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Consultant Guidelines

Incorporated by Reference
for Consultant Services Contracts

April 15, 2003

2801 West Durango Street
Phoenix, Arizona 85009-6399
(602) 506-1501

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Flood Control District of MC Library
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Phoenix, AZ 85009

CONSULTANT GUIDELINES



**INCORPORATED BY REFERENCE
FOR
CONSULTANT SERVICES CONTRACTS**

*FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
2801 WEST DURANGO STREET
PHOENIX, ARIZONA 85009-6399*

THIRD EDITION – DECEMBER 1, 2003 – REVISION 1

NOTE:

THIRD EDITION – DECEMBER 1, 2003 - REVISION 1

THE FOLLOWING CHAPTERS AND EXHIBIT WERE REVISED:

**CHAPTER 1,
CHAPTER 2,
CHAPTER 4, AND
EXHIBIT 6A**

These Consultant Guidelines are provided to Flood Control District of Maricopa County consultants as part of their contract documents and remains the property of the Flood Control District of Maricopa County.

Copies of these Consultant Guidelines retained by the consultant, subconsultants, or any related entity are governed by Arizona law regarding the use of public records and may not be used for commercial purposes without additional written permission from the Flood Control District of Maricopa County and the payment of applicable fees.

THIS DOCUMENT REPLACES THE CONSULTANT GUIDELINES, APRIL 15, 2003.

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1.0 GENERAL PROVISIONS

1.1 PURPOSE

This Consultant Guidelines Manual is issued by the Flood Control District of Maricopa County (District) to provide the Consultant with an understanding of the District's interpretation of specific contract language and requirements and to standardize planning and design deliverables and submittals. It is incorporated by reference into the District's Contracts for Consultant Services and is therefore part of the contract documents. Unless otherwise specifically stated in the project specific Scope of Work or Special Conditions to the contract, all terms and conditions and requirements identified by these Guidelines are in full force and effect for consultant services contracts with the Flood Control District of Maricopa County. The project-specific Scope of Work will include by reference these entire Consultant Guidelines unless specifically noted as deleted or not applicable. Where the Consultant Guidelines are applicable, generally no further information will be provided in the project specific Scope of Work.

1.2 DEFINITIONS

When the following terms are used in the contract documents, the meaning will be as follows:

ADWR – Arizona Department of Water Resources

Agent – The representative of the District authorized to negotiate terms of the contract and provide direction to the Consultant during the term of the contract. The Agent is the sole District contact for administering the contract.

Agreement – The term “Agreement” is also referred to and may be designated as “Contract.”

Amendment – A written alteration to the executed contract, within the general scope of work, which authorizes and directs any of the following: an addition, deletion, or revision to the scope of work; or an adjustment in the contract performance period or contract value; or any combination thereof. The term “Amendment” is also referred to and may be designated as “Change Order.” **(Exhibit 1)**

A.R.S. – Arizona Revised Statutes, as amended, through the most recently completed legislative session.

Certificate of Performance – Consultant certification required prior to final contract payment by the District, certifying that all lawful claims for labor, rental of equipment, material used and any other claims in connection with the contract have been paid by the Consultant. **(Exhibit 2)**

Change Order – The term “Change Order” is also referred to and may be designated as “Amendment.” **(Exhibit 1)**

CLOMR – Conditional Letter of Map Revision issued by FEMA.

Consultant – The individual, partnership, firm, corporation, joint venture, or other business entity with which the District has entered into a contract to provide professional services. The term “Consultant” means and includes the Consultant and all of its representatives and subconsultants.

Contract – The fully executed contract for consultant services entered into between the District and the Consultant for completion of the scope of work. The contract is a mutually binding legal relationship, which includes all attachments, exhibits, supplements, and amendments to the contract and represents the entire and integrated agreement between the District and the Consultant. It supersedes all prior discussions, negotiations, representations, or agreements pertaining to the scope of work, whether written or oral. The term “Contract” is also referred to and may be designated as “Agreement.”

Contract Adjustment – See Amendment or Change Order.

Contract Fee - The total compensation to be paid by the District to the Consultant for the acceptable completion of the scope of work. The contract fee can only be changed by a written amendment to the contract. The term “Contract Fee” is also referred to and may be designated as “Contract Value.”

Contract Value – The term “Contract Value” is also referred to and may be designated as “Contract Fee.”

Cost Estimate – The Consultant’s best professional estimate of the value of the construction project. The cost information in the cost estimate shall be adjusted to reflect costs effective the date that the bids are opened.

County – Maricopa County, Arizona.

Day – A calendar day of 24 hours, measured from midnight to the following midnight.

Design Specification – Category of specifications, which sets out in detail, the materials used for contract work and the mode and manner in which contract work is to be performed.

District – The Flood Control District of Maricopa County, Arizona, a political taxing subdivision of the state of Arizona organized under Section 48, Chapter 21, of the Arizona Revised Statutes, having all the powers, privileges and immunities granted generally to municipal corporations.

Errors and Omissions – Wrongful acts of the insured Consultant arising out of performing, or failing to perform, professional services.

FEMA – Federal Emergency Management Agency.

Forbearance – Formal action by the District to reserve and maintain all contractual rights and remedies while allowing the Consultant to complete the contract requirements beyond the contract completion date when the Consultant has been delayed through no fault of the District or other Agencies identified by the Scope of Work. **(Exhibit 3A and 3B)**

LOMR – Letter of Map Revision issued by FEMA.

Maricopa County Procurement Code – Code adopted by the Maricopa County Board of Supervisors and the District Board of Directors, which applies to all expenditures of public monies, except contracts between the County or District and other political subdivisions or other governments. The Code defines the responsibilities and authorities granted to County and District representatives for solicitation, negotiation, and award of contracts, or other purchasing agreements.

Milestone – A principal event specified in the contract documents relating to an intermediate schedule completion date or time prior to the final contract completion date.

MWBE Program – Minority and Women-Owned Business Enterprise Program whose purpose is to establish guidelines for increased full and equitable opportunities for minority business enterprises and women-owned business enterprises (MWBE) to provide goods and services to Maricopa County. The District has adopted this program and, with the County, endeavors to ensure in every way possible that minority and women-owned business enterprises have every opportunity to participate in providing professional services, purchased goods, and contractual services to the County and District without being discriminated against on the grounds of race, religion, gender, age or national origin. Contracts with MWBE participation are required to submit a completed MWBE Participation Report (**Exhibit 4**) with each request for payment.

Notice to Proceed (NTP) – The formal notification issued by the District to the Consultant authorizing the Consultant to proceed with the work and establishing the date of commencement of the performance period.

Performance Period – The period of time provided in the contract for the completion of the scope of work by the Consultant. The performance period is initiated by the Notice to Proceed. The performance period may only be revised by an amendment to the contract.

Progress Payments – Monetary payment made to the Consultant as contract work progresses and determined on the basis of percentage of completion accomplished.

Project – The total work identified by the Scope of Work, to be completed pursuant to the contract requirements.

Project Manager – Consultant's representative and the primary contact with the District. The Project Manager is knowledgeable and responsible for all aspects and phases of the project.

Retention – A percentage withheld from the progress payments to the Consultant in accordance with the contract documents. The retention is held until all terms of the contract have been fulfilled.

Schedule – A timeline of the scope of work that, at a minimum, contains those elements of the District scheduling template (**Exhibit 5**) which are applicable to the project, i.e., contract start and completion dates, coordination meetings, dates of required submittals, and significant project milestones.

Scope of Work – Contract document detailing the specific work requirements in addition to the Consultant Guidelines.

Seal - The approval of a Professional Engineer, Architect, or Land Surveyor registered in the State of Arizona and who is both qualified and regularly and customarily engaged in the technical discipline of the scope of work, which is approved by the seal.

Specification – A description of the technical requirements for a material, product, or service that includes the criteria for determining whether these requirements are met.

Stamp – The term “Stamp” is also referred to and may be designated as “Seal”.

Standard – A document that establishes engineering and technical limitations and applications of materials, processes, methods, designs, and engineering practices.

Study – An investigation that results in the acquisition of knowledge through the analysis of a proposed project or issue. At the completion of the study, the Consultant provides the District with a written report of the information attained during the study period.

Subconsultant – An individual or a business entity, which has a direct contract with the Consultant to perform a portion of the scope of work. The term “subconsultant” means and includes the subconsultant and the subconsultant’s authorized representatives.

Technical Data Notebook – The organization of technical documentation for flood studies according to the State Standard SSA1-97.

Termination – Right reserved by the District to bring an end to a contract for either the convenience of the District, or due to the unexcused failure of the Consultant to perform.

Written or In Writing – Any worded or numbered expression which can be read, reproduced, and later communicated, and includes electronically transmitted and stored information.

1.3 TERMS AND CONDITIONS

1.3.1 PAYMENTS TO THE CONSULTANT

1.3.1.1 The Consultant shall be paid for work under contract in accordance with the Scope of Work plus any adjustments that have been approved in writing in accordance with the Maricopa County Procurement Code.

1.3.1.2 The District shall pay the Consultant upon completion of satisfactory work as accepted by the District, except that progress payments may be made as billed by the Consultant based upon approved monthly progress reports subject to the limitations set forth in Exhibit A, Scope of Work. Ten percent (10%) of all contract payments made on an interim basis shall be retained by the District as insurance of proper performance of the contract or, at the option of the Consultant, a substitute security may be provided by the Consultant in an authorized form pursuant to procedures established by the District. The Consultant is entitled to all interest from any such substitute security.

1.3.1.3 When the Project is fifty percent (50%) complete, retention shall be reduced to five percent (5%) of the amount of any subsequent progress payments, and one-

half (1/2) of the amount retained will be paid to the Consultant provided the Consultant is making satisfactory progress and there is no specific cause or claim requiring a greater amount to be retained. If at any time the District determines satisfactory progress is not being made, ten percent (10%) retention shall be reinstated for all progress payments made under the contract subsequent to the determination.

1.3.1.4 If the Consultant desires a partial payment in accordance with the provisions above, and a Minority and Women-Owned Business Enterprise (MWBE) goal has been established for the contract, the Consultant will complete and forward the enclosed MWBE Participation Report (**Exhibit 4**) indicating payment distribution to MWBE firms with each request for payment.

1.3.1.5 Any retention shall be paid or substitute security returned or released to the Consultant, as applicable, within forty-five (45) calendar days after:

- a. final completion of all work per Exhibit A and the detailed Scope of Work,
- b. acceptance of the work by the District,
- c. the District's receipt of the "Certificate of Performance" form (**Exhibit 2**),
- d. the District's receipt of an invoice for any retained monies, and when applicable,
- e. the District's receipt of a final MWBE Participation Report stating the total payments received by the prime, as well as total payments the prime has made to MWBE subconsultants, vendors, and suppliers.

1.3.2 INDEMNIFICATION

1.3.2.1 INDEMNIFICATION FOR PROFESSIONAL LIABILITY:

To the fullest extent permitted by law, the Consultant shall indemnify and hold harmless the District and Maricopa County, their agents, representatives, officers, directors, officials, and employees from and against all claims, damages, losses and expenses including, but not limited to, attorney fees, court costs, expert witness fees, and the cost of appellate proceedings, relating to, arising out of, or alleged to have resulted from the Consultant's negligent acts, errors, omissions or mistakes relating to professional services in the performance of this contract. Consultant's duty to indemnify and hold harmless the District, Maricopa County, any additional Insured's, and their agents, representatives, officers, directors, officials, and employees shall arise in connection with any claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, or injury to, impairment, or destruction of property, including loss of use resulting therefrom, caused by any negligent acts, errors, omissions or mistakes, related to professional services in the performance of this contract including any person for whose negligent acts, errors, omissions or mistakes, the Consultant may be legally liable.

1.3.2.1.1 The amount and type of insurance coverage requirements set forth in the contract will in no way be construed as limiting the scope of the indemnity in this paragraph.

1.3.2.2 FOR ALL OTHER HAZARDS, LIABILITIES, AND EXPOSURES:

To the fullest extent permitted by law, the Consultant shall defend, indemnify and hold harmless the District and Maricopa County, their agents, representatives, officers, directors, officials, and employees from and against all claims, damages, losses and expenses (including but not limited to attorney fees, court costs, expert witness fees, and the cost of appellate proceedings), relating

to, arising out of or resulting from the Consultant's work or services. Consultant's duty to defend, indemnify and hold harmless the District, Maricopa County, any additional Insured's, and their agents, representatives, officers, directors, officials, and employees shall arise in connection with any claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, injury to, impairment or destruction of property including loss of use resulting therefrom, caused in whole or in part by any act or omission of the Consultant, anyone Consultant directly or indirectly employs or anyone for whose acts Consultant may be liable.

1.3.2.2.1 The amount and type of insurance coverage requirements set forth in the contract will in no way be construed as limiting the scope of the indemnity in this paragraph.

1.3.2.3 ABROGATION OF ARIZONA REVISED STATUTES § 34-226:

In the event that A.R.S. § 34-226 shall be repealed or held unconstitutional or otherwise invalid by a court of competent jurisdiction, then this duty of indemnification shall extend to all claims, damages, losses and expenses, including, but not limited to, attorney fees, court costs, expert witness fees, and the cost of appellate proceedings, relating to, arising out of, or alleged to have resulted therefrom, caused in whole or in part by any negligent acts, errors, or omissions relating to professional work or services in the performance of this contract by the Consultant, or anyone directly employed by the Consultant or anyone for whose acts Consultant may be liable regardless of whether it is caused by any party indemnified hereunder, including the District, Maricopa County, and any additional Insured's.

1.3.2.3.1 The amount and type of insurance coverage requirements set forth in the contract will in no way be construed as limiting the scope of the indemnity in this paragraph.

1.3.2.3.2 The scope of this indemnification does not extend to the sole negligence of the District.

1.3.3 INSURANCE REQUIREMENTS

1.3.3.1 Consultant, at Consultant's own expense, shall purchase and maintain the stipulated minimum insurance with companies duly licensed, possessing a current A.M. Best Company, Inc. Rating of at least B++ or a Financial Performance Rating (FPR) of at least 6, or approved unlicensed companies in the State of Arizona with policies and forms satisfactory to the District (**Exhibit 14**).

1.3.3.2 All insurance required herein shall be maintained in full force and effect until all work or service required to be performed under the terms of the contract is satisfactorily completed and formally accepted by the District. Failure to do so may, at the sole discretion of the District, constitute a material breach of the contract.

1.3.3.3 The Consultant's insurance shall be primary insurance as respects the District and any insurance or self-insurance maintained by the District shall not contribute to it.

1.3.3.4 The policies required hereunder, except Workers' Compensation and Professional Liability, shall contain a waiver of transfer of rights of recovery (subrogation) against the District, its agents, representatives, officers, directors, officials, and employees for any claims arising out of the Consultant's work or service.

- 1.3.3.5 Any failure to comply with the claim reporting provisions of the insurance policies or any breach of an insurance policy warranty shall not affect coverage afforded under the insurance policies to protect the District.
- 1.3.3.6 The insurance policies may provide coverage which contains deductibles or self-insured retentions. Such deductible and/or self-insured retentions shall not be applicable with respect to the coverage provided to the District under such policies. The Consultant shall be solely responsible for the deductible and/or self-insured retention and the District, at its option, may require the Consultant to secure payment of such deductibles or self-insured retentions by a surety bond or an irrevocable and unconditional letter of credit.
- 1.3.3.7 The District reserves the right to request and to receive, within ten (10) working days, certified copies of any or all of the required insurance policies and/or endorsements. The District shall not be obligated, however, to review such policies and/or endorsements or to advise Consultant of any deficiencies in such policies and endorsements, and such receipt shall not relieve Consultant from, or be deemed a waiver of, the District's right to insist on strict fulfillment of Consultant's obligations under this contract.
- 1.3.3.8 The insurance policies required by the contract, except Workers' Compensation and Professional Liability, shall name the District, its agents, representatives, officers, directors, officials, and employees as Additional Insureds.

1.3.4 COMMERCIAL GENERAL LIABILITY:

- 1.3.4.1 Consultant shall maintain Commercial General Liability insurance with a limit of not less than \$1,000,000 for each occurrence with a \$2,000,000 Products/Completed Operations Aggregate and a \$2,000,000 General Aggregate Limit except when stated otherwise. The policy shall include coverage for bodily injury, broad form property damage, personal injury, products and completed operations and blanket contractual coverage including, but not limited to, the liability assumed under the indemnification provisions of this contract which coverage will be at least as broad as Insurance Service Office, Inc. Policy Form CG 00 01 10 93 or any replacements thereof.
- 1.3.4.2 The policy shall contain a severability of interest provision, and shall not contain a sunset provision or commutation clause, or any provision that would serve to limit third party action over claims.
- 1.3.4.3 The Commercial General Liability additional insured endorsement shall be at least as broad as the Insurance Service Office, Inc.'s Additional Insured, CG 20 10 11 85, and shall include coverage for Consultant's operations and products and completed operations.

1.3.5 AUTOMOBILE LIABILITY:

Consultant shall maintain Automobile Liability insurance with an individual single limit for bodily injury and property damage of no less than \$1,000,000, each occurrence, with respect to Consultant's vehicles (whether owned, hired, non-owned), assigned to or used in the performance of the contract except when stated otherwise. Coverage will be at least as broad as coverage code 1, "any auto" (Insurance Services Office, Inc. Policy Form CA 00 01 12 93, or any replacements thereof). Such insurance shall include coverage for loading and off-loading and off-loading hazards. If hazardous substances, materials, or wastes are to be transported, MCS 90

endorsement shall be included and \$5,000,000 per accident limits for bodily injury and property damage shall apply except when stated otherwise.

1.3.6 WORKERS' COMPENSATION:

The Consultant shall carry Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of Consultant's employees engaged in the performance of the work or services, as well as Employer's Liability insurance of not less than \$1,000,000 for each accident, \$1,000,000 disease for each employee, and \$1,000,000 disease policy limit except when stated otherwise.

- 1.3.6.1 In case any work is subcontracted, the Consultant will require the Subconsultant to provide Worker's Compensation and Employers' Liability insurance to at least the same extent as required of the Consultant.

1.3.7 PROFESSIONAL LIABILITY:

The Consultant retained by the District to provide the work or service required by the contract shall maintain Professional Liability insurance covering negligent acts, errors, or omissions arising out of the work or services performed by the Consultant, or any person employed by the Consultant, with a limit of not less than \$1,000,000 each claim except when stated otherwise.

1.3.8 CERTIFICATES OF INSURANCE:

Prior to commencing work or services under the contract, Consultant shall furnish the District with Certificates of Insurance (**Exhibit 14**), or formal endorsements as required by the contract, issued by Consultant's insurer(s), as evidence that policies providing the required coverage's, conditions, and limits required by the contract are in full force and effect. Such certificates shall identify the contract number and title.

- 1.3.8.1 In the event any insurance policy(ies) required by the contract is (are) written on a "claims made" basis, coverage shall extend for two (2) years past completion and acceptance of the Consultant's work or services and as evidenced by annual Certificates of Insurance.
- 1.3.8.2 If a policy does expire during the life of the contract, a renewal certificate must be sent to the District fifteen (15) days prior to the expiration date.

1.3.9 CANCELLATION AND EXPIRATION NOTICE:

Insurance required shall not expire, be cancelled, or materially changed without thirty (30) days prior written notice to the District.

1.3.10 THE DISTRICT'S RESPONSIBILITIES

The District shall furnish the Consultant, at no cost to the Consultant, the following information or services for this project:

- 1.3.10.1 One copy of on-hand maps, records, survey ties, benchmarks, or other data pertinent to the project. This does not, however, relieve the Consultant of the responsibility of searching records for additional information, for requesting

- specific information or for verification of that information provided. The District does not warrant the accuracy or comprehensiveness of any such information.
- 1.3.10.2 All available information and data relative to policies, standards, criteria, and studies, etc. impacting the project as identified by the Consultant.
 - 1.3.10.3 Availability of staff for consultation with the Consultant during the performance of the studies and plan development in order to identify the problems, needs, and other functional aspects of the project.
 - 1.3.10.2 Examination of documents submitted by the Consultant and rendering of decisions pertaining thereto promptly, to avoid unreasonable delay in the progress of the work by the Consultant. The District will keep the Consultant advised concerning the progress of the District's review of work.

1.3.11 ALTERATION IN SCOPE OF WORK

- 1.3.11.1 The contract may be amended by mutual written agreement of the District and the Consultant. Any alteration in the scope of work that will result in a substantial change in the nature of the project so as to materially increase or decrease the contract fee will require negotiation of an amendment to the contract to be executed by the District and the Consultant. No work shall commence on the change until the amendment has been approved by the District and the Agent has notified the Consultant to proceed. It is distinctly understood and agreed that no claim for extra work done or materials furnished by the Consultant will be allowed by the District except as provided herein, nor shall the Consultant do any work or furnish any materials not covered by this agreement unless such work is first authorized in writing in accordance with the Maricopa County Procurement Code. Any such work or materials furnished by the Consultant without such written authorization first being given shall be at the Consultant's own risk, cost, and expense. The Consultant hereby agrees to make no claim for such work or materials furnished that without such written authorization, the District will accept no claim for compensation for such work or materials furnished.
- 1.3.11.2 Should the Consultant feel that the District, or any project partner such as city or agency staff, is requiring the Consultant to provide work that is not within the scope of the contract documents, the Consultant must notify the District Project Manager immediately and in writing and describe the work which the Consultant feels is out of scope. Such notification shall be provided to the District Project Manager prior to the commencement of any such out of scope work.
- 1.3.11.3 It is the Consultant's sole responsibility to assure that no additional services beyond the Scope of Work defined in the contract documents shall commence without the written authorization of the District Project Manager.
- 1.3.11.4 No work defined in the contract documents shall be delayed by the Consultant's request for additional fee for a change or addition in the agreed Scope of Work unless so directed by the District Project Manager.
- 1.3.11.5 Retroactive requests for additional fee shall neither be considered nor approved.

1.3.12 RECORDS

- 1.3.12.1 Records of the Consultant's payroll expense pertaining to this project and records of accounts between the District and the Consultant shall be kept on a generally recognized accounting basis and shall be available upon request to the District or its authorized representative for audit during normal business hours. The records

shall be subject to audit by appropriate grantor agency if the project is funded all or in part by a grant.

- 1.3.12.2 The Consultant shall maintain procurement records for a period of two (2) years unless applicable Federal regulations require a longer period.

1.3.13. PROJECT COMPLETION

If, during the course of the contract, situations arise which prevent completion within the allotted time, the Agent may grant an extension.

1.3.14 TERMINATION

- 1.3.14.1 The District may terminate the contract at any time upon reimbursement to the Consultant of expenses that include reasonable charges for time and material for the percentage of work satisfactorily completed provided to the District.
- 1.3.14.2 The District reserves the right to postpone, terminate, or abandon this project for the Consultant's failure to complete the project on time, or failure to comply with the provisions of the contract. The District also reserves the right to terminate any or all parts of the contract for its own convenience as the District may determine at its sole discretion.
- 1.3.14.3 The District hereby gives notice that pursuant to A.R.S. Section 38-511 "A", the contract may be canceled without penalty or further obligation within three (3) years after execution if any person significantly involved in initiating, negotiating, securing, drafting, or creating a contract on behalf of the District is, at any time while the contract or any extension of the contract is in effect, an employee or agent of any other party to the contract in any capacity or a consultant to any other party of the contract with respect to the subject matter of the contract. Cancellation under this section shall be effective when written notice from the Chief Engineer and General Manager is received by all of the parties of the contract. In addition, the District may recoup any fee or commission paid or due to any person significantly involved in initiating, negotiating, securing, drafting, or creating the contract on behalf of the District from any other party to the contract arising as a result of the contract.
- 1.3.14.4 The Consultant may terminate the contract in the event of nonpayment of fees as specified in the Payments section of the contract.

1.3.15 OWNERSHIP OF DOCUMENTS

- 1.3.15.1 All original documents including, but not limited to, studies, reports, tracings, drawings, physical and computer models, estimates, field notes, investigations, design analyses, calculations, computer software, and specifications, prepared in the performance of the contract are to be and remain the property of the District and are to be delivered to the Agent before final payment is made to the Consultant.
- 1.3.15.2 However, the District will not reuse, alter, or modify these documents without noting such modifications, alterations, or intent of their reuse, and will hold the Consultant harmless from any claims arising from the reuse, modifications, or alteration of the documents. The Consultant may retain reproducible copies of all such documents delivered to the District.
- 1.3.15.3 If the Consultant retains reproducible copies of all such documents delivered to the District, the Consultatn may not use those documents in regard to current or

future claims or litigations against the District brought by another party or parties unless the documents are independently produced in accordance with a court order or procedural rules and notice of such production is given to the District immediately and prior to their production.

1.3.15.4 Copies retained by the Consultant, sub-consultant(s), or any related entities are governed by Arizona Law regarding the use of public records and may not be used for commercial purpose without additional written permission from the District and the payment of all applicable fees.

1.3.15.5 The District reserves the right to reuse the documents as it sees fit.

1.3.16 COMPLIANCE WITH LAWS

1.3.16.1 The Consultant is required to comply with all Federal, State, and local laws, ordinances and regulations. The Consultant's signature on the contract certifies compliance with the provisions of the I-9 requirements of the Immigration Reform and Control Act of 1986 for all personnel that the Consultant and any subconsultants employ to complete this project. It is understood that the District shall conduct itself in accordance with the provisions of the Maricopa County Procurement Code.

1.3.17 GENERAL CONSIDERATIONS

1.3.17.1 The Consultant shall furnish to the District for approval the names of its key employees and of its subconsultants and their key employees, to be used on this project prior to beginning the work. Any subsequent changes are subject to the written approval of the District.

1.3.17.2 The Consultant in replacing a MWBE subconsultant shall attempt to contract with another MWBE.

1.3.17.3 The Consultant shall perform, with its own firm, work amounting to fifty percent (50%) or more of the total amount of the contract value. Any deviation may be approved, in writing, at the discretion of the Agent.

1.3.17.4 The failure of either party to enforce any of the provisions of the contract or to require performance of the other party of any of the provisions hereof shall not be construed to be a waiver of such provisions, nor shall it affect the validity of the contract or any part thereof, or the right of either party to thereafter enforce each and every provision.

1.3.17.5 The Consultant shall be responsible for the cost of any additional design, field layout, testing, construction and supervision necessary to correct those errors or omissions attributable to the Consultant and for any damage incurred by the District as a result of additional construction costs caused by such Consultant errors or omissions.

1.3.17.6 The fact that the District has accepted or approved the Consultant's work shall in no way relieve the Consultant's responsibility.

1.3.17.7 It is mutually understood and agreed that the contract shall be governed by the laws of the State of Arizona, both as to interpretation and performance. Any action at law, suit in equity, or judicial proceeding for the enforcement of the contract, or any provision thereof, shall be instituted only in the courts of the State of Arizona.

1.3.17.8 When the contract requires the Consultant to study specific geographic areas of Maricopa County including, but not limited to, floodplain delineations, watercourse master plans, area drainage master studies, or any other site specific

assignment that the Consultant agrees to during the term of the contract and any extensions thereof that Consultant will not perform similar services for any clients other than the District within that specific geographic area without the written authorization and approval of the Chief Engineer and General Manager of the District.

- 1.3.17.9 The Consultant agrees that it, its principals, employees, sub-consultants, agents and assigns, shall not accept employment as consultants, expert witnesses or otherwise in any pending or contemplated litigation against the District during the term of the contract and any extensions thereof without the written authorization and approval of the Chief Engineer and General Manager of the District.
- 1.3.17.10 The Consultant agrees that it, its principals, employees, sub-consultants, agents and assigns, shall not accept employment as consultants, expert witnesses or otherwise in any future litigation against the District in regard to the subject matter of the contract without the written authorization and approval of the Chief Engineer and General Manager of the District.
- 1.3.17.11 It is understood that the District shall have the right to seek and obtain in any court of competent jurisdiction an injunction to restrain a violation or alleged violation by the Consultant, its principals, employees, sub-consultants, agents or assigns, of the provisions of 1.3.17.8, 1.3.17.9, and 1.3.17.10 of this section or of the provisions of 1.3.15.2, and the right of action for full damages at law, in addition to any other remedies provided by the contract. In no case shall a waiver by the District of the right to seek relief under this provision constitute a waiver of any other or further violation

1.3.18 SUCCESSORS AND ASSIGNS

- 1.3.18.1 The contract shall not be assigned by either party without prior written approval of the other except that the Consultant may use in the performance of the contract without prior approval of the District, personnel or services of its related entities and affiliated companies as if they were an integral part of the Consultant; and it shall extend to and be binding upon the heirs, executors, administrators, successors and assigns of the parties hereto.

1.3.19 NO KICK-BACK CERTIFICATION

- 1.3.19.1 The Consultant warrants that no person has been employed or retained to solicit or secure the contract upon any agreement or understanding for a commission, percentage, brokerage, or contingent fee; and that no member of the Board of Directors/Supervisors or any employee of the District has any interest, financially or otherwise, in the Consultant firm.
- 1.3.19.2 For breach or violation of this warranty, the District shall have the right to annul the contract without liability, or at its discretion to deduct from the contract price or consideration, the full amount of such commission, percentage, brokerage, or contingent fee.

1.3.20 ANTI-DISCRIMINATION PROVISION

- 1.3.20.1 The Flood Control District of Maricopa County will endeavor to ensure in every way possible that minority and women-owned business enterprises shall have every opportunity to participate in providing professional services, purchased goods, and contractual services to the District without being discriminated against on the grounds of race, religion, gender, age, disability, or national origin.
- 1.3.20.2 The Consultant agrees not to discriminate against any employee or applicant for employment because of race, religion, gender, age, disability, or national origin, and further agrees not to engage in any unlawful employment practices. The Consultant further agrees to insert the foregoing provisions in all subcontracts hereunder.

1.4 CONSULTANT FEE

- 1.4.1 It is the District's intent that the Consultant receives fair and equitable reimbursement for reasonable direct labor costs, payroll additives, overhead (including general and administrative expenses), subconsultants and other direct costs (ODCs), and shall also make a reasonable profit. The District considers a cost to be "reasonable" if, in its nature and amount, it does not exceed that which would be incurred by a prudent person in the conduct of competitive business. It is the District's policy to determine the appropriateness and reasonableness of proposal fees. The fee will be submitted in the format identified by **Exhibit 6A**, for the prime Consultant and any major subconsultants as identified by the District. The fee will be comprised of the following:

- 1.4.1.1 Labor-Related Costs

Labor related costs are actual salaries of the personnel directly charging time to the project, including applicable sick leave, vacation, and holiday pay, plus unemployment compensation insurance, retirement benefits, deferred compensation (or like plan qualified under the applicable section of the Internal Revenue Code), and medical and insurance benefits. The salaries of principals or partners to the extent that they perform only advisory services directly applicable to the project will be added to the salary cost without additions for employee benefits. Where the services of the principals or partners are necessary for the successful completion of the project, and this has been demonstrated to the satisfaction of the District, then the salaries of the principals or partners will be treated as directly chargeable to the project, inclusive of all employee benefits.

- 1.4.1.2 Multiplier

This provides the compensation for the Consultant's overhead, plus a margin for interest on invested capital, readiness and ability to serve, and profit.

The largest component of this multiplier is Overhead (indirect salary expenses), and is inclusive of the following unless otherwise accounted for in the audit of the firm's expenses:

- a. The salaries of personnel in the executive and administrative salary pool other than those identifiable salaries included in salary cost, and expenses included and reimbursable and non-salary expenses, plus salaries or imputed salaries of partners and principals, to the extent that they perform general executive and administrative services.

- b. Business taxes and insurance, other than those included in salary cost, but excluding state and federal income taxes.
- c. Office space, including light, heat, cooling, and similar items.
- d. Depreciation allowances or rental for furniture, drafting equipment, and engineering instruments.
- e. Transportation expenses, including corporate automobile expense, and maintenance.
- f. Office, printing, and drafting supplies.
- g. Education and professional development (may include cost for Consultant employee's attendance at technical conferences).
- h. Communication expenses, including telephone, telegraph, and facsimile, with the exception of long distance calls directly chargeable to a specific project.
- i. Professional expenses, including fees for memberships in professional organizations.
- j. Interest and finance.
- k. Proposal preparation, preliminary arrangements for new projects, billing preparation, or like expenses.
- l. Computer expenses, exclusive of salary cost of operation for specific projects, but inclusive of all other related computer operation expenses. If otherwise provided for in the cost allocation plan of a firm (such as direct project expense), the District reserves the right to review and approve such expense allocation and amount at the time of fee negotiation.
- m. Graphic and engineering supplies.
- n. Reproduction and photo expense, including use of copier for work not specified as a direct expense.
- o. Postage, messenger, delivery and freight expenses other than those chargeable to a specific project.
- p. Outside and temporary help.
- q. Outside services – reproduction and printing, other than those costs directly chargeable to the project.
- r. Equipment rental.

1.4.1.3 Direct Non-Salary Expenses

The District will negotiate the estimated expense categories for both Consultant and subconsultant. Backup documentation may be requested by the District. Expense itemization, during the negotiation stage, must be compatible with the amount of direct expenses being proposed by the Consultant, and will vary with both the amount and type of the Consultant's contract assignment. These expenses will be identified by Consultants on a project-by-project basis and may include, but not necessarily be limited to, the following:

- a. Living and traveling expenses for principals and employees when away from the home office on business connected with the project, either actual expenses or a negotiated per diem rate.
- b. Identifiable communication expense, such as long distance telephone calls, telegraph, and express mail charges incurred for the project.
- c. Services directly applicable to the project, such as legal, accounting, special Consultants (including subcontractors), borings, laboratory charges, commercial printing and binding, and similar costs that are not applicable nor have been included in general overhead.

- d. This may also include "special" computer costs where the project requirements are such that a specific program purchase or additional computer equipment, such as rental, is necessary and identifiable. Any personnel time required in the application of specific programs will be charged as a salary cost. The District may request additional information regarding computer charges during the fee proposal and negotiation phases to ensure the cost effectiveness of the charges in relation to the project objectives and that the charges are not included in general overhead.
- e. Reproduction and printing services directly related to the project and identified by a specific deliverable, such as reports, plans and specifications.
- f. If an outside service does not involve the Consultant's use of a professional service subconsultant, this type of consultant cost must be included within the direct expense category.

1.4.2 UNALLOWABLE EXPENSES

The following expenses are unallowable for inclusion in the Consultant's overhead (indirect salary) expenses:

- a. Entertainment or advertising.
- b. Time spent for participating in civic and charitable activities.
- c. Bad debts, including interest, and charges for legal and collection fees.
- d. Cost of life insurance policies where corporation is named as beneficiary.
- e. Employee recreation and/or morale enhancement.
- f. Property taxes on other than the property primarily occupied by the corporation.
- g. Fines, penalties, or other payments for violations of whatever kind or description.
- h. Errors and omissions payments in settlement of claims or judgments.
- i. Contributions and gifts.

1.4.3 ESTIMATED MAN-HOURS

- 1.4.3.1 Listings of the man-hours proposed to be directly spent on the project by non-overhead, project personnel involved in each major task/phase/additional service/post design category are to be included in the fee proposal and totaled by tasks and personnel classifications (**Exhibit 7**).
- 1.4.3.2 When a subconsultant is being employed for the work, the Consultant will include a separate task for subconsultant project management.
- 1.4.3.3 No additional markup will be allowed on work performed by subconsultants.

1.4.4 SCHEDULED PROJECT MAN-HOURS

- 1.4.4.1 A tabulation of the Consultant's/Subconsultant's estimated direct project man-hours, by project personnel classification, on a month-by-month basis, is required. (**Exhibit 8**)

1.4.5 COST PROPOSAL SUMMARY

- 1.4.5.1 Under the "direct labor" classification (**Exhibit 9**), the labor classifications must match the personnel classifications contained in the "Consultant/Subconsultant Estimated Man-hours" sheet. It is intended that all personnel/personnel categories (other than overhead-type personnel) who will be directly involved in the contract scope of work be included. The District will assess the reasonableness of the skill level required to accomplish the work, i.e., the Consultant should not propose using staff more qualified (and therefore possibly more costly) than necessary for a specific task.
- 1.4.5.2 Estimated man-hours should be the same as the individual and total categories listed in the "Consultant/Subconsultant Estimated Man-hours" sheet.
- 1.4.5.3 The hourly rate shall reflect:
- a. The actual hourly rates of identified key project personnel; and
 - b. The average hourly rates for all other personnel classifications at the office where the work will be performed.
- 1.4.5.4 At the start of the negotiation process, salary and overhead data may be required. If required, an officer of the company must substantiate salary data. Overhead may be supported by the firm's most recent audit or by a determination of overhead by an audit conducted by another government agency. If a firm does not have an audited overhead rate, the District may assign a provisional overhead. It is expected that a reasonable overhead for most firms will not exceed 160%. Highly specialized firms may have a higher overhead. This will be reviewed by the District on a case-by-case basis.
- 1.4.5.5 During the contract negotiation stage, all components (salary, fringes, G&A overhead and net fee percentage) of a consulting firm's fee proposal will be subject to review and approval by the District for general compliance with current standards. If salaries or overhead are not acceptable, the District will so advise the Consultant who can voluntarily reduce them if they wish to continue the contract process.
- 1.4.5.6 Profit will be determined by degree of risk, complexity of the job, size of the contract and related factors. Normally acceptable profit ranges are 8% to 15%. Large, simple, low risk projects will have a lower profit range. The higher profit margins will be for small or complex, high-risk projects. Most studies should have a median profit margin, depending on the size of the scope.
- 1.4.5.7 In lieu of separate overhead and profit figures, the selection committee may establish a multiplier. The multiplier will be based on the factors stated in 1.4.5.6.
- 1.4.5.8 Unless specifically called out within the contract, the District will not entertain increases to any component of a Consultant's overall multiplier during the performance of a contract.
- 1.4.5.9 All major professional subconsultant services being proposed by the Consultant must receive the same level of detail as the Consultant's fee proposal

1.4.6 FEE SCHEDULE

- 1.4.6.1 Fee schedules are utilized for on-call contracts (**Exhibit 6**). On-call contracts are established when multiple work assignments will be performed within the contract.

- 1.4.6.2 Job classifications, direct hourly rates, overhead, and profit are submitted by the consultant. Upon contract award, this information will remain for the duration of the project.
- 1.4.6.3 Upon request by the District for a work assignment, the Consultant will calculate the total work assignment cost by identifying the realistic project hours multiplied by the direct labor rates, in accordance with the contract fee schedule.
- 1.4.6.4 The total work assignment cost shall be submitted in the fee schedule format (**Exhibit 6**). The District may also require the utilization of the forms in **Exhibit 7, 8, and 9**.

1.5 EVALUATION FORMS

- 1.5.1 Consultant projects may be evaluated between the District and the Consultant at certain milestones of completion or at project completion.
- 1.5.2 The District shall complete the one evaluation form (**Exhibit 10**) and the Consultant shall complete the one evaluation form (**Exhibit 11**). Both parties sign these forms. The originals are given to the Contracts Branch and copies are given to the Consultant and the District's Project Manager.
- 1.5.3 These evaluations will not be used in the selection process.

1.6 OPTIONAL TASKS

- 1.6.1 During the scoping of the project between the Consultant and the District's Project Manager, additional project tasks are identified as optional items. The optional items may be incidental to the project or remain an uncertainty until further development in the project.
- 1.6.2 These additional tasks are identified separately in the fee proposal by the Consultant.
- 1.6.3 The total cost for all tasks is included in the contract as a not-to-exceed amount. The basic contract lump sum amount plus the total not-to-exceed amount for all optional tasks make up the total contract amount.
- 1.6.4 The Consultant will submit a written request with supportive cost information to the District. Performance of any task must be in accordance with the Scope of Work.
- 1.6.5 Written authorization from the Project Manager will be required prior to initiating any optional task. **Exhibit 12** shows an example of the District's authorization letter for optional tasks.
- 1.6.6 If an optional task will not be used in the course of the project, a deduct change order must be issued by the District to remove those costs from the contract.
- 1.6.7 If an optional task will not be used and a different scope-related item is substituted, a change order issued by the District must be completed to delete the optional task and add the alternate.

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2.0 SCHEDULE AND PROJECT COORDINATION

2.1 SCHEDULE

- 2.1.1 The Consultant will submit a schedule for the project at the Kick-Off Meeting (See Paragraph 2.4.5). The schedule will show coordination meetings, dates of all required submittals for each of the tasks in the scope, significant project milestones, and District review periods, formatted to conform with the Schedule Template (**Exhibit 5**).
- 2.1.2 The schedule shall be developed in a computerized format that contains the anticipated beginning and end dates for the tasks identified in the scope, the time duration of each task, a bar chart (Gantt Chart) showing the tasks and the overall duration of the project. The computer program MS Project, Version 4.0 or compatible is preferred. The Consultant shall update this project schedule monthly.
- 2.1.3 A projection of estimated project costs consistent with the scheduled project man-hours and project schedule as provided in the fee proposal shall be submitted at the Kick-Off Meeting. The monthly expenditure forecast of costs shall be presented in tabular and graphic form (**Exhibit 6A**).
- 2.1.4 The Consultant shall allow for a minimum three (3) week review and comment period by the District and other involved parties in the schedule for all reports and data identified in the scope of work.

2.2 PROJECT COORDINATION

2.2.1 PROJECT MANAGER

- 2.2.1.1 The Consultant shall appoint a Project Manager who shall be knowledgeable of the progress and have responsible charge of the progress of each phase of the project. The Project Manager shall be the same person listed in the Consultant's Technical Proposal, unless otherwise approved by the District. The District may request replacement of the Project Manager if it becomes apparent that this would be in the best interest of the project. The Project Manager shall be the point of contact for the District. The District may terminate this agreement if the Project Manager is not available or if the Consultant is unable to provide a replacement Project Manager acceptable to the District.
- 2.2.1.2 The Project Manager shall keep the District informed of all coordination with outside agencies and other affected parties.

2.2.2 INVOICES

- 2.2.2.1 The Consultant will submit an estimate of the projected monthly billings at the Kick-Off Meeting. The estimate shall include the amount of retention to be withheld quarterly. Thereafter, this estimate will be updated and submitted to the District's Project Manager at least 10 days prior to the end of each quarter. This estimate will be based upon the percentage of work to be completed each month expressed as a percentage of the total contract amount and in dollars to be earned each month (earned value method).

2.2.2.2 Consultant will submit monthly (or other time intervals approved by the District) invoices requesting progress payment, which reflect work accomplished during the invoice period. The invoices shall identify the project name, contract number, the District's Project Control Number (PCN) and shall be completed as follows:

2.2.2.2.1 Lump Sum Contracts – Payments shall be based upon the amount of work accomplished to date. Payments due shall be computed based on percent complete for each work task and subcontracted service identified in the contract fee proposal. The task percent complete multiplied by the budget amount for the task per the fee proposal shall be shown with a total due for all work tasks; the amounts previously billed; the amount due for the period; and the amount remaining for each task and the contract total. **(Exhibit 6A)**

2.2.2.2.1 On-Call Contracts – Payments shall be based upon the actual cost of the work completed to date. Costs for work under each work assignment shall be summarized separately. Invoices shall identify the contract number and the PCN for each work assignment. The billing format should follow the fee schedule format.

2.2.2.2.2 Invoices for other types of contracts, such as Cost Plus Fixed Fee (CPFF), may require additional detail in levels of effort, man-hours worked, and rates paid.

2.2.2.3 Invoices shall be submitted to the District's Accounts Payable for processing and payment. At the same time a copy of the invoice will be provided to the District's Project Manager, who will review and approve the basis of the payment request.

2.2.3 PROGRESS REPORTS

2.2.3.1 The Consultant will submit monthly progress reports with the invoice. These reports shall discuss project activities for the same time period as included in the monthly invoices. The report shall be brief (no more than two [2] typed pages). At a minimum, the monthly report shall contain the following:

- a. A description of the significant work accomplished during the reporting month by task as identified in the contract fee proposal.
- b. For contracts or work assignments greater than \$200,000, the Consultant shall submit a table showing the actual monthly invoice amounts to date and original project estimate cumulative monthly totals for the duration of the contract (section 2.2.2.1). A graph showing the original monthly billing projection and the actual monthly invoiced amounts to date will be included.
- c. A brief description of the work to be accomplished in the following month by task.
- d. A description of any problems encountered and actions to resolve the problems.

2.2.3.2 The Consultant shall call the District's Project Manager once a week to provide a verbal progress report, unless directed otherwise by the District's Project Manager.

2.2.3.3 The Consultant shall provide copies of minutes of meetings, and significant telephone conversations, and correspondence to the District on a monthly basis. At the end of the project copies of all minutes, conversations, correspondence, etc. shall be submitted in the Project Data Notebook.

- 2.2.3.4 The Consultant shall provide a summary of the monthly and cumulative invoice amounts compared to the projected amounts as established at the project Kick-Off Meeting or as subsequently revised to reflect project change orders.

2.3 SCOPING SESSION

- 2.3.1 The District intends to encourage the foundation of a partnering relationship with the Consultant and its subconsultants. This cooperative relationship will be structured to draw on the strengths of each organization and to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance intended to achieve completion within budget, on schedule, and in accordance with contract requirements.
- 2.3.2 The Consultant and the District will participate in a facilitated Scoping Session prior to the final submittal of the contract fee proposal. The District will provide the facilitator for this session. During the session the content of the Scope of Work, the expected design product, and the anticipated level of effort to execute tasks and an anticipated contract schedule will be discussed and agreed upon. Those in attendance will include representatives from the Consultant, all major subconsultants, the District, and other participating agencies, and may include utility representatives. The participation of the various parties will be coordinated between the Consultant and the District. The session will be from two to three (2 to 3) days in duration.
- 2.3.3 After completion of the scoping session, the Consultant will submit the final fee proposal within the timeline established by the Project Manager.
- 2.3.4 In the final fee negotiation process, the Consultant shall have representatives present who are authorized to negotiate and sign the contract.
- 2.3.5 Following award of the contract, the cooperative relationship will continue.

2.4 MEETINGS

- 2.4.1 The Consultant shall participate in regular monthly (or more frequently as identified in the Scope of Work) coordination meetings with the District's Project Manager and in milestone coordination meetings. The Consultant is responsible for taking and distributing the minutes of all meetings. Whenever possible, coordination and milestone/deliverable review meetings will be combined.
- 2.4.2 The Consultant and the District Project Manager shall meet with officials from the towns, cities, agencies, utility representatives, project partners, and other interested parties as may be appropriate and as identified in the Scope of Work. The purpose of such meetings is to identify local flooding problems and obtain information on current and planned public works projects, infrastructure modifications, storm drainage systems, development, corporate limits, expectations for "kinder and gentler" elements, operation and maintenance needs, and other items of interest that will facilitate the completion of a successful project. In addition, project partner expectations and requirements for the project will be identified and incorporated into the project whenever possible.
- 2.4.3 Meetings with other agencies and utilities will be held as required and shall generally be held at their offices. The District shall be kept informed of all such meetings and

shall attend the meetings when needed. The District shall be copied on all meeting minutes.

2.4.4 Meetings will generally be held at the offices of the Consultant or the project partners.

2.4.5 Kick-Off Meeting

2.4.5.1 The Consultant shall meet with the District within fourteen (14) days of the Notice to Proceed. At the meeting the Consultant will submit the project schedule which shall include dates of all proposed coordination meetings, dates of all required submittals for each of the tasks in the scope, significant project milestones, and District review periods. The Consultant will also submit a monthly estimation of the projected billings. The Consultant shall bring the key project team members including the project checkers to the meeting to introduce them to the District staff who will be working on the project. The District will provide to the Consultant such project information and data as the District may have, including hydrology reports and models, aerial topographic mapping, utility record drawings, and other information and data as outlined in the Scope of Work.

2.4.6 PROJECT REVIEW MEETINGS

2.4.6.1 Following the District's review of project deliverables, the Consultant shall meet with the District Project Manager and review team to review the overall project status and to discuss the District's review comments which will be provided to the Consultant at least two (2) working days prior to the meeting. The Consultant shall make every effort to obtain the review comments of outside agencies and utilities in advance of the review meeting, so that these comments can also be reviewed. These comments will be provided to the District prior to the review meeting whenever possible. The Consultant should be prepared to discuss all review comments and the status of the project. Any problems will be identified and discussed.

2.4.6.2 Other meetings may be required as identified in the Scope of Work and other sections within these Guidelines.

3.0 SURVEY, PHOTOGRAMMETRY, AND MAPPING

3.1 SUPERVISORY QUALIFICATION REQUIREMENTS

The Consultant shall conduct all field surveys and prepare all mapping necessary to complete the project. A registered land surveyor shall supervise all survey work.

3.2 PHOTOGRAMMETRIC MAPPING

3.2.1 ACCURACY AND PROCEDURAL STANDARDS

3.2.1.1 All survey work performed to obtain topographic mapping shall meet or exceed Federal Emergency Management Agency (FEMA) minimum criteria as defined in Guidelines and Specifications for Flood Hazard Mapping Partners, February 2002. This includes, but is not limited to, the establishment of "permanent" elevation reference marks (ERMs), field control surveys, and verification of profiles by the ground survey profile procedure.

3.2.2 AERIAL CONTROL POINTS

3.2.2.1 The Consultant shall systematically set aerial targets and establish horizontal and vertical control points throughout the areas to be mapped for use in compilation by the aerial survey contractor. All aerial targets are to be removed following completion of the topographic mapping. The controls for the aerial mapping shall be in sufficient numbers and shall be in locations that will be compatible with the mapping accuracy requirements. Section corners, quarter corners, and mid-section points will be used for control points wherever possible. Ties shall be made to existing monuments including section and/or quarter section monuments. Where readily available, surveys will tie into the nearest primary and secondary control points from Maricopa County Department of Transportation (MCDOT) Geodetic Control Network. The controls shall be of at least third order accuracy.

3.2.3 BLIND AERIAL TARGETS

3.2.3.1 If required by the Scope of Work, in addition to the aerial targets required for the photogrammetry, additional aerial targets shall be set, spaced uniformly throughout the project area, and both horizontal and vertical values established. The number of additional aerial targets will be at least twenty-five percent (25%) of the number of targets required for the photogrammetric accuracy and shall include at least one (1) target per photogrammetric model.

3.2.3.2 The photogrammetry subcontractor will not be provided the surveyed elevations and coordinates at these additional aerial targets. The photogrammetry subcontractor shall be required to provide the elevation and coordinates of these blind targets, with ninety-five percent (95%) of the points meeting the accuracy requirements established in the FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners, February 2002, for the required project accuracy, prior to proceeding with the topographic mapping. The surveyed elevation and coordinate data shall be provided to the District at the same time as it is provided to the photogrammetry subcontractor. The photogrammetry subcontractor shall

provide the data for the blind aerial targets to the District at the same time as it is provided to the Consultant.

3.2.4 BENCHMARKS

3.2.4.1 Field control shall be sufficient to provide at least one "permanent" point per mile of mapping, with said point(s) being used as a benchmark. Survey points shall consist of existing monumentation, such as brass caps or similar survey monuments, whenever possible and with the approval of the District. Where additional monumentation is needed, survey markers conforming to Maricopa Association of Governments (MAG) Uniform Standard Detail for Public Works Construction, detail 120-1, Type C, shall be placed 2" +/- above grade, and topped with a brass cap. Monuments will be labeled on available maps and described in a manner that allows ready location in the field.

3.2.5 STRUCTURE SURVEYS

3.2.5.1 Field surveys of bridges, culverts, roadway improvements, and other structures are to be obtained by the Consultant when as-built plans are not available or when changes significant to the hydraulic modeling and/or design drawings, such as sedimentation, have occurred since the date of as-built. This information should be reduced and compiled into an 11" x 17" (maximum size) drawing for inclusion in the project survey report. For hydraulic modeling use, the information presented in the drawing should be in a format appropriate for use in the HEC-RAS model. Field surveys of bridges, culverts, hydraulic structures, and routing reaches must also be obtained where necessary for proper hydrologic modeling. It may be necessary to field survey some structures since the as-built plans may not be based on NAVD 88. Existing above ground utilities shall be located and shown on the mapping.

3.2.6 TOPOGRAPHIC FEATURES

3.2.6.1 For projects without photogrammetry, location surveys shall be performed to adequately show all topographic features including existing drainage swales, bridges, storm drainage outfalls, gravel mining operations, fences, buildings, roads, etc, that exist within the limits of the project or study area.

3.2.7 SECTION CORNER RESTORATION

3.2.7.1 Restoration of lost or obliterated section corners shall be re-established per applicable survey laws and monumented per ARS 33-103. The new brass cap shall bear the proper numbering of the sections for which the monument forms a landmark as per the Bureau of Land Management Manual and bear the Arizona registration number of the land surveyor. After the monument has been (re)placed at least one (re)occupation should be performed to insure the correct monument and position was established. The new monument shall have the same point number with a "Z" at the end.

3.2.8 DOCUMENTATION OF SURVEY DATA

The benchmarks, and aerial control points shall be shown on maps and plan sheets. Survey data will be documented in a project survey report. The project survey report shall include the following:

- 3.2.8.1 Copies of all survey notebooks and office calculations or printout of digital files developed with data collectors.
- 3.2.8.2 All benchmarks, aerial control, and other horizontal and vertical control points shall be included. At a minimum, the table shall summarize for each point the point number, horizontal coordinates, elevation, the datum upon which the benchmark was originally established, horizontal and vertical order and class, monument type, ground to grid conversion factor, and a detailed description of the point location for ready recovery in the field.
- 3.2.8.3 A drawing with a base map of suitable scale to show the location of the benchmarks and aerial control points.
- 3.2.8.4 Conversion to other datums as required herein.

3.2.9 DATA FORMAT

- 3.2.9.1 All field collected survey data obtained using conventional survey methods shall be noted in standard 5" x 7" hardbound survey books. All survey data collected electronically shall be submitted in an ASCII text file on 3.5-inch diskettes or CDROM.
- 3.2.9.2 The project survey report shall be 8½" x 11" in size and bound together. Any 11" x 17" maps shall be fan-folded and included in the report.

3.3 SURVEY CONTROL

3.3.1 HORIZONTAL CONTROL DATUM

- 3.3.1.1 All horizontal control surveys shall be tied to or on and delivered in NAD83 State Plane Coordinate System with the international feet as the units of measurement (A.R.S 33-132). All horizontal control points and corresponding coordinates shall be listed in the project survey report (see Section 3.2.8). Horizontal control points (monuments) shall also be noted on the appropriate plan sheets and on the Geometric Control Sheet if provided.

3.3.2 VERTICAL CONTROL DATUM

- 3.3.2.1 All vertical surveys will be based on North American Vertical Datum of 1988, (NAVD88) per FEMA guidelines. The development of conversion factors, including documentation of how they were derived, will be provided by the Consultant to allow the conversion of NAVD88 comparison of NGVD29 elevations to NGVD29 elevations and will be included in the project survey report (see Section 3.2.8). The conversion processes outlined in Guidelines and Specifications for Flood Hazard Mapping Partners, February 2002, by FEMA, shall be used.
- 3.3.2.2 At least two (2) permanent benchmarks with monuments within the project area that will not be disturbed by construction need to be established. For construction projects, temporary benchmarks will be placed throughout the

project at intervals not to exceed one thousand feet (1,000') and shown on the appropriate plan sheet.

3.3.3 INTERSECTION TIES

- 3.3.3.1 Permanent survey ties shall be established where the project corridor crosses major streets. The purpose of these ties is to provide horizontal and vertical control from which the location of utility relocations can be easily verified by inspectors. The Consultant shall determine the need for this temporary monumentation and recommend their locations to the District's Agent for approval.

3.4 UTILITIES

- 3.4.1 The Consultant shall survey the location and elevation of utilities at locations. All tops of rims and inverts or top of nuts for valves shall be collected. All power poles and direction of overhead lines should be placed on the plans. All utilities new and existing shall be referenced from a monument line.

3.5 TOPOGRAPHY

- 3.5.1 Topographic mapping shall be prepared to the scale and contour intervals specified in the project scope of work. The limits of mapping shall also be defined in the project scope of work.
- 3.5.2 All topographic features including major and minor contour lines, depression and crest ticks and spot elevations, existing drainage swales, bridges, storm drainage outfalls, gravel mining operations, fences, buildings, roads, etc., and existing above ground utilities shall be shown on the mapping. Mapping with a contour interval of one foot shall include full planimetrics for curbs, water meters, manholes, poles, centerline of street, vegetation, parking stripes, and any other visible features.

3.6 DIGITAL TERRAIN MODELING

3.6.1 FOR INCLUSION INTO GIS

- 3.6.1.1 The Digital Terrain Model (DTM) data delivery shall comply with the requirements of the "Data Delivery Specifications: The Hydrologic Information Systems (HIS)," Revision 3.1, June 1, 1998.

3.6.2 FOR DESIGN

- 3.6.2.1 The Digital Terrain Model data delivery shall comply with the requirements of the Data Delivery Specifications: The Computer Aided Drafting and Design latest revision at time of the Notice To Proceed.

3.7 DELIVERABLES

3.7.1 The final submittal of all digital maps, computer files, and other data shall be prepared and submitted in the manner defined for input by the guidelines in "Data Delivery Specifications: The Hydrologic Information System (HIS)" or "Data Delivery Specifications: Computer Aided Drafting & Design" as outlined in the Scope of Work. The final submittal shall include an electronic copy of all the files on a CD ROM disk and a permanent, reproducible set of the survey and mapping information on 3 mil mylar sheets that shall be sealed by a registered land surveyor.

3.7.2 QUALITY ASSURANCE

- 3.7.2.1 A qualified registrant shall seal the final submittal of mylar drawings and the CD's .
- 3.7.2.2 The work of each subconsultant shall be performed in accordance with the Scope of Work and these Guidelines. The Consultant shall check all work prior to each submittal to the District. All drawings shall be initialed and dated by both the person who did the work and the checker.
- 3.7.2.3 The work of any sub-contractors utilized by the prime Consultant for a contract with the District shall be reviewed by the prime Consultant for compliance with the Scope of Work and these Guidelines prior to submittal for review by the District.

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4.0 DATA DELIVERY STANDARDS

Consultants can select a *GIS FORMAT* or a *CAD FORMAT* for data deliveries.

4.1 GIS FORMAT

4.1.1 Consultants who choose to follow the GIS standards by delivering the data in Arc/Info format should follow the specs book titled: "Data Delivery Specifications: The Hydrologic Information System (HIS) REV. 3.1 June 1, 1998" Flood Control District of Maricopa County, latest edition.

4.1.2 DATA DELIVERIES SHOULD INCLUDE THE FOLLOWING DATA

Name	Page No.	Description
NDXPRJ	LP-40	Shows the map sheet boundaries of the project
PRJ	LP-60	Defines the boundary of the project
CARTO	LP-110	Planimetric features captured but not used by HIS (Fences, tree lines, etc)
CORNERS	LP-210	Section corners as defined by the PLSS (Public Land Survey System)
CTRL	LP-215	Other control points that are not corners
AGRCLTR	LP-305	Dairy and Agricultural Areas
STRCT	LP-360	Structures like building footprints (if any)
DQ.TBL	LP-410	Data Quality of Data: Scale, date, Vertical Datum, Projection
PRJDAT.TBL	LP-430	Contractor name, Project Name, Project ID
FPBLN	LP-520	Floodway center line
FPCTLFCD	LP-523	Elevation Reference Marks
FPSRFFCD	LP-535	Surface Water Elevation
FPXFCD	LP-540	Cross sections used in HEC-RAS
FPZNFCD	LP-550	Floodplain Zones
FPZNHZ	LP-560	Floodplain Hazard Zones
SPWBLN	LP-588	Spillway Baseline route System
SPWXSEC	LP-590	Spillway Cross section
SPWZN	LP-591	Spillway Zone
CNL	LP-610	Canals (If any)
FLTY	LP-620	FCD Project in the area (if any)
RR	LP-650	Railroads in the area (if any)

Name	Page No.	Description
STRTCLN	LP-655	Street Centerlines
STRDTDTL	LP-660	Edge of Pavement (if any)
UTLTY	LP-670	Utilities, Power poles, etc (if any)
ELV	LP-710	Contours and spot elevations
BRIDGE	LP-608	Bridges, including any headwalls or wing walls
CULVERT	LP-612	Culverts, including any headwalls or wing walls
VEG	LP-775	Areas of similar vegetative mix
DRNBSN	LP-920	Drainage basins
DRNPTH	LP-930	Drainage Path
LAKE	LP-950	Lakes that are in the area (if any)
RIVER	LP-960	Washes or streams in the area (if any)

- 4.1.3 This is a comprehensive listing of possible features. If there are no features collected under one of the categories mentioned, then the theme does not need to be delivered.
- 4.1.4 HIS data submittals will be subject to a quality control (QC) check by District staff. The District makes use of a checklist and a computer program to document and automate the QC process. A hardcopy of the checklist shall be delivered to the Consultant at the Kick-off meeting. The Consultant shall use the checklist to review each HIS data submittal for compliance and deliver a completed copy of the checklist to the District along with the data submittal.
- 4.1.5 The computerized application that automates the QC process is available upon request at no charge to the Consultant. The Consultant is recommended to make use of the computer application to review the data prior to submittal of HIS.
- 4.1.6 All required HIS submittals must be reviewed and accepted prior to finalizing the Technical Data Notebook for submittal to FEMA.

4.2 CAD FORMAT

- 4.2.1 Consultants should follow the CADD standards and should deliver digital data in ASCII DXF format from either AutoCAD Version 13 or newer or Microstation Version 7.01 or newer per the following specs book: "Data Delivery Specifications: Computer Aided Drafting & Design REV 1.0 January 2000" Flood Control District of Maricopa County, latest edition. The CAD Drafting standards in which all plans shall be prepared can be found at the Website of the Flood Control District of Maricopa County at <http://www.fcd.maricopa.gov/Resources/CAD/default.asp>

4.2.2 DATA DELIVERIES FOR SURVEY DATA

Name	Page No.	Description
CORNERS	CP-100 thru CP-104	Section corners as defined by the PLSS (Public Land Survey System)
MISC CTRL	CP-105 thru CP-108	Other control points that are not corners
ERM	CP-109 thru CP-111	Elevation Reference Marks

4.2.3 DATA DELIVERIES FOR MAPPING

Name	Page No.	Description
BRIDGES	CP-200	Bridges, including any headwalls or wingwalls
CARTO	CP-201 thru CP-202	Planimetric features captured but not used by HIS (fences, tree lines, etc.)
CANALS	CP-203 thru CP-204	Canals (if any)
CULVERTS	CP-205	Culverts, including any headwalls or wingwalls
DATA QUALITY	CP-206	Data quality, scale, date, vertical datum and projection
ELEVATION	CP-207	Contours and spot elevations
LAKES	CP-208 thru CP-209	Lakes (if any)
INDEX	CP-210	Shows the map sheet boundaries of the project
BOUNDARY	CP-211	Defines the boundary of the project
PRJ IDENT	CP-212	Contractor name, project name, project ID
RIVERS	CP-213 thru CP-214	Washes or streams in the area
RR	CP-215 thru CP-216	Railroads (if any)
STRUCTURE	CP-217	Structures
ST CENTER LINE	CP-218 thru CP-219	Street centerlines
ST DETAIL	CP-220	Street detail

4.2.4 DATA DELIVERIES FOR HYDROLOGY/HYDRAULICS

Name	Page No.	Description
BRIDGES	CP-300	Bridges, including any headwalls or wingwalls
CARTO	CP-301 thru CP-302	Planimetric features captured but not used by HIS (fences, tree lines, etc.)
CULVERTS	CP-303	Culverts, including any headwalls or wingwalls
DATA QUALITY	CP-304	Data quality, scale, date, vertical datum and projection
BASINS	CP-305 thru CP-306	Drainage basins
FLOW PATH	CP-307 thru CP-308	Drainage flow paths
BASELINE	CP-309 thru CP-310	Floodway baseline (reach)
SURFACE WATER	CP-311	Surface water elevation
FX SECTIONS	CP-312 thru CP-313	Cross sections associated with the HEC-RAS model
FP ZONES	CP-314 thru CP-316	Floodplain zones
HAZARD ZONES	CP-317 thru CP-318	Floodplain hazard zones
HEC-RAS	CP-319	HEC-RAS output report
LANDFORM	CP-320 thru CP-321	Land forms as per Piedmont Flood Hazard Assessment Manual
LANDSTBL	CP-322 thru CP-323	Land stability as per Piedmont Flood Hazard Assessment Manual
INDEX	CP-324	Shows the map sheet boundaries of the project
BOUNDARY	CP-325	Defines the boundary of the project
PROJECT IDENT	CP-326	Contractor name, project name, project ID
SOILS	CP-327 thru CP-337	Soils data
SPW BASELINE BLN	CP-338 thru CP-339	Spillway baseline (reach)
SPWX-SECTION	CP-340 thru CP-341	Cross sections associated with the HEC-RAS model
SPW ZONES	CP-342	Spillway inundation zones

4.2.5 DATA DELIVERIES FOR PLANNING

Name	Page No.	Description
CARTO	CP-400 thru CP-401	Planimetric features captured but not used by HIS
DEVELOPMENT SITES	CP-402 thru CP-403	Sites where new construction is occurring
DATA QUALITY	CP-405 thru CP-406	Data quality, scale, date, vertical datum and projection
LAND USE CUR	CP-405 thru CP-406	Present land use
LAND USE FUT	CP-407 thru CP-408	Future land use
INDEX SHEET	CP-409	Map sheet index
BOUNDARY	CP-410	Project Boundary
PROJ IDENT	CP-411	Contractor name, project name, project ID
ANIMAL SP STATUS	CP-412 thru CP-415	Special status species (animal) habitat
PLANT SP STATUS	CP-416 thru CP-419	Special status species (plant) habitat
VEGETATION	CP-420 thru CP-422	Areas of similar vegetative mix

4.3 This is a comprehensive listing of possible features. If there are no features collected under one of the categories mentioned, then the feature does not need to be delivered.

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5.0 PUBLIC INVOLVEMENT

5.1 The Public Information Office of the District has prepared a separate set of guidelines for consultants conducting public involvement and public information activities for the District. A copy of these guidelines is available from the Public Information Office and should be used as a reference by the consultant when preparing public information related materials.

5.2 It is the intention of the guidelines to increase quality, efficiency, and consistency in public involvement work and products at the District. These guidelines should assist in creating a consistent message for uniform and quality materials.

5.2.1 These guidelines cover:

- | | |
|---------------------------------------|-------------------------------------|
| a. District Key Messages and Values | h. Logo Guidelines |
| b. Creating a Public Involvement Plan | i. Website Guidelines |
| c. District Turnaround Times | j. Powerpoint Guidelines |
| d. Quality Control and Review | k. Public Meeting Guidelines |
| e. Materials Content Guidelines | l. Deliverables |
| f. Writing Guidelines | m. Public Information Office Staff. |
| g. Design & Printing Guidelines | |

5.3 The District and the Consultant will plan and conduct public involvement and information as required for a particular project and as identified in the Scope of Work, in accordance with the District Public Involvement and Information Guidelines. The number of public involvement activities will be as identified in the Scope of Work.

5.3.1 Phase I – Area Drainage Master Study (ADMS)

- a. Introduction Brochure (Start of ADMS)
 1. Prepare a brochure announcing the beginning of the study, the study schedule, and introducing the public to the District and the study process
 2. Mail brochure to everyone located within study area boundaries
 3. Place PDF of the brochure on District website
 4. Place brochures in key area locations in study area – schools, libraries, etc.
 5. Mail brochures to key stakeholders
 6. Send out a press release regarding start of ADMS
- b. Project Website (Start of ADMS)
 1. Create or provide information to the District
 2. Update on a regular basis
- c. Public Meeting (End of ADMS – Following completion of Data Collection)
 1. Hold a public meeting to present the results from the Data Collection and to gather additional information from the public. Also, this meeting should inform the public about the next phase of the project.
 2. Mail a flyer/brochure announcing public meeting to everyone located within the study boundaries
 3. Place a legal advertisement regarding the public meeting.
 4. Place at least 2 display advertisements in area newspapers (one week apart) advertising the public meeting

5. Invite identified stakeholders, elected officials in that area (mayor and city council), and city staff (city manager, engineer, and PIO) to the public meeting
6. Produce handouts, comment sheets, and graphic display boards for meeting
7. Post the public meeting on the District website
8. Work with partner cities to utilize their newsletters, bulletins, websites to advertise public meeting.
9. Make electronic copies of the exhibit boards and handouts available on the website
10. Send out press release about the public meeting
11. Follow District Public Involvement Guidelines for holding a public meeting

5.3.2 Phase II - Area Drainage Master Plan (ADMP)

- a. Press Release (Start of ADMP)
 1. Send out press release highlighting the start of the ADMP
- b. Public Meeting (Start of ADMP)
 1. Hold public meeting to present the public with a range of possible concepts for their community and gather additional ideas and direction on alternatives.
 2. Follow steps for the public meeting as noted earlier for the ADMS.
- c. Alternatives Brochure (Mid ADMP following completion of alternatives formulation and evaluation – Presentation of alternatives).
 1. The brochure should detail the alternatives, the benefits and constraints, locations, impacts on the community, etc.
 2. Mail brochure to everyone located within 1/2 mile of any element of a proposed alternative, plus everyone who attended past public meetings and everyone who requested being on the mailing list.
 3. Place a PDF of the brochure on the District website.
- d. Project Website
 1. Update Information
- e. Public meeting (presenting alternatives)
 1. Hold a public meeting to present the public with the select list of alternatives for the area and gather feedback from the public.
 2. Follow steps for the public meeting as noted earlier for the ADMS.
- f. Recommended Drainage Alternative Brochure (End of ADMP following the finalization of a recommended drainage alternative. Brochure announces recommended alternative and public meeting.)
 1. The brochure details the Recommended Alternative, the next steps in the project, and the upcoming public meeting.
 2. Mail brochure to everyone located within 1/2 mile of an element of the recommended drainage alternative, plus those who attended a previous public meeting, those who have been in communication with the District, and those people that asked to be on the mailing list.
 3. Place a PDF of the brochure on the District website
- g. Project Website
 1. Update Information
- h. Public Meeting (Recommended Drainage Alternative)
 1. Hold public meeting to present the public with the recommended drainage alternative and make the public aware of the next steps of the project process.
 2. Follow steps for the public meeting as noted earlier for the ADMS
- i. Make electronic copies of ADMP reports available on the District website.

- j. Press Release
 - 1. Send out a press release regarding the next steps in the process
- 5.3.3 Ten-Fifteen percent (10%-15%) Design Plans (Optional Phase)
 - a. Design Plans Brochure (Near the end of this phase)
 - 1. Mail brochure to everyone located within 1/2 mile of an element of the recommended drainage alternative, plus those who attended a previous public meeting, those who have been in communication with the District, and those people that asked to be on the mailing list.
 - 2. Place a PDF of the brochure on the District website
 - b. Public Meeting
 - 3. Hold public meeting to present the public with a range of possible concepts for their community and gather additional ideas and direction on alternatives.
 - 4. Follow steps for the public meeting as noted earlier for the ADMS.
 - c. Project Website
 - 1. Update information
- 5.4 The Public Information Officer is responsible for reviewing and overseeing all public involvement efforts by the Consultant. The Public Information Office should be represented on all District projects. All materials, public involvement planning, and public meetings should be organized in coordination with the District Public Information Office.
- 5.5 The Public Information Office should receive a copy of the following for a project:
 - a. Project Public Involvement Plan
 - b. Project Schedule
 - c. Project Public Involvement Schedule
 - d. Draft versions of all Public Involvement project materials for review
 - e. Notice of all project and public meetings
 - f. Electronic PDF and paper copies of all final project public involvement materials
 - g. Copies of all public meeting sign in and comment sheets
 - h. Electronic PDF of final project report or executive and technical summary
 - i. Proof of advertising for public meetings
 - j. All project photographs
- 5.6 The Public Information Officer is responsible for reviewing and overseeing all public involvement efforts by consultants. The Public Information Office should be represented on all District projects. All materials, public involvement planning, and public meetings should be organized in coordination with the District Public Information Office.
- 5.7 The Public Information Office should receive a copy of the following for a project:
 - a. Project Public Involvement Plan
 - b. Project Schedule
 - c. Project Public Involvement Schedule
 - d. Draft versions of all Public Involvement project materials for review
 - e. Notice of all project and public meetings
 - f. Electronic PDF and paper copies of all final project public involvement materials
 - g. Copies of all public meeting sign in and comment sheets
 - h. Electronic PDF of final project report or executive and technical summary
 - i. Proof of advertising for public meetings
 - j. All project photographs

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6.0 RIGHTS-OF-WAY AND EASEMENTS

- 6.1 Generally the District will acquire rights-of-entry for site investigations including geotechnical investigations. The Consultant shall coordinate the schedule of any field investigations with the District's Agent. Occasionally the Scope of Work may identify if the Consultant will notify all property-owners and obtain any necessary rights-of-entry for the study area. In such a case, the Consultant will furnish the District with a list of all the property-owners notified and a sample rights-of-entry letter.
- 6.2 Existing rights-of-way adjacent to the project site, which may be disturbed by project construction, shall be researched and identified by the Consultant.
- 6.3 The Consultant shall review parcel ownership maps and identify which properties will be affected by the proposed project.
- 6.4 The Consultant shall identify permanent rights-of-way and easements requirements necessary for the project features and indicate all property impacts and acquisition requirements on preliminary or 30% plans.
- 6.5 The Consultant shall identify or review and confirm any temporary construction easements required to complete the project. These too will be identified on the preliminary or 30% plans.
- 6.6 Unless specified otherwise in the Scope of Work for the project, the District will prepare all legal descriptions for rights-of-way and easements necessary for project from the Consultant's exhibits, plans, and/or strip maps.

6.7 SECTION SURVEYS AND RIGHT-OF-WAY MONUMENTATION

6.7.1 PROJECT SECTION CONTROL

- 6.7.1.1 Surveys for project section control shall be performed. The surveys shall conform to the "Minimum Standards for Arizona Land Boundary Surveys" as adopted by the State Board of Technical Registration that is in effect at the time the original survey is performed. Applicable statutes and regulations are to be observed in addition to these standards.
- 6.7.1.2 The District may acquire Rights-of-Entries for survey but the Consulting Surveyor shall be responsible for notification and access arrangements before the survey commences (per ARS: 33-104).
- 6.7.1.3 Prior to the commencing of project design, a complete section survey of all sections affected by the project shall be completed. A District On-Call Contract Surveyor managed by the Property Engineering Branch of the Lands Division shall conduct the section survey. The Section survey shall be ordered when the Letter of Intent (LOI) is issued for the project design and shall be completed and recorded within ninety (90) days. The survey shall be conducted under the direct supervision of a Professional Land Surveyor who is licensed to practice in the State of Arizona. All section, quarter section, and center quarter corners shall be located and identified. Obliterated or lost corners shall be restored or replaced.
- 6.7.1.4 Plats of the section surveys shall be prepared and recorded. A mylar copy of the recorded plat and an electronic file in Microstation DGN format shall be

submitted to the District. Any digital product containing survey boundary information shall be signed and sealed on the face of the CD. Electronic seal and signatures are also permitted within the dataset. The plat may be in sheets at a scale appropriate for recording. The electronic file shall contain the entire survey and shall not be broken into sheets. The plat shall show the coordinates for each section, quarter section, and center section corner along with the Grid adjustment factor. The basis of coordinates shall be the Maricopa County Department of Transportation GDACS network control. Section and quarter section lines shall be annotated with bearings and ground distances in U.S. International Feet.

6.8 RIGHT-OF-WAY REQUIREMENTS FOR PROJECT SURVEY AND DESIGN

- 6.8.1 The District shall provide the recorded section plat to the Project Design Consultant. The recorded section survey shall be the survey basis for the project design and shall be the Primary Control for the project. Project Survey work by or for the Design Consultant shall be tied to this recorded section survey. The recorded section survey(s) will be incorporated into the final construction plans.
- 6.8.2 The District may provide preliminary Title reports to the Project Design Consultant to assist in placing existing property lines on the plans correctly.
- 6.8.3 The Design Consultant shall tie the project survey and construction centerline and the proposed right-of-way lines to the Project Section Control. The intersections of the project survey and construction centerline and the proposed right-of-way lines with the section lines shall be tied by bearing and distance to the nearest section or quarter section corner in each direction.
- 6.8.4 The Design Consultant shall locate by survey and show on the design plans any fences, walls, trees, and other features that would be removed, relocated, or compensated for that are within ten feet (10') of the proposed right-of-way line. In addition, using assessor's maps and/or title reports provided by the District, the Consultant shall also show in the design plans the approximate location of property lines.
- 6.8.5 The Design Consultant shall prepare a project right-of-way plan sheet at a minimum scale of 1 inch = 200 foot. The right-of-way plan sheet shall clearly show all section tie, survey centerline, and proposed right-of-way line bearings, distances, and curve deltas, arclengths, and radius lengths. Line and curve table are acceptable. The right-of-way plan sheet shall be made a part of the project design plans. Note that the project specific scope of work may allow the use of coordinates to describe the right-of-way line information to be provided on the right-of-way plan sheet.
- 6.8.6 The Project right-of-way plan sheet shall be included as part of the 30% plan submittal and shall be revised and updated as the design evolves, and will be provided with each subsequent submittal.

6.9 PROJECT RIGHT-OF-WAY MONUMENTATION

- 6.9.1 The Consultant and District Project Manager shall include in the construction documents that the Contractor shall protect in place all temporary and permanent right-of-way monumentation.

6.9.2 Right-of-Way markers shall be of the aforementioned MAG standard at a minimum, and at the District's discretion, brass caps set in concrete under the direct field supervision of the applicable Registered Land Surveyor. All markers will display, as a minimum, the Arizona license number of the registrant, the District label, and the year set.

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7.0 ENVIRONMENTAL EVALUATION

Assessment activities will be arranged in ascending order of intensity depending on whether the study or flood control project is in the planning, pre-design, or design phase.

7.1 ENVIRONMENTAL OVERVIEW FOR PLANNING STUDIES

The purpose of the environmental overview is to collect and provide data that will assist the planning project team in evaluating the environmental issues within the focus or project area. The environmental overview will be used throughout the alternative development stages in the planning process to identify potential problems and opportunities associated with unique vegetation communities and habitat, special status plant and wildlife species, cultural resources, and hazardous material sites.

Typically, the project area for the environmental overview will only include areas where flooding hazards have been identified in Phase I of the planning study (i.e., the data collection phase) or where alternatives for flood hazard mitigation have been proposed in Phase II of the planning study.

7.1.1 REGULATORY AND HAZARDOUS WASTE SITES

- 7.1.1.1 This work may not be authorized with the Notice to Proceed and may be authorized in writing by the District. The Consultant shall conduct a search of the federal, state, and local environmental lists and databases located in the project area and their respective search radius as defined by ASTM 1527 -00.
- 7.1.1.2 The Consultant shall submit an appropriately scaled map of the locations of the significant regulatory sites. Significant sites are sites that may affect the project and does not necessarily include every regulated site in the project area. An electronic copy of the map depicting the significant sites shall be provided in accordance with the District's GIS requirements. The Consultant shall review the list of "orphan" sites and make a reasonable effort to locate and map these sites based on the Consultant's knowledge of the project area and other information.
- 7.1.1.3 The Consultant shall submit a summary report and map of the results of the regulatory review for the significant sites. The report shall include, but is not necessarily limited to, a brief description of the regulatory sites, the descriptive location of the site, the type of site, and the status of the site (i.e. closed or open status) if known. This information should be obtained as part of the regulatory review; therefore, the Consultant is not expected to conduct any file review or fieldwork to obtain this information. In addition, the Consultant shall estimate the general cost to investigate and remediate the potential contamination resulting from the significant regulatory sites.
- 7.1.1.4 Optional Item based on an evaluation by the District, the Consultant may be requested to perform a field analysis and file review to acquire more information or to identify potentially hazardous sites which may have not been included in the environmental databases.

7.1.2 ARCHEOLOGICAL ASSESSMENT

- 7.1.2.1 The study area will be specified and described in the Scope of Work. All work conducted by the Consultant shall be in accordance with the National Historic Preservation, the Archeological and Historic Antiquities Act of 1974, the Archeological Resources Protection Act of 1979, the Native American Graves Protection Act of 1990, the State Historic Preservation Act of 1982, the Arizona Antiquities Act of 1992, NPS Bulletin 38 on Traditional Cultural Properties, and any other local, State, and Federal regulations that are applicable when the project is initiated. The District's objectives are to avoid and minimize impacts to archeological resources when practicable. Archeological Resources, also referred to as Historic and Prehistoric Cultural Resources, are defined to include: Historic buildings or structures, historic archaeological sites, prehistoric archaeological sites, Traditional Cultural Properties (TCP's), human remains and associated mortuary assemblages, and isolated cultural features and artifacts.
- 7.1.2.2 This work may not be authorized with the Notice to Proceed and may be authorized in writing by the District. The purpose of the Archeological Assessment is to identify any known or previously documented prehistoric or historic cultural resources within the study area. The results of the Archeological Assessment will be used in the Alternative formulation and the Alternative Analysis process to determine the effects of each alternative on the identified resources. The District's objectives are to avoid and minimize impacts to archeological resources when practicable.
- 7.1.2.3 The Consultant shall conduct archival research to identify previously documented surveys and archeological resources within the proposed project area boundaries. This includes, but is not limited to, an Arizona State Museum (ASM) site file check and State Historic Preservation Office (SHPO) records review to evaluate documentary records dealing with archeological resources in the project area and region. The literature search shall obtain published information pertaining to the local environment and historic properties conducted at other archives, government offices, and repositories as appropriate.
- 7.1.2.4 The Consultant shall prepare an **independent** report documenting the results of the archival and literature search. The report shall describe the significance of any known-recorded sites and the potential impact of each of the project alternatives on the sites. The report shall include a description of the specific findings of all of the identified archeological resources within the study area including, but not limited to:
- a. Location
 - b. Bibliographic References
 - c. Size of Site
 - d. Type of Site
 - e. Physical Features of Site
 - f. Location of previous cultural resource surveys
 - g. Percentage of project area that has been intensively surveyed for cultural resources
 - h. For sites that may be impacted by a project alternative, the Consultant shall estimate the associated testing and mitigation costs.
- 7.1.2.5 The Consultant shall illustrate the identified sites on a full-scale U.S.G.S. 7.5-minute quadrangle topographic map and large-scale aerial photographs that will be used throughout the alternative formulation and analysis.

- 7.1.2.6 The Consultant shall prepare a summary of the archeological assessment that discusses the results, potential impacts to sites, cost estimates associated with testing and mitigation for sites that may be impacted, and additional archeological issues that may need to be addressed prior to the implementation of each of the alternatives. The Consultants shall submit the independent report, maps, and other graphics to the District electronically in accordance with the District's electronic and GIS submittal requirements.

7.1.3 BIOLOGICAL EVALUATION

- 7.1.3.1 This work may not be authorized with the Notice to Proceed and may be authorized in writing by the District. The purpose of this overview is to document the existing or potential biological resources within the project area. The District's objectives are to avoid and minimize impacts to the natural environment when practicable. The Consultant shall coordinate with the landscape/planning Consultant to ensure integration of appropriate data.
- 7.1.3.2 For the project area, the Consultant shall conduct a non-intensive biological evaluation by using current aerial photographs with limited field verification, windshield surveys, and agency coordination to identify, evaluate, and map the existing biological resources. The biological resources include, but are not necessarily limited to, vegetation communities, habitat types, wildlife, sensitive species and critical habitat, and special aquatic sites such as wetlands.
- 7.1.3.3 The Consultant shall contact the U.S. Fish and Wildlife Service (FWS) to get the current list of Threatened and Endangered species (including proposed or candidate species) and the Arizona Game and Fish Department (AGFD) to obtain information regarding the presence of listed Threatened and Endangered Species, Wildlife Species of Special Concern, and designated critical habitat in the project area.
- 7.1.3.4 For each alternative, the Consultant shall:
- a. Determine the type of habitat or vegetation community and the approximate acreage that would be impacted.
 - b. Determine the approximate acreage of impacts to the presumed Waters of the United States (i.e., include any washes, streams, wetlands, stock tanks, or other special aquatic sites).
 - c. Determine if any plant or wildlife species that are not federally listed, or habitat types that may be present in the area have any restrictions or issues that may need to be addressed prior to the alternative implementation. Examples of some of the issues include the Native Plant Law, the Migratory Bird Treaty Act, other protected species, etc. Describe what the issues and restrictions are in the Biological Evaluation report that is discussed below.
- 7.1.3.5 For special status species and designated critical habitat (if it exists in the project area), the Consultant shall describe and document the potential effects of each alternative using the following categories of:
- a. No effect
 - b. May affect – is not likely to adversely affect.
 - c. May affect – is likely to adversely affect.
- 7.1.3.6 The Consultant shall recommend methods to avoid or minimize any adverse effects the proposed alternatives may have on the biological resources and

special status species for each alternative. If the adverse effects cannot be avoided or minimized, then the Consultant shall estimate the general costs for mitigation and additional studies. The Consultant shall also identify any opportunities associated with the alternatives for enhancing or restoring habitat and biological resources.

- 7.1.3.7 The Consultant shall prepare a Biological Evaluation Report describing the results of the task items 7.1.3.2 through 7.1.3.6 (see example). The report shall also include a description and maps or aerial photographs (scale 1 inch = 400 feet) depicting the locations of the biological resources. This information will be used to compare the potential environmental impacts among the alternatives and during the alternative analysis process.

7.1.4 RECOMMENDED ALTERNATIVE

For the final recommended alternative, the Consultant shall document the environmental permits, any environmental issues, approximate amount of mitigation that is likely to be required, and additional investigations that will be necessary to address prior to implementing this alternative. If the recommended alternative is not the least environmentally damaging practicable alternative, the Consultant shall briefly reiterate the reasons this alternative was chosen instead of the other alternatives. This documentation should be included in the final planning document.

7.2 LEVEL 2 – ENVIRONMENTAL EVALUATION FOR PRE-DESIGN AND DESIGN STUDIES

The purpose of the Environmental Evaluation for the pre-design phase of proposed flood control projects is to conduct a more site-specific environmental evaluation of the project area. The project area and proposed impacts will be well defined for the Consultant.

7.2.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT

The Consultant shall conduct a Phase I Environmental Site Assessment (ESA) and prepare a corresponding report for the defined project area. The Phase I ESA should be conducted before the District acquires land or easements for the project. Therefore, if rights-of-entry are necessary, the District will obtain them for the Consultant. The Phase I ESA shall be conducted in accordance with ASTM 1527-00 (or the most current ASTM standards for Phase I ESAs) and any other current applicable local, state, or federal regulations. Depending upon the results of the Phase I ESA, the District may request a proposal for Phase II Investigation or Phase III remediation.

7.2.2 BIOLOGICAL RESOURCES

7.2.2.1 Biological Surveys

- 7.2.2.1.1 This task may not be authorized with the Notice to Proceed and may be authorized in writing by the District based on the results of the reconnaissance. The Consultant shall submit separate cost estimates for this work in the fee proposal and all invoices shall separately identify costs for work under this paragraph.

- 7.2.2.1.2 The Consultant shall perform a biological survey and prepare appropriate documentation in accordance with applicable State and Federal

regulations and policies. The documentation will be used by the District and consulting parties to guide discussions, review, and obtain biological clearances of the project area.

7.2.2.1.3 The Consultant shall arrange for access to the project site with the District and obtain all necessary permits and rights-of-entry.

7.2.2.1.4 The Consultant will conduct a biological survey of all areas that may be disturbed during construction and operation of the project, including temporary construction easements and proposed maintenance roads. Using aerial photographs, agency coordination, and field inspections, the Consultant survey shall document:

- a. The vegetation and habitat types that will be affected by the project implementation.
- b. The potential for Threatened and Endangered Species and their designated critical habitat to be in the project area.
- c. The presence of other protected species in the project area (e.g., birds protected by the Migratory Bird Treaty Act that may be breeding in the area, plants protected by the Arizona Native Plant Law, etc.).

7.2.2.1.5 The limits of the vegetation shall be digitally mapped as a layer to the topographic mapping to allow superimposing of the project alternatives and the extent of project impacts. A description of the existing vegetation shall be provided in a report describing the type of vegetation, density, size, maturity, and condition. During the survey, the Consultant shall document all observed plant and wildlife species. Species may include both terrestrial and aquatic species. The Consultant shall prepare a report documenting the results.

7.2.3 BIOLOGICAL ASSESSMENT AND CONSULTATION WITH USFWS

7.2.3.1 This work may not be authorized with the Notice to Proceed and may be authorized in writing by the District based upon the results of the Biological Survey. The Consultant shall submit separate cost estimates for this work in the fee proposal and all invoices shall separately identify costs for work under this paragraph.

7.2.3.2 If, based on the results of the Biological Survey, the Consultant determines that the project may affect a listed or proposed threatened or endangered species or affect critical habitat, the Consultant shall immediately notify the District. The District will be responsible for initiating consultation with the USFWS. Based on the results of informal consultation with the USFWS, the District may direct the Consultant in the preparation of a Biological Assessment (BA). The BA will be prepared in accordance with the Endangered Species Act of 1973 and supplements, and the requirements of the USFWS. The Consultant will assess if both construction (direct) and operation (indirect) impacts of all proposed project alternatives would adversely effect or jeopardize a sensitive species or destroy or modify a sensitive species habitat. The BA will describe how potential impacts to listed species may be avoided, minimized, or mitigated.

7.2.3.3 The Consultant shall coordinate at least once a week with the District Agent by telephone. If significant problems exist, the Consultant will notify the District Agent within 24 hours.

7.2.4 WETLANDS DELINEATION

- 7.2.4.1 This work may be not authorized with the Notice to Proceed and may be authorized in writing by the District based upon the results of the reconnaissance. The Consultant shall submit separate cost estimates for this work in the fee proposal and all invoices shall separately identify costs for work under this paragraph.
- 7.2.4.2 If potential wetlands are identified based upon the results of the ecological assessment, the Consultant shall perform Wetlands Delineation, in accordance with the Army Corps of Engineers Wetlands Delineation Manual, 1987. The delineation shall describe wetlands indicators observed in the field - soils, vegetation, and hydrology - and shall discuss methods in which wetlands impacts may be avoided, minimized, or mitigated.

7.2.5 CULTURAL RESOURCE SURVEY

- 7.2.5.1 The Consultant shall perform an intensive (100%) cultural resource survey and prepare appropriate documentation in accordance with the National Historic Preservation Act, the Archeological and Historic Antiquities Act of 1974, the Archeological Resources Protection Act of 1979, the Native American Graves Protection Act of 1990, the State Historic Preservation Act of 1982, the Arizona Antiquities Act of 1992, NPS Bulletin 38 on Traditional Cultural Properties, and any other local, State, and Federal regulations that are applicable when the project is initiated. Cultural Resources, also referred to as Historic and Prehistoric Archeological Resources, are defined to include: historic buildings or structures, historic archeological sites, prehistoric archeological sites, Traditional Cultural Properties (TCP's), human remains and associated mortuary assemblages, and isolated cultural features and artifacts. The documentation will be used by the District and consulting parties to guide discussions, review, and obtain cultural resources clearance of the project area. The District's objectives are to avoid and minimize impacts to cultural resources when practicable.
- 7.2.5.2 The Consultant shall arrange for access to the project site with the District, and obtain all necessary permits. The District will obtain the rights-of-entry. The Consultant shall submit a "Notification of Intent" to conduct the survey to the ASM and other appropriate Federal or State agencies. The Consultant shall not collect artifactual materials encountered during the survey. The survey will provide intensive (100%) coverage of the permanent rights-of-way and all temporary construction easements within the project area. The Standard Survey Method for the (100%) intensive pedestrian survey is parallel transects with swaths spaced no more that 20 meters (65.6 ft) apart.
- 7.2.5.3 The Consultant shall make field records according to the following:
- a. All sites shall meet Federal or ASM site definition policy as appropriate.
 - b. In accordance with current standards as interpreted by the lead agency in consultation with SHPO.
 - c. Isolated Prehistoric and historic artifacts shall be recorded as directed by the lead agency in consultation with SHPO.
 - d. All project sites shall receive official ASM site designation, and all ASM site cards and records shall be properly completed.
 - e. Each site shall have a site map.

- f. The Consultant documents the sites by photographing all surface archeological features.
- g. The Consultant shall delineate the sites on aerial photographs.
- h. The Consultant shall provide the Global Positioning System (GPS) coordinates for each site in the report and on the aerial photograph.

7.2.5.4 The Consultant shall provide a daily journal of all relevant aspects of the project. The Consultant shall produce a professionally acceptable report describing the results of the survey. The Consultant shall coordinate with the District, ASM, SHPO, and others as appropriate. The report shall document reasonable alternatives, which may result in avoiding, limiting, or mitigating adverse impacts that have potential to occur as a result of the project. The report shall include recommendations for further work or cultural resources clearance as appropriate. The report shall meet all Federal or State Standards as appropriate and include all appropriate tables, figures and photographs, including supporting documentation in separate appendices.

7.2.5.5 The Consultant shall assess the type and level of direct, indirect, and potential impacts to all historic properties within the project area. The Consultant shall evaluate the potential significance of all project sites. The significance shall be based on eligibility, or potential eligibility, to be nominated to either the State or National Register of Historic Places. The eligibility requirements shall be those established by the National Park Service as codified by 36 CFR Part 60.

7.2.5.6 The Consultant shall coordinate at least once each week with the District Agent by telephone. If significant problems exist, the Consultant will notify the District Agent within 24 hours.

7.3 404 JURISDICTIONAL DELINEATION

7.3.1 This work may not be authorized with the Notice to Proceed and may be authorized in writing by the District. The Consultant shall provide a preliminary delineation of any jurisdictional waters in accordance with the current Army Corps of Engineers (CORPS) Section 404 regulations. This information shall be plotted on 1 inch = 100 to 200 feet scale aerial photographs that will be supplied by the District and submitted to the ACOE for final approval.

7.3.2 The Consultant will use approved jurisdictional delineation and prepare a table describing the type and approximate area, in acres, of the proposed impacts within was for each alternative. Information from the jurisdictional delineations will be combined with the data from the environmental assessments and engineering and land use data to determine a preferred alternative in accordance to the 404 (b) 1 guidelines. The Consultant shall not proceed with this task unless the District has authorized the task in writing.

7.4 TITLE VI ENVIRONMENTAL JUSTICE ASSESSMENT

7.4.1 This work may not be authorized with the Notice to Proceed and may be authorized in writing by the District. The Consultant shall document and map the social and economic attributes of the citizens within this study with regards to the Title VI Environmental Justice Executive Order. The Consultant's documentation shall include a brief letter report summarizing the findings of the assessment and a set of map(s) identifying basic the social and economic attributes of the project area. This report

shall be completed and available for use during the alternative analysis process. The mapped information shall be marked on the appropriate U.S.G.S. 7.5 minute series Quadrangle Topographic Maps and on large-scale aerial photographs. The District will provide all necessary aerial photographs to the Consultant. Alternatively, the Consultant may elect to submit an appropriately scaled map, including this information, produced from an electronic ArcInfo™, ArcView™, or AutoCad™ file (if created, the electronic file must also be provided to the District).

8.0 GEOTECHNICAL INVESTIGATION

The Consultant shall conduct, or contract for, geotechnical investigations as required for the design of the proposed work. In addition to the following requirements, the investigations shall address the specific requirements in the project Scope of Work.

8.1 FIELD INVESTIGATION

- 8.1.1 The Consultant shall submit, and obtain approval of, an investigation plan prior to beginning the field investigation. The plan shall include the proposed boring and test pit locations and depths, sampling frequencies, and testing program.
- 8.1.2 In linear projects such as levees or storm drains, borings and/or test pits shall be located at the beginning and ending of the alignment and at intervals of approximately 1,000 feet in between or as called for in the project Scope of Work. Proposals for other intervals will be considered by the District.
- 8.1.3 Where possible, borings shall penetrate at least five (5) feet below the lowest adjacent excavation or foundation elevation. In-situ soils testing shall be in accordance with Naval Facilities Engineering Command (NAVFAC) DM-7.1, Soil Mechanics Design Manual 7.1, dated May 1982. If ground water is encountered, then standard penetration tests shall be performed with the water level in the hole at or above the ground water level.
- 8.1.4 Soil cement projects will require samples from all proposed borrow areas to determine the suitability of the materials for use as soil cement aggregate and to perform a preliminary soil cement design.
- 8.1.5 Projects that will include sediment transport analysis will require test pit samples that are representative of the full depth of the moveable bed. If an armoring analysis is to be performed, the gradation samples and analysis shall include any cobbles and boulders encountered. A reference for bed material sampling procedures is "Computing Degradation and Local Scour, Technical Guideline for Bureau of Reclamation."
- 8.1.6 Storm drain projects will require sufficient data for the selection of the pipe type using Arizona Department of Transportation's (ADOT) "Pipe Selection Guidelines and Procedures". The required data may include resistivity, pH, sulfate levels, and moisture contents.
- 8.1.7 The Consultant shall promptly notify the District of any hazardous or other landfill materials encountered during the investigations.
- 8.1.8 When performing field investigations the consultant will undertake the following:
 - a. The Consultant will call for Blue Stake in all areas where geotechnical investigations are to occur.
 - b. All test holes, trenches, or other disturbances of the ground will be completely backfilled to grade by the end of the working day. No such

holes, trenches, etc. will be left open overnight without approval of the Project Manager.

- c. If open trenches must be left overnight, they will be adequately barricaded and marked to prevent persons from falling into them or otherwise being injured.
- d. The Consultant will notify the Project Manager at least three (3) working days in advance of such field investigations so that the Project Manager can then notify the District O&M Division and District Permitting staff.

8.2 LAB TESTS

- 8.2.1 Testing for density, moisture content, grain size, and Atterberg Limits shall be performed as needed in order to classify and describe the soils encountered.
- 8.2.2 Additional testing shall be performed, as needed, to meet the analysis and design requirements of this document.

8.3 ANALYSIS

- 8.3.1 Allowable soil bearing values and lateral load capacities shall be determined in accordance with NAVFAC DM-7.2, Foundations and Earth Structure Design Manual 7.2, May 1982, and in accordance with AASHTO Specifications. In case of conflict between AASHTO and NAVFAC specifications, AASHTO specifications shall govern. The effect of future elevated moisture content or saturated condition of the soil, due to potential future seepage from the drainage structure, should be considered and included in the soils report recommendations.
- 8.3.2 If the project involves the construction of either cut or fill slopes, the stability of the slopes shall be addressed. Slope stability calculations shall be submitted for District review. Where applicable, the analysis shall consider pore pressure caused by rapid drawdown. The loading conditions for stability analysis and safety factors shall be as shown in U.S. Army Corps of Engineers EM-1110-2-1913, Table 6.1. The stability and piping potential of the back (land) side of proposed levees shall also be addressed.

8.4 REPORT

- 8.4.1 The Consultant shall provide the District with the original and five (5) copies of the Geotechnical Report and any addenda. The report shall be sealed by a qualified, Arizona-registered Civil Engineer, and shall be completed at, or prior to, the agreed upon schedule, which preferably is prior to a 30% design submittal. The report shall include brief descriptions of the project, the site, and the subsurface conditions encountered. Test results shall be summarized in tabular form.
- 8.4.2 Where applicable, the report shall address the potential for subsidence, fissures and collapsible or expansive soils and provide the appropriate recommendations.
- 8.4.3 Projects that involve cut and fill work shall include recommended shrink and swell factors.
- 8.4.4 Soil cement projects shall include a preliminary soil cement design, including recommended aggregate gradation ranges.

- 8.4.5 Projects that involve excavation shall include a discussion of excavatability.
- 8.4.6 Storm drainpipe projects shall include an opinion regarding the feasibility of a cast-in-place (CIP) pipe alternative.

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9.0 HYDROLOGY

The Consultant shall perform complete and detailed hydrologic analysis of the project area in order to fulfill the specific requirements identified in the Scope of Work.

9.1 PROCEDURES

- 9.1.1 The Consultant shall follow the procedures outlined in the Drainage Design Manual for Maricopa County, Volume I Hydrology, latest revision, for all hydrologic modeling and calculations and the Scope of Work, General Requirements and Procedures.

9.2 RETURN FREQUENCY

- 9.2.1 Hydrologic modeling shall be completed for the specific frequency and duration required by the Scope of Work. Unless specified otherwise in the Project Scope of Work, the 100-year 24-hour and 100-year 6-hour will be used for all projects. Projects requiring design of storm drains will require the 10-year 6 and/or 24-hour event and projects requiring design of culvert road crossings will require the 50-year 6 and/or 24-hour event.

9.3 EXISTING STUDIES AND FIELD RECONNAISSANCE

- 9.3.1 The Consultant shall research and give consideration to all existing hydrologic studies of the area and shall become familiar with the general hydrology of the area. A field reconnaissance shall be done to determine the following:
- a. Verify sub-basin delineations boundaries
 - b. Verify flow patterns
 - c. Determine the actual current land use for parcels
 - d. Identify flow diversion locations caused by natural obstructions, drainage structures, storm drains, site grading, etc.
 - e. Obtain field cross-sections at hydraulic flow splits locations

9.4 BASE MAPS

- 9.4.1 The Consultant shall develop the hydrologic base maps using the topographic mapping prepared by the Consultant/subconsultant or supplied by the District. For those areas not covered by the mapping, U.S. Geological Survey (USGS) topographical quadrangle maps will be used. An overall watershed drainage basin map with sheet index will be prepared at a scale of 1 inch = 2000 feet or as appropriate.

9.5 COMPUTER MODELING

- 9.5.1 The Consultant shall use the U.S. Army Corps of Engineers computer program HEC-1, Version 4.1, to develop a hydrologic model for the area.
- 9.5.2 The District's computer program DDMSW shall be used to develop HEC-1 input data. The specific hydrologic techniques to be used are:

- 9.5.2.1 Rainfall Excess: The Green and Ampt methodology will be utilized for estimation of rainfall losses.
- 9.5.2.2 Unit Hydrograph: The Clark and S-Graph method should be used. The choices in methodology will be to the discretion of the Consultant, with approval from the District.
- 9.5.2.3 The Times of concentration and Lag times shall be adjusted for the appropriate return frequency using the Drainage Design Manual, Volume I.
- 9.5.2.4 Channel Routing: The choice of methodology will be at the discretion of the Consultant, with approval from the District. Average cross sections will be developed utilizing available mapping and field reconnaissance data. Sufficient field cross sections will be taken to ensure that routing reaches are reasonable and representative of field conditions. The HEC-1 routing parameters for the reaches modeled using HEC-RAS will be adjusted after the HEC-RAS cross sections are available. The resulting velocities and depths, for all reaches, must be assessed for realistic values.
- 9.5.2.5 Reservoir Routing: Detailed analysis of structures and ponding areas will be accomplished using the Modified Puls reservoir routing option of HEC-1. Stage versus discharge tables for hydraulic structures will be estimated using appropriate hydraulic methodology.
- 9.5.2.6 Channel Transmission Losses: Attempts should be made to estimate infiltration losses through channel bottoms based on existing field data or literature. If sufficient data is not available, the final report must acknowledge so and explain how the peaks and volumes of flow are affected by not including the transmission losses.
- 9.5.2.7 The District will provide appropriate references to facilitate parameter estimation.
- 9.5.2.8 Output of the computer model should be reviewed to see if the peak flows and volumes are realistic. An adjustment to input for obtaining the most realistic results is normal to the scope.
- 9.5.2.9 The Consultant shall attempt to recover historic stream gage data and use it to compare with the results obtained by the hydrologic model. Major differences must be discussed in the final report. The peak discharges and unit discharges for the sub-basins should be graphically presented and compared to regional discharge curves.

9.6 WATERSHED AND SUB-BASIN DELINEATIONS

- 9.6.1 Using appropriate hydrologic judgment, sub-basins are to be identified that provide reasonable depiction of the watershed condition. The sub-basins must be as homogeneous as possible, using watershed area, watershed type (mountainous and flat lands or urban and undeveloped areas), and time of concentration as criteria. Sub-basin breakdowns will be done in sufficient detail to provide peak discharges at structures, major road crossings, confluences, and at boundary lines. An appropriate time step and number of ordinates is to be selected that allows for complete calculation of the flood hydrograph without sacrificing resolution of the flood peak. All calculations or assumptions used in developing sub-basin and routing parameters shall be documented and made a part of the appendix for the hydrology report. Field surveys may need to be taken for HEC-1 modeling purposes.

9.7 MEETINGS

Four meetings associated with four tasks, and two field trips shall be held with the District staff at the following milestones. These meetings should be combined with meetings required by other tasks as much as possible.

- 9.7.1 One field trip at the start of the project to scope out the critical points of the watershed and problem areas.
- 9.7.2 Meeting number 1: held as soon as basic data are gathered and the sub-basins have been delineated. Sample HEC-1 parameter estimations should also be presented and discussed at this meeting. A copy of the draft maps of the sub-basins must be delivered to the District at this meeting.
- 9.7.3 Meeting number 2: after all the parameters have been estimated. A draft copy of the parameters must be delivered to the District at least one week prior to this meeting.
- 9.7.4 Meeting number 3: after the preliminary HEC-1 results have been obtained and a draft report has been prepared. A copy of the draft report and the copy of the HEC-1 on a floppy disc, compatible with the District's computer, must be delivered two weeks prior to the meeting.
- 9.7.5 Meeting number 4: to review comments by the District. A second field trip may be scheduled for the same day so the results obtained could be discussed.

9.8 REVIEW AND APPROVAL

- 9.8.1 It is required that the Consultant obtains the approval from the District at each of the following steps:
 - a. Soil maps, watershed boundary maps, and land use maps.
 - b. HEC-1 parameter estimation.
 - c. HEC-1 flow diagram and input parameters.
 - d. HEC-1 results.
- 9.8.2 All hydrology models shall be submitted to the District for review and approval.
- 9.8.3 The District must approve any changes made by the Consultant to any models.
- 9.8.4 All changes to any hydrology models prepared by the Consultant must be provided to the District in a timely manner for review and approval. Such models shall not be used for final design without prior approval of the District.

9.9 THE HYDROLOGIC REPORT

- 9.9.1 The findings of the hydrologic study will be presented in Section 3 of the Technical Data Notebook and will be prepared in accordance with ADWR State Standards Attachment 1-97 (SSA 1-97). The report will be organized as specified by the District, following SSA 1-97 format. The report shall be submitted in draft form for review and comment and the final report shall be submitted upon incorporation of review comments.

9.9.2 TABLES AND FIGURES FOR THE APPENDICES:

- 9.9.2.1 (Schematic Map) Base Topographic base map(s) showing the sub-basins, schematic map for the HEC-1, routing reaches, order of combining the hydrographs, major man-made structures such as pipe or culverts, and references (i.e. street names, Township, Range, Section, etc.) at a scale of 1 inch = 2000 feet.
- 9.9.2.2 (Routing Map) Topographic base map showing the Tc flow path or lag flow paths, and routing reaches at the same scale as the base map. Pertinent hydraulic data for each routing reach such as cross section locations, photographs, "n" value selection, velocity calculations, pipe or culvert dimensions and slopes shall be included on the map.
- 9.9.2.3 (Soils Map) Soils map(s) at the same scale as the base map.
- 9.9.2.4 (Land Use Map) Land Use map(s) at the same scale as above.
- 9.9.2.5 (Flow Map) Base topographic map showing the results of the study (i.e. peak flows, peak volumes, etc) at major concentration points. The level of detail of this map is to be determined by each individual scope).
- 9.9.2.6 Pertinent data on all the structures in the watershed (such as spillway elevation, rating curves, etc.).
- 9.9.2.7 One set of study maps (i.e. Schematic maps, Routing maps, Soils maps, Land Use maps and the Flow map) to be folded and delivered in a binder.

10.0 HYDRAULICS

If the hydraulics will be part of a package submitted to FEMA, the District's Floodplain Delineation guidelines shall be used.

10.1 STANDARDS

The Consultant shall follow the procedures outlined in the Drainage Design Manual for Maricopa County, Volume II Hydraulics latest revision, for all hydraulics calculations, except as amended or modified herein or in the scope of work.

10.2 OPEN CHANNEL HYDRAULICS FOR MAJOR WATERCOURSES

- 10.2.1 HEC-RAS shall be used by the consultant and approved by the District to perform water surface profile calculations, unless the District agrees in writing to another method. A hard copy and CD with input and output files shall be submitted for District review. The HEC-RAS files shall be prepared in a format suitable for submittal to FEMA.
- 10.2.2 Tributary (side) drainage shall be addressed such that the more severe of the following conditions govern.
 - 10.2.2.1 100-year frequency peak in the main channel with 10-year frequency peak tributary drainage or
 - 10.2.2.2 10-year frequency peak in the main channel with the 100-year frequency peak tributary drainage.
- 10.2.3 The Consultant shall estimate blockage due to debris at bridge piers based on field conditions. As a minimum, use the greater of 2 times the diameter of the pier or 1' on each side of the pier.
- 10.2.4 Freeboard for levees shall additionally comply with FEMA freeboard criteria.
- 10.2.5 Locations of cross sections used in the water surface profile calculations shall be provided on a scaled map and also in a tabular format. The cross section labels on the maps shall reflect cross sections in the models.
- 10.2.6 Design shall conform to subcritical flow regime whenever possible, with a Froude Number less than or equal to 0.86, unless otherwise approved by the District. If supercritical regime is to be designed for, the Froude Number shall be greater than or equal to 1.10.

10.3 CHANNEL STABILIZATION DESIGN

- 10.3.1 Channel stability for unlined channels shall be based on permissible velocity.
- 10.3.2 Channel stability for lined channels using riprap or loose material shall be based upon tractive shear design. Provide calculations to show that the type of bank protection (riprap, gabions, concrete, etc.) is suitably sized to resist hydraulic forces (tractive shear, impingement, buoyancy, etc.) at the design frequency peak flow.

- 10.3.3 All hydraulics and structural calculations shall be provided for District review.
- 10.3.4 Consideration shall be given to how the upstream and downstream floodplain conditions will impact the proposed channel. The effects of existing and potential mining and fill operations shall be addressed. Overbank flooding upstream of the channelization shall be analyzed to ensure that flows enter and are contained within the improved channelization. The design and analysis shall address the potential impacts of future modifications proposed by others. Gradual transition of the existing floodplain/floodway upstream and downstream of the channelization is required for FEMA submittal.
- 10.3.5 Minimum factors of safety applied to hydraulic forces on structural components shall be 1.5 based on the 100-year frequency peak flow.

10.4 SEDIMENT TRANSPORT, SCOUR, LATERAL MIGRATION, AND RIVER MECHANICS

- 10.4.1 Scour analysis shall be performed using an analytical approach based on flow characteristics associated with 100-year frequency peak flow, the depth of the thalweg, and the channel bed materials.
- 10.4.2 Toe-down elevations for bank protection shall be based on the sum of all scour components determined to occur for the 100-year peak flow, times a factor of safety of 1.3, and shall be measured from the channel thalweg elevation. A factor of safety of 1.5 shall be used in cases where only one component of scour is present (usually local scour).
- 10.4.3 Scour calculations are to be tabulated at all critical design locations and presented with a map showing the locations. All of the following shall be considered in determining the total amount of scour:
- 10.4.3.1 Scour due to river bend.
 - 10.4.3.2 Scour due to any local obstruction (bridge pier, abutment, bankline, debris etc.) shall be determined.
 - 10.4.3.3 Contraction scour in the vicinity of bridge crossings and river sections that have been constricted due to fill or any other type of encroachment shall be computed by methods described in Federal Highway Administration, FHWA, Hydraulic Engineering Circular Numbers 18 and 20.
- 10.4.4 Long-term aggradation (deposition) and degradation (general scour) shall be computed by using the concept of equilibrium slope or the concept of streambed armoring, depending on which approach controls the long-term channel profile. The equilibrium slope concept shall utilize a sediment transport relationship, which incorporates the median size (D_{50}) and gradation of the streambed sediment. The streambed-armoring concept shall use a critical tractive shear stress approach and the representative armoring particle size. A series of flood frequency hydrographs from 10- to 100-year shall be used to represent the hydrologic history that the structure may experience in its life as a basis for determining these long-term trends. The dominant discharge shall generally be assumed to be the 10-year frequency discharge. If armoring potential is indicated for the dominant discharge, it should also be checked for the higher design

discharge since the armor layer may be ruptured for this discharge. If armor is to be used to limit degradation and therefore a lower toe down depth for structures, then sediment sampling shall be of a higher standard. Sediment sampling shall be at 500 feet intervals and taken at the anticipated scour depth location.

- 10.4.5 Bed-form scour, due to the passage of dunes or antidunes, shall be computed from analytical relationships developed by investigators such as Yalin and Kennedy, as described in textbooks on sediment transport technology. The maximum hydraulic parameters associated with the passage of a 100-year frequency peak shall be used to establish the quantitative values for this scour component.
- 10.4.6 If a sediment transport analysis is necessary, the analysis shall consider the sediment load entering the study reach. If computer software is used to analyze sediment transport a hard copy and CD with input and output files shall be submitted for review.
- 10.4.7 Unless otherwise directed, the analysis shall include both the Level 1 and Level II analysis as defined in the State of Practice Report, Lateral Migration and Channel Degradation, Attachment 2, Channel Degradation Estimation for Alluvial Channels in Arizona latest version.
- 10.4.8 The Consultant shall complete an analysis of the stability of the existing channel to determine the long-term stability of the channel and to estimate the potential scour depths. The HEC-RAS model water surface profile channel hydraulics shall be used to establish averaged hydraulic conditions for existing and proposed conditions within the study reach. Alternative channel configurations considered for the project shall be evaluated to assess the impact of the proposed alternative on the channel stability. Scour estimates shall be used to estimate the depth of toe down required for bank armor and grade control structures. The methods described in the Arizona Department of Water Resources State of Practice Report, Lateral Migration and Channel Degradation shall be followed. Narrative summarizing the evaluation shall be included in project report (Master Plan or Pre-design Report) and calculations shall be included in the Technical Data Notebook.
- 10.4.9 Sediment Sampling and Testing. The Consultant shall obtain and test samples of the existing channel bed and banks throughout the study reach and the upstream sediment source area. Samples shall be obtained at intervals of approximately 1,000 feet. The sampling procedures shall be consistent with procedures described in the Bureau of Reclamation's, Computing Degradation and Local Scour, January 1984, or the U.S. Army Corps of Engineers', Sedimentation Investigations of Rivers and Reservoirs, 31 October 1995. Gradations of the sediment samples shall be plotted for both the channel bed and banks. Changes in the gradations throughout the study reach shall be documented. Test data, gradation plots, plots of the longitudinal change in size, and any other supporting data shall be included in the Technical Data Notebook.

10.5 GENERAL

- 10.5.1 Plans submitted for review shall include profiles showing the top of levee protection, toe-down, hydraulic grade line, existing and design invert elevations at the thalweg, and the low chord elevations for bridges. Also, road and railway crossing locations must be shown on plans and profiles.

- 10.5.2 Maintenance access and channel invert access ramps shall be incorporated into the design. They should be a minimum of 16 feet wide, and no steeper than 10:1. Additional design criteria are found within the Drainage Design Manual for Maricopa County, Volume II, Hydraulics, January 28th, 1996, or latest version.

11.0 FLOODPLAIN DELINEATION STUDIES

11.1 COORDINATION

- 11.1.1 The Consultant is responsible for placing the legal advertising at the beginning of the study, as well as notifying the public of the study as directed by the District. After the ad is run the Consultant will supply the District with the original affidavit of publication from each of the newspapers for each day that the ad ran.
- 11.1.2 The Consultant is responsible for placing display advertising at the start of the study and at the study results stage. The advertisement should run in a local area newspaper twice with approximately two (2) weeks between runs.
- 11.1.3 The Consultant shall notify property owners along the watercourses being studied at the start of the study and prior to the study results public meeting, with a direct mailer to obtain any necessary rights-of-entry for the study area. The Consultant shall furnish the District with a list of all the property owners notified and a sample rights-of-entry letter.
- 11.1.4 The Consultant shall meet with officials from the local communities. The purpose of this meeting is to identify local flooding problems and obtain information on current and planned public works projects, channel modifications, storm-drainage systems, development, and corporate limits.
- 11.1.5 The District shall plan and conduct two (2) public meetings in conjunction with a study. The first meeting will be to inform the public of the purpose and scope of the study. The second meeting will be to inform the public and obtain public comment on the study results, and shall take place prior to the submittal of the final report to FEMA. The Consultant/District shall be responsible for the preparation of the graphic displays and mailer notice for these meetings. The Consultant shall respond to the public's comments and make revisions to the study if necessary.
- 11.1.6 Consultant/District Performance Evaluations will be performed. An informal evaluation will be performed at the completion of the hydrologic analysis. A formal evaluation will be performed at the completion of the project upon receipt of all deliverables.
- 11.1.7 Information regarding a Flood Delineation Study shall be posted on the District's Website.

11.2 DATA COLLECTION

- 11.2.1 The Consultant shall collect and review pertinent data from the District and other outside sources. Data to be collected will include previous flood hazard reports and hydrology for the study area; existing topographic mapping; historical flooding information; as-built plans for existing structures; FEMA Flood Hazard Boundary Maps and any Letters of Map Amendment and/or Revisions, and other pertinent information.

11.2.2 The results of the data collection efforts will be included in the Technical Data Notebook (TDN). A preliminary draft of this section of the TDN is due within 90 days of the Notice to Proceed.

11.3 PHOTOGRAMMETRIC MAPPING AND CONTROL SURVEYING

Refer to Sections 3.2 and 3.3 for requirements.

11.4 HYDROLOGY

Refer to Section 9.0 for requirements.

11.5 FLOODPLAIN DELINEATION

- 11.5.1 Floodplain delineations must be accomplished using the U.S. Army Corps of Engineers' most recent version of the HEC-RAS computer model. Other modeling methodologies acceptable to FEMA shall be considered on a case by case basis, and will be specified in the Scope of Work. The Consultant will conduct the study using the guidelines established in FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners, February 2002, FIA Document 12, Appeals, Revisions, and Amendments to Flood Insurance Maps, December 1993, Arizona Department of Water Resources' State Standard for Floodplain Hydraulic Modeling (SS9-02), and the project Scope of Work. The models for each study area will need to include textual descriptions regarding the name of the study contractor and their location, District FCD contract number, District project manager, study-related topographic mapping, and other items determined pertinent to obtain a full study documentation.
- 11.5.2 The delineation work shall meet requirements for floodplain and floodway delineations as prescribed by the FEMA and the ADWR. The delineation work may also require review and acceptance by other cities, towns, or local agencies as identified in the contract Scope of Work.
- 11.5.3 The delineation study shall be based on the final results of the hydrologic study as summarized in Section 9.0 of this document, or existing hydrology data supplied by the District at the beginning of the project.
- 11.5.4 The Consultant is to make refinements to the HEC-RAS model based on review of the model results by the District, ADWR, FEMA, and the FEMA Flood Map Production Coordination Contractor. The Consultant shall also review the HEC-RAS model results for reasonableness. The use of FEMA's Check-RAS computer program will be part of the review process. Work normal to the scope shall include all adjustments to the input parameters required for obtaining the most realistic results.
- 11.5.5 Floodways are to be determined using equal conveyance encroachment to start with, but only encroachment method 1 will be used in the final analysis. The floodway encroachment should produce a rise in the water surface elevation that is as near the one-foot maximum as possible.

11.5.6 REVIEW AND APPROVAL

- 11.5.6.1 The Consultant must obtain District approval at each of the following steps:
- a. Field reconnaissance report and estimation of Manning's "n" values.
 - b. Proposed location and alignment of the cross sections and channel centerline.
 - c. Floodplain (natural) delineation.
 - d. Floodway delineation using equal conveyance encroachment method 4.
 - e. Floodway delineation using encroachment method 1.
 - f. Finalized reporting in Technical Data Notebook.
 - g. Final FEMA submittal package (with all documentation).

11.5.7 FIELD RECONNAISSANCE

- 11.5.7.1 The Consultant will conduct field reconnaissance covering the full study reach. This will include observation of channel and floodplain conditions for estimation of Manning's "n" values, photographic documentation of floodplain characteristics, determination of channel bank stations, observation of possible overflow areas, inspection of levees or other flood control structures, and measurement of bridge dimensions.
- 11.5.7.2 Manning's "n" values are to be determined using the methodology in the USGS report, Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona, April 1991. Copies of the report are available through the District.
- 11.5.7.3 The field reconnaissance results will be included as a section of the TDN, and a draft copy will be submitted to the District for review and approval prior to beginning the HEC-RAS modeling. The field reconnaissance section will present the determination of channel and overbank "n" values using captioned color photographs or color photocopies. The section will also discuss floodplain conditions affecting the delineation, describe structures and obstructions, and provide color photos or photocopies of major hydraulic structures. The location of photos and direction of view, structures, and "n" values will be displayed on reduced scale mapping.

11.5.8 CROSS SECTIONS

- 11.5.8.1 The location and alignment of cross sections and channel centerline will be submitted for the District's review and approval prior to digitizing the cross section data. Cross section stationing will be from left to right looking downstream with the thalweg as station 10,000. Cross sections will be spaced approximately every 500 feet, unless geographic or structural constraints dictate otherwise, and will extend the full width of the area inundated by 100-year floodwaters. Identification of cross sections will be in river miles, increasing upstream. The stationing will coincide with cross section locations of any existing FEMA studies. Cross section orientation may need to be altered after running the HEC-RAS model to ensure that sections are perpendicular to flow per FEMA criteria. Textual descriptions regarding cross section locations with respect to physical features within each study area will be required within the Hydraulic model. These descriptions should also reference flow-splits and other Hydrologically pertinent study results, including results from previous related studies.

- a. The cross section plots will show water surface profiles, ineffective flow areas, "n" values, encroachments, channel stationing, and other pertinent information. All plots are to be accompanied by a legend.

- 11.5.9 Bridges and culverts must be modeled in compliance with HEC-RAS modeling requirements for the selected routine. Where multiple bridges occur, each bridge will be modeled separately. The HEC-RAS modeling results for bridges, culverts, and other hydraulic structures may need to be checked using an independent method as determined by the District to analyze these structures.
- 11.5.10 For floodplains identified as ponding areas, it is preferable to analyze these areas by using storage routing techniques as provided in the HEC-1 computer model (see Section 9.0), unless it can be demonstrated that movement of flood-flows is riverine in nature. If appropriate, the Consultant shall identify a floodway for the purpose of allowing the pond to seek a constant stage throughout the area extent of the ponding, versus the creation of two independent ponds.
- 11.5.11 Flood zones must be determined according to FEMA criteria and clearly labeled on the final work-study drawings.
- 11.5.12 A Technical Data Notebook (TDN) shall be prepared in accordance with the ADWR State Standards Attachment 1-97 (SSA1-97) to present the findings of the floodplain/floodway delineations. The format of the TDN shall follow "ADWR/FEMA Submittals" as outlined in SSA1-97 unless otherwise specified in the Scope of Work. Pertinent information from other sections of these guidelines shall also be documented as necessary to fully complete the TDN for a FEMA submittal and review. The TDN shall include profile plots and complete printouts of the HEC-RAS and HEC-1 models.

11.5.13 WORK-STUDY MAPS

- 11.5.13.1 The Consultant shall provide permanent non-erasable mylars of the work study drawings. Unless specified otherwise, the drawings shall be 24" x 36" in size, with a scale of 1-inch = 200-feet and a contour interval of 2-foot for all mapping with the exception of section line roads which will have a contour interval of 1 foot and/or spot elevations. A cover sheet will be provided with the project title, date of topographic mapping, and a location map showing geographic range covered by each specific mapping sheet. Each drawing shall include contours, spot elevations, the floodplain and floodway delineations, and a minimum of a north arrow, scale, section corners and quarter corners, current and proposed streets and highway names, NAD83 Central Zone State Plane Coordinate System grid marks, major drainage features, corporate boundaries, cross section lines, channel station center line, index map, and description and elevation of elevation reference marks (ERMs). The District will supply a template of map and drawing formats.
- 11.5.13.2 The final mylar drawings shall be sealed by each qualified registrant according to the work performed. The work of each subconsultant and/or sub-contractor shall be performed in accordance with the Scope of Work and these Guidelines. The Consultant shall check all work prior to each submittal to the District. All drawings shall be initialed and dated by the person who performed the work and the checker.

11.5.14 QUALITY ASSURANCE

- 11.5.14.1 A qualified registrant shall seal the final submittal of mylar drawings.
- 11.5.14.2 The work of each subconsultant shall be performed in accordance with the Scope of Work and these Guidelines. The Consultant shall check all work prior to each submittal to the District. All drawings shall be initialed and dated by both the person who did the work and the checker.
- 11.5.14.3 The work of any subcontractors utilized by the prime Consultant for this contract shall be reviewed by the prime Consultant for compliance with the Scope of Work and these Guidelines prior to submittal for review by the District.

11.5.15 HIS DATA

11.5.15.1 Delivery of digital study data for population of the District's Hydrologic Information System (HIS) database shall comply with the District's HIS Data Delivery Specifications, latest revision. The Consultant shall have the option of delivering the digital data in one of two formats:

- OPTION 1 – Digital data shall be delivered in a Geographical Information System (GIS) format per District specifications; or,
- OPTION 2 – Digital data shall be delivered in a CADD standard ASCII DXF format from either AutoCAD or MicroStation per District specifications.

For either option, unless otherwise specified, the following themes shall be delivered according to District HIS specifications:

COVERAGE NAMES FOR GIS

Name	Page No.	Description
NDXPRJ	LP-40	Shows the map sheet boundaries of the project
PRJ	LP-60	Defines the boundary of the project
CARTO	LP-110	Planimetric features captured but not used by HIS (Fences, tree lines, etc)(if any)
CORNERS	LP-210	Section corners as defined by the PLSS (Public Land Survey System)
CTRL	LP-215	Other control points that are not corners
AGRCLTR	LP-305	Dairy and Agricultural Areas
STRCT	LP-360	Structures like building footprints (if any)
DQ.TBL	LP-410	Data Quality of Data: Scale, date, Vertical Datum, Projection
PRJDAT.TBL	LP-430	Contractor name, Project Name, Project ID
FPBLN	LP-520	Floodway center line
FPCTLFCD	LP-523	Elevation Reference Marks
FPSRFFCD	LP-535	Surface Water Elevation

Name	Page No.	Description
FPXFCD	LP-540	Cross sections used in HEC-RAS
FPZNFCD	LP-550	Floodplain Zones
FPZNHZ	LP-560	Floodplain Hazard Zones
SPWBLN	LP-588	Spillway Baseline route System
SPWXSEC	LP-590	Spillway Cross section
SPWZN	LP-591	Spillway Zone
CNL	LP-610	Canals (If any)
FLTY	LP-620	FCD Project in the area (if any)
RR	LP-650	Railroads in the area (if any)
STRTCLN	LP-655	Street Centerlines
STRDTL	LP-660	Edge of Pavement (if any)
UTLTY	LP-670	Utilities, Power poles, etc (if any)
ELV	LP-710	Contours and spot elevations
BRIDGE	LP-608	Bridges, including any headwalls or wing walls
CULVERT	LP-612	Culverts, including any headwalls or wing walls
VEG	LP-775	Areas of similar vegetative mix
DRNBSN	LP-920	Drainage basins
DRNPTH	LP-930	Drainage Path
LAKE	LP-950	Lakes that are in the area (if any)
RIVER	LP-960	Washes or streams in the area (if any)

- 11.5.15.2 This is a comprehensive listing of possible features. If there are no features collected under one of the categories mentioned, then the theme does not need to be delivered. Coverage of Auto CADD submissions shall follow District specifications for CADD deliverables, a copy of which is available from the District.
- 11.5.15.3 HIS data submittals will be subject to a quality control (QC) check by the District staff. The District makes use of a checklist and a computer program to document and automate the QC process. A hardcopy of the checklist shall be delivered to the Consultant at the Kickoff meeting. The Consultant shall use the checklist to review each HIS data submittal for compliance and deliver a completed copy of the checklist to the district along with the data submittal.
- 11.5.15.4 The computerized program that automates the QC process is available upon request at no charge to the Consultant. The Consultant is recommended to make use of the QC checking computer program to review the data prior to submittal of

HIS. The program is available for Arc/Info on all UNIX platforms, as well as for Auto CADD.

- 11.5.15.5 All required HIS submittals must be reviewed and accepted prior to finalizing the Technical Data Notebook for submittal to FEMA.

11.6 SUBMITTALS

The Consultant will submit the following items to the District for review by Federal Emergency Management Agency (FEMA) and any other appropriate governmental agency. All of the following products, unless otherwise specified, are considered deliverables for the FEMA submittal:

- 11.6.1 Original Affidavits of Publication.
- 11.6.2 Two (2) complete sets of blueline topographic base maps with the floodplain/floodway delineations shown. All drawings shall be signed and sealed by persons of appropriate professional registration(s). Each registrant shall provide a specific statement as to what service they performed.
- 11.6.3 Two (2) copies of the Technical Data Notebook, including complete HEC-1 and HEC-RAS digital input/output files on diskettes or CDs. The Technical Data Notebook shall be prepared in accordance with ADWR State Standards Attachment 1-97 (SSA1-97) using the ADWR/FEMA Submittals outline, unless otherwise specified by the District.
- 11.6.4 Three (3) sets of the project survey report.
- 11.6.5 Final Submittal - The following products are considered deliverables for the final submittal to the District after FEMA approval is issued.
- 11.6.5.1 One (1) complete set of mylars and four (4) complete sets of sealed blueline topographic base maps with the floodplain/floodway delineations shown. All drawings shall be signed and sealed by persons of appropriate professional registration(s). Each registrant will provide a specific statement as to what service they performed.
- 11.6.5.2 Four (4) complete copies of the Technical Data Notebook including HEC-1 and HEC-RAS input/output files on diskettes. The Technical Data Notebook shall be prepared in accordance with ADWR State Standards Attachment 1-97 (SSA1-97) using the ADWR/FEMA Submittals outline, unless otherwise specified by the District. This submittal of the Technical Data Notebook shall include any correspondence and/or meeting minutes with the reviewing agencies, and shall reflect any revisions required by those reviewing agencies. Revisions may include, but are not limited to, modifications to the delineation maps, the HEC-1 model, the HEC-RAS model, and/or the final Technical Data Notebook.

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12.0 PLANNING STUDIES

12.1 PROJECT PHASING

Area Drainage Master Plan (ADMP) projects will generally be completed in two Phases, each with a separate Notice to Proceed (NTP).

- 12.1.1 Phase I will consist mainly of data collection including analyses of existing facilities, identification of past drainage and flooding problems, collection of existing flood photos, completion of existing conditions analyses, identification of flood hazard limits, formulation of flood protection alternatives, and preliminary analyses of those alternatives. During Phase I, and as required by the project Scope of Work (SOW), the Consultant will identify drainage problems by evaluating the impacts in the watershed due to development, review the existing and future conditions hydrologic models, revising as necessary, perform hydraulic analyses, evaluate existing floodplain delineations and delineate additional floodplains, conduct sedimentation and geomorphic evaluations, conduct survey work, produce interim development guidelines, and develop preliminary feasible alternatives to be recommended for consideration in Phase II of the projects. A Data Collection Report, Preliminary Alternatives Submittal, and Phase I Preliminary Alternatives Formulation Report will be prepared at this time.
- 12.1.2 Phase II will be conducted only if feasible implementable alternatives are identified during the Phase I effort. During Phase II the Consultant will refine the Phase I preliminary alternatives and conduct detailed analysis of the proposed alternatives (structural and non-structural). Proposed alternatives may include floodplain delineation work to be conducted during Phase II. Procedures for implementation of structural and non-structural plan features will be evaluated and recommended and, if required by the project SOW, development guidelines and erosion hazard non-encroachment areas will be refined. An ADMP report and Phase II Technical Data Notebook (TDN) will be prepared at this time. The ADMP report will generally include cost estimates and an implementation plan of the recommended alternatives.
- 12.1.3 Site visits, team meetings, public meetings and/or open houses, and stakeholder information and coordination will be included in Phases I and II of the projects.

12.2 PHASE I

12.2.1 DATA COLLECTION AND EXISTING CONDITIONS ANALYSIS

- 12.2.1.1 The Consultant shall collect and review pertinent data from the District, MCDOT, partner Towns and Cities, and other sources. Data to be collected and reviewed will include, but is not limited to, existing topographic mapping, utility quarter sections, as-built plans for existing structures, FEMA Flood Hazard Boundary Maps, FEMA-approved floodplain delineation studies, any Letters of Map Amendment and/or Revisions, drainage reports, site plans, future drainage improvement plans, land-use plans, development plans, and landfill closure plans. Interviews should be arranged with appropriate agencies or associations for information on drainage problems in the area. The Consultant shall also

- develop a comprehensive list of possible existing and proposed developments impacting the project area.
- 12.2.1.2 The Consultant shall develop a comprehensive list of flooding and drainage problems impacting the project area. This is an essential part of the Phase I task to document the need and necessity of the project. The Consultant will research and obtain historic flood data such as precipitation data, newspaper articles, and historic flooding photos, to help establish past flooding within the project area. The Consultant will provide a map, which indicates the location of flooding or problem areas identified by the flood data obtained.
- 12.2.1.3 The Consultant shall prepare an Existing Facilities Exhibit containing an inventory of all man-made or relevant drainage facilities within the project area, including stock ponds. The inventory shall note the condition, size and/or capacity, level of protection, and ownership of these structures. These facilities will become part of the base map for the alternatives analysis. The Consultant shall make maximum use of these facilities, where feasible, as part of the alternative plans.
- 12.2.1.4 The Consultant shall research and become familiar with all existing hydrologic and hydraulic studies and models impacting the project area.
- 12.2.1.5 The District shall prepare a GIS map layer and accompanying database that includes all land ownership in the area. The land ownership base map will indicate whether property is publicly or privately held and ownership information.
- 12.2.1.6 The Consultant will compile the data in a Data Collection Report. The Data Collection Report will contain a description of information collected for this project. Existing major natural washes and existing and planned man-made drainage facilities in the watershed should be shown on the Existing Facilities Exhibit to be submitted with the Data Collection Report. The Existing Facilities Exhibit will be prepared in AutoCAD format. The Consultant shall submit a DRAFT of this report (generally within 120 days of the NTP) followed by a FINAL once all data collection tasks are complete.
- 12.2.1.7 The Data Collection Report should include the following as applicable:
- a. Executive Summary
 - b. Project Description
 - c. Scope of Project
 - d. Data Collection Results
 1. Current Conditions
 2. Areas of Past and Potential Flooding
 3. Existing and Future Development Plans
 4. Current and Future Transportation Plans
 5. Existing and Future Drainage Facilities
 - e. Land
 1. Parcel Ownership
 2. Rights-of-Entry Requirements
 - f. Existing Hydrology/Hydraulics/FLO-2D Models
 1. Summary of Models/Conditions
 2. Concerns
 - g. Major Utilities
 - h. Existing Facilities Exhibit
 - i. References/Figures

12.2.2 PROJECT-SPECIFIC TASKS

- 12.2.2.1 Based on the project SOW, the Consultant will be required to complete one or more of the following project-specific tasks. Detailed guidelines regarding methods for completing each of these tasks can be found in the project SOW or elsewhere in these Consultant Guidelines.
- a. Hydrologic Analysis
 - b. Hydraulic Analysis
 - c. FEMA Floodplain and Floodway Delineation
 - d. Flood Warning/Flood Response Plan
 - e. Field Survey
 - f. Sedimentation Engineering and Geomorphic Evaluation
 - g. Environmental Analysis
 - h. Landscape Character Analysis
 - i. Multiple-Use Opportunities Assessment
 - j. Public Involvement

12.2.3 PRELIMINARY ALTERNATIVES FORMULATIONS AND ANALYSIS

- 12.2.3.1 The Consultant shall prepare an existing constraints map for presentation at a Preliminary Alternatives Formulation and Analysis Meeting (Phase I brainstorming session). The presentation shall identify existing flooding problem areas, existing studies in the project area, and the results of the data collection effort and project-specific tasks (as required by the project SOW). This presentation will ensure all Project Team members are aware of all existing information and issues in the area. The Consultant will then provide several seed ideas for potential solutions and consideration as part of the brainstorming session.
- 12.2.3.2 Preliminary alternatives addressing both structural and non-structural alternatives shall be developed, including a "No Action" alternative. The Preliminary Alternatives Formulation and Analysis shall be conducted using information provided by the data collection effort and the project-specific tasks. This preliminary analysis will be conducted to insure the feasibility of each alternative. The focus of this feasibility level evaluation is to determine if a suitable project alternative exists to alleviate or manage flooding as identified during the Phase I analysis and data collection effort.
- 12.2.3.3 The Consultant shall document each preliminary alternative with a schematic drawing (if appropriate) and narrative description. The Consultant shall further identify the strength, weakness, estimated costs, opportunities and constraints of each preliminary alternative.
- 12.2.3.4 If required by the project SOW, the Consultant shall produce Interim Development Guidelines. The Consultant shall look at possible construction requirements that could be implemented for structures and roads. These requirements shall include, but not be limited to, finished floor elevations, setbacks from washes, construction of walls and road alignments. The Guidelines should provide details of what can and cannot be constructed, ways to alleviate the impacts of construction on the watershed, and how to protect structures from flooding and erosion.
- 12.2.3.5 These Interim Development Guidelines will be used by the Regulatory Division of the District to manage development, which includes subdivisions and individual lots, in the ADMP area. The Consultant shall produce the guidelines

- in a document format that the District will be able to provide to developers or landowners as a guide to construction on their property. The Consultant shall develop possible methods to implement the Guidelines within the County.
- 12.2.3.6 The Consultant shall develop evaluation criteria with input from the participating agencies for evaluation of the preliminary alternatives and prepare an evaluation matrix by which the preliminary alternatives can be evaluated within individual geographic regions and collectively for the entire watershed. Flood safety impacts are to be included, as applicable, in the evaluation criteria.
- 12.2.3.7 The Consultant shall review the preliminary alternatives generated during the brainstorming session and, using the evaluation matrix, recommend the preliminary alternatives or combination of alternatives to be studied further. At the conclusion of the Preliminary Alternatives Formulation and Analysis Meeting, the Consultant will propose several alternatives to the District for analysis in Phase II of the project. The District, with input from the project participants, will make the final selection of proposed alternatives to be further studied in Phase II of the project. The proposed alternatives for Phase II evaluation may be comprised of multiple features, providing a collective solution.
- 12.2.3.8 All documentation developed during this Preliminary Alternatives Formulation and Analysis shall be submitted to the District as the Preliminary Alternatives Formulation Report.

12.2.4 STAKEHOLDER INVOLVEMENT

- 12.2.4.1 Agencies, private enterprises, or individuals who have an interest in the outcome of the project will be considered stakeholders. If required by the project SOW, the Consultant shall prepare a Stakeholder Involvement Plan immediately upon NTP. The Plan will include a preliminary list of stakeholders for use in developing a stakeholder database, preliminary agendas for the initial stakeholder working group meeting, a preliminary stakeholder's matrix of opportunities and issues, and a preliminary stakeholder involvement schedule. After review by the District Project Manager, the Consultant will finalize the plan and keep it updated during Phase I.
- 12.2.4.2 The Consultant will work with the District on updating the ADMP stakeholder database immediately upon NTP. After the District has approved the initial database, the Consultant will schedule and conduct a Phase I Stakeholder Working Group Kick-off Meeting. The meeting agenda will include:
- a. An overview of the ADMP Purpose and Goals
 - b. ADMP Schedule and Milestones
 - c. Identification of Stakeholder Opportunities and Constraints
 - d. Development of Future Meeting Dates (if necessary)
- 12.2.4.3 If required by the project SOW, the Consultant will prepare a stakeholder working group notebook, which will be distributed at the first meeting for participants use. Meeting summaries will subsequently be prepared and distributed, as well as a stakeholder opportunities/issues matrix. These will be developed and maintained throughout the project by the Consultant. The matrix/database will be utilized by the ADMP team at all levels of the project, but particularly at Alternatives evaluation/formulation/recommendation.
- 12.2.4.4 If open house meetings and/or public meetings are required by the project SOW, the Consultant will also utilize those meetings as an opportunity to engage

stakeholders and, if deemed appropriate and approved by the District, additional agency or non-agency stakeholders may be added to the stakeholder working group as a result of the public meetings.

12.2.4.5 With approval of the District, the Consultant will schedule and coordinate the stakeholders working group throughout the project to exchange information, address opportunities and issues and ensure that stakeholder concerns and input are considered as part of the Phase I alternatives formulation.

12.2.4.6 In addition to the working group meetings and public information activities, the Consultant will meet with stakeholders individually, as needed, to ensure that site and stakeholder specific issues are considered in the Phase I preliminary alternatives analysis. The District's Project Manager is to be advised of meetings and given an opportunity to attend. The Consultant shall keep a written summary of all meetings and will include them as part of the project record.

12.2.5 PLANNING/REGULATORY COORDINATION

12.2.5.1 The Consultant shall complete an inventory and determine the status and relevance of any planning studies conducted by Maricopa County, partner Towns and Cities, and any other agencies working within the project area.

12.2.5.2 The Consultant shall identify significant conditional development approvals by the Maricopa County Board of Supervisors, partner Towns and/or Cities' Councils, and any other agencies.

12.2.5.3 If required by the project-specific SOW, the Consultant shall meet with planning staff from identified agencies to determine current policy thinking concerning land use, development standards, flood control, and environmental protection for the project area.

12.2.5.4 The Consultant shall assess opportunities and obstacles created by adopted codes, ordinances, and development conditions.

12.2.5.5 The Consultant shall identify planning issues resulting from policies and/or regulations pertinent to the project.

12.2.6 SITE VISITS

12.2.6.1 The District will conduct a one (1) day Kick-off site visit to provide Consultant and District project team members with an overview of the watershed.

12.2.6.2 The District will conduct at least one (1) additional all-day site visit during Phase I of the project to familiarize the Consultant and the District with the project area, and to determine any initial conflicts or opportunities.

12.2.7 MEETINGS

12.2.7.1 The Consultant is responsible for the minutes of any meetings and shall include copies of minutes of meetings, telephone conversations, and correspondence to the District in the Project Administration Report.

12.2.7.2 The Consultant shall participate in the following specific meetings, generally held at the Consultant's office, during the Phase I effort:

12.2.7.2.1 Kick-Off Meeting – The Consultant shall meet with the District to submit the project schedule that shall include dates of all proposed submittals and review meetings, and to discuss the schedule and the tasks necessary to accomplish it. The Consultant shall bring the key project

- team members to the meeting to introduce them to the District staff working on the project.
- 12.2.7.2.2 Data Collection Report Review Meeting – The Consultant shall meet with the District staff to review the overall project status and to discuss the Data Collection Report review comments that will be provided to the Consultant at the meeting. The Consultant should be prepared to explain all information and any assumptions made up to this point. Any problems will be identified and discussed.
 - 12.2.7.2.3 Preliminary Alternatives Formulation and Analysis Meeting – The Consultant shall facilitate an all-day brainstorming session with the Project Team and other stakeholders to discuss existing flooding problems, existing studies and to identify potential solutions.
 - 12.2.7.2.4 Progress Evaluation Meeting – The District shall facilitate an all-day meeting with the Consultant and other stakeholders to discuss flooding problems, identified alternatives, and to review the impacts of Phase I findings on the anticipated work plan for Phase II.
 - 12.2.7.2.5 Lesson’s Learned Meeting – Upon completion of the project, the Consultant shall facilitate a half (½) day workshop to review any SOW items, task items, project assumptions, methodologies, project issues, etc., that can provide insight to the Project Team for future projects.
 - 12.2.7.2.6 Monthly Project Review Meetings – The Consultant shall meet monthly with the District’s Project Manager and Project Team to review the overall project status. The Consultant and subconsultants shall be prepared to provide status updates and discuss any new or outstanding issues. Any problems shall be identified and discussed. The Consultant shall take notes of all regularly scheduled project review meetings.

12.2.8 REPORTS

- 12.2.8.1 All reports or documents shall be submitted to the District for review in draft form. Upon receipt of review comments, the Consultant shall incorporate appropriate revisions and complete the report. The Consultant shall incorporate a two-week District review time in the project schedule.
- 12.2.8.2 The following documents or reports shall be developed as a result of Phase I work:
 - a. Data Collection Report
 - b. Preliminary Alternatives Formulation Report
 - c. Project Administration Report
- 12.2.8.3 As required by the project SOW, one or more of the following project-specific documents or reports shall be developed as a result of Phase I work:
 - a. Interim Development Guidelines
 - b. ADMP Hydrology Report (in TDN format)
 - c. ADMP Hydraulics Report (in TDN format)
 - d. FEMA Floodplain Delineation Submittal and HIS Data
 - e. Flood Warning/Flood Response Plan
 - f. Project Survey Report
 - g. Sedimentation Engineering and Geomorphic Evaluation Report
 - h. Environmental Overview Report
 - i. Landscape Character Analysis Report
 - j. Multiple-Use Opportunities Assessment Report

- k. Stakeholder Involvement Plan
- l. Public Involvement Plan

12.3 PHASE II

12.3.1 DATA COLLECTION AND EXISTING CONDITIONS UPDATE

- 12.3.1.1 The Consultant shall review the Data Collection Report prepared for Phase I of the project and update/refine the existing conditions analysis to reflect any new information, as appropriate.
- 12.3.1.2 The Consultant shall identify permanent and temporary right-of-way (ROW) and easement requirements necessary for the proposed alternatives. The District will provide all available GIS ROW information to the Consultant. The remaining ROW will be researched and drawn on the proposed alternatives project area base sheets by the Consultant. Only areas of additional ROW or easements necessary to construct the proposed alternatives will be identified.
- 12.3.1.3 The Consultant shall identify zoning and land ownership for properties potentially impacted by the proposed alternatives.
- 12.3.1.4 The Consultant shall obtain supplemental field surveys as necessary to aid in the development of the proposed alternatives.
- 12.3.1.5 For survey purposes, the Consultant will identify and obtain any necessary rights-of-entry (ROE) within the project area. Before distribution, the Consultant will provide any ROE letters to the District for approval.

12.3.2 PROJECT-SPECIFIC TASKS

- 12.3.2.1 Based on the project SOW, the Consultant will be required to complete one or more of the following project-specific tasks. Detailed guidelines regarding methods for completing each of these tasks can be found in the project SOW or elsewhere in these Consultant Guidelines.
 - a. Hydrologic Analysis
 - b. Hydraulic Analysis
 - c. FEMA Floodplain and Floodway Delineation
 - d. Flood Warning/Flood Response Plan
 - e. Field Survey
 - f. Sedimentation Engineering and Geomorphic Evaluation
 - g. Environmental Analysis
 - h. Landscape Character Analysis
 - i. Multiple-Use Opportunities Assessment
 - j. Public Involvement

12.3.3 PROPOSED ALTERNATIVES ANALYSIS

- 12.3.3.1 The Consultant shall develop evaluation criteria with input from the participating agencies for evaluation of the proposed alternatives identified for further analysis during Phase I of the project. The Consultant shall prepare a matrix by which the alternatives can be evaluated. Socioeconomic, physical and natural environmental, flood safety, and cultural and visual resource impacts are to be included, as applicable, in the evaluation criteria.
- 12.3.3.2 Using the Phase I results and data collected and developed during Phase II, the Consultant shall evaluate the proposed alternatives to determine their engineering

feasibility and approximate costs. Conceptual design of the project features shall be limited to typical sizes and dimensions and shall be sufficient to determine the costs of major project components. Project features will provide a level of protection as described in the project SOW. For areas where no retention is planned as part of the alternatives, future condition hydrology may be used as a basis for design. Capital cost estimates shall include design, major construction items, ROW, major utility relocations, and aesthetic improvements.

- 12.3.3.3 The Consultant shall identify major existing utilities for any proposed structural or engineered alternatives. Utilities shall be identified within the project construction limits that may impact the project. The alignment of the utilities shall be shown on the alternative sketches and in the conceptual design plans. Estimates of the cost to relocate or realign the utilities shall be included in the project cost estimates as a separate line item. The Consultant shall contact each utility company that has facilities, known or suspected, within the project area, to request the alignment and size of the utility facilities. Record drawings shall be obtained to ascertain all underground utility locations.
- 12.3.3.4 The Consultant shall formulate conceptual designs that are environmentally friendly and blend with the natural landscape of the area. The Consultant shall follow the District's *Policy for the Aesthetic Treatment and Landscaping of Flood Control Projects*, dated December 16, 1992, and revised 2001.
- 12.3.3.5 The Consultant shall develop possible methods of implementing the alternatives. These methods shall be documented and submitted to the District.
- 12.3.3.6 If Interim Development Guidelines were produced during Phase I of the project, the Consultant shall evaluate them as an alternative. These Guidelines may be revised to reflect any new information that is produced during the Phase II analysis. The Consultant shall develop possible methods to implement the Guidelines within the County.
- 12.3.3.7 The Consultant shall prepare a Proposed Alternatives Analysis Summary presenting the proposed Phase II alternatives and evaluation criteria to be reviewed by the Project Team and used to evaluate the proposed alternatives at a comparative level of detail. A Proposed Alternatives Evaluation Meeting will be held to evaluate the proposed alternatives. The Consultant shall assemble the evaluations and identify the proposed alternatives receiving the highest composite score based on the scores assigned by the reviewers. The Recommended Alternative may be comprised of multiple features, providing a collective solution.
- 12.3.3.8 A Proposed Alternatives Analysis Report shall be prepared containing narrative descriptions of the proposed Phase II alternatives considered and discarded, the results of the alternatives analysis, cost estimates, and the recommended plan. The advantages and disadvantages of each alternative shall be identified, considering construction cost, logistics, ROW issues, public preferences, environmental impacts, project objectives, and reliability and life of the project. The Recommended Alternative shall be identified in the Report. For the alternatives that are not recommended, the Consultant shall document the reasons the Recommended Alternative was preferred or selected in lieu of the other proposed alternatives. The Report shall be submitted in DRAFT form for review by the District and the project participants. Upon receipt of review comments, the Consultant shall incorporate appropriate revisions and incorporate the Proposed Alternatives Analysis Report into the ADMP Report. The Proposed Alternatives Analysis Report format should include the following as applicable:

a. Summary

- b. Description of Project Area
- c. Scope of Project
- d. Environmental Overview
 - 1. Ecological Assessment Summary
 - 2. Hazardous Materials Overview
 - 3. Cultural Resources Assessment
- e. Landscape Character Analysis
- f. Multiple-Use Opportunities Assessment
- g. Alternatives Descriptions (including sketches as necessary)
- h. Alternatives Eliminated
- i. Cost Estimates
- j. Evaluation Criteria/Matrix
- k. Evaluation of Alternatives
- l. References/Figures

12.3.3.9 A TDN shall be prepared by the Consultant in accordance with ADWR State Standards Attachment 1-97 (SSA1-97) to present the technical findings of the Proposed Alternatives Analysis. Only pertinent sections of SSA1-97 will apply. The TDN contains documentation of any designs, analysis and calculations. The TDN should include the following as applicable:

- a. Executive Summary
- b. Description of Project Area
- c. Scope of Project
- d. Data Collection Results
- e. Environmental Overview
 - 1. Ecological Assessment Summary
 - 2. Hazardous Materials Overview
 - 3. Cultural Resources Assessment
- f. Landscape Character Analysis
- g. Multiple-Use Opportunities Assessment
- h. Land
 - 1. Parcel Ownership
 - 2. Rights-of-Entry Requirements
 - 3. Right-of-Way Requirements
- i. Hydrology/Hydraulics Models
 - 1. Current Conditions
 - 2. Areas of Past and Potential Flooding
 - 3. Existing and Future Development Plans
 - 4. Existing and Future Drainage Facilities
 - 5. Summary of Models/Conditions
 - 6. Concerns
- j. Major Utilities and Utilities Conflicts
- k. Existing Facilities Exhibit
- l. References/Figures

12.3.4 RECOMMENDED ALTERNATIVE ANALYSIS

12.3.4.1 The Consultant shall present the Recommended Alternative to the project participants. The participants shall prioritize the features of the Recommended Alternative and the Consultant shall include the prioritization in the FINAL ADMP Report.

- 12.3.4.2 The Consultant shall prepare Conceptual Design Plans which will identify the approximate sizes, slopes, profiles, alignments, cross-sections and plan and profile for proposed channels, culverts, basins and/or other features.
- 12.3.4.3 The Consultant shall show major existing utilities impacting the Recommended Alternative on the Conceptual Design Plans. Estimates of the cost to relocate or realign the utilities shall be included in the project cost estimates as a separate line item.
- 12.3.4.4 The Consultant shall identify permanent and temporary ROW and easement requirements necessary for the Recommended Alternatives.
- 12.3.4.5 The Consultant shall develop recommendations to minimize the environmental impacts for the Recommended Alternative. The Consultant shall assess the potential effects of the Recommended Alternative in terms of the ecological resources, cultural resources, hazardous materials assessment, and social environment and recommend mitigation measures to reduce the level of impact.
- 12.3.4.6 The Consultant shall provide hydrologic models that incorporate the effects of the Recommended Alternative as described in the project-specific Hydrology task.
- 12.3.4.7 The Consultant shall assess the area benefited for each identified project feature of the Recommended Alternative. The assessment should include the area benefited by the feature, the number and type of public facilities within the benefited area, type and number of residential or commercial buildings, quantitative evaluation of damages prevented and/or other information that will typify the benefited area.
- 12.3.4.8 A DRAFT ADMP Report shall be prepared containing the content of the Proposed Alternatives Analysis Report and the results of the feasibility level analysis of the Recommended Alternative.
- 12.3.4.9 The ADMP Report will focus on the Recommended Alternatives. The Report will include recommendations to regulators which will detail recommended regulatory methods to circumvent localized flooding and will include a set of guidelines for development in steep hillside and natural wash terrains. The recommendations and guidelines will be developed using hydrologic, hydraulic, sedimentation, environmental, and landscape analyses and will include consideration for preserving landscape character and habitat and recreation opportunities.
- 12.3.4.10 The DRAFT ADMP Report shall be submitted for review by the District and other project participants. Upon receipt of review comments, the Consultant shall incorporate appropriate revisions and complete the FINAL ADMP Report. The Report should include the following as applicable:
- a. Summary
 - b. Description of Project Area
 - c. Scope of Project
 - d. Evaluation Criteria
 - e. Selection of Recommended Alternative
 - f. Recommendations to Regulators
 - g. Environmental Overview Summary
 - h. Landscape Character Analysis
 - i. Multiple-Use Opportunities Assessment
 - j. Cost Estimates
 - k. Priority of Features
 - l. Implementation Plan
 - m. References/Figures

- n. Disk Copies of applicable hydrologic and hydraulic models
- o. Conceptual Design Plans (if applicable):
 - 1. Indicate existing topography
 - 2. Indicate conveyance criteria; approximate size and configuration, invert,
 - a. typical cross-section
 - b. Indicate conflicting utilities

12.3.4.11 The DRAFT ADMP Report shall be submitted for review by the participating agencies. The Consultant shall prepare a separate, reproducible Executive Summary of the FINAL ADMP Report.

12.3.4.12 The TDN developed for the Proposed Alternatives Analysis Report shall be revised to be consistent with the FINAL ADMP Report. Full-scale conceptual design plans if applicable will be included as part of the TDN.

12.3.5 STAKEHOLDER INVOLVEMENT

12.3.5.1 If required by the project SOW, the Consultant shall update the Phase I Stakeholder Involvement Plan immediately upon NTP for Phase II. The Plan will include an updated list of stakeholders for use in developing a Phase II database, preliminary agendas for the initial Phase II stakeholder working group meeting, and a Phase II stakeholders matrix and a stakeholder involvement schedule. After the District Project Manager has approved the Plan, the Consultant will finalize the Plan and keep it updated during Phase II.

12.3.5.2 The Consultant will work with the District on updating the Phase I database immediately upon NTP. After the District has approved the initial database, the Consultant will schedule and conduct a Phase II Stakeholder Working Group Kick-off Meeting. The meeting agenda will include:

- a. An overview of the ADMP Phase II Purpose and Goals
- b. ADMP Phase II Schedule and Milestones
- c. Identification of Stakeholder Opportunities and Constraints
- d. Development of Future Meeting Dates (if necessary)

12.3.5.3 If required by the project SOW, the Consultant will prepare a stakeholder working group notebook that will be distributed at the first meeting for participants use. Meeting summaries will subsequently be prepared and distributed. A stakeholder opportunities and issues matrix will be developed and maintained throughout Phase II by the Consultant. The matrix/database will be utilized by the ADMP team at all levels of the project, but particularly at Alternatives formulation/ analysis/ recommendation.

12.3.5.4 The Consultant will also utilize any Phase II Open House or Public Meetings as an opportunity to engage stakeholders and, if deemed appropriate and approved by the District, additional agency or non-agency stakeholders may be added to the stakeholder working group as a result of the Open House or Public Meetings.

12.3.5.5 With approval of the District, the Consultant will schedule and coordinate the stakeholders working group throughout the project to exchange information, address issues and ensure that stakeholder concerns and input are considered as part of the Phase II alternatives formulation.

12.3.5.6 In addition to the working group meetings and public involvement activities, the Consultant will meet with stakeholders individually as needed to ensure that site

and stakeholder specific issues are considered in the Phase II alternatives evaluation and recommendations. The District's Project Manager is to be advised of meetings and given an opportunity to attend. The Consultant shall keep a written summary of all meetings and will include them as part of the project record.

12.3.6 PLANNING/REGULATORY COORDINATION

- 12.3.6.1 If required by the project SOW, the Consultant shall meet with planning staff from identified agencies to confirm current policy thinking concerning land use, development standards, flood control, and environmental protection.
- 12.3.6.2 The Consultant shall incorporate identified planning issues as part of selection criteria and alternatives formulation.
- 12.3.6.3 If required by the project SOW, the Consultant shall develop new policies, guidelines, and/or ordinances, as applicable, as part of the implementation plan.

12.3.7 IMPLEMENTATION PLAN

- 12.3.7.1 The Consultant shall develop a strategy for the implementation of the Recommended Alternative consisting of the following:
 - 12.3.7.1.1 The Consultant shall identify potential funding sources for implementation of the plan. The Consultant shall prepare a funding document that includes the source of funding, application procedures, potential cost-share, and constraints.
 - 12.3.7.1.2 The Consultant shall produce landscape and multiple-use design guidelines as appropriate to provide consistency during implementation.
 - 12.3.7.1.3 If required by the project SOW, the Consultant shall review the floodplain and stormwater ordinances for jurisdictions relevant to the ADMP area. The Consultant shall provide recommendations as to ordinance modifications that may be required to ensure the implementation of the plan. This may include the drafting of ordinance specific language as identified in the project-specific SOW.
 - 12.3.7.1.4 The Consultant shall prepare a separate memo to the District that identifies key opportunities and constraints for implementation. The memo shall consider timing, funding, proposed public projects, summary of public feedback, permitting, and regulatory issues.

12.3.8 SITE VISITS

- 12.3.8.1 The District will conduct a one (1) day Kick-off site visit to provide Consultant and District project team members with an overview of the watershed and the results of the Phase I project.
- 12.3.8.2 The District will conduct at least one (1) additional all-day site visit during Phase II of the project to incorporate any necessary field review. Additional site visits may be required by the project SOW.

12.3.9 MEETINGS

- 12.3.9.1 The Consultant is responsible for the minutes of any meetings and shall include copies of minutes of meetings, telephone conversations, and correspondence to

the District in the Project Administration Report.

- 12.3.9.2 The Consultant shall participate in the following specific meetings, generally held at the Consultant's office, during the Phase II effort:
- 12.3.9.2.1 Proposed Alternatives Analysis Meeting – The Consultant shall facilitate a half (½) day brainstorming session at initiation of Phase II of the project, with the District and other stakeholders, to discuss the alternatives proposed during Phase I, apply the evaluation matrix, and make recommendations for alternatives to be further evaluated.
 - 12.3.9.2.2 Proposed Alternatives Analysis Report Review Meeting – Three (3) weeks after submittal of the Proposed Alternatives Analysis Report, the Consultant shall meet with the District to review the overall project status and to discuss the Proposed Alternatives Analysis Report review comments.
 - 12.3.9.2.3 Feature Prioritization Meeting – The Consultant shall coordinate a meeting with the participants to discuss implementation of the Recommended Plan and develop project priorities and phasing.
 - 12.3.9.2.4 Recommended Alternative Meeting – Three (3) weeks after submittal of the DRAFT ADMP Report the Consultant shall meet with the District to review the overall project status and to discuss the recommended alternatives. The Consultant will be prepared to explain all assumptions and calculations completed up to this point. Any problems will be identified and corrective actions agreed upon at this meeting. The Consultant will make any necessary corrections and provide written responses to all comments and will resubmit the ADMP Report and any preliminary plans as required to the satisfaction of the District.
 - 12.3.9.2.5 FINAL Submittal Meeting – the Consultant shall meet with the District to make the final submittal of the hydrology and hydraulic analyses, the alternative flood mitigation solutions, the cost estimates, and the final recommended solutions as revised per the DRAFT ADMP Report review comments. The Consultant shall supply the hydraulic data and any plans on CD-ROM. The plans should be in AutoCAD format.
 - 12.3.9.2.6 Lesson's Learned Meeting – Upon completion of the project, the Consultant shall facilitate a half (½) day workshop to review any SOW items, task items, project assumptions, methodologies, project issues, etc., that can provide insight to the Project Team for future projects.
 - 12.3.9.2.7 Monthly Project Review Meetings – The Consultant shall meet monthly with the District's Project Manager and Project Team to review the overall project status. The Consultant and subconsultants shall be prepared to provide status updates and discuss any new or outstanding issues. Any problems shall be identified and discussed. The Consultant shall take notes of all regularly scheduled project review meetings.

12.3.10 REPORTS

- 12.3.10.1 All reports or documents shall be submitted to the District for review in draft form. Upon receipt of review comments, the Consultant shall incorporate appropriate revisions and complete the report. The Consultant shall incorporate a two (2) week District review time in the project schedule.

- 12.3.10.2 The following documents or reports shall be developed as a result of Phase II work:
- a. Alternatives Summary
 - b. Proposed Alternatives Analysis Report
 - c. Technical Data Notebook
 - d. ADMP Report – DRAFT and FINAL
 - e. Implementation Plan
- 12.3.10.3 As required by the project SOW, one or more of the following project-specific documents or reports shall be developed as a result of Phase II work:
- a. Development Guidelines
 - b. ADMP Hydrology Report (in TDN format)
 - c. ADMP Hydraulics Report (in TDN format)
 - d. FEMA Floodplain Delineation Submittal and HIS Data
 - e. Flood Warning/Flood Response Plan
 - f. Project Survey Report
 - g. Sedimentation Engineering and Geomorphic Evaluation Report
 - h. Environmental Overview Report
 - i. Landscape Character Analysis Report
 - j. Multiple-Use Opportunities Assessment Report
 - k. Stakeholder Involvement Plan
 - l. Public Involvement Plan

12.4 DELIVERABLES FOR PLANNING STUDIES

- 12.4.1 The Consultant shall submit all items sealed by a registered civil engineer in the State of Arizona. Upon receipt of the final submittal, the District shall review the report and preliminary plans for the accurate incorporation of all final comments. If incomplete and/or incorrect incorporation of those comments is found, the original documents shall be returned to the Consultant for correction and re-submittal.
- 12.4.2 The Consultant shall submit computer files of the information to the District delivered on CD-ROM.
- 12.4.3 Reports, documents, figures, exhibits, and tables shall be submitted in a version of Microsoft Word and/or Microsoft Excel later than or equal to 2000 or other acceptable software format as determined by the District.
- 12.4.4 Plans should be in MicroStation (dgn) format or AutoCAD (dwg) in accordance with the “CADD Drafting Standards” section of these Guidelines.
- 12.4.5 The Consultant shall submit three (3) paper copies and one (1) electronic copy of each DRAFT report, estimates, schedules or drawings to the District.
- 12.4.6 The Consultant shall submit four (4) paper copies, one (1) electronic copy in PDF format, and one (1) electronic copy in the original software format of each FINAL report, estimates, schedules or drawings to the District and two (2) paper copies for each FINAL report, estimates, schedules or drawings to each participating agency. Prior to the FINAL submittal, the Consultant and the District shall agree to the actual numbers of each report volume required.

13.0 PRE-DESIGN

13.1 PURPOSE

- 13.1.1 The purpose of the Pre-Design is to refine the design of the project in sufficient detail such that the size, alignment, and profile of major project features are determined, field data is collected, including identification of potential major utility conflict information, which will be required for completion of the final design, and project costs are refined.

13.2 COST ESTIMATE

- 13.2.1 The Consultant shall refine the design and cost estimate for the recommended plan identified in the final Preferred Alternative Analysis Report. The recommended alternative shall be evaluated at a level of detail sufficient to evaluate remaining unresolved issues related to project feature alternatives, alternative site locations, or alternative project alignments, to identify general right-of-way impacts and acquisition needs, and to refine the estimated project costs.

13.3 HYDRAULIC ANALYSIS

- 13.3.1 The hydraulic analysis shall be completed in sufficient detail to document the hydraulic adequacy of the project in sufficient detail for use in the final design and for documentation of the impact of the project on the existing floodplain.

13.4 ESTIMATED COSTS

- 13.4.1 The project cost estimates shall include costs for major construction items. An allowance for unlisted or miscellaneous items shall be included as appropriate. The cost estimates shall include as separate line items for the major construction items, rights-of-way, utility relocations, contingencies, and engineering services.

13.5 CLOMR

- 13.5.1 The Consultant will review the existing CLOMR submittal and determine if the preliminary designs conducted herein have changed the project originally proposed in the CLOMR and report the findings in the Pre-Design Study Report.

13.6 PRE-DESIGN STUDY REPORT

- 13.6.1 The Consultant shall prepare a Preliminary Design Report that summarizes the pre-design data. The report shall document the alternatives considered and the final selected alternative plan. Environmental impacts and project permitting requirements shall be summarized. A review of the 404.b.1 "checklist" shall be done to ensure that data required in support of the checklist has been provided. The major project construction items and special design considerations shall be described. The report shall include plan – profile, site plans, and structure drawings and details that show the major project features and typical sections. The report shall be submitted to the District and identified agencies for review. Upon receipt of review comments, the Consultant shall make appropriate revisions and submit the final report.

13.7 DELIVERABLES

- 13.7.1 The Consultant shall submit all items 'sealed' by a registered civil engineer. Upon receipt of the final submittal, the District shall review the report and preliminary plans for the accurate incorporation of all final comments. If incomplete and/or incorrect incorporation of those comments is found, the original documents shall be returned to the Consultant for correction and re-submittal.
- 13.7.2 The Consultant shall submit computer files of the information to the District delivered on 3.5" diskettes or CD-ROMs. Reports are to be delivered in Word 6.0 or alternate format approved by the District. Plans are to be delivered in MicroStation format per the District CADD Standards.
- 13.7.3 The Consultant shall submit, unless otherwise specified in the Scope of Work, three (3) copies of all draft submittals for review and five (5) copies of the final submittals, and shall submit two (2) copies of both draft and final to other review agencies as specified in the Scope of Work.

14.0 FINAL DESIGN AND CONSTRUCTION DOCUMENTS

14.1 DESIGN ACTIVITIES

14.1.1 TRAFFIC

- 14.1.1.1 The Consultant shall identify requirements for public and private access within and across the project limits, both for construction and post-construction. This will include review of traffic control requirements, providing traffic control plans, and, if necessary, detour or diversion plans for the construction phase. The Consultant shall coordinate, as required, all aspects of traffic control and detour design, subject to the review and approval of the jurisdictional authority.

14.1.2 AESTHETIC TREATMENT AND LANDSCAPING

- 14.1.2.1 In accordance with the District's "Policy for the Aesthetic Treatment and Landscaping of Flood Control Projects", the District will form a Project Aesthetics Advisory Committee (PAAC) to recommend aesthetic features for the project. The committee will be composed of the District's Agent, public involvement coordinator, ecologist, the Consultant, and if available a neighborhood representative, cooperative agency project managers, other District staff, and other agency representatives. The District will conduct public involvement meeting(s) to present and discuss the project aesthetic treatment.
- 14.1.2.2 The District's "Policy for the Aesthetic Treatment and Landscaping of Flood Control Projects", as well as the Landscape Planning and Designing manual guidelines, incorporated herein by reference, will be used in the formulation of the final landscaping and aesthetics design for the project.

14.1.3 UTILITIES

- 14.1.3.1 The Consultant shall identify major existing utility corridors. Utilities shall be identified within the project construction limits that may impact the project. The alignment of the utilities shall be shown on the project layout. Estimates of the cost to relocate or realign the utilities shall be included in the project cost estimates as a separate line item. The Consultant shall contact each utility company that has facilities, known or suspected, within the project area, to request as-built and/or record drawings for the alignment and size of all the utilities both above ground and buried. Where record drawings are not available, blue stake services shall be utilized to locate the horizontal alignment of the underground facilities. The vertical location of sanitary and storm sewers will be determined from field surveys as appropriate. Utility companies with other major utilities within the project alignment will be contacted and pothole information requested.
- 14.1.3.2 The Consultant shall identify potholing and designating requirements. The Consultant or the District, as directed in the project specific Scope of Work, will have potholed and/or designated ALL potentially conflicting utilities and shall survey the location and elevation of utilities at locations where potholes and/or designating has been completed. The Consultant shall submit in writing a proposed plan and associated costs to complete the required potholing and designating. Performance of potholing and designating is not authorized with the

Notice to Proceed (NTP) for this scope of work but, upon review of the Consultant plan, the District may authorize the work under a separate written NTP. The unit base costs for performance of potholing and designating will be included in the fee schedule as a separated item to be negotiated by the District.

- 14.1.3.3 The Consultant shall identify and show utilities on the planimetric mapping and project layout.
- 14.1.3.4 The Consultant shall establish permanent survey ties where the project corridor crosses major streets. The purpose of these ties is to provide horizontal and vertical control from which the location of utility relocations can be easily verified by inspectors. The Consultant shall determine the need for temporary monuments, and recommend their locations to the District for approval.
- 14.1.3.5 The Consultant shall include existing utility locations on the 30% plan submittal. All subsequent plan submittals shall include existing, relocated, and abandoned-in-place utility locations.
- 14.1.3.6 The Consultant shall coordinate any utility relocation with the owner or jurisdiction that owns the facilities to determine the procedures, costs, and time requirements for the relocations. Relocation of municipally or privately owned facilities shall be in accordance with the standards of the owner.
- 14.1.3.7 The Consultant shall provide for the preferred alternative design calculations, plans, and specifications for the relocation of all utility relocations to be accomplished as part of the project.
- 14.1.3.8 The Consultant shall document the data from the utilities analysis in the Design Data Report (DDR).

14.1.4 LAND OWNERSHIP AND RIGHTS-OF-WAY

- 14.1.4.1 The Consultant shall complete a drawing showing the existing land ownership property lines and the anticipated rights-of-way required to be purchased for the recommended plan. Estimated costs to purchase the rights-of-way shall be based upon unit cost values to be provided by the District and shall include relocation costs if relocation of businesses or residences are required. The required acreage and costs shall be included in the project cost estimate as a separate line item.

14.2 MEETINGS

14.2.1 30% SUBMITTAL MEETING

- 14.2.1.1 The Consultant shall meet with the District Project Manager and members of the review team to review the overall project status, and to discuss the 30% review comments. The Consultant will be prepared to discuss all review comments. Any problems will be identified and corrective actions agreed upon at this meeting. Authorization to Proceed with the 60% submittal may be given at the completion of this meeting.

14.2.2 VALUE ENGINEERING (VE)

- 14.2.2.1 Following the 30% Submittal Meeting, or at another appropriate time in the project design schedule, a VE Session may be conducted. The Consultant shall provide all the necessary planning and design documents, copies of reports and visual displays for use by the Value Engineering Team to evaluate potential cost saving measures and value improvements for the project. The VE Session may

be from three (3) to four (4) days in length depending on the complexity of the project. Generally the District will provide a certified (C.V.S.) professional (P.E. or A.I.A.) VE Team Leader and independent expert team members. The VE Team Leader shall prepare a VE Report of the Session for distribution and inclusion in the Design Data Report. The Consultant shall include the District approved VE Recommendations in the 60% submittal.

14.2.3 60% SUBMITTAL MEETING

14.2.3.1 The Consultant will meet with the District Project Manager and members of the review team to review the overall project status, and to discuss the 60% review comments. The Consultant will be prepared to discuss all review comments. Generally, the 60% Submittal Meeting shall include a "plans-in-hand" field review. Any problems will be identified and corrective actions agreed upon at this meeting. Authorization to Proceed with the 90% submittal may be given at the completion of this meeting.

14.2.3.2 If the subject project is within a delineated FEMA floodplain, the consultant shall make sure that submittals conform to the initial concept of the plan that was processed as a CLOMR through FEMA.

14.2.4 CONSTRUCTABILITY ANALYSIS (CA) SESSION

14.2.4.1 As part of or immediately following the 60% Submittal Meeting, the Consultant shall participate with the District Project Manager, the review team, and all interested project partners in a Constructability Analysis Session. Generally the CA Session will be no more than one day in duration. Generally the District will provide a session facilitator. The Consultant shall prepare all appropriate minutes and results of the session for distribution, and inclusion in the Design Data Report. The Consultant shall include the results of the Constructability Analysis Session as required into the 90% submittal.

14.2.5 90% SUBMITTAL MEETING

14.2.5.1 The Consultant will meet with the District Project Manager and members of the review team to review the overall project status, and to discuss the 90% review comments. The Consultant will be prepared to discuss all review comments. Any problems will be identified and corrective actions agreed upon at this meeting. Authorization to Proceed with the final (100%) submittal may be given at the completion of this meeting.

14.2.6 FINAL (100%) SUBMITTAL MEETING

14.2.6.1 The Consultant will meet with the District Project Manager to make the final submittal of the final deliverables that have been modified to incorporate the 90% review comments.

14.3 FINAL DESIGN AND CONSTRUCTION DOCUMENTS

14.3.1 REPORTS AND STUDIES

- 14.3.1.1 The Consultant shall review all Design Concept Reports (DCR), and other existing designs, reports, hydrology models, and studies as developed in the Planning Phase and in Pre-Design of the project and provided by the District. These reports and studies shall form the basis of the final design concept and construction documents.

14.3.2 DESIGN DATA REPORT (DDR)

- 14.3.2.1 The Consultant shall maintain a design data report throughout the project, which contains documentation of the designs, analysis, and calculations. The report shall be organized to include, but not limited to, the following sections as appropriate to the project:
- a. A recommendation of lateral design, configuration, alignment, and feature locations. (Include a 1"=100' scale preliminary plan).
 - b. Location of conflicting utility relocations and potholing and designating locations.
 - c. Requirements for public and private access.
 - d. Rights-of-way and easement information.
 - e. Identification of hazardous materials.
 - f. Design review and permitting requirements.
 - g. Construction duration and schedule.
 - h. Special project features, including unusual construction techniques, special materials, and/or conditions.
 - i. Maps, sketches, calculations, and other supporting documentation as required.
 - j. Recommendations for additional field surveys and/or soils investigations.
 - k. Results of the Value Engineering Session and the Constructability Analysis Session.

14.3.3 CONSTRUCTION COST ESTIMATES

- 14.3.3.1 The District is limited to award of construction contracts that are no more than 10% greater than the Engineer's Construction Cost Estimate provided by the Consultant. The Consultant shall make every effort to provide a realistic and accurate cost estimate within this 10% range. Preparation of the estimate shall include, but not be limited to, the following:
- a. Using District and other agency historical bid tabulation information.
 - b. Investigation of industry conditions as pertains to labor and material availability.
 - c. Providing adequate calculations to support bid quantities.
 - d. Providing adequate unit cost calculations for Lump Sum and Unit Price bid items.
 - e. Cost estimates shall conform identically to the bid item number, name, bid quantities, and bid units as provided for in the Supplementary General Conditions and the Special Provisions.
 - f. The cost estimate shall be provided in Excel Spreadsheet format.

14.4 30% SUBMITTAL

14.4.1 Following the project Kick-off meeting and the review of appropriate reports and studies, the Consultant shall perform preliminary investigation and calculations necessary to prepare the 30% Submittal. All submitted items shall be dated and marked "Preliminary, 30% Submittal". The following submittals shall be included:

14.4.1.1 PLANS

- 14.4.1.1.1 Indicate existing topography.
- 14.4.1.1.2 Indicate lateral alignment, plan/profile, cross-section, and traffic control requirements.
- 14.4.1.1.3 Include the approximate size and configuration of project features.
- 14.4.1.1.4 Indicate rights-of-way and easements required.
- 14.4.1.1.5 Indicate all utilities and identify conflicting utilities that are to be relocated and/or protected in relationship to project control and monument lines.
- 14.4.1.1.6 Details need not be included.
- 14.4.1.1.7 Submit four (4) sets to the District for review. These may be half-size or full size as directed in the Scope of Work.
- 14.4.1.1.8 Submit copies as required to all project partners, other outside agencies, and to municipalities for review of water and sewer relocations. Submit sufficient number of plan sets to the District for distribution to all other utilities that may have conflicting utilities.

14.4.2 BID QUANTITIES AND ENGINEER'S CONSTRUCTION COST ESTIMATE

- 14.4.2.1 Submit three (3) copies to the District for review. (For example, see **Exhibit 13**.)

14.4.3 PLANS DELINEATING RIGHTS-OF-WAY AND EASEMENT REQUIREMENTS

- 14.4.3.1 The plans shall provide sufficient information such as ties to monument lines, section corners and other dimensions to allow preparation of maps and legals for acquisition purposes. The plans will include ties to the County's first order survey grid whenever possible. Refer to the Consultant Guidelines Section 6.7 and 6.8.
 - 14.4.3.2 Submit three (3) copies for use by the District to begin the final rights-of-way acquisition process.
- 14.4.4 Correspondence and minutes of conversations and meetings with the District, other affected agencies and utility owners.

- 14.4.4.1 Submit one (1) copy for District records.

14.4.5 SURVEY DATA AND REPORT

- 14.4.5.1 Submit two (2) copies to the District.

14.4.6 GEOTECHNICAL REPORT

- 14.4.6.1 Submit six (6) copies to the District for review.

14.4.7 PRELIMINARY DESIGN CALCULATIONS AND ANALYSES

14.4.7.1 Submit three (3) copies to the District for review.

14.5 60% SUBMITTAL

14.5.1 Upon review and approval of the 30% Submittal by the District, the Consultant shall incorporate review comments, including those from the VE Session, and perform hydrology, hydraulic, civil, and structural calculations necessary to prepare the 60% Submittal. All submitted items shall be dated and marked "Preliminary, 60% Submittal."

14.5.2 PLANS

14.5.2.1 Plans shall be complete with the exception that details and schedules may be preliminary in nature.

14.5.2.2 Submit four (4) sets to the District for review. These may be half-size or full size as directed in the Scope of Work.

14.5.2.3 Submit copies as required to all project partners, other outside agencies and to municipalities for review of water and sewer relocations. Submit sufficient number of plan sets to the District for distribution to all other utilities that may have conflicting utilities.

14.5.3 CONSTRUCTION SUPPLEMENTARY GENERAL CONDITIONS (SGCs) AND SPECIAL PROVISIONS (SPs)

14.5.3.1 The basis for the SGC's and the SP's shall be the Maricopa Association of Governments (MAG) specifications. Other agency specifications may be used and referenced in the SGC's and SP's only if the MAG specifications are not adequate for the intended use and only with the approval of the District Project Manager. Such other agency standards must be readily and publicly available, a copy must be in the District library, and the Consultant must also have a copy and have reviewed the standard for applicability.

14.5.3.2 At the direction of the District Project Manager the referenced specification will either be incorporated into the appropriate section of the SGC's and SP's, made an appendix to the SGC's or SP's, or included solely by reference.

14.5.3.3 The Precedence of Contract Documents as presented in the SGC's must include the order of precedence of these other agency specifications as approved by the District Project Manager.

14.5.3.4 Submit four (4) paper copies and one electronic version in Microsoft WORD to the District for review.

14.5.6 DESIGN CALCULATIONS AND ANALYSES

14.5.6.1 Submit four (4) copies to the District for review.

14.5.7 BID QUANTITY CALCULATIONS AND ENGINEER'S CONSTRUCTION COST ESTIMATE

14.5.7.1 Submit three (3) copies to the District for review. (For example, see **Exhibit 13.**)

14.5.8 ANTICIPATED CONSTRUCTION SCHEDULE

14.5.8.1 Prepare a bar chart type of schedule showing the major construction activities and the anticipated duration for each, thereby deriving an anticipated construction contract schedule, which will be used by the District for establishing the construction contract duration.

14.5.8.2 Submit three (3) copies to the District for review.

14.5.9 CORRESPONDENCE AND MINUTES OF CONVERSATIONS AND MEETINGS WITH THE DISTRICT, OTHER AFFECTED AGENCIES AND UTILITY OWNERS

14.5.9.1 Submit one (1) copy for District records.

14.5.10 DESIGN DATA REPORT

14.5.10.1 Submit two (2) copies to the District for review.

14.6 90% SUBMITTAL

14.6.1 Upon review and approval of the 60% Submittal by the District, the Consultant shall incorporate review comments, including those from the Constructability Analysis Session, and perform final revisions and refinements to the hydrology, hydraulic, civil, and structural calculations necessary to prepare the 90% Submittal. All submitted items shall be dated and marked "Preliminary, 90% Submittal."

14.6.2 PLANS

14.6.2.1 Plans shall be complete and appear ready to bid.

14.6.2.2 Submit four (4) sets to the District for review. These may be half-size or full size as directed in the Scope of Work.

14.6.2.3 Submit copies as required to all project partners, other outside agencies, and to municipalities for review of water and sewer relocations.

14.6.3 CONSTRUCTION SUPPLEMENTARY GENERAL CONDITIONS (SGCs) AND SPECIAL PROVISIONS (SPS)

14.6.3.1 The SGCs and SPs shall be complete and appear ready to bid.

14.6.3.2 Submit four (4) paper copies and one electronic version in Microsoft WORD to the District for review.

14.6.4 DESIGN CALCULATIONS AND ANALYSES

14.6.4.1 Submit four (4) copies to the District for review.

14.6.5 BID QUANTITY CALCULATIONS AND ENGINEER'S CONSTRUCTION COST ESTIMATE

14.6.5.1 Submit three (3) copies, and one electronic Excel spreadsheet version to the District for review. (For example, see **Example 13.**)

14.6.6 ANTICIPATED CONSTRUCTION SCHEDULE

- 14.6.6.1 Submit three (3) copies of the update and refined Construction Schedule to the District for review.

14.6.7 CORRESPONDENCE AND MINUTES OF CONVERSATIONS AND MEETINGS WITH THE DISTRICT, OTHER AFFECTED AGENCIES AND UTILITY OWNERS

- 14.6.7.1 Submit one (1) copy for District records.

14.6.8 DESIGN DATA REPORT

- 14.6.8.1 Submit two (2) copies to the District for review to incorporate any changes since the 60% submittal.

14.7 99% SUBMITTAL

A 99% submittal may be required primarily due to the number of outstanding review comments remaining after the 90% submittal, or because of lack of completeness of any one or more of the submittal documents. The District Project Manager shall determine the need for a 99% submittal, and for which document(s) the submittal is applicable. No additional contract time or fee will be provided for such a submittal, and the contract end date for the final (100%) submittal shall be maintained.

14.8 FINAL (100%) SUBMITTAL

- 14.8.1 Upon approval of the 90% Submittal, or if required the 99% Submittal, the Consultant shall incorporate review comments and make required corrections, changes, etc., to the hydrology, hydraulic, civil, and structural calculations, and incorporate comments and make changes and corrections to the Design Data Report, Plans, SGC's, SPs, calculations, and the bid quantity calculations, and Engineer's construction cost estimate.

- 14.8.2 All submitted items shall include the construction contract number and the Project Control Number (PCN), and shall be 'sealed' by a registered civil engineer and ready for advertising and bidding. Upon receipt of the final submittal, the District shall review the plans, SGC's, and SP's for the accurate incorporation of all final comments. If incomplete and/or incorrect incorporation of those comments is found, the original documents shall be returned to the Consultant for correction and resubmittal.

14.8.3 PLANS

- 14.8.3.1 Submit original sealed mylars ready for reproduction and one (1) half-size set.
- 14.8.3.2 Submit 3.5" diskettes or CD-ROMs containing the drawing files.
- 14.8.3.3 Plans are to be prepared in MicroStation format per the District's CADD Standards.

14.8.4 CONSTRUCTION SUPPLEMENTARY GENERAL CONDITIONS (SGC'S) AND SPECIAL PROVISIONS (SPS)

- 14.8.4.1 Submit sealed original documents ready for reproduction.

- 14.8.4.2 Submit CD containing files in Microsoft WORD format compatible with District WORD version.
- 14.8.4.3 The District Contracts Branch shall prepare the final construction contract documents to include District standard boilerplate contract, bidding schedule, SGC's, SP's and any required appendices. The Consultant will then be required to come to the District to seal the cover sheet for the documents.

14.8.5 DESIGN CALCULATIONS AND ANALYSES

- 14.8.5.1 Submit four (4) sealed sets to the District in final bound format.

14.8.6 BID QUANTITY CALCULATIONS AND ENGINEER'S CONSTRUCTION COST ESTIMATE (For example, see **Exhibit 13.**)

- 14.8.6.1 Submit three (3) copies in final bound format.
- 14.8.6.2 Submit electronic version of the final Engineer's construction cost estimate in the District's format, which can be downloaded from internet web site in either MICROSOFT EXCEL 97, or older format. This will be utilized to create the final bidding schedule.
- 14.8.6.3 An original copy of the final Engineer's Construction Cost Estimate shall be sealed by a civil engineer registered in the State of Arizona, and placed in a sealed envelope addressed to the Contracts Branch Manager. The envelope shall be identified by project name and contract number.

14.8.7 CORRESPONDENCE AND MINUTES OF CONVERSATIONS AND MEETINGS WITH THE DISTRICT, OTHER AFFECTED AGENCIES AND UTILITY OWNERS

- 14.8.7.1 Submit one (1) copy for District records.

14.8.8 FINAL DESIGN DATA REPORT

- 14.8.8.1 Submit four (4) copies.

14.8.9 OPERATION AND MAINTENANCE PLAN FOR THE COMPLETED PROJECT

- 14.8.9.1 Submit three (3) copies.

14.8.10 TECHNICAL DATA NOTEBOOKS (TDN) PER ADWR AND FEMA FOR PROCESSING A LOMR

- 14.8.10.1 (See appropriate section within these guidelines).

14.9 POST DESIGN SERVICES

- 14.9.1 When the District provides construction management services during construction of a design project, the District serves as the Construction Manager and is in charge of all items related to the construction contract including, but not limited to, the construction schedule, contract conditions, and payment.

14.9.2 Under an on-call contract, the District may require the following technical services from the Design Consultant during the construction phase of the Project:

- a. The Consultant may be required by the District to review shop drawings and other submittals for conformance with the intent of the design.
- b. The Consultant may be required to provide one or more persons to attend meetings, observe and comment on the work, review testing procedures and results, and comment on site specific conditions exposed during construction.
- c. The Consultant may be required to participate in the following meetings:
 1. Initial Partnering Session
 2. Monthly Partnering Meetings
 3. Post Design Review Meeting
 4. Meetings with the Construction Manager as requested
- d. The Consultant may be required to visit the site as determined necessary by the District; and may be requested to review specific problem areas, render opinions, and prepare revised design plans on items that may affect critical features of the Project.
- e. Civil engineering work requested under this contract shall be completed under the responsibility of a civil engineer registered in the State of Arizona. All work submitted shall bear the "wet seal" and original signature of the responsible registered civil engineer.

14.9.3 At completion of construction, the Consultant may be required to participate in the review of record drawings prepared by the construction contractor.

15.0 QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

- 15.1 The Consultant shall independently check all design drawings and calculations. Each drawing and every calculation sheet shall be initialed and dated by both the designer and checker for each and every submittal of design drawings and calculations. The Consultant shall verify the completeness of the check before submitting drawings or calculations to the District. **Submittals received which have not been initialed and dated, or that appear to have not been checked, will be returned.** Re-submittal shall be made within two (2) working days, and no formal contract time extension will be considered for the re-submittal.
- 15.2 Upon review of any plan submittal by the District, if more than five significant comments are identified on five or more sheets, the Consultant shall be asked to retrieve the plans for rechecking. The Consultant shall recheck the plans, make appropriate corrections and resubmit the plans within 72 hours after being returned to the Consultant. No additional contract time or fee will be provided for the rechecking.
- 15.3 All design calculations submitted to the District shall be complete in detail and shall be checked. All engineering assumptions made during the design other than standard engineering judgments shall be documented with appropriate references on the calculation sheets.
- 15.4 The person checking the calculations shall not be the originator and shall possess equal or better qualifications than the originator.
- 15.5 Calculations can be either hand calculations or computer generated calculations. Computer generated calculations can be used for either the design or the check, but cannot be used for both the design and the check. All hand calculations and computer-generated calculations shall be sealed by a registered engineer prior to submittal to the District. HEC-1 and HEC-RAS modeling are excepted from the hand calculation requirement.
- 15.6 The work of any subconsultants utilized by the prime Consultant for this contract (i.e., civil design, and structural design) shall be reviewed by the prime Consultant for compliance with the scope of work and project specifications prior to submittal for review by the District.
- 15.7 The Consultant shall submit a copy of its QA/QC procedures with the technical proposal. The procedure should outline the Consultant's method of checking plans and calculations, including the use of check prints. Check prints should be kept on file during the term of the contract for review by the District.
- 15.8 All final contract documents including all final reports, specifications, engineer's estimates, and plans shall be sealed by a Professional Engineer registered in the State of Arizona. And, in addition, all interim submittals with the exception of the plans shall be sealed and shall be stamped preliminary.

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16.0 MAINTENANCE PLAN

- 16.1 The Consultant shall prepare a maintenance plan that shall document the required maintenance of the project facilities. The plan shall include descriptions of the required vegetation maintenance, periodic dredge and fill requirements within the channel, materials (paints, lubricants, etc.), structural inspections of levees, culverts, etc., any specialized equipment required, maintenance intervals, manufacturers data and specifications, and an estimate of the required manpower and costs required. The maintenance plan shall be submitted in draft form for review and in final form, submitted with the final 100% project submittals after completing revisions to incorporate review comments.
- 16.2 The maintenance plan may be submitted to the U.S. Army Corps of Engineers in support of a Clean Water Act Section 404 permit. The Consultant shall make revisions to the maintenance plan that may be required to satisfy the Section 404 permit requirements. The maintenance plan shall be prepared in such a way that it can be used by the District as a guideline for its operation and maintenance responsibilities and those of its project partners.

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17.0 CADD/DRAFTING STANDARDS

Consultants shall follow the CADD/DRAFTING Standards as specified in the latest edition of the District's Drafting Guides.

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18.0 DIGITAL ORTHOPHOTOS

18.1 AERIAL PHOTOGRAPHY

A maximum photo scale of 1:24000 (1"=2000') is to be used for project areas mapped at 1"=400'

All photos will be black and white.

All photogrammetric processes, products, and resultant by-products shall conform to the American Society of Photogrammetry and Remote Sensing (ASPRS), "ASPRS Accuracy Standards for large-Scaled Maps" (ASPRS 1990) Class I standards and specifications.

18.2 LABEL & TILING

A separate CD with the ortho photos is to be delivered to the District. All CD's will be labeled to designate Township, Range, and Sections, with photo date and scale.

18.3 PHOTOGRAMMETRIC SCANNING

Each photograph will be scanned such that each dot or pixel has a ground resolution of 1'x1'. If a scale of 1:24000 is used for the photos, then they will be scanned at a resolution of 2000 dots per inch (dpi) to generate the ground resolution of 1' x 1' pixels.

18.4 ORTHO-PHOTOGRAPHIC RECTIFICATION

The scanned photography will be ortho rectified using the mapping and the control used for the project. The Horizontal datum will employ the North American Datum 1983 standards (NAD83) using the Arizona State Plane Coordinate system for the central zone.

The images will be trimmed to cover a 1-mile by 1-mile area, with at least 100' of overlap. The data will extend to the edge of the image to allow for clean aerial mosaics. All adjacent tiles, and all join areas within tiles, should edge match.

18.5 TONE MATCHING

Adjacent images will be tone and contrast matched to give the appearance of a continuous page. Localized adjustment of brightness values will be done to reduce tonal differences between join areas.

18.6 DIGITAL DELIVERABLES

All digital images will be stored and delivered on CD-ROM disks. The file format should be TIF with corresponding TFW files registered and rectified per section 4.0. In addition to the TIF format, images should be delivered in MrSid format from LizardTech. The MrSid images will be done for the original images, 5' re-sampled images, 20' re-sampled images, and 50' re-sampled images. All images will be delivered on CDs.

18.7 NAMING CONVENTIONS

Townships will be indicated with "T" followed by its corresponding number and north or south indicator. Range will be indicated with "R" followed by its corresponding number

and East or West indicator. Section will be indicated with corresponding number 1 through 36. Leading 0's for numbers less than 10. Project Rid to follow.

Example: T01NR01WS03_1634.

The CD naming convention should be: All CD's will be labeled to designate township, range, section photo date, and scale.

18.8 QUALITY CONTROL

Two (2) sample images of a TIF and TFW file will be submitted for quality control purposes at the beginning of the project cycle.

19.0 DESIGN REFERENCES, SPECIFICATIONS AND STANDARDS

19.1 STANDARD DETAILS AND SPECIFICATIONS

- 19.1.1 "Uniform Standard Specifications for Public Works Construction", and "Uniform Standard Details for Public Works Construction", 1998 Arizona, and all revisions through 2002, Maricopa Association of Governments (MAG).
- 19.1.2 "Flood Control District of Maricopa County Engineering Division 2002 Computer Aided Drafting Guidelines."
- 19.1.3 "Maricopa County Supplement to the MAG Standard Details", by Maricopa County Highway Department (now referred to as MCDOT), shall be utilized as part of the design criteria.
- 19.1.4 Use standard MAG details on plans unless otherwise requested by FCDMC. Arizona Department of Transportation (ADOT) standard details may be used, as approved and when appropriate, then modified to be referenced to MAG specifications.

19.2 DESIGN MANUALS, POLICIES, GUIDES, AND PROCEDURES

- 19.2.1 "Drainage Design Manual for Maricopa County, Arizona, Volume I Hydrology", January 1, 1995.
- 19.2.2 "Drainage Design Manual for Maricopa County Arizona, Volume II Hydraulics", January 28, 1996.
- 19.2.3 "Drainage Design Manual for Maricopa County, Arizona, Volume III Erosion Control", January 1, 1993."
- 19.2.4 Urban Highways, Channel Lining Design Guidelines", February 1989, ADOT.
- 19.2.5 Structural design shall be in accordance with current AASHTO Specifications. Street and maintenance road crossings shall be designed to accommodate HS20-44 loading. Calculations shall be based on service loads and the working stress method.
- 19.2.6 "Pipe Selection Guidelines and Procedures" February 1, 1996, ADOT with March 21, 1996 revisions.
- 19.2.7 "A Policy on Geometric Design of Highways and Streets", 4th Edition, AASHTO, 2001, commonly referred to as the "Green Book", and "Maricopa County Department of Transportation Roadway Design Manual" latest edition and revisions shall be used, unless otherwise requested by the District.
- 19.2.8 "Roadside Design Guide", 2002, AASHTO, to be used to establish clear distances and other related safety issues.

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20.0 LANDSCAPE PLANNING AND DESIGN

Consultants shall follow the landscape guides as specified in the latest edition of the District's Landscape Planning and Design manual.

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EXHIBITS

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EXHIBIT 1-Consultant Change Order

CONSULTANT CHANGE ORDER - FCD APPROVAL			
Flood Control District of Maricopa County			
Date: 7/5/00	Change Order Number: 1	Amount: \$20,000.00	File No: XXXXX
Contract No: FCD 2000CXXX			PCN No: 120.22.22
Consultant Name: Phillips Services			
Contract Title: Spreadsheet Development			
Initial Amount: \$1,000,000.00	Contract Award Date: 5/19/99	Total Previous Change Orders: \$44,444.00	
By mutual agreement of the parties, the following contract change(s) are incorporated into the above contract. All other contract terms and conditions remain unchanged.			
Enter justification here.			
By reason of this proposed change 30 days extension of time will be allowed. The contract completion date is: 2/9/00			
The following financial information is submitted:			
Initial Contract Amount		\$ 1,000,000.00	
Amended Contract Amount w/ previous change orders		\$ 1,044,444.00	
Current Change Order Request		\$ 20,000.00	
<u>Amended Contract Amount w/ current change order</u>		<u>\$ 1,064,444.00</u>	
Change Order Authorization Limit		\$ 97,500.00	
Total Requested Change Orders		\$ 64,444.00	
Change Order Authorization Remaining		\$ 33,056.00	
<i>We, the undersigned Consultant, hereby agree that upon execution of this change order we will perform all services as identified above, and will accept the above specified amount(s) as full payment therefore.</i>			
Consultant Name: Phillips Services		By: _____	
Consultant Address: 2801 W. Durango St. Phoenix, AZ 85009		Printed Name: _____	
		Title: _____	
		Date: _____	
DISTRICT APPROVAL			
I certify that this change is required to accomplish the overall task for which this contract is initiated.			
Project Manager	Date	Division Manager	Date
Funds are available to accomplish this Change Order		I certify that this change is within the limits authorized by the County Procurement Code.	
Controller	Date	Contracts Branch Manager	Date
General Manager Approval		Chief Public Works Officer Approval	
Chief Engineer & General Manager	Date	Chief Public Works Officer	Date
Copy to: Contract File, Controller, Division Manager, Project Manager			

EXHIBIT 2--Certificate of Performance

**CERTIFICATE OF PERFORMANCE
AND COMPLETION OF ON-CALL CONTRACT**

The Flood Control District of Maricopa County (District) accepts the completed work by _____ or its subcontractors in connection with the scope of work described in District Contract FCD _____. Whereas the completion date for this On-Call Contract has passed, the District will not authorize any new work assignments to this Contract.

_____ certifies that all work covered in and required by Contract FCD _____ has been completed, payments requested and received, and that all claims of any nature or kind against the District arising out of performance of the Contract are settled. The undersigned hereby certifies that no contractual disputes exist in regard to this Contract and that there is no knowledge of any pending or potential claims in regard to this Contract.

This document hereby formally closes the contractual relationship between the District and _____ for Contract FCD _____. No further requests for payment will be entertained by the District.

By affixing signatures below, the District and _____ mutually acknowledge completion and termination of the Contract FCD _____.

State of Arizona)
)§
County of Maricopa)

Signed this _____ day of _____, 200__.

Signature

Title

SUBSCRIBED AND SWORN TO before me this _____ day of _____, 200__.

Notary Public

My Commission Expires: _____

EXHIBIT 3A-Letter of Forbearance (with cause)

Letter of Forbearance (with cause)

DATE

CONSULTANT

Address

City, State

Subject: Contract No. FCD _____, _____ [Title]

Letter of Forbearance

The Flood Control District must advise [consultant] that the contract completion date of _____ can not be contractually waived. However, in view and consideration of _____, the District will forbear the contract completion date to _____.

The District reserves and retains all contractual rights and remedies under the subject contract. [Consultant] shall pursue all aspects of this extended schedule to ensure the successful completion of the contract and shall submit to the District a recovery plan and schedule indicating major milestones and associated dates of delivery or completion.

This forbearance letter establishes a new completion date only and shall not increase the contract price. By affixing a signature in the space provided below and returning to the undersigned, [Consultant] acknowledges receipt and acceptance of this forbearance letter.

Very truly yours,

Chief Engineer and General Manager

[CONSULTANT] Acknowledgement

By: _____

Title: _____

Date: _____

EXHIBIT 3B-Letter of Forbearance (without cause)

Letter of Forbearance (without cause)

DATE

CONSULTANT

Address

City, State

Subject: Contract No. FCD _____, _____ [Title]

Letter of Forbearance

The Flood Control District must advise [*consultant*] that the contract completion date of _____ can not be contractually waived. Prior written communications notwithstanding, your firm has still not met its commitments and the District must take further action. Accordingly, the District forbears the contract completion date to _____, but will keep a record of this unsuccessful fulfillment of the contract schedule and completion date. This information may be considered on future contract selection and determination of responsibility.

The District reserves and retains all contractual rights and remedies under the subject contract. [*Consultant*] shall pursue all aspects of this extended schedule to ensure the successful completion of the contract and shall submit to the District a recovery plan and schedule indicating major milestones and associated dates of delivery or completion.

This forbearance letter establishes a new completion date only and shall not increase the contract price. By affixing a signature in the space provided below and returning to the undersigned, [*Consultant*] acknowledges receipt and acceptance of this forbearance letter.

Very truly yours,

[CONSULTANT] Acknowledgement

By: _____

Chief Engineer and General Manager

Title: _____

Date: _____

EXHIBIT 4—MWBE Participation Report

MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES PROGRAM

MWBE PARTICIPATION REPORT
(To be attached with each request for pay)

Date: _____

Prime Contractor: _____

Contractor Contact Person: _____

Contractor Address: _____

Contractor Telephone Number: _____

Contractor Fax Number: _____

Contract Description: _____

Contract Number: _____

Invoice For Pay Period of (indicate dates): _____

MWBE Subcontractor/Subconsultant Name: _____

Contact Person: _____

Address: _____

Telephone Number: _____

Type of Firm: _____

Type of Work performed for this contract
by this MWBE firm: _____

Total MWBE Subcontract Amount for this Subcontractor: _____

The amount above is the MWBE percentage goal calculated from the **TOTAL CONTRACT AMOUNT**; it is **THE SAME TOTAL** amount shown for the subcontractor on the MWBE Actual Affidavit previously submitted by your firm.

Amount Paid to this MWBE Subcontractor *on this invoice* payment: _____

Total paid to this Subcontractor since the contract start date: _____

Total MWBE Contract Goal = _____ %

Total MWBE Participation on this contract to date = _ %

Send to: **Flood Control District of Maricopa County**
Finance Services Branch
2801 West Durango Street
Phoenix, Arizona 85009

EXHIBIT 5–Scheduling Template

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY SCHEDULING TEMPLATE FOR CONCEPTUAL DESIGN or PLANNING CONTRACT					
ID	Task	Duration	Start	Finish	Predecessor
	Initiate Project				
	Notice to Proceed				
	Kickoff Meeting				
	Submit Project Schedule				
	Data Collection & Existing Conditions Analysis				
	Prepare Mapping				
	Identify Existing Features				
	Identify Current Flooding				
	Orientation Site Visit #1				
	Perform Flood Damage Cost Analysis				
	Identify Existing Plans				
	Purpose and Scope Public Meeting #1				
	Update/Verify Hydrologic Model				
	Submit Data Collection Report				
	Data Collection Report Review				
	Data Collection Meeting				
	Level I Analysis – Alternatives Formulation				
	Identify Feature Alternatives				
	Identify Landownership, ROW, Easements				
	Perform Geotechnical Analysis				
	Perform Environmental Assessments				
	Environmental Permits (410/404)				
	Environmental Regulator Records Review				
	Biological Assessment				
	Cultural Resources Assessment				
	Hazardous Waste Inventory				
	Identify Utilities				
	Identify Land ownership/Land Rights/Limitations				
	Submit Preliminary Alternatives Report				
	Value Engineering Workshop				
	Preliminary Alternatives Report Review				
	Preliminary Alternatives Meeting				
	Level II Analysis – Alternatives Analysis				
	Conceptual Design, Construction Cost Estimate				
	Evaluation Matrix				
	Alternative Analysis Site Visit #2				
	Alternatives Public Meeting #2				
	Submit Alternatives Analysis Report				
	Alternatives Analysis Report Review				
	Alternative Analysis Report Meeting				
	Level III Analysis – Preferred Alternative Analysis				
	Recommended Preferred Alternative				
	Conduct Field Surveys				
	Locate/Finalize Utility Conflicts				
	Identify ROW, Easement Requirements				
	Prepare Hydraulic Calcs for Preferred Alternatives				

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
SCHEDULING TEMPLATE FOR
CONCEPTUAL DESIGN or PLANNING CONTRACT**

ID	Task	Duration	Start	Finish	Predecessor
	Final Site Visit				
	Prepare 30% Plans				
	Submit Preferred Alternatives Report				
	Preferred Alternative Meeting				
	Study Results Public Meeting #3				
	Maintenance Plan				
	Estimate Requirements/Costs				
	Implementation Plan				
	Prepare Plan				
	Final Report Meeting				
	Final Report Meeting				
	Submit Final Report				
	Submit Project Survey Report				
	Submit Project Technical Report				
	Submit Project Geotechnical Report				
	Submit Project Administrative Report				

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
SCHEDULING TEMPLATE FOR
DESIGN CONTRACT**

ID	Task	Duration	Start	Finish	Predecessor
	Initiate Project				
	Notice to Proceed				
	Kickoff Meeting				
	Submit Project Schedule				
	Design and P&S				
	Survey and Geotechnical				
	30% Submittal				
	District Review of 30% Submittal				
	Value Engineering Workshop				
	60% Submittal				
	District Review of 60% Submittal & Constructability Session				
	90% Submittal				
	District Review of 90% Submittal				
	99% Check Submittal				
	District Review of 99% Check Submittal				
	100% Submittal				
	Plans and Specifications to Reproduction				

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
SCHEDULING TEMPLATE FOR
FLOODPLAIN DELINEATION CONTRACT**

ID	Task	Duration	Start	Finish	Predecessor
	Initiate Project				
	Notice to Proceed				
	Kickoff Meeting				
	Submit Project Schedule				

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
SCHEDULING TEMPLATE FOR
FLOODPLAIN DELINEATION CONTRACT**

ID	Task	Duration	Start	Finish	Predecessor
	Project Coordination				
	Data Collection				
	Field Review Meeting				
	Office and Field Recon				
	Survey and Mapping				
	Recon and Property Research				
	Primary Control (Horiz)				
	Secondary Control (Vert)				
	Set Panels				
	Locate Panels, Corners, ERMs				
	Aerial Photography				
	Create DTM				
	Map Checks and Supplemental Topo				
	GIS Processing				
	Complete Mapping				
	District Review Mapping				
	Hydrology Studies				
	Determine Basin & Sub-basin Boundaries				
	Develop Model Schematic w/ Routing				
	Estimate Hydro Model Parameters				
	Hydraulic Analyses for Routing/Flow Split				
	Iterative Computations				
	Model Calibration				
	Interim District Review				
	Report Preparation				
	GIS Processing				
	Complete Hydrology				
	District Review				
	Hydraulic Studies				
	Establish Flowline and Cross-Section Locations				
	Develop Cross-Sections from DTM				
	Field Recon				
	Determine Manning's "n" Values				
	Determine Structure Parameters				
	Interim District Review				
	Develop HEC-RAS model				
	Crosscheck depth/Velocity Results				
	Perform Model Calibration				
	Interim District Review				
	Establish Natural Floodplain Boundaries				
	Interim District Review				
	Determine Floodway Limits-Encroachment				
	Interim District Review				
	Report and TDN Preparation				
	GIS Processing				
	Complete Hydraulics				
	District Review Hydraulics				
	Prepare FEMA Submittals				
	FEMA Review				

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
SCHEDULING TEMPLATE FOR
FLOODPLAIN DELINEATION CONTRACT**

ID	Task	Duration	Start	Finish	Predecessor
	GIS Processing				
	Final Submittals to District				

EXHIBIT 6–Fee Schedule

EXHIBIT B – FEE SCHEDULE

CONTRACT FCD Insert Contract Number here
Insert Contract Title here

The following is a format for the fee schedule. Please add more applicable job classifications, direct expenses, or subconsultant costs as required by the Scope of Work. All subconsultants must submit a Fee Schedule.

COMPANY NAME: _____ **DATE:** _____

PROFESSIONAL

DIRECT LABOR HOURLY RATE
(NOT TO EXCEED)

Principal
Project Manager
Project Engineer
Design Engineer
Designer
Technician/Drafter
Secretary/Clerical

SURVEY/MAPPING

- The survey crew rates include, GPS equipment owned by the consultant. If equipment will be leased, identify the cost as a direct expense.

Survey Manager
Survey Crew (2 man/GPS)
Survey Crew (3 man/GPS)

DIRECT AND OUTSIDE EXPENSES

- With prior approval from the Flood Control District of Maricopa County, all additional direct and outside expenses will be reimbursed at cost.

Photo Copies
Color Copies
Blueprints
Mileage

SUBCONSULTANT – *Subconsultants must also submit a Fee Schedule.*

List Firm Names of all Subconsultants here.

OVERHEAD _____ %
PROFIT _____ %

EXHIBIT 6A-Sample Invoice

INVOICE

FIRM NAME
FIRM ADDRESS
FIRM PHONE NUMBER

Page 1 of 3

DATE:

INVOICE NUMBER:

TIME PERIOD:

TO: Accounts Payable
Flood Control District of Maricopa County
2801 W. Durango Street
Phoenix, Arizona 85009

PROJECT NAME:
PROJECT CONTROL NUMBER (PCN):
CONTRACT NUMBER FCD

TASK <i>(Identify either tasks or phases.)</i>	CONTRACT AMOUNT - AUTHORIZED	CONTRACT AMOUNT - COMPLETED	PERCENT COMPLETE - AUTHORIZED	CONTRACT AMOUNT - REMAINING
---	------------------------------------	-----------------------------------	-------------------------------------	-----------------------------------

TOTAL:

CONTRACT AMOUNT COMPLETED:

PREVIOUSLY BILLED:

TOTAL DUE:

LESS RETENTION:

TOTAL INVOICE:

PRINCIPAL/PROJECT MANAGER: _____

cc: District Project Manager

PROGRESS REPORT

FIRM NAME:
PROJECT NAME:
CONTRACT NUMBER:
TIME PERIOD:

Page 2 of 3

Progress Report

(Identify the progress of each task item.)

Upcoming Work Tasks

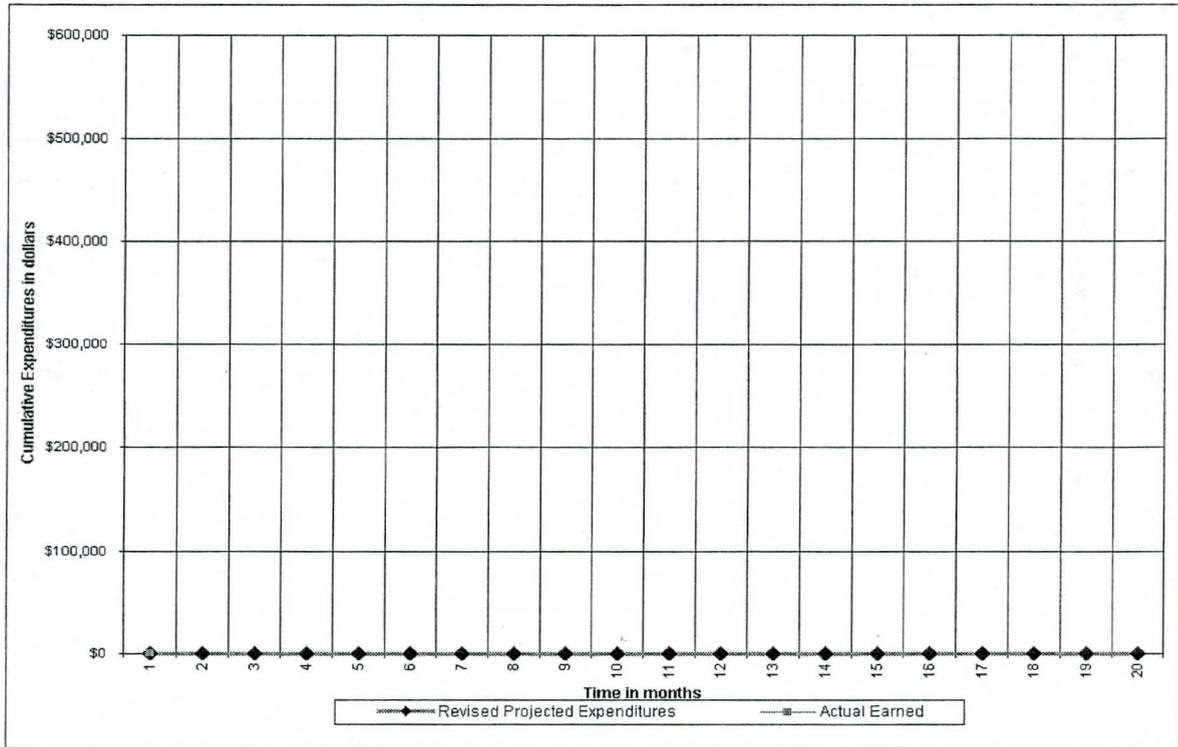
(Identify the future project work.)

Issues/Problems

(Discuss any project issues that were resolved or need to be resolved.)

EXPENDITURE FORECAST for TOTAL PROJECT (includes Optional Items)

FIRM NAME:
 PROJECT NAME:
 CONTRACT NUMBER:
 TIME PERIOD:
 Page 3 of 3



Month	Monthly Projected Expenditures	Cumulative Projected Expenditures	Cumulative Actual Expenditures	Monthly Actual Expenditures	% Actual Expenditures	Quarterly Projected Expenditures	Quarterly Actual Expenditures
1	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
2	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
3	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
4	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
5	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
6	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
7	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
8	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
9	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
10	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
11	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
12	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
13	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
14	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
15	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
16	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
17	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
18	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
19	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
20	\$0	\$0	\$0	\$0	#DIV/0!	\$ -	\$ -
*TOTAL	\$0	\$0	\$0	\$0	#DIV/0!		

*NOTE: Total equals fee authorized under contract award

EXHIBIT 7-Table A, Consultant/Subconsultant Cost Proposal Summary

**TABLE A
CONSULTANT/SUBCONSULTANT
COST PROPOSAL SUMMARY**

CONSULTANT/SUBCONSULTANT: _____
 PROJECT NAME: _____
 CONTRACT NO.: _____
 CHANGE ORDER NO.: _____

DIRECT LABOR			
Classifications	Man-hours	Hourly Rates	Labor Costs

Subtotal Labor \$ _____
 Overhead @ _____% of Labor \$ _____
 Total Labor \$ _____
 Salary Fringes _____%
 G&A Overhead _____%

DIRECT AND OUTSIDE EXPENSES	
DESCRIPTION	EXPENSE AMOUNT

Total Expenses \$ _____

TABLE A
CONSULTANT/SUBCONSULTANT
COST PROPOSAL SUMMARY

SUBCONSULTANTS		
NAME OF SUBCONSULTANT	TASK	COST

Total Subconsultants \$ _____

Total Labor \$ _____

Total Expenses \$ _____

Total Consultant Cost \$ _____

Net Fee (Total Labor x _____ %) \$ _____

TOTAL PROPOSED FEE \$ _____

Firm

Signature

Title

Date

EXHIBIT 10–Department Evaluation Form

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DEPARTMENT EVALUATION FORM**

To be filled out by Department

Date: _____	
Consultant Name _____	Project Name _____
Project Description _____	
Project Manager _____	Contract Number _____
Type of Review: Final	

This form is to be used for design and study contracts.

Rate each of the following using a scale 1 through 5. Mark categories that do not apply N/A (Not Applicable). Use this form as the final review. Write comments, if any, in the space provided. Sign and date completed form and return to the Contracts Branch.

1	2	3	4	5
Needs Improvement		Satisfactory		Superior

RATING

TIMELINESS

1. Timeliness of scoping and negotiations leading to contract award. 1 2 3 4 5

2. Meeting interim milestones. 1 2 3 4 5

3. Consultant's timely response to Department comments or questions. 1 2 3 4 5

4. Timely billings or billing questions resolved. 1 2 3 4 5

KNOWLEDGE

5. Understanding of project objectives/scope of work. 1 2 3 4 5

6. Value Engineering submittals. (i.e., savings, cost, design) 1 2 3 4 5

7. Coordination to resolve issues beyond the scope of work. 1 2 3 4 5

8. Coordination of subconsultants' work and submittals. 1 2 3 4 5

COOPERATION/COMMUNICATIONS

9. Working relationship between Department staff and Consultant. 1 2 3 4 5

10. Prompt notification of problems. 1 2 3 4 5

11. Initiative and proactive solutions. 1 2 3 4 5

12. Compliance with contractual obligations. 1 2 3 4 5

QUALITY

13. Deliverables/submittals in accordance with the scope. 1 2 3 4 5

14. Per Department's standards, Consultant produced clear, complete, and accurate:

- a. Plans 1 2 3 4 5
- b. Specifications 1 2 3 4 5
- c. Calculations 1 2 3 4 5
- d. Quantity calculations 1 2 3 4 5
- e. Reports 1 2 3 4 5

15. Maintained adequate and qualified personnel throughout the project. 1 2 3 4 5

16. Performed quality control on project submittals. 1 2 3 4 5

17. Complete documentation. 1 2 3 4 5

CONSTRUCTABILITY (if applicable)

18. Plans and plan content are clear, concise, and accurate. 1 2 3 4 5

19. Quantity summary totals are accurate and reflect quantities for each plan sheet. 1 2 3 4 5

20. Survey information is accurate. 1 2 3 4 5

21. References to MAG specs, ASHTO, ACI, ADOT Drawings, etc., are correct. 1 2 3 4 5

22. All necessary dimensions and references are clearly shown. 1 2 3 4 5

23. All known utilities are clearly/accurately shown. 1 2 3 4 5

How well are we doing? How can we improve?

COMMENTS:

Consultant Date

Project Manager Date

EXHIBIT 11-Consultant Evaluation Form

**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
CONSULTANT EVALUATION FORM**

To be filled out by Consultant

Date: _____	
Consultant Name _____	Project Name _____
Project Description _____	
Project Manager _____	Contract Number _____
Type of Review: Final	

This form is to be used for design and study contracts.

Rate each of the following using a scale 1 through 5. Mark categories that do not apply N/A (Not Applicable). Use this form as the final review. Write comments, if any, in the space provided. Sign and date completed form and return to the Contracts Branch of the Flood Control District of Maricopa County.

1	2	3	4	5
Needs Improvement		Satisfactory		Superior

RATING

1 2 3 4 5

TIMELINESS

1. Timeliness of scoping and negotiations leading to contract award.

2. Materials furnished to Consultant in a timely fashion. 1 2 3 4 5

3. Department's timely response to Consultant questions. 1 2 3 4 5

4. Department's timely reviews in accordance with the schedule. 1 2 3 4 5

5. Timely payment of billings, billing questions resolved. 1 2 3 4 5

KNOWLEDGE

6. Understanding of project objectives/scope of work. 1 2 3 4 5

7. Coordination to resolve issues beyond the scope of work. 1 2 3 4 5

8. Guidance by Department's project manager. 1 2 3 4 5

9. Acceptance of Value Engineering submittals. 1 2 3 4 5

COOPERATION/COMMUNICATIONS

10. Working relationship between Consultant and Department. 1 2 3 4 5

11. Clarity of decisions or instructions from Department. 1 2 3 4 5

12. Recognition and resolution of unusual or critical problems. 1 2 3 4 5

13. Compliance with contractual obligations. 1 2 3 4 5

EXHIBIT 12-Optional Task Letter of Authorization

Date

*Project Manager
Consultant Name
Consultant Address*

Subject: Identify Contract Number, Contract Name, and Task Number

Dear _____:

This letter is in response to your letter dated _____, requesting authorization to proceed with Optional Task (*identify the task*) in accordance with the Contract provisions. The Flood Control District of Maricopa County has evaluated your request and authorizes you to proceed with this optional task. (*Add any further elaboration if necessary*)

The fee outlined in your letter in the amount of \$ _____ for this task is approved. Please itemize on your invoices the costs of the optional fees as they are incurred.

Task (Identify number and/or name)

Original Not-to-Exceed Fee	\$
Previously authorized amount	\$
Fee herein approved	\$
Optional Task Balance	\$

If you have further questions, please call me at 602-_____.

Sincerely,

(Project Manager's Name)
Project Manager

Cc: Contracts Branch Manager
Contract File _____ (Number)

EXHIBIT 13–Bid Schedule

Following is an example of a typical bid schedule for District projects. The Engineer’s Construction Cost Estimate will follow the format of the bid schedule, and will be provided in Excel format. District Contracts Branch will then create the final bid schedule.

The bid item number, name and bidding units must be identical to those presented in the Supplementary General Conditions and Special Provisions.

BID SCHEDULE					
PROJECT NAME: 43rd Avenue Storm Drain			PROJECT CONTROL NO. 117.02.31		
Southern Avenue to Salt River			CONTRACT NO. FCD 99-32		
ITEM NO.	DESCRIPTION	Unit	Qty	UNIT COST NUMBERS	EXTENDED AMOUNT
105-01	Partnering	LS	1		
107-01	NPDES / SWPPP Permits	LS	1		
107-02	Public Information and Notification Allowance	LS	1		
107-03	Project Signs Allowance	LS	1		
202-01	Mobilization	LS	1		
336-01	Pavement Replacement (4" AC/8" ABC)	SY	13,145		
336-02	Pavement Replacement (4" AC/10" ABC)	SY	19,251		
340-01	Curb and Gutter, MAG DET 220, Type A	LF	242		
340-02	Sidewalk, MAG DET 230	SF	902		
345-01	Adjust Manhole Frame and Cover	EA	13		
345-02	Adjust Water Valve Box and Cover, Type A	EA	5		
350-01	Removal of Existing Improvements	LS	1		
401-01	Traffic Control	LS	1		
405-01	Survey Monument MAG DET 120-1, Type A	EA	3		
405-02	Survey Monument MAG DET 120-1, Type B	EA	7		
420-01	24' Chain Link Fence Gate	EA	1		
505-01	Special Junction Structure	EA	1		
505-02	Concrete Headwall	EA	1		
505-03	Concrete Box Culvert, ADOT Det B 02.10	LF	90		
505-04	Concrete Catch Basin COP Det P 1569-1, M-1, L=10	EA	2		
505-05	Concrete Catch Basin COP Det P 1569-1, M-1, L=17	EA	2		
505-06	Concrete Catch Basin COP Det P 1569-1, M-2, L=6	EA	5		
505-07	Concrete Catch Basin COP Det P 1569-1, M-2, L=10	EA	6		
505-08	Concrete Catch Basin COP Det P 1569-1, M-2, L=17	EA	9		
515-01	10' x 5' Flap Gate	EA	1		
601-01	Permanent Pipe Supports, MAG Det 403-3	EA	3		
610-01	12" Ductile Iron Water Pipe and Fittings	LF	151		
610-02	Replace Water Service Pipe (Contingent Bid Item)	LF	60		
610-03	Relocate Water Meter (Contingent Bid Item)	EA	1		
618-01	114 Inch Pipe, Class III RGRCP	LF	4,420		
618-02	114 Inch Pipe, Class IV RGRCP	LF	2,682		
618-03	96 Inch Pipe, Class III RGRCP	LF	60		

BID SCHEDULE

PROJECT NAME: 43rd Avenue Storm Drain
Southern Avenue to Salt River

PROJECT CONTROL NO. 117.02.31
CONTRACT NO. FCD 99-32

ITEM NO.	DESCRIPTION	Unit	Qty	UNIT COST NUMBERS	EXTENDED AMOUNT
618-04	84 Inch Pipe, Class III RGRCP	LF	60		
618-05	72 Inch Pipe, Class IV RGRCP	LF	200		
618-06	54 Inch Pipe, Class III RGRCP	LF	73		
618-07	Bore & Jack 114 Inch Pipe	LF	170		
618-08	Pipe Plug, MAG Det 427,30" & larger	EA	2		
618-09	Pipe Plug, MAG Det 427, 24" & Smaller	EA	2		
618-10	18 Inch Catch Basin Connector Pipe, Class III	LF	10		
618-11	24 Inch Catch Basin Connector Pipe, Class III	LF	103		
618-12	24 Inch Catch Basin Connector Pipe, Class IV	LF	264		
618-13	30 Inch Catch Basin Connector Pipe, Class IV	LF	62		
618-14	72 Inch To 84 Inch Pipe Transition	EA	1		
618-15	84 Inch To 96 Inch Pipe Transition	EA	1		
618-16	96 Inch To 114 Inch Pipe Transition	EA	1		
618-17	114 Inch x 18 Inch Prefab Tee	EA	1		
618-18	114 Inch x 24 Inch Prefab Tee	EA	4		
618-19	Concrete Pipe Collar, MAG DET 505 (24" & Larger)	EA	1		
619-01	Pump Station and Controls	EA	1		
619-02	Remove and Relocate Pump Station and Controls	EA	1		
619-03	Pump Reconditioning Allowance	EA	1		
621-01	Storm Drain Hydrostatic Test (Contingent Bid Item)	EA	5		
625-01	Storm Drain Manhole, MAG DET 521, 522 & 523	EA	5		
625-02	Storm Drain Manhole, MAG DET 522, 523 & Detail A	EA	8		
625-03	Storm Drain Manhole, MAG DET 522, 523, & Detail B	EA	3		
TOTAL DOLLARS					

EXHIBIT 14—Certificate of Insurance

Flood Control District of Maricopa County
CERTIFICATE OF INSURANCE

CONTRACT FCD 2000CXXX

PROJECT TITLE: INSERT CONTRACT NAME HERE

NAME AND ADDRESS OF INSURANCE AGENCY:			*COMPANIES AFFORDING COVERAGES:			
			Company Letter	A		
			Company Letter	B		
			Company Letter	C		
NAME AND ADDRESS OF INSURED:			Company Letter	D		
			Company Letter	E		
			Company Letter	F		
This certificate of insurance certifies that policies of insurance listed below have been issued to the insured named above and are in full force at this time.						
*CO. LTR.	TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE (MM/DD/YY)	EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY: <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> : Claims Made <input type="checkbox"/> : Occur <input checked="" type="checkbox"/> : PREMISES OPERATIONS <input checked="" type="checkbox"/> : BLANKET CONTRACTURAL <input checked="" type="checkbox"/> : BROAD FORM PROPERTY DAMAGE <input checked="" type="checkbox"/> : PERSONAL INJURY <input checked="" type="checkbox"/> : PRODUCTS AND COMPLETED OPERATIONS HAZARD <input checked="" type="checkbox"/> : XCU Hazards <input checked="" type="checkbox"/> : INDEPENDENT CONTRACTORS				GENERAL AGGREGATE PRODUCTS/COMPLETED OPERATIONS AGGREGATE EACH OCCURRENCE	\$2,000,000 \$2,000,000 \$1,000,000
	AUTOMOBILE LIABILITY: <input checked="" type="checkbox"/> : ANY AUTO <input checked="" type="checkbox"/> : ALL OWNED AND NON-OWNED AUTOS				Combined Single Limit Bodily Injury Property Damage Per person/Per accident	\$1,000,000 \$1,000,000 \$1,000,000 \$1,000,000
	<input type="checkbox"/> : EXCESS LIABILITY <input type="checkbox"/> : Umbrella Form <input type="checkbox"/> : Other than Umbrella Form				Each occurrence Aggregate	\$ \$
	<input checked="" type="checkbox"/> : WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY LIMITS AND EMPLOYER'S LIABILITY: EACH ACCIDENT DISEASE: EACH EMPLOYEE DISEASE: POLICY LIMIT	\$1,000,000 \$1,000,000 \$1,000,000
	<input checked="" type="checkbox"/> : PROFESSIONAL LIABILITY				Each Claim Aggregate	\$1,000,000 \$1,000,000
	<input checked="" type="checkbox"/> : OTHER:	Except for Workers' Compensation and Professional Liability Insurance, the Flood Control District of Maricopa County, Maricopa County, and ADD IN ANY OTHER ADDITIONAL INSURED'S HERE , their agents, representatives, officers, Directors, Officials, and employees are named as Additional Insured's.				
Except for Workers' Compensation and Professional Liability Insurance, the Flood Control District of Maricopa County (District), Maricopa County, and ADD IN ANY OTHER ADDITIONAL INSURED'S HERE , their agents, representatives, officers, Directors, Officials, and employees are named as Additional Insured's on those types of policies described herein which are required to be furnished by this contract entered into between the insured and the District. To the extent provided in Contract FCD 2001CXXX, insured shall hold harmless the District from liability arising out of any services provided or duty performed by insured as required by statute, law, purchase order or otherwise required, with the exception of liability for loss or damage resulting from the sole negligence of the District, its agents, employees, or indemnities. It is agreed that any insurance available to the named insured shall be primary of other sources that may be available. It is further agreed that no policy shall expire, be cancelled, or materially changed to affect the coverage available to the District without thirty (30) days written notice to the District. THIS CERTIFICATE IS NOT VALID UNLESS COUNTERSIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE COMPANY.						
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY 2801 WEST DURANGO STREET PHOENIX, ARIZONA 85009				DATE ISSUED: _____ _____ AUTHORIZED REPRESENTATIVE		

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**CONSULTANT GUIDELINES
INCORPORATED BY REFERENCE
FOR
CONSULTANT SERVICES CONTRACTS**



***FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
2801 WEST DURANGO STREET
PHOENIX, ARIZONA 85009-6399***

DECEMBER 1, 2003 – REVISION 1