

**SUBMITTAL TO THE FLOOD CONTROL AND  
WATER CONSERVATION DISTRICT BOARD  
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA**



9/16 B

**FROM:** General Manager-Chief Engineer

**SUBMITTAL DATE:**

Sept. 11, 2012

**SUBJECT:** West Desert Hot Springs Master Drainage Plan  
Project No. 6-0-00831  
Amendment No. 1 – Consulting Services Agreement  
District 4 / District 4

**RECOMMENDED MOTION:**

1. Approve the Amendment to the multi-year Consulting Services Agreement (Agreement) between the District and Pacific Advanced Civil Engineering (PACE) (Consultant); and
2. Authorize the Chairman to execute the Agreement documents on behalf of the District.

**BACKGROUND:**

The Amendment provides for a change in the scope of services, an extension of time to June 30, 2015 to allow for the completion of additional work and an increase to the contract amount of \$84,848, for a total not to exceed amount of \$933,328, for the District's West Desert Hot Springs Master Drainage Plan project.

Continued on page 2

**WARREN D. WILLIAMS**  
General Manager-Chief Engineer

<b>FINANCIAL DATA</b>	Current F.Y. District Cost:	\$300,000	In Current Year Budget:	Yes
	Current F.Y. County Cost:	N/A	Budget Adjustment:	No
	Annual Net District Cost:	\$300,000	For Fiscal Year:	12-13, 13-14, 14-15

<b>SOURCE OF FUNDS:</b> 525440 25160 947500 Zone 6 – Engineering Services	<b>Positions To Be Deleted Per A-30</b>	<input type="checkbox"/>
	<b>Requires 4/5 Vote</b>	<input type="checkbox"/>

**C.E.O. RECOMMENDATION:**

APPROVE

BY:   
Michael R. Shetler

**County Executive Office Signature**

- Dep't Recomm.:  Consent  Policy
- Per Exec. Ofc.:  Consent  Policy

Prev. Agn. Ref.: 6/16/09, Item 11.2 | District: 4<sup>th</sup>/4<sup>th</sup> | Agenda Number:

ATTACHMENTS FILED WITH THE CLERK OF THE BOARD

11.6

FISCAL PROCEDURES APPROVED  
JEANINE J. REY, FINANCE DIRECTOR  
BY:   
JEANINE J. REY

FORM APPROVED COUNTY COUNSEL  
DATE: 9/11/12  
BY:   
NEAL R. KIRANIS

**FLOOD CONTROL AND WATER CONSERVATION DISTRICT BOARD SUBMITTAL  
COUNTY OF RIVERSIDE, STATE OF CALIFORNIA**

**SUBJECT:** West Desert Hot Springs Master Drainage Plan  
Project No. 6-6-00831  
Amendment No. 1 – Consulting Services Agreement  
District 4 / District 4

**SUBMITTAL DATE:** Sept. 11, 2012

**Page 2**

**BACKGROUND:**

This Amendment is necessary to allow for additional scope of work to meet the additional time and scope of work required by working with the project steering committee, consisting of members of the community within the plan boundary.

County Counsel has approved the Agreement as to legal form and the Consultant has executed the Agreement.

**FINANCIAL:**

Sufficient funding is available in District's Zone 6 budget for FY 2012-2013 and will be included in the proposed budgets for FY 2013-2014 and FY 2014-2015.

CLC:bjj

**AMENDMENT NO. 1**  
**CONSULTING SERVICES AGREEMENT**  
**West Desert Hot Springs Master Drainage Plan**  
**Project No. 6-0-00831**

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4 The RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION  
5 DISTRICT, hereinafter called "DISTRICT" and PACIFIC ADVANCED CIVIL  
6 ENGINEERING, INC., hereinafter called "CONSULTANT", previously entered into a  
7 Consulting Services Agreement, hereinafter called "AGREEMENT", dated June 16, 2009,  
8 providing for CONSULTANT to perform engineering and environmental services for  
9 DISTRICT'S West Desert Hot Springs Master Drainage Plan project (Project No. 6-0-00831).

10  
11 DISTRICT desires CONSULTANT to provide additional services and CONSULTANT is  
12 willing to perform such work as requested by DISTRICT and as described in  
13 CONSULTANT'S revised Scope of Work, attached hereto as Attachment "A".

14 DISTRICT and CONSULTANT mutually agree that, upon approval of this Amendment  
15 No. 1 by DISTRICT'S Board of Supervisors, the amount of compensation paid for additional  
16 scope of services as shown in Attachment "A" under said AGREEMENT shall be increased by  
17 eighty-four thousand eight hundred forty-eight dollars (\$84,848) and CONSULTANT'S time  
18 for performance under AGREEMENT shall be extended in accordance with the project  
19 schedule as revised in Attachment "D", or June 30, 2015, whichever is later.

20  
21 NOW, therefore, the parties hereto mutually agree to amend AGREEMENT as  
22 follows, effective upon approval of this Amendment No. 1 by DISTRICT'S Board of  
23 Supervisors:

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1. Section 3, Paragraph 3 of AGREEMENT is added to read:

3. Time for Performance

"CONSULTANT shall continue performance of current services under the AGREEMENT and AMENDMENT No. 1 and shall diligently and responsibly pursue the performance of additional scope of services to completion in accordance with Attachment "D" or by June 30, 2015, whichever is later."

2. Section 4, Paragraph 2 of AGREEMENT is amended to read:

4. Compensation

"The total amount of compensation paid to CONSULTANT under AGREEMENT and AMENDMENT No. 1 shall not exceed the sum of nine hundred thirty-three thousand three hundred twenty-eight dollars (\$933,328) unless a written amendment to this Agreement is executed by both parties prior to the performance of additional services."

3. Section 24 of AGREEMENT is added to read:

24. Attachments "A", "B", "C" and "D"

Attachments "A", "B", "C" and "D" of AGREEMENT are replaced by Attachments "A", "B", "C" and "D" attached hereto.

4. Except to the extent specifically added to, modified or amended herein, all of the terms, covenants and conditions of said AGREEMENT dated June 16, 2009 shall remain in full force and effect between the parties hereto.
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IN WITNESS WHEREOF, the parties hereto have executed this Agreement on

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(to be filled in by Clerk of the Board)

**RIVERSIDE COUNTY FLOOD CONTROL  
AND WATER CONSERVATION DISTRICT**

RECOMMENDED FOR APPROVAL:

By   
WARREN D. WILLIAMS  
General Manager-Chief Engineer

By \_\_\_\_\_  
MARION ASHLEY, Chairman  
Riverside County Flood Control and Water  
Conservation District Board of Supervisors

APPROVED AS TO FORM:

ATTEST:

PAMELA J. WALLS  
County Counsel

KECIA HARPER-IHEM  
Clerk of the Board

By   
NEAL R. KIPNIS  
Deputy County Counsel

By \_\_\_\_\_  
Deputy

(SEAL)

Consulting Services Agreement - Amendment No. 1  
West Desert Hot Springs Master Drainage Plan  
7/26/12  
CLC:blj

**PACIFIC ADVANCED CIVIL  
ENGINEERING, INC.**

By *Bruce M. Phillips*

BRUCE PHILLIPS  
Senior Vice-President

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Consulting Services Agreement - Amendment No. 1  
West Desert Hot Springs Master Drainage Plan  
7/26/12  
CLC:blj

## SCOPE OF WORK – DETAILED TASK DESCRIPTIONS

### Master Drainage Plan – West Desert Hot Springs

**Original: May 7, 2009**

**Revised: June 28, 2012**

#### **PHASE 1 – BASELINE DATA INVENTORY**

##### **1.1 Data Collection and Review of Existing Database Resources**

Obtain and perform cursory of the existing available technical studies from the District or Cities related to the floodplain hydraulics, regional watershed investigations, sediment transport studies, hydrologic data, and environmental data. The researched information that has been reviewed will serve as the foundation to perform the engineering technical analysis. The additional specific items included in the research and data collection process include the following:

- Research available data / information
- Technical data
- Environmental data
- Research existing electronic mapping data
- Research existing GIS data
- City / County Staff Interviews Historical Needs
- Research additional technical data
- Research additional environmental data
- Review collected data
- Summarize critical data for MDP
- Field Reconnaissance / Research

**Deliverables: 1. Draft data inventory catalogue spreadsheet**

##### **1.2 Review of Prior Consultant's Work / Engineering & Environmental Studies**

Review the previous engineering MDP studies and environmental for the West Desert Hot Springs area specifically related to evaluating the (1) proposed drainage facilities, and (2) environmental/biological constraints. The original MDP technical/engineering data will include the digital mapping of the hydrologic information, facilities planning data, environmental constraints, sediment transport, alluvial fan analysis, watershed planning data, and assumptions on the MDP. In addition, obtain and review previous studies related to biological and environmental resources for the area. These studies may be associated with other projects; in particular the database for the Coachella Valley MSHCP will be reviewed. Assess accuracy and use of this information to reflect the actual current conditions.

- Review Previous Technical Studies
- Review Previous Environmental Studies
- Catalogue and compile data

##### **1.3 Initial Needs and Data Gap Assessment**

Compile an organized database of the existing available information and determine areas where additional technical data is required. The initial technical review of the data will include summarizing the existing data based upon the research to generate a baseline data base of the existing study conditions. An inventory of the existing available will be developed and the information reviewed in order to identify the pieces of data that can be utilized for the engineering analysis. A "data management tracking" spreadsheet will be utilized that has been pre-assembled with the different minimum categories and subcategories of information typically required for watershed planning and environmental requirements. The tracking will quickly identify "data gaps" necessary to provide additional information in order to initiate

the planning studies. A qualitative “data gap” evaluation will be performed to assess additional field or reference information that may be required through supplemental investigation. The researched information that has been reviewed will serve as the foundation to perform the initial assessments and request additional investigations or analysis. The database will be compiled in an organized report format for both the District and City review.

- Compilation of Project Technical/Environmental Database
- Compilation of Base Map Information
- Summary of Database items
- Database Spreadsheet Checklist
- Review and Identify data gaps with summary memo

**Deliverables: 1. data gap analysis memo and spreadsheet**

#### **1.4 Stakeholder Technical Steering Committee Initiation**

Provide for the development and management of the “Stakeholder” technical steering committee or specialized work group. The formulation process which will include a separate “partnering” kick-off meeting at the very beginning of the project that includes the key ranking officials from the County, agencies, watershed landowners, and other relevant stakeholders specifically invited to be part of the technical steering committee. The kick-off meeting would establish a memorandum of understanding among all team members agreeing on the importance of master plan for the stream stabilization program and integration with other future watershed projects, mutual goals and objectives, and a commitment to fostering cooperative teamwork to resolve local issues in a timely manner. This committee will be composed of key participants that have specialized technical knowledge related to watershed restoration processes and related technical fields, ecosystems and environmental regulatory processes. This is a technical advisory committee that would be composed of members with interdisciplinary technical backgrounds related to the study goals and objectives. Stakeholders who wish to participate on the steering committee are asked to commit to attend meetings regularly and participate actively in discussion. Steering committee members are relied on to contribute their time, intellectual and creative energy, credibility, and organizational resources to develop and implement the project. They are also asked to review and accept the ground rules that will be proposed, discussed and amended under a separate document, and sign a participation agreement to indicate concurrence. The function of this advisory group is to provide advice to assist in the decision making process. As a result, it is important that all members of this advisory group understand the issues, develop practical and well thought-out recommendations, and achieve consensus in support of their recommendations.

- Committee Objectives – Definition / Process
- Formation of Technical Steering Committee

**Deliverables: 1. Technical steering committee procedures memo**

#### **1.5 Engineering Design Criteria and Objectives**

Provide preliminary engineering services to establish the study objectives and to perform a design criteria review to evaluate the necessary hydraulic and hydrologic design requirements prior to initiating the engineering study process. The criteria and objectives are established initially set the governing guidelines for the entire study process and defines the ultimate objectives needed at the end of the study. Establish the necessary planning criteria and standards. The criteria will establish the baseline requirements to ensure that the required level of flood protection is provided which will meet the various jurisdictional agency requirements. The project objectives will be defined, as well as the project stakeholders. The objectives of the stakeholders will be evaluated which include flood protection, environmental, and community benefits. Identification of the objectives will allow evaluation of the alternative to assess how well they meet the objectives. A summary document will be prepared summarizing the recommended design criteria and guidelines for review and approval. This document will serve as a reference framework to base decisions as work progresses and guidance related to required minimum requirements of the engineering analysis.



- Hydrology Criteria
- Hydraulics Criteria
- Environmental Criteria
- Alternative aesthetic channel facilities
- Water Quality Criteria
- City / Stakeholder's Objectives
- District Plan Check Procedures

**Deliverables: 1. Objectives and criteria memo**

## **PHASE 2 – PROJECT DRAINAGE DEFICIENCY AND CONSTRAINTS IDENTIFICATION**

### **2.1 Hydrologic Parameters Assessment and Analysis**

Review the previous regional and local hydrology analysis performed as part of the previous MDP for the West Desert Hot Springs area. The previous "regional" watershed study is assumed to be adequate and will be used as a technical basis in the MDP. The previous modeling will be reviewed in order to utilize data from the model and make potential adjustments depending on the final local systems. Perform technical review and assessment of these studies and corresponding hydrology analysis. Input for watershed computer models will be evaluated including parameters characterizing the watershed based on the proposed analysis empirical methods applied. In addition, perform an analysis in order to update the local and subregional watershed parameters which include the rainfall and infiltration values. A key feature of the assessment is the determination of the watershed size where the rational method model should be changed to the unit hydrograph method. Determine the hydrologic parameters that are characteristic of the individual subareas from the available digital mapping of the hydrologic soil types and landuse overlays. Digital mapping of the hydrologic parameters will be developed in GIS for the localized watershed area within the study (excluding regional offsite) which will include hydrologic soils types, landuse, and rainfall isohyets.

- Review previous hydrology models/upload model
  - Regional
  - Local
- GIS Landuse /soil data overlay loss coefficient / Rainfall isohyets
- Additional Hydrology Parameters analysis

### **2.2 Existing Drainage Facility Hydraulic Capacities**

Perform hydraulic capacity analysis of the existing culverts and bridges with the use of Geo-RAS which will be better suited to the existing facility hydraulic constraints. The existing culvert and bridges will be checked using hand hydraulic calculations and confirmed the detailed Geo-RAS analysis. Data for all the facilities in question will be based on plan information provided by the County, but a field reconnaissance will be performed at each of the locations to verify the information, including a ground photo inventory at each of the facilities. The existing topography and as-built elevation information for the facilities will be used in developing the hydraulic model in Geo-RAS for the facilities to accurately assess the upstream and downstream hydraulic characteristics of the natural floodplain. A sensitivity analysis of varying flowrates will be used in order to determine the hydraulic capacity through the development of a rating curve within Geo-RAS.

- Existing drainage facility inventory (size / location)
- Bridges/Culverts Hand Calcs Hydraulics
- Bridges/Culvert HEC-RAS model and analysis
- Summary table of existing facility hydraulic capacity

**Deliverables: 1. Culvert and bridge hydraulic capacity analysis / summary table / ground photo inventory**

### 2.3 Watershed Hydrology Runoff Yield Estimates

Develop watershed planning tools for the generation approximate “planning level” flowrate/runoff estimates. These values will assist in the conceptual sizing of the alternative facilities through the use of “runoff yield” values generated for different watershed parameters which will allow estimate approximate design flowrates. Runoff yields will be generated as a flowrate/unit area (cfs/acre) based on evaluating different (1) time of concentrations, (2) size of watershed, and (3) average landuse within the watershed. Planning level “rational method” hydrology models will be developed for different parts of the watershed reflecting average landuse densities and concentration points with different “time of concentrations” and drainage areas. In addition, several different unit hydrographs will also be generated with different acreage and average landuse for the local watershed in order to develop planning level flowrates for the concentration points with larger tributary acreages. Graphs will be generated with a family of curves that establish flowrate yields as a function of time of concentration and will serve as the basis for planning level watershed hydrology discharges.

- Multiple rational method analysis (3 development watershed areas)
- Planning Level UH models different acreages
- Runoff Yield Calc - multiple Tc (3 areas)
  - Runoff Yield Graph

**Deliverables: 1. Runoff yield estimates / planning curves & backup analysis**

### 2.4 Sediment Bulking Factor Estimates

Develop estimates for the “bulking factors” that can be applied to the “clear water” hydrology flowrates to account for sediment delivery from the watersheds and increase the design discharges. The bulking factor estimates will be performed for the “regional” offsite watershed west of Freeway 62. The previous watershed sediment yield analysis will be utilized as the initial technical basis to establish the sediment yield used in the bulking factor calculation. Procedures will be applied to estimate the offsite tributary watershed sediment yield. Evaluate the offsite tributary watershed characteristics to assess the erosion potential to generate sediment which incorporates other factors such as vegetation, topography, and soil conditions. The potential sediment yield of the watershed will be estimated through the application of the Modified Uniform Soil Loss Equation or similar empirical procedure.

- Review existing sediment yield values
- GIS mapping approximate sediment yield parameters
- Sediment yield calc
  - Offsite
- Bulking Factor calc

**Deliverables: 1. Bulking factor estimate**

### 2.5a Existing Floodplain Mapping & Hydraulics Database

Compile the available floodplain hydraulic modeling from FEMA, County, and private consultants for the study area in order to accurately assess the existing floodplain boundaries and the hydraulic characteristics for Morongo Wash and Mission Creek. The review includes conventional HEC-RAS model, approximate floodplain hydraulic procedures, and two-dimensional hydraulic models. A solid technical understanding of the existing floodplain hydraulics for the regional creeks is critical since these are the controlling facilities for the sub-regional drainage systems. The existing hydraulic analysis of the regional floodplains will be used in order to (1) provide the basic data for use in the engineering and hydraulic analyses, (2) identify the floodplain boundary limits, (3) characteristics of the alluvial fan, and (4) obtain average and localized hydraulic characteristics for the study portion of the floodplain. The previous floodplain hydraulic analysis will provide an accurate analysis of the **baseline floodplain condition** reflecting the natural floodplain in its existing condition and the associated boundaries or limits of the floodplain. The baseline hydraulic analysis will be utilized as the hydraulic engineering basis in evaluating

changes or modifications to the floodplain. Potential impacts will be evaluated and requirements for facility sizing will be based on the baseline hydraulic model information.

- Existing Floodplain studies review models
  - Review FEMA floodplain models / hazard boundaries
    - Supporting FEMA technical documentation
  - Review existing FLO-2D analysis
    - RCFCD Analysis
    - Exponent Analysis
- Summarize baseline floodplain hydraulic data

### **2.5b Existing Floodplain Historical Mapping**

Perform evaluation of the historical trends, and floodplain limits on the alluvial fan. Research of available historical aerial photographs after larger rainfall events will be researched through the District archive of photographs and those available through the Fairchild Collection (Whittier College). The photographs will be digitally rectified and the drainage patterns digitized. The digital drainage patterns will be overlaid in GIS and compared with the digital topographic data. A composite of the floodplain patterns will be overlaid with the mapped floodplain modeling for comparison, and resulting summary exhibit will be prepared.

**Deliverables: 1. Existing floodplain database summary**

### **2.6 Drainage Constraints Map Compilation**

Compilation of the available baseline information primary items, which encompasses the available data related to physical and regulatory constraints, into a digital "constraints map" that will serve as a tool to assist in guiding the formulation of alternatives. The information for the drainage constraints map will be based upon the data provided by the District, or research, and will include information for four general categories which include (1) drainage facilities, (2) watershed data, (3) flood hazards, and (4) environmental constraints. The summary mapping will include descriptive information of all the existing drainage facilities which includes culverts, bridges, and channels. This available information in these categories will be generated through GIS mapping layers and combined together to identify areas available for proposed drainage facilities/solutions. Summarize on the identified project related constraints from the initial technical review. The constraints will also include any regulatory and design criteria limitations. The constraints will include the information determined during the reconnaissance and data collection, including illustration of the existing right-of-way or property ownership provided by the District, utilities, or other physical constraints impacting the alternatives, and vegetative coverage from aerial photographs.

- GIS - Facility data
- GIS - Environmental constraints data
- GIS - Floodplain data
- Master Constraints Maps

**Deliverables: 1. Drainage opportunities / constraints map**

## **PHASE 3 – PLANNING LEVEL ALTERNATIVE DRAINAGE SYSTEM EVALUATION**

### **3.1 Regional System - Conceptual Alternatives Formulation and Layout**

Develop a range of conceptual alternative approaches and solutions which will serve as a toolkit to draw from in order to formulate the different "systems" alternatives. A variety of horizontal and vertical alignments will be developed as part of the alternative formulation subject to hydraulic and topographic constraints. The systems will include incorporation of naturalized solutions for the desert and minimizing impacts to environmental constraints. Develop conceptual engineering horizontal layouts and alignments of the proposed facilities for each alternative. The alternative formulation process will conceptually identify

the range of potential alternatives that can be screened to the most feasible alternatives. The concepts for the proposed drainage facility solutions will be identified at a low-level of detail to sufficient for preliminary planning level horizontal layouts. The general hydraulic operation for facility sizing will also be identified. The alternatives identified are based upon compatibility with the existing physical constraints. These regional facilities can include (1) incised open channels, (2) levee systems, (3) combination of levees and channels, and (4) alternative inlet and outlet facilities. The layouts will be prepared at 1"=100' scale for the different alternatives and identify the approximate horizontal location of the primary facilities. The preliminary "conceptual" layouts will serve as the foundation for the planning level hydraulics and facility locations.

- Develop different alternative system horizontal layouts –Different Major Categories
  - Flood Control / Channelization & Levee
  - Water Conservation / Environmental
  - Hybrid
- Conceptual location of Debris Basins
- Upstream Training Headworks – Alternative Systems Layout
- Downstream Outlet works – Alternative Systems Layout

**Deliverables: 1. Summary conceptual regional alternatives / layouts**

### **3.2 Local System - Conceptual Alternative Formulation**

Review the previous "local" and "sub-regional drainage" facilities layout in order to evaluate the configuration and optimize the horizontal layout from a costs and efficiency perspective. Layout several alternative modifications to the original proposed system in horizontal alignment only, in order to evaluate different benefits. The benefits will include (1) minimizing environmental impacts to jurisdictional waters, (2) compatibility with future development, (3) minimizing size, (4) optimizing use of regional detention and water quality facilities, and (5) additional benefits. No hydraulic sizing or hydrology will be performed only gross level tributary drainage area will be evaluated. Layouts will be performed in GIS to quickly assess the optimized system which will be reviewed by the District for additional study/refinement. In addition, a "suite" of different types of conveyance facilities will be developed which can be interchangeably used as the proposed facility. A total of five different types of facilities can be developed which can be used and a table of approximate sizes will be generated for different flowrates and corresponding longitudinal slopes based on normal depth calculations. The alternative for sub-regional detention basins will define the optimized locations for these proposed facilities.

- Review and adjust previous AEI-CASC alignment to optimize system
- Interchangeable Conveyance Facilities (5 alternative facility types)
  - Open channel
  - Pipe / RCB
  - Aesthetic channel
  - Detention
  - Hybrid

**Deliverables: 1. Summary conceptual local alternatives / layouts**

### **3.3 Local System - Planning Level Hydrology and Hydraulics Conceptual Alternatives**

Utilize the "optimized" layout of the proposed "local" drainage system in order to map the tributary area to major segments of the drainage conveyance system and determine "planning level" flowrates for sizing of the facilities. Low-level engineering analysis will be performed to initially size the conceptual planning alternatives facilities utilizing "runoff yield" values and approximate hydrologic routing to determine volume requirements. The tributary drainage areas will be delineated based on surface drainage patterns from the topography and physical constraints such as roadways and the proposed interception of future drainage facilities. The mapping of the subareas will be based on the "ultimate" collection, interception, and conveyance facilities in-place using large size subareas for planning level analysis. The subareas will be delineated to major collection points such as major confluences using large areas. Flowrates will be approximated using estimated time of concentration to calculated runoff yields and multiplying by the

total area at a concentration point. The sizing of the facilities will be performed using normal depth. The system will be divided into long segments or "reaches" with a common slope and flowrate with large changes in drainage area between reaches. A matrix will be developed which defines the sizes for each of the five types of conveyance facilities which can be used for the different segments. Locations defined for detention basins will be approximately sized using simplified methods (for example TR-55 graphical procedure)

- Conceptual watershed subarea delineation map
- Planning level flowrates using runoff yields
- Local drain / channel normal depth size
- Conceptual Detention Basin Sizing Table / Chart
- Facility Map with flowrates and matrix of sizes

**Deliverables: 1. Facility exhibits with matrix**

### **3.4 Regional System – Planning Level Hydraulics Conceptual Alternatives**

Prepare preliminary level hydraulics of the regional alternatives facilities identified to provide the desired level of flood protection associated with the recommended flood control system alignments. The facilities can include channel enlargement or relocation, culvert or bridge crossings, various forms of channel lining systems, composite channel geometry, levees, and naturalized channel system. The preliminary facility sizing will focus on the geometry and basic requirements of the improvements. The initial facility sizing will be based upon "normal" depth analysis and the application of the appropriate design criteria. The culvert or bridge facilities can utilize inlet control hydraulics for initial sizing or "normal" depth depending upon the hydraulic operation. Appropriate Manning's roughness values and design longitudinal slopes will be based on the existing map slopes for use in the hydraulic sizing. Approximate hydraulics will be performed for the inlet / outlet system to evaluate the preliminary hydraulic operation and feasibility of the system.

- Regional Channel normal depth calc/size
  - Drainage facility sizing (channel, culverts, bridges, levees)
  - Headworks / outlet facilities

**Deliverables: 1. Facility exhibits with sizes**

### **3.5 Planning Level R.O.M Cost Analysis**

Prepare a Rough Order Magnitude (ROM) construction cost estimate of the flood protection facilities and features. Rough Order Magnitude (ROM) construction cost estimate for the different facilities will be prepared based (upon the proposed alternative evaluations) on an initial quantity estimate from the "conceptual layouts" for each alternative. Preliminary estimates of construction quantities will be based the concept plan layout and the cross section geometry used in the hydraulic analysis. The cost estimate will be based on current unit cost estimate and include appropriate "allowances" for this level of planning and screening cost estimate. The costs will include a contingency for this level of estimate and costs for the final engineering and permits. Environmental mitigation costs will be assessed by either construction of replacement habitat or purchase of mitigation credits. Cost will include estimates for land Right of Way based on unit cost provided by the District.

- Preliminary quantity estimates
  - Local
  - Regional
- Cost estimate spreadsheet estimates

**Deliverables: 1. Alternative ROM cost analysis with R/W**

### 3.6 Regional Alternative Feasibility Analysis and Comparison

A feasibility analysis will be performed to screen the number of conceptual regional alternatives to select the recommended alternative which meets the project objectives. This process will qualify the alternatives different levels of feasibility in order to rank the alternatives. The "feasibility" evaluation will address the (1) economic suitability, (2) constructability, (3) acceptability so that many of the conceptual alternatives can be eliminated from further investigation. A **decision matrix** will be prepared for the flood control alternatives which identify the (1) advantages, (2) disadvantages, (3) preliminary construction costs, (4) design constraints, (5) physical constraints, (6) implementation requirements, (7) flood protection, and (8) economic factors including intangible costs. The alternatives are weighted and ranked through this process to identify the most suitable alternatives. A typical decision matrix which presents the alternatives based upon the degree of satisfying the various project objectives facilitates the decision process.

- Evaluate advantage /disadvantage each alt
  - Local
  - Regional
- Calculate Cost / benefit ratio based on Area
- Summary compaction matrix
- Feasibility matrix for ranking / scoring alts
- Exhibits – Alternatives Layout
  - Local
  - Regional

### 3.7 Recommended Alternative Selection

The "recommended alternative" will be identified through planning level plan formulation and screening process to determine the proposed alternative system which best meets the project objectives. Additional selection criteria will be evaluation in addition to the feasibility ranking matrix developed. The additional selection criteria may consider the ability to meet other objectives of the watershed stakeholders or timing issues associated with projects within the watershed. The different factors analyzed will be utilized in formulation of the recommended alternative.

- Selection of recommended alternative
- Presentation of feasibility ranking to the Stakeholder Committee

**Deliverables: 1. Alternative feasibility analysis and ranking matrix / stakeholder presentation**

## **PHASE 4 – RECOMMENDED PLAN REFINED ENGINEERING ANALYSIS**

### 4.1 Local Watershed Delineation and Hydrology Analysis

Prepare watershed mapping and refined planning level hydrology analysis/modeling of the local watershed based on the ultimate watershed conditions with the proposed drainage systems. The delineation of the various subwatersheds will be defined by the major primary drainage systems and surface drainage patterns. The work effort also includes definition of critical hydrologic concentration points. Major subwatersheds will be identified and then key concentration points will be defined based on junctions/confluences or hydrologic processes. Subarea boundaries and minimum hydrologic concentration points will also be defined by the minimum data requirements for the storm drain system hydraulic sizing. The hydrologic parameters that are characteristic of the individual subareas will be determined from the available hydrologic soil types and landuse overlays. The lengths, slopes and representative elevation differentials for each of the subareas will be measured for time of concentration estimates. Runoff yields will be used to determine flowrates for watershed areas under one square mile. These runoff yield flowrates will be refined from the previous initial assessment. Watershed areas that exceed the defined maximum amount for the rational method analysis will be evaluated using the "unit hydrograph" procedure. These procedures will be applied for concentration points at the lower portion of

the watershed which have larger tributary areas than the maximum amount previously determined from the sensitivity analysis for the watershed. The hydrology analysis will be performed for a single "return period" defined by the required level of flood protection.

- Refined runoff yield based flowrate estimates
- Concentration point identification
- Subwatershed and watershed detailed delineation
- GIS calc subwatershed parameters
- UH model parameters
- UH model analysis
- Review results and adjust models

**Deliverables: 1. Local systems hydrology analysis**

#### **4.2 Regional System – Refine Alignment and Facility Size**

Adjust and modify the regional flood control facilities to reflect the initial results from the recommended concept level regional drainage masterplan model and analysis. Refinements will include (1) reduction of the required drainage system facilities, (2) improved horizontal alignment, (3) adjustments in channel dimensions, (4) additional facility requirements, (5) minimizing impacts, (6) additional environmental benefits, and (5) optimizing the cost and configuration of the proposed system. Revised facility sizing will be prepared using simplified normal depth or alluvial fan equations for depth/velocity to provide conservative sizing. Preliminary sediment transport analysis / capacity will be prepared to evaluate potential changes from the existing or natural conditions based on the previous sediment transport studies prepared. This will assess if there will be the potential for future degradation or aggradation that may require grade stabilization structures or additional features to be incorporated into the regional system. The inlet headworks hydraulics will be evaluated in more detail to ensure the correct operation. Water quality basin sizing will be evaluated for the existing urbanized areas.

- Review horizontal and vertical alignment and adjust
- Refined facility sizing
- Sediment Transport Capacity / mitigation features

**Deliverables: 1. Recommended regional system hydraulics / finalized layout**

#### **4.3 Local System - Preliminary Hydraulics and Facility Sizing**

Perform preliminary hydraulic sizing of the local drainage facilities based on the refined alignment and facility locations using the results of the refined planning hydrology analysis. The facility sizing will be performed based on normal depth hydraulics using the approximate invert longitudinal slopes and alignment. Local flood control "detention" facilities will be sized in more detail using the initial conceptual planning level analysis and a hydrologic reservoir routing analysis will be performed to verify the approximate sizes and outflow requirements. The hydraulic sizing will be performed on smaller study segments or "reaches" of the system compared to the conceptual planning level analysis. The matrix of conveyance system "alternatives" with the different suite of conveyance facilities will be modified to reflect the adjusted facility sizing.

- Preliminary normal depth sizing of channel/pipe
- Preliminary flowline elevation of channel
- Review results and adjust facility / system
- Detention basins preliminary – routing analysis
- Debris basin preliminary storage volume / sediment yield analysis (optional)

**Deliverables: 1. Recommended local system hydraulics / finalized layout**

#### 4.4 Preliminary Construction Cost Estimate

Provide engineering services for the preparation of a preliminary engineer's estimate of the drainage facility improvement quantities and costs. The quantities will be developed from the preliminary drainage facility improvement exhibits. Unit costs will be based upon the most current cost information for recent similar projects in the area compiled by the Consultant and approved by the District. In addition, intangible costs for alternative systems can be investigated, such as environmental mitigation, if these are determined to be critical for a particular system. Major physical constraints will be included in the estimate that can include (1) land acquisition right of way, (2) street paving, and (3) utility relocation or protection. Construction costs shall include an estimate of channel grading requirements. Costs will be presented in tabular form for review by the District using the standard planning estimate form and unit costs spreadsheet.

- Preliminary quantity estimate
  - Regional systems
  - Local systems
- Cost Estimate spreadsheets
- R/W estimates

**Deliverables:** 1. Preliminary facility cost estimate

#### 4.5 Phasing and Implementation Program

Provide technical guidance for developing phasing strategies related to project implementation of the masterplan flood control facilities and local/sub-regional drainage improvements. Phasing limitations and constraints will be identified based on hydraulic and potential watershed limitations. Critical areas of high flood hazard potential will be identified based on the results of the floodplain analysis and assessment of the existing hazards/opportunities. A prioritization scheme will be developed to quantify the importance of different improvements to ensure that the initial phases of improvements have the greatest impact. A recommended prioritization will be provided for implementing the required flood control facilities to correct existing hydraulic and flood control deficiencies. The prioritization will consist of establishing a weighting or ranking system of the various system improvements. The suggested ranking will utilize a prioritization equation incorporating a (1) simplified cost/benefit analysis, (2) the level of hydraulic deficiency, (3) existing operational problems, and (4) erosion potential based on future channel response. The different indicators can be utilized in developing a numerical ranking of the facility implementation since they are generally independent and have unequal weighing and the different factors can be given weighting such as operational deficiencies can have a higher weighting. A summary decision matrix will be generated to facilitate use by non-technical staff in developing recommendations regarding facility priorities and their numerical weighted ranking.

- Cost / benefit phasing analysis
- Prioritization matrix ranking of elements
  - Regional
  - Local

**Deliverables:** 1. Phased implementation program analysis

### **PHASE 5 – PROJECT REPORTS AND EXHIBITS**

#### 5.1 Preparation Draft - MDP Report

Provide the engineering services for the compilation of a new *Master Plan of Drainage Report* to support the proposed recommended municipal drainage and flood control facilities. The written report and appendices can serve as the technical documentation for the preliminary engineering design and selection of the recommend watershed improvements. The report shall follow the minimum requirements outlined by the District for technical content in a MDP. This report shall include the background for the hydraulics, watershed investigation, hydrologic modeling, hydrologic analysis, design criteria, constraints,



design assumptions, references, floodplain evaluation, channel design and sizing, flood protection requirements. The written report will serve as the technical documentation for the preliminary engineering design and operation of the drainage / onsite flood protection facilities, including the flood control operation of the flood control system and compatibility with the regional watershed. The report will identify the physical project constraints, technical criteria, assumptions, and guidelines in the preliminary engineering phase of the project. The primary focus of the report is to present the basis for the logical selection of the recommended combined regional flood control systems and local sub-regional drainage systems. This document will serve to reference the design assumptions, guidelines, and criteria developed during the overall initial preliminary engineering design phase of the project. The text of the document will be prepared on MS WORD. In addition, a multi-media CD presentation of the entire masterplan document, exhibits, and appendices will be generated.

- Report TOC outline development
- Report Text preparation
- Additional report analysis
- Report graphics / additional exhibits
- MDP digital database development
- MDP multimedia CD software formulation
- Compilation MDP multimedia CD

**Deliverables:** 1. Draft MDP report

## 5.2 Final MDP Report

Provide engineering services to develop the "final" MDP report which will present the results of the technical analysis and the recommended flood control/drainage system based on the review of the District and the watershed stake holders. The comments from the external review of the initial draft document will be incorporated into the final work product. The format of the report will be prepared so that it can be utilized by non-technical staff in developing capital project budgets or public discussions. The report will summarize the master plan development for drainage and serve to document the engineering assessment. The report will include documentation of hydrology, hydraulics, design criteria, constraints, cost estimates, deficiencies, and implementation priority. This report will serve as a reference document for the master plan and can be utilized during the review process for various agencies. The final report will follow the minimum requirements defined by the District for a MDP document.

- Report Text preparation
- Additional report analysis
- Report graphics / additional exhibits
- MDP digital database development
- MDP multimedia CD software formulation
- Compilation MDP multimedia CD

**Deliverables:** 1. Final MDP report

## 5.3 Hydrology Map Exhibits

The watershed hydrology maps will be prepared on the digital base sheets which will reflect the ultimate hydrology and drainage facilities. The hydrology maps shall include the hydrologic concentration points or nodes clearly identified and the associated design discharge. A summary hydrologic information table will be prepared for each sheet in addition to schematic node diagrams of that portion of the watershed shown on the sheet. The hydrology maps will summarize the mapping of the hydrologic data and calculated results of the hydrology models based on the ultimate system. The maps will be developed so they can be "stand-alone" exhibits with the minimum information. A summary hydrologic information table will be prepared for each sheet in addition to schematic node diagrams of that portion of the watershed shown on the sheet.

- Watershed parameters maps (soil/landuse/rain)

- Deliverables:** 1. Draft hydrology map exhibits with report  
2. Final hydrology map exhibits with report

#### **5.4 Facilities Exhibits – Plan Layouts**

Prepare *Drainage Facility Exhibits* which define the size and alignment of the proposed (1) regional flood control systems and (2) local/subregional drainage facilities. The drainage facility exhibit will identify approximate inlet locations, outlet, storm drain alignments, overland flow paths, drainage storage features, facility lengths, elevations, and approximate sizes. The different systems will be divided into reaches and the approximate conveyance sections will be defined in a matrix on the exhibits along with typical sections.

- Local Systems - facility Exhibit
- Regional – Facilities Exhibit

- Deliverables:** 1. Draft drainage facility exhibits with report  
2. Final facility exhibits with report

#### **5.5 Additional Exhibits**

Prepare additional exhibits for the technical report that had not previously been generated as part of the analysis. These will include exhibits will include graphics for the main body of the report text and additional illustration or large format exhibits.

- Floodplain Exhibits
- Additional Exhibits

- Deliverables:** 1. Draft additional exhibits with report  
2. Final additional exhibits with report

#### **5.6 Report Appendices**

Compile the *Technical Appendices* associated with the report which include all the technical backup for the hydrology and hydraulics modeling that support the results of the MDP formulation. All this information will also be compiled digitally onto a CD that will be included in the final report.

- Compile hydrology appendices
- Compile hydraulics appendices
- Additional appendices
- Compile facility quantity and cost appendices

- Deliverables:** 1. Draft technical appendices with report  
2. Final technical appendices with report

### **PHASE 6 – ENVIRONMENTAL IMPACT REPORT**

#### **6.1 EIR Kick-Off Meeting**

BonTerra Consulting will participate in a kick-off meeting to initiate the process for preparation of the MDP CEQA document. As the environmental constraints, jurisdictional delineation, and preferred project description will have been prepared under earlier tasks in Phase 4, the purpose of this meeting is to discuss the status of the preferred project, any remaining data needs required to complete a thorough environmental impact analysis, coordination of project mailing lists for noticing purposes, and overall EIR schedule.

- Deliverables:** 1. Minutes of the EIR Kick-Off Meeting  
2. Draft Project Description

## 6.2 Plan, Coordinate and Participate in Initial Public Scoping

BonTerra Consulting will support District staff throughout the CEQA public review process by conducting the required scoping meeting. The scoping meeting during public review of the IS/NOP would be located at the RCFCD offices or at a location in the Master Drainage Plan study area, at the discretion of the District. BonTerra Consulting will prepare meeting minutes after the scoping meeting that summarizes the EIR issues raised by each commenter. If the District would like to hold multiple scoping meetings, a budget amendment would be required.

A pre-scoping meeting "briefing session" is proposed with the resource agencies to summarize the approach being undertaken by the District to solicit early input from the regulatory agencies (e.g., Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Game, and Regional Water Quality Control Board). Consultation with Native American tribal representatives would also occur at this briefing session. This approach would facilitate incorporation of agency feedback into the Initial Study and NOP process prior to scoping meetings, at which the resource agencies can be identified as active participants in the MDP planning process. The revised draft IS/NOP would be updated with agency feedback received at this session, submitted to the District for final approval, and subsequently distributed.

BonTerra will prepare a recap memorandum after the scoping meeting that lists the names of meeting attendees, identifies which attendees provided EIR scoping input, and summarizes the EIR issues raised by each commenter.

**Deliverables:**

1. Participation in planning, organizing, and discussions at one Scoping Meeting.
2. Scoping Meeting Minutes that lists the names of the attendees, identifies which individuals provided comments, and summarizes the EIR issues raised.

## 6.3 Prepare Initial Study/Notice of Preparation (IS/NOP)

BonTerra Consulting will prepare a draft IS with text explanations for all topical issue areas, as required by CEQA. A draft of the IS and proposed IS/NOP will be provided to the District for review and comment. One round of comments will be incorporated into a revised draft IS for presentation at the pre-scoping agency briefing session discussed below in Task 6.3. The IS will be re-submitted to the District for final approval after District and City feedback has been incorporated from this briefing session.

Upon approval of the final IS/NOP, BonTerra Consulting will distribute a copy of the IS/NOP to each responsible agency through the State Clearinghouse, pursuant to CEQA Guidelines Section 15082, as well as to other interested parties, as determined by the District. It is assumed that a digital mailing list for recipients of the IS/NOP will be provided by the District. BonTerra Consulting will develop these mailing lists into a Master Mailing List for all public noticing purposes. The mailing of the NOP will start the mandatory 30-day NOP review period.

**Deliverables:**

1. Draft and Revised Draft IS/NOP for project team review
2. Mailing of the Final IS/NOP by certified mail, return receipt, of up to 50 copies of the IS/NOP using the mailing list provided by the District.
3. Attendance at one pre-scoping briefing session with regulatory agency staff to receive input on issues to be addressed in the Draft Program EIR and provide minutes of the meeting.

## 6.4 Evaluate Comments on NOP/Scope Screencheck Program EIR

At the conclusion of the NOP review period and after receipt of all comments from the State Clearinghouse, BonTerra Consulting will prepare a memorandum that documents the agencies, organizations, and individuals who submitted comments on the IS and NOP for submittal to the District and Cities. A meeting will be held if necessary to discuss this feedback with the project team and adjust the EIR approach accordingly.

- Deliverables:**
1. Memorandum summarizing comments received on the NOP.
  2. Attendance at one project team meeting

### 6.5 Prepare Three Drafts of the Administrative Draft Program EIR

The Program EIR will include a comprehensive evaluation of the Master Drainage Plan Preferred Alternative for each of the topic areas listed in the CEQA Checklist. The following topics would be addressed:

- Aesthetics/Visual
- Agricultural Resources
- Air Quality/Global Climate Change
- Biological Resources
- Cultural Resources
- Geology/Soils
- Hazards & Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Mineral Resources
- Noise
- Population/Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities/Service Systems
- Alternatives to the Proposed Master Plan
- Other CEQA mandated sections (e.g., growth inducing)

In order to ensure that the Program EIR is as comprehensive as possible, BonTerra Consulting will work closely with the project team to obtain as much detailed information as possible about the project phasing and planned infrastructure construction. This information will be included in the EIR project description section, along with the project description information concerning the proposed Master Drainage Plan facilities.

Within each technical topic (e.g., biological resources, hydrology/water quality) addressed in the Program EIR, subsections will address existing setting, significance thresholds, potential impacts, proposed mitigation measures, level of significance after mitigation, and cumulative impacts. Additional details on the approaches, methods, and technical scopes for the assessment of impacts to biological resources, cultural resources, air quality and global climate change, and jurisdictional resources are provided in Appendix A to this scope of work. As required by CEQA, the alternatives section of the Program EIR will include a description of the No Project Alternative as well as the three other alternatives considered and evaluated within the MDP Design Report (Phase 4).

Other CEQA mandated sections will be included in the Program EIR such as growth-inducing and cumulative impacts. Particular attention will be given to Coachella Valley MSHCP commitments and the Tribal HCP for the Agua Caliente Indian Reservation. An executive summary section and table will be included at the front of the EIR to facilitate review.

As specified in the RFP, we have assumed that three reviews of the Administrative Draft EIR by the District, Cities, and project team. Upon receipt of comments on the first, second, and third administrative drafts, BonTerra Consulting will produce the Draft Program EIR and submit it to the District for a final review prior to printing for public review.

- Deliverables:**
1. Ten copies of the first Administrative Sreencheck Draft Program EIR for team review, including the document on a CD.
  2. Ten copies of the second Administrative Draft Screencheck Program EIR for \ team review, including the document on a CD.
  3. Ten copies of the third Administrative Draft Screencheck Program EIR for team review prior to printing of the Draft EIR for Public Review, including the document on a CD.

## 6.6 Complete and Distribute Draft Program EIR

Upon approval of the Third Draft Screencheck Program EIR by the District and Cities, BonTerra Consulting will print and distribute the Draft EIR for public review. It is assumed that 50 copies of the Draft EIR and 50 copies of one technical appendix volume would be printed and distributed. Distribution will include the State Clearinghouse and other agencies, organizations, and individuals who received the NOP, as well as those who attended the Scoping Meeting, provided comments on the NOP, or who requested the EIR from the District or the Cities. EIRs will be mailed certified mail, return receipt unless otherwise specified by CLWA. A 45-day EIR review period will be necessary due to the involvement of State agencies. Production and distribution of a digital CD that contains the EIR and Technical Appendix can be provided to the District in lieu of a portion of the paper copies noted above as a cost saving measure.

A Notice of Completion (NOC) will be filed with the State Clearinghouse and posted at the District and at the Cities. We have assumed that any newspaper notices regarding the availability of the EIR and the start of the 45- day review period would be placed by the District.

BonTerra Consulting will provide the Draft EIR electronically for upload to District and City web sites if desired. Further, email comments on the Draft EIR could be accepted if they are provided within previously established guidelines (i.e., they must make specific reference to the page of the document and identify the specific EIR analysis text they are commenting upon). This approach could reduce the number of hard copy documents that would need to be printed, as well as providing much broader availability of the EIR for public review and comment.

- Deliverables:**
1. Production/printing of 50 copies of the Draft Master Drainage Plan Program EIR and 50 single volume EIR Appendix volumes, three loose unbound copies of each, and one electronic PDF file.
  2. Completion and filing of a Notice of Completion with the State Clearinghouse and posting at the District and within the Cities.
  3. Mailing of DEIR copies by certified mail, return receipt or equivalent.

## 6.7 Response to Comments on Draft Program EIR

BonTerra Consulting will compile all comments received on the Draft EIR during the public review period and will assess them to develop an appropriate response strategy. This information will be compiled into a memorandum that will be provided to the District for consideration and discussion. One project team meeting will be held to review the comments received on the draft EIR, discuss the response strategy, and ensure a consistent direction for preparation of Responses to Comments. Response to Comment format, contributors, reviewers and completion schedule will be determined at this meeting. Any adjustments to the budget for this task will be agreed upon during this early evaluation.

BonTerra Consulting will lead the responses to comments preparation effort and will prepare most of the responses as appropriate. As noted above, it is expected that other members of the project team will also be preparing responses to selected technical comments and issues and providing these to BonTerra Consulting for compilation. BonTerra Consulting will also prepare draft findings of fact and appropriate draft statements of overriding considerations, if necessary. These EIR certification documents will be prepared using the District's format and provided to the District and its legal counsel for review. Two rounds of revision are assumed. Upon receipt of District and City(s) comments on the Response to Comments document, BonTerra will finalize the Response to Comments and prepare the draft final findings of fact and statements of overriding consideration for use by the District and Cities during decision-making processes.

- Deliverables:**
1. Initial memorandum compiling comments received on the DEIR during public review and recommending a response strategy
  2. Two rounds of revision for the Response to Comments documentation.

3. Two rounds of revision for the Findings of Fact and Statements of Overriding Considerations.

Printing and mailing of Response to Comments document by certified mail, return receipt.

### 6.8 Preparation of Mitigation/Monitoring Plan

The California Public Resources Code §21081.6 (AB 3180) requires that a lead or responsible agency adopt a Mitigation Monitoring Program (MMP) when approving or carrying out a project where an environmental document, either an environmental impact report (EIR) or a mitigated negative declaration (MND), has identified measures to reduce potential adverse environmental impacts to levels that are less than significant. The RCFC&WCD, in partnership with the Cities of Desert Hot Springs and Palm Springs is the lead agency for the MDP Project and, therefore, is responsible for implementation of the MMP. As an EIR will be prepared for this project which addresses the potential environmental impacts and, where appropriate, recommends measures to mitigate these impacts, an MMP is therefore required to ensure that adopted mitigation measures are successfully implemented.

The MMP includes Standard Conditions and Mitigation Measures, all of which have been identified as measures to reduce potential adverse environmental impacts. The RCFC&WCD will adopt the MMP in its capacity as the lead agency in accordance with the provisions of the CEQA (Cal. Pub. Res. Code §§21000, et seq.) and its implementing guidelines (14 Cal. Code Regs. §§15000, et seq.) (the *CEQA Guidelines*).

**Deliverables:** 1. Three copies and one CD of the MMP

### 6.9 Preparation of Final Program EIR

Upon completion of the certification process, BonTerra Consulting will prepare the Notice of Determination (NOD). We have assumed that the District, as lead agency, will take the EIR certification action and approve the Master Drainage Plan; the City would be responsible agencies under CEQA and would be responsible for taking their own EIR certification and approval actions. Support of the Cities' CEQA actions is not a part of this scope of work.

A copy of the NOD will also be sent to the State Clearinghouse. Preparation of the CEQA Final EIR administrative record for use by the District and Cities is not included in this scope of work; we can prepare this under a separate agreement if the District and Cities choose to not use their own staff for this work. BonTerra will provide a copy of the Response to Comments received on the Draft EIR, the Mitigation Monitoring Program, and Findings of Fact to complete the Final EIR documentation. A total of 30 hours of staff time has been assumed for these efforts.

**Deliverables:**

1. Staff support services as requested up to 20 hours.
2. Attendance at two Board Meetings/Public Hearings.
3. One copy of the Draft EIR, Responses to Comments Document, Mitigation Monitoring and Reporting Program, and Findings of Fact Document which constitute the basic elements of a Final EIR under CEQA.

### 6.10 Meetings – Environmental

BonTerra Consulting will attend up to six (6) meetings with District and City staff to review and brief the project team on project progress, issues resolution, and technical feedback.

**Deliverables:** 1. Attendance at up to six (6) project team meetings in Riverside, or Desert Hot Springs.

## ADMINISTRATIVE

### A.1 Internal Team Meeting and Consultant Coordination (T&M)

Provide regularly scheduled internal project team technical meetings and coordination with the other consultant team members. This will provide for discussion of technical issues and to review overall project status and progress. This task shall also include telephone conferences necessary with the same parties for the above-mentioned purposes. This task item is a budget amount estimated on biweekly conference calls over a 14 month period and includes meeting preparation; travel time, if any, is not included. If the budget amount is exceeded then additional meeting attendance and consulting services will be completed, if required, on an hourly basis for an additional fee with the approval of the District.

- Biweekly conference Calls

**Deliverables:** 1. Meeting Agenda / Notes

### A.2 Client and Agency Project Meetings (T&M)

Perform coordination, communication, and technical consultation with the District/watershed stakeholders during the technical investigation and planning process for the development of the MDP. This item includes meetings at regular intervals to discuss the progress of the study and provide clarifications to assist the project planning. This item provides for regular phone discussion and correspondences to update the status of the project. This task item is a budget fee amount since the precise amount of work effort cannot be determined. This fee is based on monthly client and agency project meetings over a 14 month period and includes meeting preparation; travel time, if any, is not included. If the budget amount shown in the fee section is to be exceeded and additional work is still required to complete the task, then additional work will be completed on either a time and materials basis or separate contract addendum.

- Monthly Agency Meetings
- Stakeholder Steering Committee Meetings

**Deliverables:** 1. Meeting Agenda / Notes

### A.3 Agency Presentations

Perform formalized presentations for the Client and watershed stakeholder group for specific milestones along the project schedule in order to share the results in the plan formulation. The work effort includes developing the presentation in a Powerpoint format and preparing the exhibits/additional items required for the presentation. This task item is a budget fee amount since the precise amount of work effort cannot be determined. This fee is based four (4) milestone meetings which includes preparation and presentation time; travel time, if any, is not included. If the budget amount shown in the fee section is to be exceeded and additional work is still required to complete the task, then additional work will be completed on either a time and materials basis or separate contract addendum. Based on 4 milestone which includes presentation & preparation

- Milestone presentation - Alternatives analysis
- Milestone presentation - Draft MDP

**Deliverables:** 1. Meeting Agenda / Notes

### A.4 Change Order Scoping and Administration

Provide time for coordination and administration of contract adjustments associated with changes in scope or additions requested by the District during the project. This task is for the time associated with developing the change order scope, estimating manpower costs, administration, and processing with the District. This item is a budget fee amount. If the budget amount shown in the fee section is to

be exceeded and additional work is still required to complete the task, then additional work will be completed on either a time and materials basis or separate contract addendum.

**A.5 Additional Work as Directed by the District in Writing**

In the event that unpredicted and unforeseen conditions occur, the District may request PACE to perform additional work for the satisfactory completion of the MDP. This additional work is solely at the direction of the District and its cost shall be negotiated between the District and PACE. Approval by District shall be secured before work is started.





West Desert Hot Springs - Deliverable List with Payment Schedule (Revised: June 28, 2012)										
	Deliverable	Total Contract Amount	Contract Cost Less Reimbursables	Retainable 10%?	Reimbursables Costs <sup>1</sup>	Due on Completion Invoiced on task	Due on Approval Invoiced on task	Plus Previous Task	Total Invoiced \$	Balance Less Retention
<b>PHASE 1 - BASELINE DATA INVENTORY</b>										
1.1	Data Collection and Review of Existing Database Resources	\$48,498	\$45,608	\$4,531	\$2,668	70%	20%	\$0	\$41,227	\$0
1.2	Review of Prior Consultant's Work / Engineering Studies	\$16,137	\$15,194	\$1,519	\$943	90%	\$9,162	\$0	\$7,597	\$8,078
1.3	Initial Needs and Data Gap Assessment	\$23,631	\$23,106	\$2,311	\$525	70%	20%	\$6,078	\$28,873	\$0
1.4	Stakeholder Technical Steering Committee	\$7,490	\$7,490	\$749	\$0	70%	20%	\$0	\$6,741	\$0
1.5	Engineering Design Criteria and Objectives	\$2,860	\$2,860	\$286	\$0	70%	20%	\$0	\$2,574	\$0
<b>PHASE 2 - DRAINAGE DEFICIENCY and CONSTRAINTS IDENTIFICATION</b>										
2.1	Hydrologic Parameters Assessment and Analysis	\$8,899	\$8,899	\$890	\$0	50%	20%	\$0	\$4,450	\$3,960
2.2	Existing Drainage Facility Hydraulic Capacities	\$28,430	\$28,430	\$2,843	\$0	70%	20%	\$0	\$25,587	\$0
2.3	Watershed Hydrology Runoff Yield Estimates	\$10,240	\$10,240	\$1,024	\$0	70%	20%	\$3,560	\$12,776	\$0
2.4	Sediment Building Factor Estimates	\$10,770	\$10,770	\$1,077	\$0	70%	20%	\$0	\$9,693	\$0
2.5a	Existing Floodplain Mapping & Hydraulics Database	\$9,272	\$9,272	\$927	\$0	50%	20%	\$0	\$4,636	\$3,709
2.5b	Existing Floodplain Historical Mapping	\$5,650	\$5,650	\$565	\$0	70%	20%	\$3,709	\$8,794	\$0
2.6	Drainage Constraints Map Compilation	\$11,170	\$8,170	\$817	\$3,000	70%	20%	\$0	\$7,353	\$0
<b>PHASE 3 - PLANNING LEVEL ALTERNATIVE DRAINAGE SYSTEM EVALUATION</b>										
3.1	Regional System - Conceptual AN Formulation	\$30,155	\$29,640	\$2,964	\$515	70%	20%	\$0	\$26,676	\$0
3.2	Local System - Conceptual AN Formulation	\$21,910	\$21,910	\$2,191	\$0	70%	20%	\$0	\$19,719	\$0
3.3	Local System - Planning Hydrology / Hydraulics	\$24,570	\$24,570	\$2,457	\$0	70%	20%	\$0	\$22,113	\$0
3.4	Conceptual Alternatives	\$23,990	\$23,990	\$2,399	\$0	70%	20%	\$0	\$21,591	\$0
3.5	Planning Level ROM Cost Analysis	\$17,230	\$17,230	\$1,723	\$0	70%	20%	\$0	\$15,507	\$0
3.6	Alternative Feasibility Analysis and Comparison	\$26,504	\$26,504	\$2,650	\$0	80%	20%	\$0	\$13,252	\$10,602
3.7	Recommended Alternative Selection	\$5,240	\$5,240	\$524	\$0	70%	20%	\$10,602	\$15,318	\$0
<b>PHASE 4 - RECOMMENDED PLAN ENGINEERING ANALYSIS</b>										
4.1	Local - Watershed Delineation and Hydrology Analysis	\$34,719	\$34,719	\$3,472	\$0	70%	20%	\$0	\$31,247	\$0
4.2	Regional - Refine Alignment / Facility Size	\$39,892	\$39,892	\$3,989	\$0	70%	20%	\$0	\$35,903	\$0
4.3	Local System - Preliminary Hydraulics and Facility Sizing	\$17,240	\$17,240	\$1,724	\$0	70%	20%	\$0	\$15,516	\$0
4.4	Preliminary Construction Cost Estimate	\$15,760	\$15,760	\$1,578	\$0	70%	20%	\$0	\$14,202	\$0
4.5	Phasing and Implementation Program	\$15,520	\$15,520	\$1,552	\$0	70%	20%	\$0	\$13,968	\$0

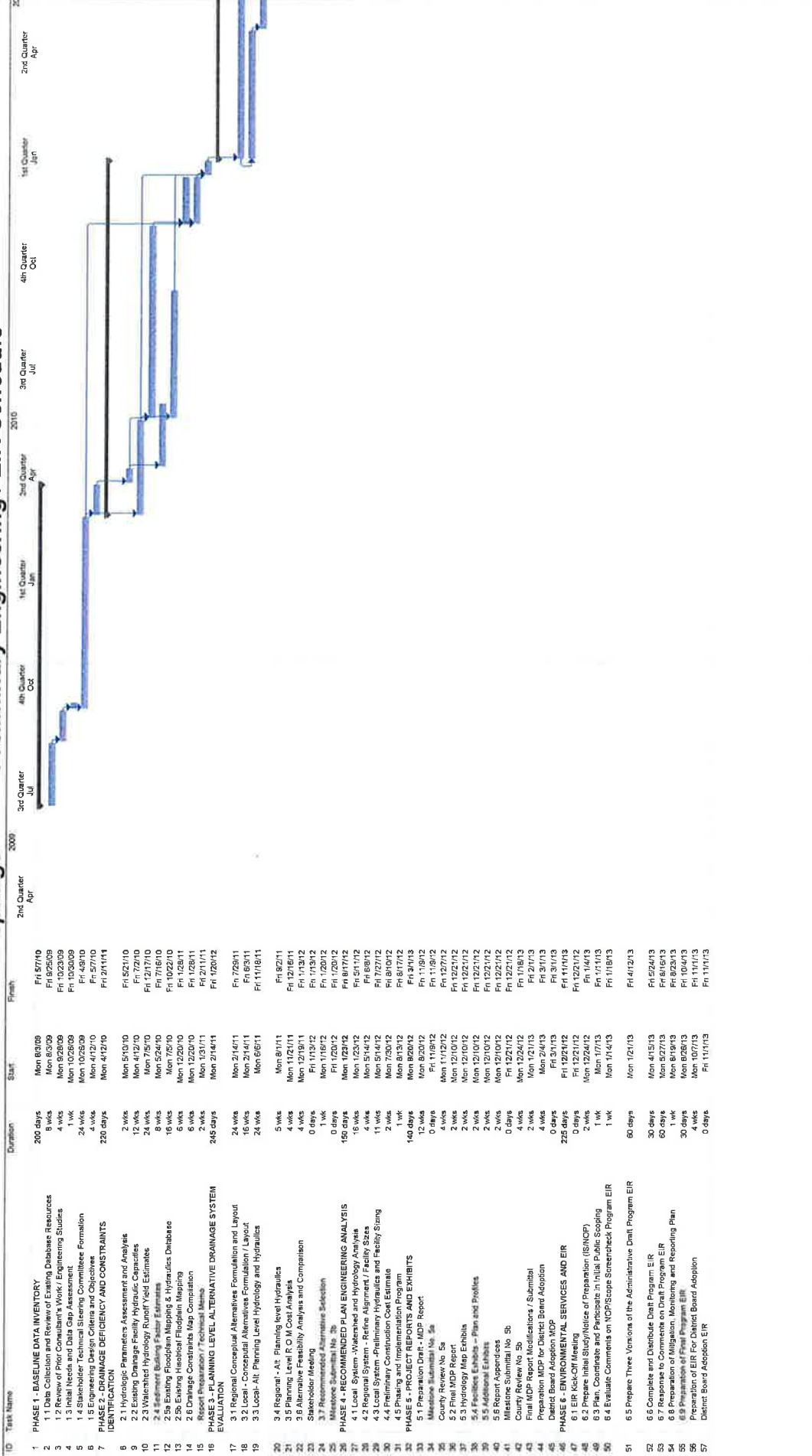
West Desert Hot Springs - Deliverable List with Payment Schedule (Revised: June 28, 2017)

PHASE 5 - PROJECT REPORTS AND EXHIBITS	Deliverable	Total Contract Amount	Contract Cost Less Reimbursables	Retention 10% <sup>2</sup>	Reimbursables Coats <sup>1</sup>	Due on Completion Invoiced on Task	Due on Approval Invoiced on Task	Plus Previous Task	Total Invoiced \$	Balance Less Retention
5.1	Preparation Draft - MDP Report	\$77,054	\$66,854	\$6,685	\$10,780	70%	20%	\$0	\$60,169	\$0
5.2	Final MDP Report	\$42,474	\$31,928	\$3,193	\$10,546	70%	20%	\$0	\$28,735	\$0
5.3	Hydrology Map Exhibits	\$2,920	\$2,920	\$292	\$0	45%	\$0	\$0	\$1,314	\$1,314
5.3b	Hydrology Map Exhibits				\$0	45%	\$0	\$1,314	\$1,314	\$0
5.4	Facilities Exhibits	\$5,970	\$5,970	\$597	\$0	45%	\$0	\$0	\$2,687	\$2,687
5.4b	Facilities Exhibits				\$0	45%	\$0	\$2,687	\$2,687	\$0
5.5	Additional Exhibits	\$19,470	\$9,470	\$947	\$10,000	45%	\$0	\$0	\$4,262	\$4,262
5.5b	Additional Exhibits				\$0	45%	\$0	\$4,262	\$4,262	\$0
5.6	Report Appendices	\$12,690	\$7,690	\$769	\$5,000	45%	\$0	\$0	\$3,461	\$3,461
5.6b	Report Appendices				\$0	46%	\$0	\$3,461	\$3,461	\$0
<b>PHASE 6 - ENVIRONMENTAL IMPACT REPORT</b>										
6.1	EIR Kick-off Meeting	\$1,053	\$880	\$88	\$173	70%	20%	\$0	\$792	\$0
6.2	Plan, Coordinate and Participate in Initial Public Scoping	\$17,060	\$16,450	\$1,645	\$610	70%	20%	\$0	\$14,805	\$0
6.3	Prepare Initial Study/Notice of Preparation (IS/NOP)	\$4,535	\$4,190	\$419	\$345	70%	20%	\$0	\$3,771	\$0
6.4	Evaluate Comments on NOP/Scope Screenshot	\$2,228	\$2,120	\$212	\$208	70%	20%	\$0	\$1,908	\$0
6.5	Prepare Three Drafts of the Administrative Draft Program EIR	\$86,532	\$82,080	\$8,208	\$4,452	70%	20%	\$0	\$73,872	\$0
6.6	Complete and Distribute Draft Program EIR	\$11,410	\$7,940	\$794	\$3,470	70%	20%	\$0	\$7,146	\$0
6.7	Response to Comments on Draft Program EIR	\$8,122	\$7,600	\$760	\$622	\$5,920	\$1,520	\$0	\$6,940	\$0
6.8	Preparation of Mitigation, Monitoring and Reporting Plan	\$3,675	\$3,500	\$350	\$375	\$3,450	\$200	\$0	\$3,150	\$0
6.9	Preparation of Final Program EIR	\$5,406	\$4,790	\$473	\$616	\$3,350	\$958	\$0	\$4,311	\$0
6.10	Meetings - Environmental (T&M)	\$19,358	\$17,010	\$1,701	\$2,348	T&M	T&M	\$0	\$15,308	\$0
<b>ADMINISTRATIVE ITEMS</b>										
A.1	Internal Team Meeting and Consultant Coordination (T&M)	\$14,100	\$12,300	\$1,230	\$1,600	T&M	T&M	\$0	\$13,070	\$0
A.2	Client and Agency Project Meetings (T&M)	\$34,960	\$33,150	\$3,316	\$1,600	T&M	T&M	\$0	\$28,444	\$0
A.3	Agency Presentation (T&M)	\$12,788	\$11,040	\$1,104	\$1,748	T&M	T&M	\$0	\$9,916	\$0
A.4	Change Order Scoping & Administration (T&M)	\$10,000	\$10,000	\$1,000	\$0	T&M	T&M	\$0	\$9,000	\$0
A.5	Additional Work as Directed by the District in Writing	\$94,848	\$0	\$0	\$0			\$0	\$94,848	\$0
<b>REIMBURSABLE EXPENSES</b>										
00	Reimbursable Expenses <sup>1</sup>	\$933,328	\$786,016	\$78,602	\$62,464	T&M	T&M	\$0	\$62,464	\$0
<b>TOTALS:</b>									\$854,126	\$0

NOTE: OPTIONAL TASKS are included in the final contract amount.  
<sup>1</sup> No Retention is held on reimbursables and amount used will be billed monthly.  
<sup>2</sup> 10% retention to be paid at the completion of all tasks within individual project phases.



# West Desert Hot Springs MDP - Preliminary Engineering / EIR Schedule



Task: Project Schedule  
Date: Thu 7/26/12

Summary: Project Summary, External Tasks

External Milestone: Inactive Milestone, Inactive Task

Inactive Milestone: Inactive Summary, Inactive Task

Duration-only: Manual Summary Rollup, Manual Summary

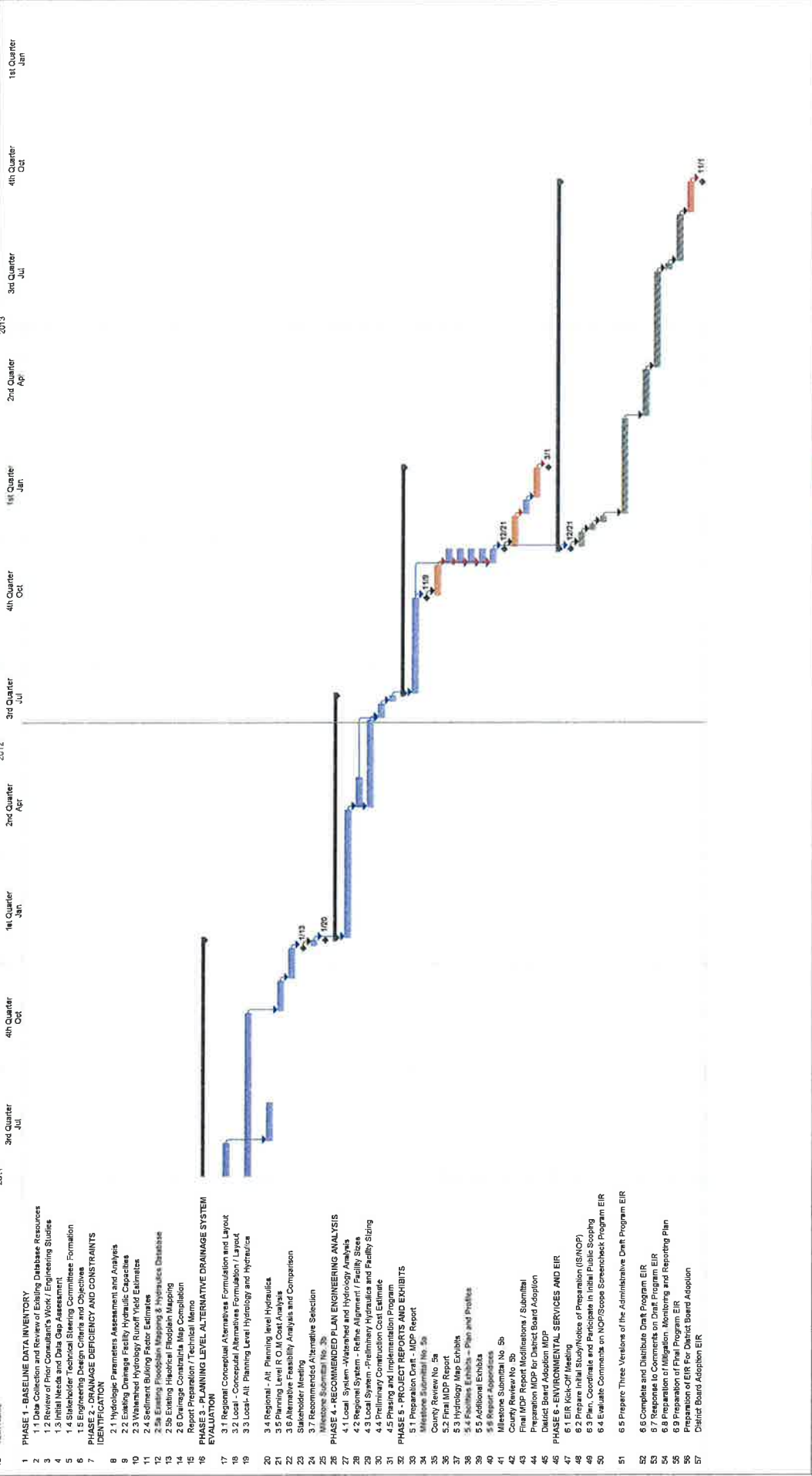
Start-only: Manual Summary, Manual Summary

Finish-only: Manual Summary, Manual Summary

Progress: Manual Summary, Manual Summary

Deadline: Manual Summary, Manual Summary

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ID	Task Name	2011	2012	2013	Legend
1	PHASE 1 - BASELINE DATA INVENTORY	Jan			Start-only
2	1.1 Data Collection and Review of Existing Database Resources	Jan			Start-only
3	1.2 Review of Prior Consultant's Work / Engineering Studies	Jan			Start-only
4	1.3 Initial Needs and Data Gap Assessment	Jan			Start-only
5	1.4 Stakeholder Technical Steering Committee Formation	Jan			Start-only
6	1.5 Engineering Design Criteria and Objectives	Jan			Start-only
7	PHASE 2 - DRAINAGE DEFICIENCY AND CONSTRAINTS IDENTIFICATION	Jan			Start-only
8	2.1 Hydrologic Parameters Assessment and Analysis	Jan			Start-only
9	2.2 Watershed Hydrology Assessment	Jan			Start-only
10	2.3 Watershed Hydrology Runoff Yield Estimates	Jan			Start-only
11	2.4 Sediment Building Factor Estimates	Jan			Start-only
12	2.5 Existing Floodplain Mapping & Hydrological Database	Jan			Start-only
13	2.6 Existing Floodplain Mapping	Jan			Start-only
14	2.6a Existing Floodplain Mapping	Jan			Start-only
15	2.6b Existing Floodplain Mapping	Jan			Start-only
16	2.6c Existing Floodplain Mapping	Jan			Start-only
17	2.6d Existing Floodplain Mapping	Jan			Start-only
18	2.6e Existing Floodplain Mapping	Jan			Start-only
19	2.6f Existing Floodplain Mapping	Jan			Start-only
20	2.6g Existing Floodplain Mapping	Jan			Start-only
21	2.6h Existing Floodplain Mapping	Jan			Start-only
22	2.6i Existing Floodplain Mapping	Jan			Start-only
23	2.6j Existing Floodplain Mapping	Jan			Start-only
24	2.6k Existing Floodplain Mapping	Jan			Start-only
25	2.6l Existing Floodplain Mapping	Jan			Start-only
26	2.6m Existing Floodplain Mapping	Jan			Start-only
27	2.6n Existing Floodplain Mapping	Jan			Start-only
28	2.6o Existing Floodplain Mapping	Jan			Start-only
29	2.6p Existing Floodplain Mapping	Jan			Start-only
30	2.6q Existing Floodplain Mapping	Jan			Start-only
31	2.6r Existing Floodplain Mapping	Jan			Start-only
32	2.6s Existing Floodplain Mapping	Jan			Start-only
33	2.6t Existing Floodplain Mapping	Jan			Start-only
34	2.6u Existing Floodplain Mapping	Jan			Start-only
35	2.6v Existing Floodplain Mapping	Jan			Start-only
36	2.6w Existing Floodplain Mapping	Jan			Start-only
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44	2.6ae Existing Floodplain Mapping	Jan			Start-only
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53	2.6an Existing Floodplain Mapping	Jan			Start-only
54	2.6ao Existing Floodplain Mapping	Jan			Start-only
55	2.6ap Existing Floodplain Mapping	Jan			Start-only
56	2.6aq Existing Floodplain Mapping	Jan			Start-only
57	2.6ar Existing Floodplain Mapping	Jan			Start-only