation, in-house review, response to comments, and support to the Study Manager and other Study Team Members.

#### **c. Quantity Calculations.**

Quantities of the various alternatives and flood proofing costs will be made. Details of the quantities will be summarized for estimating purposes.

#### **d. Cost and Benefit Estimating.**

Detailed baseline costs for the recommended plans will be developed. Estimates of the costs of without project flood proofing will be performed. All estimates will be reported using the M-CACES format.

### **3. Responsibilities.**

The Design Branch of the Los Angeles District will be responsible for performing all work needed to complete this task. The in-kind services have not been identified.

## **I. REAL ESTATE EFFORTS.**

### **1. Purpose.**

The study of the real estate within the study area is of prime importance to the feasibility of regional flood control solutions. The availability of the Arizona State Lands and values of vacant properties are key to a feasible project.

### **2. Subtasks.**

a. Execute Right of Entry Agreements.

Right of entry agreements to perform on-site study or testing under this PSP will be executed.

b. Real Estate Value Assessment.

This subtask will include preparation of preliminary real estate cost estimates for project right-of-way requirements. Areas to be used for local drainage and mitigation will also be considered. Availability of Arizona State Lands will be researched and reported upon.

c. Real Estate Acquisition Plan.

A Draft Real Estate Acquisition Plan will be prepared in coordination with the non-Federal sponsors. A model Local Cooperation Agreement (LCA) for construction of selected alternative will be included in the feasibility report. The LCA is a legally binding agreement that sets forth the terms of the relationship between the Federal Government and the local sponsor for construction, operation and maintenance of projects approved through the feasibility process.

d. Gross Appraisal of Properties.

This subtask consist of preparation of a Gross Appraisal of all study area properties for the market value of lands at their highest and best use.

e. Documentation, Coordination.

The real estate section of the appendix will provide a summarization of all tasks performed in providing the above information, including text and plates. The real estate task will also include in-house report review, response to comments, and support to the Study Manager and others during the study phase.

3. Responsibilities.

The Arizona Projects Office of the Real Estate Division of the Los Angeles District will be responsible for performing all work needed to complete this task. The in-kind services have not been identified.

## J. STUDY MANAGEMENT.

1. Purpose.

Study management will ensure that all required tasks and coordinations are performed, resulting in the production of a quality Feasibility Report. Technical coordination and inter-disciplinary planning are the responsibilities of the Study Manager. Study management will monitor the scope and progress of the activities of the study to ensure that the study remains on track, within budget and on schedule, and that any potential

impacts on scope, schedule, and cost are fully coordinated with the Executive Committee and resolved.

## 2. Subtasks.

### a. Technical Management.

The study manager will be responsible for providing detailed information for the work performed by other technical elements. The study manager will outline the technical requirements of Engineering Service Requests (ESR's), establishing study milestones with the various Corps Engineering and Planning Sections to assure all work is performed. The study manager will review results and reports provided by the technical support staff. Study Management Team meetings will be held on a quarterly basis, or more frequently if necessary.

### b. Local Sponsor and Other Agency Coordination.

The study manager will serve as primary point of contact with the local sponsor and any interested agency on technical matters of the Feasibility Phase. Work will include briefings, presentations, meetings, correspondence, etc.

### c. Scheduling.

The study manager will be responsible for developing networks to include work activities, task schedules, critical path networks and funding schedules, directing, monitoring, and modifying assigned work items as required and agreed upon by the Sponsor, etc.

### d. Plan Formulation.

Plan formulation includes reviewing and refining the plans selected for study during the reconnaissance phase and other plans developed during the course of the feasibility study. The annual and periodic activities and responsibilities for operating and maintaining (O&M) the completed project will be described and closely coordinated with other requirements (e.g., cost estimates and environmental monitoring). The general magnitude of these activities will be described for all alternatives in detail; however, more detail will be provided for the alternative recommended for implementation. The report will identify and justify the recommended plan, as well as evaluate the locally-preferred plan, if different from the recommended plan.

### e. Report Preparation and Reproduction.

Report preparation includes the compilation of all study team products into an initial draft report and a final report. The work will include collection and assembly of pertinent data, writing, editing, typing, drafting, reviewing, revising, reproducing, and distributing the draft and final Feasibility Reports, Environmental Impact Statement, and related technical documents and

appendices. The study manager will be responsible for reproduction and dissemination to facilitate review and revision.

3. Responsibilities.

Planning Section C of the Los Angeles District will be responsible for performing all work needed to complete this task. The in-kind services have not been identified.

**K. ENGINEERING MANAGEMENT.**

1. Purpose.

Engineering management will ensure that all required tasks to be performed by the Corps Engineering Division are performed, resulting in the production of a quality Feasibility Report.

2. Subtasks.

a. Coordination.

The Engineering Manager will serve as Engineering Division's coordinator among the various engineering functions to provide appropriate technical representation and participation in study team meetings.

b. Quality Control.

The Engineering Manager will work to resolve technical issues and insure products are delivered in a timely manner.

3. Responsibilities.

Engineering Management Branch of the Los Angeles District will be responsible for performing all work needed to complete this task. No in-kind services will be credited for work under this task.

**L. PROGRAMS AND PROJECT MANAGEMENT.**

1. Purpose.

Project management will ensure that all required budgetary matters and coordination with upper Corps management and the local sponsor is performed, resulting in the production of a quality Feasibility Report. Project management will monitor the budgetary progress of the study to ensure that the study remains within budget and on schedule, and that any potential impacts on scope, schedule, and cost are fully coordinated with the Executive Committee and resolved.

2. Subtasks.

a. Manage Budget Allocation and Expenditure.

Budgetary management responsibilities include tracking and documenting the funds and budget (accounting) of the study; documenting appropriations, including interpretation of current and future budgetary guidance; monitoring and reprogramming study funds, executing current year and future funds; processing schedules of obligations and expenditures; monitoring project financial performance and coordinating with study and project managers on project financial performance; assessing District manpower allocations versus available funds, assuming District operating budget includes appropriate hired labor and contract amounts; coordinating future funds allocations and manpower requirements with other District elements; setting up and documenting all cost key accounts, reviewing pre-and post-labor reports, and closing out all budgetary matters at the conclusion of the study.

b. Upper Management Reporting.

The Project Manger is responsible for keeping the District Engineer and his immediate staff informed as to the progress of the study. This subtask is accomplished through submitting project data sheets, justification sheets and other testimonial fact sheets as required.

c. Manage In-Kind Services.

The Project Manager will coordinate with the sponsor for the management of negotiated in-kind services. Periodic meetings will be held between the Corps and the Sponsor to report on the status of the study and responsible in-kind services and credits. The project Manager will coordinate review and approval of completed in-kind work, coordinate cost-sharing procedures, and manage budgets and schedules for the feasibility study. Negotiation of tasks and costs, review of reports, and participation in meetings on in-kind services results and issues are included in this task. The Project Manager will serve as point of contact for the development and negotiation of the PCA, MOA's and other customer agreements.

d. Prepare Project Management Plan.

Presuming the feasibility study results in a plan recommended for Federal participation, the plans and procedures required for project implementation will be defined by a Project Management Plan (PMP). The PMP will include preparation of pre/post construction hydraulic data collection plans; preparation of a water quality control plan (if found necessary); and the coordination of O&M studies that need to be completed. Management activities will also include coordination and documentation of all M-CACES-generated estimates and revisions to these estimates. The Project Management Plan (PMP) will cover tasks, schedules, costs and management framework and direction for the project through construction.

3. Responsibilities.

Programs and Project Management Branch of the Los Angeles District will be responsible for performing all work needed to complete this task. No in-kind services will be credited for work under this task.

## **M. QUALITY CONTROL AND REVIEW.**

### **1. Purpose.**

This work includes all costs associated with Corps internal technical review of study products to assure that technical products and processes comply with law, policies, regulations and sound technical practices of the involved disciplines. The independent evaluation will focus on whether the technical results of the study are reasonable for reaching a decision on whether there is potential for project implementation.

### **2. Subtasks.**

#### **a. Quality Control Plan.**

A Quality Control Plan will be completed to formalize the review process. A Review Strategy Session will be held to identify the study team and review team members. The Quality Control Plan will include an overall objective statement, review checklists, pertinent guidance, rosters of both the review team and study team, a list of the documents to be reviewed, and a review schedule. An SPD representative will participate in the initial Review Strategy meeting as part of the Division's quality assurance partnership with the District. Division representatives will, throughout the course of the study, aid in resolving technical issues that cannot be resolved within the District level teams.

#### **b. Independent Technical/Policy Review.**

The quality control process will be on-going throughout the study, but at particular milestones, specific efforts will be made to assess the quality and progress of the study through independent technical/policy review. All planning, EIS, NPDES, and NEPA documents will be extensively reviewed prior to being finalized. The review process will include technical team meetings and meetings with the local sponsor. All study team members will be involved in the formulation and review of the reports. A Feasibility Review Conference and two comment periods will be held to assure that all comments and views are incorporated.

#### **c. Documentation.**

The Review Team Leader will be responsible for disseminating the various documents for review and collecting the comments from all reviewers. The collected comments will be utilized to formulate a review memorandum for

record that will establish those items which need to be addressed prior to the next milestone date.

3. Responsibilities.

Planning Division of the Los Angeles District will be responsible for performing all work needed to complete this task. The in-kind services have not been identified.

**N. CONTINGENCY.**

1. Purpose.

A ten percent contingency has been added to the total work effort. The purpose of applying a contingency is to allow for changes in the cost estimates for the various work items should the actual work reveal that additional effort is needed. The contingency amount applies to both Corps in-house efforts as well as in-kind service efforts.

2. Subtasks.

There are no subtasks to this item.

3. Responsibilities.

Programs and Project Management Division of the Los Angeles District will be responsible for monitoring and reporting budgetary progress. There are no in-kind services for this task.

**VIII. STUDY COST SUMMARY.**

The total amount to perform the Feasibility Phase is currently estimated to be \$2,000,000.00. This total cost includes both Corps costs, Sponsor cash and in-kind services, and contingency. The total cost includes direct and indirect costs. A breakdown of the study costs by task is given in Table 2 below. For a Detailed breakdown of the study costs by subtask, refer to Appendix C.

**TABLE 2 (x\$1000)  
Study Cost Summary**

<b>TASK/SUBTASK</b>	<b>TOTAL COST</b>	<b>VALUE OF IN-KIND SERVICE</b>	<b>VALUE OF CORPS EFFORT</b>
A. Coordination and Public Involvement	50	0	50
B. Institutional Studies	10	0	10
C. Environmental Studies	285	0	285
D. Economic Studies	90	0	90
E. Hydrologic Studies	285	0	285
F. Hydraulic Studies	285	0	285
G. Geotechnical Investigations	90	0	90
H. Design Efforts	120	0	120
I. Real Estate Efforts	80	0	80
J. Study Management	285	0	285
K. Engineering Management	60	0	60
L. Programs and Project Managment	90	0	90
M. Quality Control and Review	70	0	70
N. Contingency	200	0	200
TOTAL STUDY COST	2,000	0	2,000

**NORTH SCOTTSDALE DRAINAGE AREA,  
ARIZONA  
FEASIBILITY STUDY**

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**APPENDIX C**

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**DRAFT  
DETAILED STUDY SCHEDULE**

**23 April 1996**

**NORTH SCOTTSDALE DRAINAGE, ARIZONA**  
**Feasibility Report Schedule**

ID	Task Name	Start	Finish	Duration	Predecess	Early Start	Early Finish	Late Start	Late Finish	Critical
1	<b>F1 - FEASIBILITY STUDY START</b>	Mon 9/2/96	Mon 9/2/96	0d		Mon 9/2/96	Mon 9/2/96	Mon 9/2/96	Mon 9/2/96	Yes
2										
3	<b>A - COORD &amp; PUBLIC INVOLVEMENT</b>	Mon 11/25/96	Fri 7/2/99	680d		Mon 11/25/96	Fri 7/2/99	Mon 2/17/97	Mon 8/2/99	No
4	Public Involvement Plan	Mon 11/25/96	Fri 2/14/97	60d	67SS+30d	Mon 11/25/96	Fri 2/14/97	Mon 2/17/97	Fri 5/9/97	No
5	F2 - Public Workshop (Initial Pub Mtg)	Fri 2/14/97	Fri 2/14/97	0d	4	Fri 2/14/97	Fri 2/14/97	Fri 5/9/97	Fri 5/9/97	No
6	Information Dissemination	Mon 2/17/97	Fri 2/26/99	530d	5	Mon 2/17/97	Fri 2/26/99	Mon 5/12/97	Fri 5/21/99	No
7	F7 - Final Public Meeting	Fri 5/21/99	Fri 5/21/99	0d	6,92SS+30d	Fri 5/21/99	Fri 5/21/99	Fri 5/21/99	Fri 5/21/99	Yes
8	Documentation	Mon 5/24/99	Fri 7/2/99	30d	5,7	Mon 5/24/99	Fri 7/2/99	Tue 6/22/99	Mon 8/2/99	No
9										
10	<b>B - INSTITUTIONAL STUDIES</b>	Mon 1/19/98	Fri 7/17/98	130d		Mon 1/19/98	Fri 7/17/98	Mon 6/22/98	Fri 12/18/98	No
11	Financial Planning	Mon 1/19/98	Fri 6/5/98	100d	83SS+360d	Mon 1/19/98	Fri 6/5/98	Mon 6/22/98	Fri 11/6/98	No
12	Documentation and Coordination	Mon 6/8/98	Fri 7/17/98	30d	11	Mon 6/8/98	Fri 7/17/98	Mon 11/9/98	Fri 12/18/98	No
13										
14	<b>C - ENVIRONMENTAL STUDIES</b>	Mon 10/14/96	Mon 8/2/99	731d		Mon 10/14/96	Mon 8/2/99	Mon 10/28/96	Mon 8/2/99	Yes
15	Ecological/Biological Support, Coord, Docum	Mon 10/14/96	Fri 7/31/98	470d	66	Mon 10/14/96	Fri 7/31/98	Mon 10/28/96	Fri 8/14/98	No
16	Cultural Resources Studies	Mon 1/6/97	Fri 7/17/98	400d	15SS+60d	Mon 1/6/97	Fri 7/17/98	Mon 2/3/97	Fri 8/14/98	No
17	Fish & Wildlife Studies/Draft CAR	Mon 1/6/97	Fri 7/17/98	400d	15SS+60d	Mon 1/6/97	Fri 7/17/98	Mon 2/3/97	Fri 8/14/98	No
18	Fish & Wildlife Studies/Final CAR	Mon 5/24/99	Mon 8/2/99	51d	7,17	Mon 5/24/99	Mon 8/2/99	Mon 5/24/99	Mon 8/2/99	Yes
19	Recreation Studies	Mon 9/15/97	Fri 2/27/98	120d	15SS+240d	Mon 9/15/97	Fri 2/27/98	Mon 3/2/98	Fri 8/14/98	No
20	Draft EIS	Mon 8/3/98	Fri 12/4/98	90d	15,16,17,19	Mon 8/3/98	Fri 12/4/98	Mon 8/17/98	Fri 12/18/98	No
21	Final EIS	Tue 5/11/99	Mon 8/2/99	60d	18FF,20	Tue 5/11/99	Mon 8/2/99	Tue 5/11/99	Mon 8/2/99	Yes
22										
23	<b>D - ECONOMIC STUDIES</b>	Mon 10/14/96	Fri 8/21/98	485d		Mon 10/14/96	Fri 8/21/98	Mon 3/16/98	Fri 12/18/98	No

## NORTH SCOTTSDALE DRAINAGE, ARIZONA Feasibility Report Schedule

ID	Task Name	Start	Finish	Duration	Predecess	Early Start	Early Finish	Late Start	Late Finish	Critical
24	Flood Proof Benefit Analysis	Mon 10/14/96	Fri 3/28/97	120d	66	Mon 10/14/96	Fri 3/28/97	Mon 3/16/98	Fri 8/28/98	No
25	Recreation Analysis	Mon 3/2/98	Fri 5/1/98	45d	24,19	Mon 3/2/98	Fri 5/1/98	Mon 8/31/98	Fri 10/30/98	No
26	Inundation Damage Analysis	Mon 5/25/98	Fri 7/3/98	30d	24,40	Mon 5/25/98	Fri 7/3/98	Mon 9/21/98	Fri 10/30/98	No
27	Risk and Uncertainty Analysis	Mon 1/19/98	Fri 7/3/98	120d	41FF	Mon 1/19/98	Fri 7/3/98	Mon 7/6/98	Fri 12/18/98	No
28	Documentation and Coordination	Mon 7/6/98	Fri 8/21/98	35d	25,26,27FF	Mon 7/6/98	Fri 8/21/98	Mon 11/2/98	Fri 12/18/98	No
29										
30	<b>E - HYDROLOGIC STUDIES</b>	<b>Mon 10/14/96</b>	<b>Fri 8/14/98</b>	<b>480d</b>		<b>Mon 10/14/96</b>	<b>Fri 8/14/98</b>	<b>Mon 10/14/96</b>	<b>Fri 12/18/98</b>	<b>Yes</b>
31	Alluvial Fan Modeling	Mon 10/14/96	Fri 9/12/97	240d	66	Mon 10/14/96	Fri 9/12/97	Mon 10/14/96	Fri 9/12/97	Yes
32	With Project Modeling	Mon 9/15/97	Fri 1/16/98	90d	31	Mon 9/15/97	Fri 1/16/98	Mon 9/15/97	Fri 1/16/98	Yes
33	Sediment and Debris Flow	Mon 3/2/98	Fri 5/22/98	60d	32,39FF	Mon 3/2/98	Fri 5/22/98	Mon 7/6/98	Fri 9/25/98	No
34	Retention Basin Modeling	Mon 9/15/97	Fri 1/16/98	90d	32FF	Mon 9/15/97	Fri 1/16/98	Mon 5/25/98	Fri 9/25/98	No
35	Documentation	Mon 5/25/98	Fri 8/14/98	60d	33,34	Mon 5/25/98	Fri 8/14/98	Mon 9/28/98	Fri 12/18/98	No
36										
37	<b>F - HYDRAULIC STUDIES</b>	<b>Mon 9/15/97</b>	<b>Fri 8/14/98</b>	<b>240d</b>		<b>Mon 9/15/97</b>	<b>Fri 8/14/98</b>	<b>Mon 1/19/98</b>	<b>Fri 12/18/98</b>	<b>No</b>
38	Flood Proofing Design	Mon 9/15/97	Fri 12/5/97	60d	31,66	Mon 9/15/97	Fri 12/5/97	Mon 8/17/98	Fri 11/6/98	No
39	Sediment Transport Studies	Mon 1/19/98	Fri 5/22/98	90d	32	Mon 1/19/98	Fri 5/22/98	Mon 1/19/98	Fri 5/22/98	Yes
40	With Project Design Effort	Mon 4/13/98	Fri 5/22/98	30d	32,39FF	Mon 4/13/98	Fri 5/22/98	Mon 4/13/98	Fri 5/22/98	Yes
41	Risk and Uncertainty Analysis	Mon 5/25/98	Fri 7/3/98	30d	40	Mon 5/25/98	Fri 7/3/98	Mon 9/28/98	Fri 11/6/98	No
42	Documentation	Mon 7/6/98	Fri 8/14/98	30d	38,40,41	Mon 7/6/98	Fri 8/14/98	Mon 11/9/98	Fri 12/18/98	No
43										
44	<b>G - GEOTECHNICAL INVESTIGATIONS</b>	<b>Mon 10/14/96</b>	<b>Fri 6/5/98</b>	<b>430d</b>		<b>Mon 10/14/96</b>	<b>Fri 6/5/98</b>	<b>Mon 4/28/97</b>	<b>Fri 12/18/98</b>	<b>No</b>
45	Materials Effort	Mon 10/14/96	Fri 2/14/97	90d	66	Mon 10/14/96	Fri 2/14/97	Mon 9/29/97	Fri 1/30/98	No
46	Geotechnical Effort	Mon 10/14/96	Fri 7/18/97	200d	66	Mon 10/14/96	Fri 7/18/97	Mon 4/28/97	Fri 1/30/98	No

**NORTH SCOTTSDALE DRAINAGE, ARIZONA**  
**Feasibility Report Schedule**

ID	Task Name	Start	Finish	Duration	Predecess	Early Start	Early Finish	Late Start	Late Finish	Critical
47	HTRW Assessment	Mon 10/14/96	Fri 2/14/97	90d	66	Mon 10/14/96	Fri 2/14/97	Mon 9/29/97	Fri 1/30/98	No
48	Constructability Analysis	Mon 7/21/97	Fri 8/29/97	30d	45,46,47	Mon 7/21/97	Fri 8/29/97	Mon 2/2/98	Fri 3/13/98	No
49	Documentation, Reviews, Coordination	Mon 9/1/97	Fri 6/5/98	200d	48	Mon 9/1/97	Fri 6/5/98	Mon 3/16/98	Fri 12/18/98	No
50										
51	<b>H - DESIGN EFFORTS</b>	<b>Mon 10/14/96</b>	<b>Mon 5/17/99</b>	<b>675d</b>		<b>Mon 10/14/96</b>	<b>Mon 5/17/99</b>	<b>Mon 5/25/98</b>	<b>Thu 9/2/99</b>	<b>No</b>
52	Surveys and Mapping	Mon 11/25/96	Mon 11/25/96	1d	53SS+30d	Mon 11/25/96	Mon 11/25/96	Fri 11/6/98	Fri 11/6/98	No
53	Design Assistance	Mon 10/14/96	Fri 3/28/97	120d	66	Mon 10/14/96	Fri 3/28/97	Mon 5/25/98	Fri 11/6/98	No
54	Quantity Calculations	Mon 5/25/98	Fri 7/3/98	30d	40	Mon 5/25/98	Fri 7/3/98	Mon 9/28/98	Fri 11/6/98	No
55	Develop Baseline Costs/Benefits (M-CACES)	Mon 7/6/98	Fri 8/14/98	30d	52,53,54	Mon 7/6/98	Fri 8/14/98	Mon 11/9/98	Fri 12/18/98	No
56	M-CACES Approval by SPD	Mon 5/17/99	Mon 5/17/99	0d	55	Mon 5/17/99	Mon 5/17/99	Thu 9/2/99	Thu 9/2/99	No
57										
58	<b>I - REAL ESTATE EFFORTS</b>	<b>Mon 11/25/96</b>	<b>Fri 12/18/98</b>	<b>540d</b>		<b>Mon 11/25/96</b>	<b>Fri 12/18/98</b>	<b>Mon 5/25/98</b>	<b>Thu 9/2/99</b>	<b>No</b>
59	Execute Right of Entry Agreements	Mon 11/25/96	Fri 1/24/97	45d	46SS+30d	Mon 11/25/96	Fri 1/24/97	Fri 7/2/99	Thu 9/2/99	No
60	Real Estate Value Assessment	Mon 5/25/98	Fri 7/3/98	30d	40	Mon 5/25/98	Fri 7/3/98	Mon 5/25/98	Fri 7/3/98	Yes
61	Real Estate Acquisition Plan	Mon 7/6/98	Fri 11/6/98	90d	60	Mon 7/6/98	Fri 11/6/98	Mon 7/6/98	Fri 11/6/98	Yes
62	Gross Appraisal of Properties	Mon 7/6/98	Fri 9/25/98	60d	60	Mon 7/6/98	Fri 9/25/98	Mon 8/17/98	Fri 11/6/98	No
63	Documentation, Coordination	Mon 11/9/98	Fri 12/18/98	30d	61,62	Mon 11/9/98	Fri 12/18/98	Mon 11/9/98	Fri 12/18/98	Yes
64										
65	<b>J - STUDY MANAGEMENT</b>	<b>Mon 9/2/96</b>	<b>Mon 8/2/99</b>	<b>761d</b>		<b>Mon 9/2/96</b>	<b>Mon 8/2/99</b>	<b>Mon 9/2/96</b>	<b>Thu 9/2/99</b>	<b>Yes</b>
66	Tech Management - Initiate Work	Mon 9/2/96	Fri 10/11/96	30d	1	Mon 9/2/96	Fri 10/11/96	Mon 9/2/96	Fri 10/11/96	Yes
67	Local Sponsor and Other Agency Coordinati	Mon 10/14/96	Fri 9/11/98	500d	66	Mon 10/14/96	Fri 9/11/98	Mon 1/6/97	Thu 9/2/99	No
68	Tech Management - Scheduling, Review	Mon 10/14/96	Fri 9/11/98	500d	66	Mon 10/14/96	Fri 9/11/98	Mon 1/6/97	Thu 9/2/99	No
69	Plan Formulation - Existing Conditions	Mon 11/25/96	Fri 7/4/97	160d	67SS+30d,6	Mon 11/25/96	Fri 7/4/97	Mon 2/17/97	Fri 9/26/97	No

**NORTH SCOTTSDALE DRAINAGE, ARIZONA**  
**Feasibility Report Schedule**

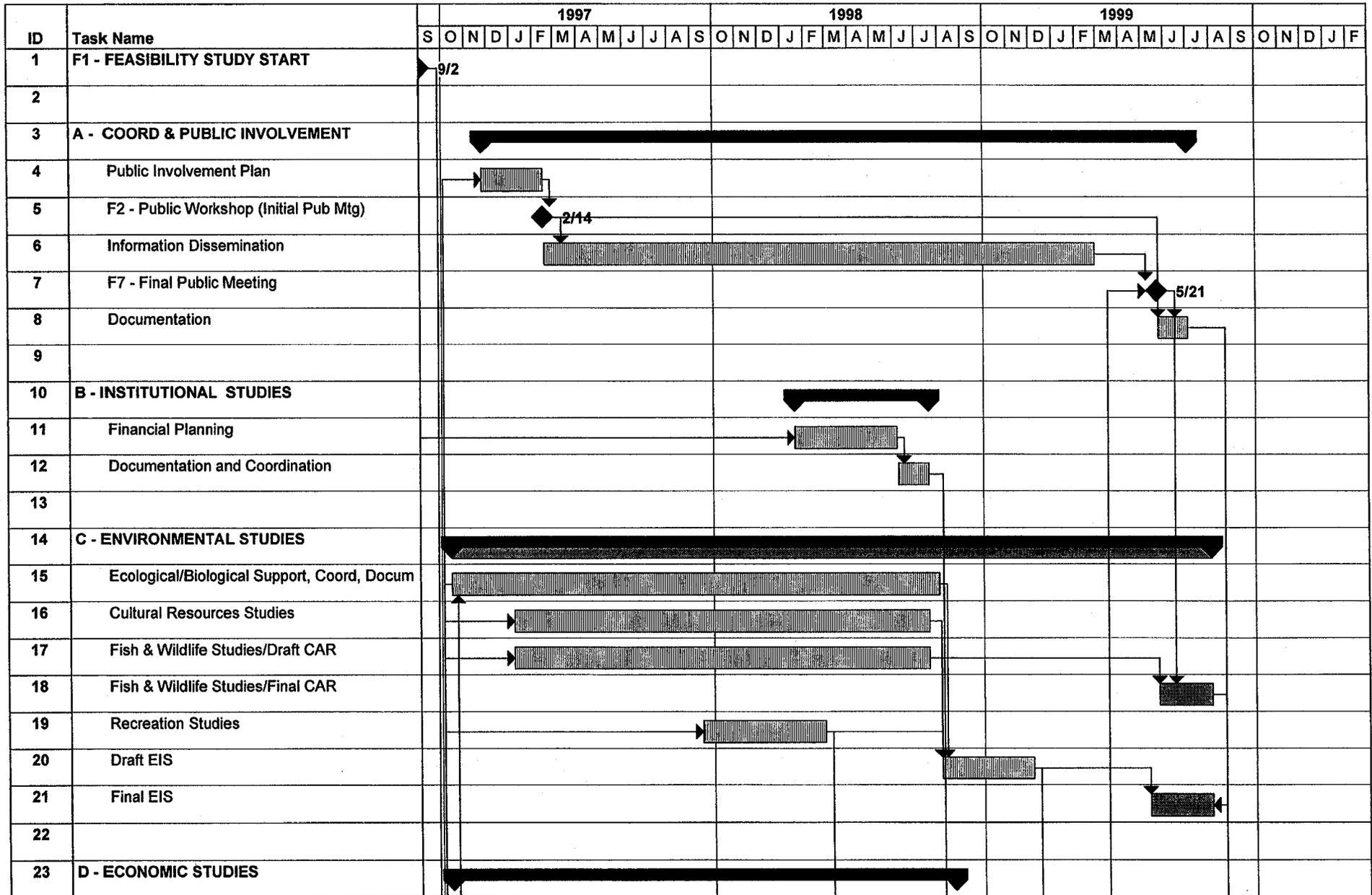
ID	Task Name	Start	Finish	Duration	Predecess	Early Start	Early Finish	Late Start	Late Finish	Critical
70	F3 Conference	Fri 9/12/97	Fri 9/12/97	0d	31,69	Fri 9/12/97	Fri 9/12/97	Fri 9/26/97	Fri 9/26/97	No
71	Plan Formulation - Evaluate Alternatives	Mon 9/15/97	Fri 9/11/98	260d	70	Mon 9/15/97	Fri 9/11/98	Mon 9/29/97	Fri 9/25/98	No
72	F4 Conference	Fri 9/11/98	Fri 9/11/98	0d	40,71	Fri 9/11/98	Fri 9/11/98	Fri 9/25/98	Fri 9/25/98	No
73	Draft Report Preparation	Mon 9/14/98	Fri 12/4/98	60d	72	Mon 9/14/98	Fri 12/4/98	Mon 9/28/98	Fri 12/18/98	No
74	F5 - Submit Draft Report & DEIS	Fri 12/18/98	Fri 12/18/98	0d	20,28,35,42	Fri 12/18/98	Fri 12/18/98	Fri 12/18/98	Fri 12/18/98	Yes
75	Final Report Preparation	Tue 5/11/99	Mon 8/2/99	60d	8FF,21FF,7	Tue 5/11/99	Mon 8/2/99	Tue 5/11/99	Mon 8/2/99	Yes
76	F8- Submit Final Report & Final EIS	Mon 8/2/99	Mon 8/2/99	0d	75	Mon 8/2/99	Mon 8/2/99	Mon 8/2/99	Mon 8/2/99	Yes
77										
78	<b>K. ENGINEERING MANAGEMENT</b>	Mon 10/14/96	Fri 6/18/99	700d		Mon 10/14/96	Fri 6/18/99	Tue 11/26/96	Mon 8/2/99	No
79	Coordination	Mon 10/14/96	Fri 12/5/97	300d	66	Mon 10/14/96	Fri 12/5/97	Tue 11/26/96	Mon 1/19/98	No
80	Quality Control	Mon 12/8/97	Fri 6/18/99	400d	79	Mon 12/8/97	Fri 6/18/99	Tue 1/20/98	Mon 8/2/99	No
81										
82	<b>L - PROGRAMS AND PROJECT MANAGMENT</b>	Mon 9/2/96	Fri 6/18/99	730d		Mon 9/2/96	Fri 6/18/99	Fri 11/15/96	Thu 9/2/99	No
83	Manage Budget Allocation and Expenditures	Mon 9/2/96	Fri 5/7/99	700d	1	Mon 9/2/96	Fri 5/7/99	Fri 11/15/96	Thu 9/2/99	No
84	Manage In-Kind Services	Mon 10/14/96	Fri 5/7/99	670d	83SS+30d	Mon 10/14/96	Fri 5/7/99	Fri 12/27/96	Thu 9/2/99	No
85	Upper Management Reporting	Mon 11/25/96	Fri 6/18/99	670d	84SS+30d	Mon 11/25/96	Fri 6/18/99	Fri 2/7/97	Thu 9/2/99	No
86	Prepare Project Management Plan	Mon 3/16/98	Fri 7/17/98	90d	12FF	Mon 3/16/98	Fri 7/17/98	Mon 8/17/98	Fri 12/18/98	No
87										
88	<b>M - QUALITY CONTROL AND REVIEW</b>	Mon 11/25/96	Thu 9/2/99	724d		Mon 11/25/96	Thu 9/2/99	Fri 12/18/98	Thu 9/2/99	Yes
89	Quality Control Plan	Mon 11/25/96	Mon 11/25/96	1d	1SS+60d	Mon 11/25/96	Mon 11/25/96	Fri 12/18/98	Fri 12/18/98	No
90	Indep Tech Review of Draft Documents	Mon 12/21/98	Fri 3/12/99	60d	74,89	Mon 12/21/98	Fri 3/12/99	Mon 12/21/98	Fri 3/12/99	Yes
91	F5A - Feasibility Review Conference	Fri 3/12/99	Fri 3/12/99	0d	90	Fri 3/12/99	Fri 3/12/99	Mon 3/15/99	Thu 9/2/99	Yes
92	F6 - Field Level Coordination	Fri 4/9/99	Fri 4/9/99	0d	91SS+20d	Fri 4/9/99	Fri 4/9/99	Mon 4/12/99	Thu 9/2/99	Yes

**NORTH SCOTTSDALE DRAINAGE, ARIZONA**  
**Feasibility Report Schedule**

ID	Task Name	Start	Finish	Duration	Predecess	Early Start	Early Finish	Late Start	Late Finish	Critical
93	Indep Tech Review of Final Documents	Tue 8/3/99	Thu 9/2/99	23d	76,90	Tue 8/3/99	Thu 9/2/99	Tue 8/3/99	Thu 9/2/99	Yes
94										
95	F9 - DIV ENG CERT/DIST ENG NOTICE	Thu 9/2/99	Thu 9/2/99	0d	56,73,84,85	Thu 9/2/99	Thu 9/2/99	Thu 9/2/99	Thu 9/2/99	Yes

# NORTH SCOTTSDALE DRAINAGE, ARIZONA

## Feasibility Report Schedule











**NORTH SCOTTSDALE DRAINAGE AREA,  
ARIZONA  
FEASIBILITY STUDY**

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**APPENDIX D**

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**DRAFT  
DETAILED STUDY COST ESTIMATE**

**23 April 1996**

Note: The detailed study cost estimate includes a ten percent contingency in each work item. The costs given are total costs including direct labor, overhead, travel, reproduction, etc. The numbers shown are x\$1000. The total for each task is given in parenthesis. At this time, the in-kind services have not been identified, and therefore no value has been assigned.

TASK/SUBTASK	TOTAL COST	VALUE OF IN-KIND SERVICE	VALUE OF CORPS EFFORT
<b>A. COORDINATION AND PUBLIC INVOLVEMENT</b>	(140)	(0)	(140)
Public Involvement Plan	25	0	25
Conduct Initial Public Meeting (F2)	35	0	35
Information Dissemination	45	0	45
Conduct Final Public Workshop (F7)	35	0	35
Documentation	5	0	5
<b>B. INSTITUTIONAL STUDIES</b>	(10)	(0)	(10)
Financial Planning	5	0	5
Documentation and Coordination	5	0	5
<b>C. ENVIRONMENTAL STUDIES</b>	(285)	(0)	(285)
Cultural Resources Studies	75	0	75
Fish and Wildlife Studies	30	0	30
Environmental Impact Statement	90	0	90
Recreation Studies	30	0	30
Ecological/Biological Support, Coord, Document	60	0	60
<b>D. ECONOMIC STUDIES</b>	(90)	(0)	(90)
Flood Proof Benefit Analysis	20	0	20
Recreation Analysis	20	0	20
Inundation Damage Analysis	10	0	10
Risk and Uncertainty Analysis	15	0	15
Documentation and Coordination	25	0	25

E. HYDROLOGIC STUDIES	(285)	(0)	(285)
Alluvial Fan Modeling	115	0	115
With Project Modeling	60	0	60
Sediment and Debris Flow	30	0	30
Hydraulic Modeling	40	0	40
Documentation	40	0	40
F. HYDRAULIC STUDIES	(285)	(0)	(285)
Flood Proofing Design	40	0	40
Sediment Transport Studies	85	0	85
With Project Design Effort	100	0	100
Risk and Uncertainty Analysis	20	0	20
Documentation	40	0	40
G. GEOTECHNICAL INVESTIGATIONS	(90)	(0)	(90)
Materials Effort	20	0	20
Geotechnical Effort	20	0	20
HTRW Assessment	20	0	20
Constructability Analysis	10	0	10
Documentation, Reviews, Coordination	20	0	20
H. DESIGN EFFORTS	(120)	(0)	(120)
Surveys and Mapping	60	0	60
Design Assistance	20	0	20
Quantity Calculations	10	0	10
Cost and Benefit Estimating	30	0	30
I. REAL ESTATE EFFORTS	(80)	(0)	(80)
Execute Right of Entry Agreements	10	0	10

Real Estate Value Assessment	20	0	20
Real Estate Acquisition Plan	20	0	20
Gross Appraisal of Properties	20	0	20
Documentation, Coordination	10	0	10
<b>J. STUDY MANAGEMENT</b>	<b>(285)</b>	<b>(0)</b>	<b>(285)</b>
Technical Management	70	0	70
Local Sponsor and Other Agency Coordination	45	0	45
Scheduling	20	0	20
Plan Formulation	60	0	60
Report Preparation and Reproduction	90	0	90
<b>K. ENGINEERING MANAGEMENT</b>	<b>(60)</b>	<b>(0)</b>	<b>(60)</b>
Coordination	30	0	30
Quality Control	30	0	30
<b>L. PROGRAMS AND PROJECT MANAGEMENT</b>	<b>(90)</b>	<b>(0)</b>	<b>(90)</b>
Manage Budget Allocation and Expenditure	20	0	20
Upper Management Reporting	20	0	20
Manage In-Kind Services	30	0	30
Prepare Project Management Plan	20	0	20
<b>M. QUALITY CONTROL AND REVIEW</b>	<b>(70)</b>	<b>(0)</b>	<b>(70)</b>
Quality Control Plan	5	0	5
Independent Technical/Policy Review	55	0	55
Documentation	10	0	10
<b>N. CONTINGENCY</b>	<b>210</b>	<b>0</b>	<b>210</b>
<b>TOTAL STUDY COST</b>	<b>2,100</b>	<b>0</b>	<b>2,100</b>