



**PURCHASING ITEM  
FOR  
COUNCIL AGENDA  
Memo No. CA07-261**

**1. Agenda Item Number:**  
**35**  
**2. Council Meeting Date:**  
May 24, 2007

**TO: MAYOR & COUNCIL**

**3. Date Prepared: May 7, 2007**

**THROUGH: CITY MANAGER**

**4. Requesting Department: Municipal Utilities**

**5. SUBJECT:** Award a Professional Services Contract to Carollo Engineers for development of the Integrated Water, Wastewater and Reclaimed Water System Master Plans, Project No. WA0710-101, in an amount not to exceed \$612,720.

**6. RECOMMENDATION:** Recommend award of a Professional Services Contract to Carollo Engineers for development of the Integrated Water, Wastewater and Reclaimed Water System Master Plans, Project No. WA0710-101, in an amount not to exceed \$612,720.

**7. BACKGROUND/DISCUSSION:** The 2004 Water, Wastewater and Reclaimed Water System Master Plans were updated and accepted by Council on May 13, 2004. The Master Plans govern "build-out and build-up" expansion of the City's water, wastewater and reclaimed water systems infrastructure. A reliable, well-planned utility system is essential to the City successfully serving its residential, commercial and industrial customers. The Master Plans are updated every three to five years in order to stay current with growth, new regulations and technologies. This update will incorporate the City's planning direction as identified in the General Plan Update being performed concurrently with these Master Plans. The Wastewater and Reclaimed Water Master Plans also will identify technically feasible options for managing future wastewater and reclaimed water flows.

The Scope of Work includes updating the Water, Wastewater and Reclaimed Water Master Plans, verifying reliability and redundancy of the existing systems, calibrating and updating Chandler's hydraulic computer models, assessing impacts of future high density areas identified in the General Plan Update, and developing alternative infrastructure scenarios that meet water, wastewater and reclaimed water system needs. A West Chandler Wastewater Management Analysis will be completed to develop technically feasible options with a recommendation to collect and treat wastewater and distribute future reclaimed water flows. This Analysis will include a Decision Matrix and Timeline, Ocotillo Water Reclamation Facility Expansion/Upgrade Assessment, a West Chandler Pipeline Corridor Feasibility/Alignment Assessment, and a Cost Analysis for either a potential Lone Butte Waste Water Treatment Plant Upgrade or a new Chandler Water Reclamation Facility/expansion. This information will be utilized as input to future West Chandler wastewater management planning strategies. An implementation plan and final reports submitted in bound copies, CD's and electronic format will be provided upon completion of this project.

**8. EVALUATION:** In January 2007, staff issued a Request for Qualifications (RFQ) for this project. Three firms were interviewed on March 9, 2007 in accordance with established City procedures. The selection committee included Robert Mulvey, Assistant Municipal Utilities Director; Kim Neill, Utility System Manager; Doug Toy, Senior Engineer; John Knudson, Senior Engineer; Gregg Capps, Water Resource Manager; Tim Krawczyk, Project Manager; and Henry Seager, resident.

The interview process resulted in the following rankings:

1. Carollo Engineers
2. CH2MHILL
3. Black & Veatch

Staff negotiated the contract with Carollo Engineers. The contract includes all costs necessary to complete the Integrated Water, Wastewater and Reclaimed Water Master Plans. Staff reviewed the hours per task, billing rates, and fee for this contract and found them to be acceptable. This contract is scheduled to begin in June 2007 with a contract time of 12 months.

**9. FINANCIAL IMPLICATIONS:**

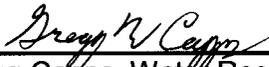
Cost: \$612,720  
 Savings: N/A  
 Long Term Costs: N/A

**Fund Source:**

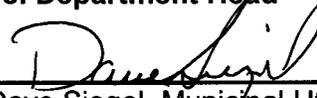
<u>Account No.</u>	<u>Fund Name</u>	<u>Program Name</u>	<u>Year Funded</u>	<u>Amount</u>
603.3820.0000.6814.7WA029	Water SDF	Water Master Plan	FY 2006/07	\$157,800
614.3910.0000.6817.7WW021	WW SDF	WW Master Plan	FY 2006/07	\$157,800
606.3910.0000.6817.7WW073	Recl. Water SDF	Effluent Reuse Master Plan	FY 2006/07	\$157,800
615.3970.0000.5219	WW Operating	Other Prof. Contract Svcs	FY 2006/07	\$139,320

**10. PROPOSED MOTION:** Move that Council award a Professional Services Contract to Carollo Engineers for development of the Integrated Water, Wastewater and Reclaimed Water System Master Plans, Project No. WA0710-101, in an amount not to exceed \$612,720, and authorize the Mayor to sign the contract documents.

**ATTACHMENTS:** Contract

**APPROVALS****11. Requesting Department**


Gregg Capps, Water Resource Manager

**13. Department Head**


Dave Siegel, Municipal Utilities Director

**12. City Engineer**


Sheina Hughes, Acting Assistant Public Works Director / City Engineer

**14. City Manager**


W. Mark Pentz

CITY OF CHANDLER  
PROFESSIONAL SERVICES AGREEMENT

Project No: **WA0710-101**

Project Name: **Water, Wastewater, and Reclaimed Water Master Plan Update**

THIS AGREEMENT is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 2007, by and between the City of Chandler, a Municipal Corporation of the State of Arizona, hereinafter referred to as "CITY", and Carollo Engineers, P.C., a corporation of the State of Arizona, hereinafter referred to as "CONSULTANT".

WHEREAS, the Mayor and City Council of the City of Chandler is authorized and empowered by provisions of the City Charter to execute contracts for professional services; and

WHEREAS, CONSULTANT represents that CONSULTANT has the expertise and is qualified to perform the services described in the Agreement.

NOW THEREFORE, in consideration of the mutual promises and obligations set forth herein, the parties hereto agree as follows:

**1. CONTRACT ADMINISTRATOR**

1.1. To provide the professional services required by this Agreement CONSULTANT shall act under the authority and approval of City Engineer or designee, (the Contract Administrator), who shall oversee the execution of this Agreement, assist the CONSULTANT with any necessary information, audit billings, and approve payments. The CONSULTANT shall channel reports and special requests through the Contract Administrator.

1.2. CITY reserves the right to review and approve any/all changes to CONSULTANT'S key staff assigned to the CITY project by the firm during the term of this Agreement.

2. **SCOPE OF WORK:** CONSULTANT shall provide those services described in Exhibit A attached hereto and made a part hereof by reference.

3. **ACCEPTANCE AND DOCUMENTATION:** Each task shall be reviewed and approved by CITY to determine acceptable completion. All documents, including but not limited to, data compilations, studies, and reports which are prepared in the performance of this Agreement, shall be and remain the property of CITY and shall be delivered to CITY before final payment is made to CONSULTANT.

4. **FEE SCHEDULE:** For the services described in paragraph 2 of this Agreement, CITY shall pay CONSULTANT a fee not to exceed the sum of Six Hundred Twelve Thousand and Seven Hundred Twenty dollars (\$612,720) in accordance with the fee schedule attached hereto as Exhibit B and incorporated herein by reference.

5. **TERM:** Following execution of this Agreement by CITY, CONSULTANT shall immediately commence work and shall complete all services described herein within Three Hundred Sixty Five (365) calendar days from the date hereof.

6. **TERMINATION:** CITY reserves the right to terminate this Agreement or any part thereof for its sole convenience with fifteen (15) days written notice. In the event of such termination, CONSULTANT shall immediately stop all work hereunder, and shall

immediately cause any of its suppliers and subconsultants to cease such work. As compensation in full for services performed to the date of such termination, the CONSULTANT shall receive a fee for the percentage of services actually completed.

7. **INDEMNIFICATION:** To the fullest extent permitted by law, CONSULTANT shall defend, indemnify and hold harmless the City of Chandler, its agents, representatives, officers, directors, officials and employees, individually and collectively, (hereinafter CoC) from and against all losses, claims, damages, suits, actions, payments, judgments, demands, expenses and costs, including, but not limited to, attorney's fees, defense costs, court costs, and the cost of appellate proceedings, or actions of any kind and nature, wages or overtime compensation due employees in rendering service under this Contract and whether to any person or property, including natural resources and any claim made under the Fair Labor Standards Act or any other federal or state laws, related to, arising out of, or alleged to have resulted from acts, errors, mistakes, omissions, work or services of the CONSULTANT, its employees, agents, or any tier of subconsultants in the performance of this Contract or of any other person for whose acts, errors, mistakes or omissions CONSULTANT may be legally liable, and from any claims or amounts arising or recovered under Workers' Compensation laws or any other law, bylaw, or ordinance, order or decree or any failure on the part of CONSULTANT, its agents, employees or representatives to fulfill CONSULTANT'S obligations under this Contract. IT IS THE INTENTION OF THE PARTIES to this contract that the CoC, are to be indemnified against their own negligence unless and except their negligence is found to be the sole cause of the injury to persons or damages to property. The provisions of this paragraph shall survive termination of this Contract.

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

8. **INSURANCE REQUIREMENTS:** CONSULTANT shall provide and maintain the insurance as listed in Exhibit C attached hereto and made a part hereof by reference.
9. **ENTIRE AGREEMENT:** This Agreement constitutes the entire understanding of the parties and supersedes all previous representations, written or oral, with respect to the services specified herein. This Agreement may not be modified or amended except by a written document, signed by authorized representatives or each party.
10. **ARIZONA LAW:** This Agreement shall be governed and interpreted according to the laws of the State of Arizona.
11. **NOTICES:** All notices or demands required to be given pursuant to the terms of this Agreement shall be given to the other party in writing, delivered by hand or registered or certified mail, at the addresses set forth below, or to such other address as the parties may substitute by written notice given in the manner prescribed in this paragraph.
12. **CONFLICT OF INTEREST:**

12.1. **No Kickback.** CONTRACTOR warrants that no person has been employed or retained to solicit or secure this Agreement upon an agreement or understanding for a commission, percentage, brokerage or contingent fee; and that no member of the City Council or any employee of the CITY has any interest, financially or otherwise, in the firm unless this interest has been declared pursuant to the provisions of A.R.S. Section 38-501. Any such interests were disclosed in CONTRACTOR'S proposal to the CITY.

12.2. **Kickback Termination.** CITY may cancel any contract or agreement, without penalty or obligation, if any person significantly involved in initiating, negotiating,

securing, drafting or creating the agreement on behalf of the CITY is, at any time while the Agreement or any extension of the Agreement is in effect, an employee of any other party to the Agreement in any capacity or a CONTRACTOR to any other party to the Agreement with respect to the subject matter of the Agreement. The cancellation shall be effective when written notice from CITY is received by all other parties, unless the notice specifies a later time (A.R.S. 38-511).

12.3. **No Conflict.** CONTRACTOR stipulates that its officers and employees do not now have a conflict of interest and it further agrees for itself, its officers and its employees that it will not contract for or accept employment for the performance of any work or services with any individual business, corporation or government unit that would create a conflict of interest in the performance of its obligations pursuant to this project.

In the case of City:  
City of Chandler  
Public Works/Contract Administration  
P.O. Box 4008, MS 407  
Chandler, AZ 85244-4008  
480.782.3307

In the case of CONSULTANT:  
Mr. Richard Johnson  
Carollo Engineers  
3033 N. 44<sup>th</sup> St., Ste. 101  
Phoenix, AZ 85018  
602-263-9500 602-265-1422 fax

Notices shall be deemed received on date delivered, if delivered by hand, and on the delivery date indicated on receipt if delivered by certified or registered mail.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names to this day of \_\_\_\_\_ 2007.  
CITY OF CHANDLER

\_\_\_\_\_  
MAYOR Date

ADDRESS FOR NOTICE  
City of Chandler  
P.O. Box 4008, Mail Stop 407  
Chandler, AZ 85244-4008  
480-782-3307

APPROVE AS TO FORM

\_\_\_\_\_  
City Attorney  
By: \_\_\_\_\_  
ATTEST:

\_\_\_\_\_  
City Clerk

SEAL

CONSULTANT

By: \_\_\_\_\_ 5/8/07  
Title: PARTNER

ADDRESS FOR NOTICE  
3033 NORTH 44TH STREET  
SUITE 101  
PHOENIX, ARIZONA 85018

Phone: 602-263-9500

ATTEST: If Corporation  
Richard Johnson 5/8/07  
Secretary PARTNER

## EXHIBIT A SCOPE OF WORK

### GENERAL PLAN COORDINATION

The purpose of this Task is to define the Consulting services to be provided in connection with the City's General Plan Update that is being performed concurrently with this Master Plan Update. The CONSULTANT will coordinate with the General Plan Update process, incorporate updated planning direction, and provide water and wastewater infrastructure input to the process.

#### Coordination Meetings

The CONSULTANT will attend up to three coordination meetings with the General Plan Consultant and City staff. The purpose of these meetings will be to gain insight into the General Plan Update process and direction, and to share infrastructure master plan strategies with the CONSULTANT.

#### Land Use Modifications

The CONSULTANT will review and incorporate information regarding land use modifications from the General Plan Consultant and the City.

#### Corridor Study Areas

The CONSULTANT will incorporate information regarding specific corridor study areas such as growth/density/vertical/land use impacts.

#### Meetings

The CONSULTANT will attend up to three Public/Council Meetings related to General Plan Update. Attendance at the meetings does not include preparation of meeting materials.

### DEVELOP PLANNING FRAMEWORK

The purpose of this Task is to review and incorporate updated planning data, information, and direction into a comprehensive planning framework to serve as the basis for updating this master plan.

#### Water Resources Strategy

The CONSULTANT will review the City's updated Water Resources Plan and incorporate the key strategies into the infrastructure master planning framework. The Water Resources Plan will serve as the strategic planning document for this Master Plan Update.

#### Update Land Use Plan

The CONSULTANT will update the Land Use Plan used for master planning purposes. The update will incorporate modifications from General plan Update, and vertical development/corridor studies.

#### Population Projections

The CONSULTANT will incorporate updated population projections into the master planning process. Population growth and buildout projections will serve to guide the implementation phases of infrastructure improvements.

#### Growth Trends

Based on input from the General Plan update process and the Planning Department, the CONSULTANT will verify growth trends through the buildout time frame, and update the master plan database. The growth trends will be used to modify the percent buildout, which impacts the timing of infrastructure implementation.

#### Economic Development

Based on input from the Economic Development Department, the CONSULTANT will update the master planning Land Use Plan relative to economic development impacts. Economic development impacts will be assessed from the standpoint of their impact on demand and flow projections. They will be evaluated to determine the magnitude and timing of increased demand and flow projections.

### **County Island/Private Water Companies**

Based on input from Chandler, the CONSULTANT will identify County Island and Private Water Company impact areas. These areas will be evaluated from the standpoint of timing as to when they are projected to receive service from Chandler, as well as the projected demands and flows from such service.

### **Water Quality Regulations**

The CONSULTANT will provide an overview summary of water quality related regulations affecting the water, wastewater, and reclaimed water systems. This overview will include updates to the Safe Drinking Water Act regulations impacting the treatment and distribution of drinking water. In addition, regulations impacting the wastewater infrastructure will also be addressed. State of Arizona regulations relative to managing reclaimed water and aquifer storage and recovery will also be summarized.

**Deliverables:** Technical Memorandum No. 1 (TM1) – Planning Framework. The CONSULTANT will prepare TM1 summarizing the results of updates to the planning framework, which will become the guide for the Master Plan Update.

## **DEVELOP DEMAND AND FLOW PROJECTIONS**

The purpose of this Task is to update the demand and flow projections from the 2004 Master Plan, reassess the assumptions, and develop a basis for increased demand/flow projections for the corridor studies.

### **Revisit 2004 Master Plan Demand Projections**

The CONSULTANT will revisit the land use based water unit demand projections from 2004 Master Plan and update them as necessary.

### **Revisit 2004 Master Plan Flow Projections**

The CONSULTANT will revisit the land use based wastewater unit flow projections from 2004 Master Plan and update them as necessary.

### **Water Resources Plan - Demand/Flow Assessment**

Based on the demand and flow projections from the City's updated Water Resources Plan, the CONSULTANT will develop an updated demand and flow projection to be used in this study.

### **Historic Record Analysis**

The CONSULTANT will obtain and evaluate historic (monthly, last 5 years, daily, last 2 years) records for production, wastewater flow monitoring, and reclaimed water deliveries. The purpose of this analysis is to evaluate 2004 Master Plan projections to determine if values are still valid or if changes have occurred. Then a comparison of 2004 values, recent historic values, and water resources plan projections will be made for the purpose of selecting a unified approach to demand/flow projections for this Master Plan Update.

### **Peaking Factors**

Based on the recent historic record analysis, the CONSULTANT will reassess the water demand and wastewater flow peaking factors, both seasonal as well as diurnal.

**Deliverables:** Technical Memorandum No. 2 – Demand and Flow Projections. The CONSULTANT will prepare TM2 documenting the results of the demand and flow projection update analysis.

## **ASSET MANAGEMENT**

### **Review and Summarize Existing Asset Management Activities**

Review and summarize current water and wastewater system asset management and rehabilitation activities.

### **Recommend Future Asset Management Plan**

Based on a review and summary of the City's existing asset management activities and a review of other communities' asset management programs, recommend a future asset management plan concept.

(Note: This concept will be the framework for developing a detailed asset management plan in the future.)

Recommend Future Water Distribution Pipe Replacement Program with Appropriate Funding Levels  
Based on work accomplished in Tasks 4.1 and 4.2, recommend a general pipe replacement program and planning level funding requirements that can be inserted into the City's five (5) year capital improvement program plan.

**Deliverable:** Technical Memorandum No. 3 summarizing the results of Task 4.0 including a recommended approach for future asset management program.

### **EXISTING WATER SYSTEM EVALUATION**

The purpose of this task is to develop an updated understanding of the existing water transmission and distribution system, determine if there are any existing system deficiencies that need attention, and to provide a basis for development of the Water System Master Plan.

#### **Existing System Model**

The CONSULTANT will review and evaluate the status of the City's existing water system model. It is assumed that the model is up to date with respect to infrastructure, demands, and operating controls, and is calibrated. If it is determined that additional updating is necessary, the CONSULTANT will recommend actions that need to be taken by City staff to complete the updates.

#### **Performance Criteria**

The CONSULTANT will develop and update the water system performance and design criteria to be used in the evaluation of the existing water distribution system and development of the Water System Master Plan.

#### **Existing System Assessment**

The CONSULTANT will conduct an assessment of the performance of the existing water distribution system using the City's current water system model. The existing system modeling assessment will include evaluation of the system performance under average day, maximum day, and peak hour demand conditions, and under fire flow and other emergency conditions. The CONSULTANT will define the scenarios to be modeled and evaluate the results. City staff will be responsible for setting up the scenarios and running the models. The CONSULTANT will provide oversight of the City modeling staff.

#### **Evaluate Existing Booster Stations**

The CONSULTANT will document the performance of the existing booster pump stations based on the results of the above modeling scenarios, and recommend required upgrades/ modifications. It is assumed that the water model has the current booster pump curves.

#### **Evaluate Existing Zone Hydraulic Grade Lines**

The CONSULTANT will review and update Chandler's existing system hydraulic grade lines for Zones 1 and 2, and provide assessment of the performance of existing facilities. The CONSULTANT will provide recommendations for upgrading and/or modifying existing facilities to improve system operation.

#### **Existing System Deficiencies**

The CONSULTANT will evaluate the performance of the existing distribution system against the established criteria, and identify any existing system deficiencies. Existing system deficiencies will be incorporated into the Water System Master Plan under Task 6.0, and become part of the City's Capital Improvement Plan (CIP).

**Deliverable:** Technical Memorandum No. 4 – Existing Water System Evaluation. The CONSULTANT will prepare TM4 documenting the results of the investigations completed under Task 5.0.

### **WATER SYSTEM MASTER PLAN**

The purpose of this Task is to prepare an update to the City's existing Water System Master Plan that addresses an updated planning framework and incorporates recent decisions and new infrastructure studies into the master plan.

### **Update Supply and Demand**

The CONSULTANT will update the water supply availability and needs based on the City's recently prepared Water Resources Plan, and revised water demand projections from Task 3.0. The updated demand projections from Task 3.0 are based on a re-evaluation land use and General Plan modifications, together with projections from the Water Resources Plan.

### **Update Water Model**

The CONSULTANT will develop a protocol/strategy for updating the water model with long-term water demand projections, and new/proposed infrastructure. Chandler modeling staff will be responsible for updating the water model, with oversight by the CONSULTANT.

### **Incorporate Joint Water Treatment Plant**

The CONSULTANT will assess and incorporate recent studies concerning the Joint Water Treatment Plant integration into Chandler's water system. The integration will include modifying infrastructure in the water system model based on these study recommendations. The CONSULTANT will recommend model updates to accommodate this integration, and City staff will perform the modeling. The CONSULTANT will review the results, and make any necessary recommendations for modifications to the proposed plans.

### **System Reliability and Redundancy**

The CONSULTANT will revisit the reliability/redundancy criteria developed in the 2004 Master Plan, and recommend adjustments to the criteria as appropriate consistent with the Water Resources Plan, well development program, back-up generation plan, and other criteria. The CONSULTANT will make recommendations concerning reliability/redundancy criteria for the City's review and approval.

### **Water Production Needs**

The CONSULTANT will re-evaluate buildout water production needs in light of the Water Resources Plan, updated demand projections, and redundancy criteria. This evaluation will include the current well development program, Joint WTP, and evaluation of the capacity needs of the Pecos WTP, i.e., 60 versus 75 mgd.

### **Pressure Zone Evaluation**

The CONSULTANT will revisit the recommended zone configuration from the 2004 Master Plan in light of production and Joint WTP delivery updates. This re-evaluation will consider the Zone 2 boundary delineation from the 2004 Master Plan, and recommend adjustments as appropriate. In addition, this Task will include a study of the feasibility of creating a new Zone 3 to serve West Chandler.

### **Storage/Booster Pumping Requirements**

The CONSULTANT will update the long-term storage and booster pumping requirements and facilities in accordance with revised design criteria, demands, reliability and redundancy criteria, and other factors as appropriate.

### **Corridor Studies**

The CONSULTANT will evaluate infrastructure adequacy with the results of updated corridor studies and high demand areas. This Task will incorporate increased demand projections from the land use, planning framework, and General Plan amendments that contemplate vertical development or other high demand impacts. The increased demand scenarios will be developed for up to seven (7) corridor study areas, and the City's modeling staff will model these scenarios, with oversight and result review from the CONSULTANT.

### **Master Plan Alternatives**

The CONSULTANT will develop alternative infrastructure scenarios that meet the water system needs, criteria, and updated projections, including up to seven (7) corridor study areas. These scenarios will then be input into the model and run under maximum day, peak hour, and emergency conditions to assess the adequacy of the proposed system improvements. Chandler modeling staff will perform these modeling functions with oversight and results review by the CONSULTANT. Based on the results review and input from Utilities staff, the recommended infrastructure improvements will be incorporated into the Master Plan.

The CONSULTANT will prepare up to seven (7) alternative master plan overlays for the general plan update process. It is envisioned that these overlays will consist of electronic overlay maps indicating water, wastewater, and reclaimed water master plans.

(Note: This work is to be performed in conjunction with and as part of the work defined in Task 9.5.)

#### **Cost Methodology**

The CONSULTANT will develop the CIP cost methodology that includes planning level cost estimates for design, construction, permitting, construction management, taxes, bonds, and insurance. The cost methodology will incorporate specific project allowances provided by the City, together with appropriate contingencies.

#### **Water System Master Plan**

Based on the foregoing Tasks, the CONSULTANT will develop the long-term Water System Master Plan describing required infrastructure to meet projected buildup and buildout demand conditions. The plan will include maps displaying system improvements, together with a phasing plan by 5-year planning periods to buildout. The plan will include construction as well as project costs for each recommended improvement.

#### **CIP and Implementation Plan**

Based on the results of Task 6.11, the CONSULTANT will prepare a Capital Improvement Plan and an Implementation Plan for recommended water system improvements by planning period.

**Deliverable:** Technical Memorandum No. 5 – Water System Master Plan. The CONSULTANT will prepare TM5 documenting the results of the Water System Master Plan completed under Task 6.0.

### **WEST CHANDLER WASTEWATER MANAGEMENT STUDY**

The City currently has an agreement with the Gila River Indian Community (Indian Community) that provides treatment of sewage flows from the west area of the City. The current agreement is scheduled to expire in 2017.

Previous master plans and studies have identified several alternatives for treatment of the sewage flows after the expiration of the agreement with the Indian Community. These alternatives include:

- Renewing or extending the agreement with the Indian Community (Lone Butte Wastewater Treatment Plant)
- Construction of a new water reclamation facility to treat sewage flows from West Chandler
- Transfer of sewage flows from West Chandler to existing treatment facilities at Ocotillo WRF
- Transfer of sewage flows from West Chandler to treatment facilities at the Airport WRF

The goal of this task is to technically identify feasible options for managing the wastewater and reclaimed water flows now being conveyed to and from the Lone Butte WWTP. These feasible options will be incorporated into a decision matrix and associated timeline. The results of this effort will be a joint City staff and CONSULTANT recommendation relative to the most technically feasible West Chandler wastewater management option. This information may be utilized in the future by the City, citizen groups, and other stakeholders as input to future West Chandler wastewater management planning strategies.

#### **Gather Data and Information**

Obtain from the City, if available, and review pertinent reports, studies, agreements, etc. to develop a historic perspective of the planning framework involving the West Chandler wastewater management issues. The data and information will include, but not be limited to:

- 2001 West Chandler Water Reclamation Facility Evaluation Methodology
- Agreement between the City and Gila River Indian Community for the Lone Butte Wastewater Reclamation Facility
- Water exchange agreements between the City and Gila River Indian Community
- Pertinent sections of the Gila River Water Settlement Agreement
- 2004 Chandler Master Plan for Water, Wastewater, and Reclaimed Water
- City Water Resource Plan
- West Chandler flow monitoring studies

#### **Review Data and Develop Summary of Previous Actions**

The CONSULTANT will review the data and information from Task 7.1 to identify key issues that need to be addressed by the City and issues that will need to be presented to stakeholders and citizens.

The CONSULTANT will evaluate the data and information to determine if there are any other possible/feasible alternatives to managing the West Chandler flows that have not been previously identified, and document the alternatives.

### **Review/Confirm West Chandler Wastewater Flows**

The CONSULTANT will verify West Chandler wastewater flows to confirm the required capacity that will be needed to treat and/or pump flows in the West Chandler area.

**Deliverable:** The CONSULTANT will prepare Technical Memorandum No. 6 summarizing the information on previous activities and decisions related to the West Chandler wastewater issues and documenting the alternatives identified for consideration.

### **Develop Decision Matrix with Timeline**

1. Based on the 2001 West Chandler Water Reclamation Facility Evaluation Methodology Study, update and refine the decision matrix to reflect relevant options for evaluation.
2. Develop a timeline required to accomplish a project aimed at managing the West Chandler wastewater and reclaimed water by 2017.

### **Ocotillo WRF Expansion/Upgrade Study**

3. Meet with City of Chandler staff to review the decision matrix and timeline.  
The intent of Task 7.4 is to analyze the existing hydraulics and treatment processes at the Ocotillo WRF and develop options for increasing the capacity from 10 mgd to as much as 20 mgd. The additional available capacity would be reserved to treat some of or all of the flows currently being conveyed to the Lone Butte WWTP.
4. Obtain from the City record drawings, performance records, and past reports/studies pertinent to this study.
5. Analyze the data provided by the City and meet with plant operators to discuss existing operations and plant limitations.
6. Conduct a site visit with electrical, mechanical, structural, and process specialists to evaluate the condition of the existing facilities and physical capabilities for future expansion and/or modifications.
7. Run hydraulic and process modeling for the existing plant using existing flow and loading data to calibrate both models. Conduct a workshop with the City and plant staff to review results of the initial assessment and the model runs of the existing facilities.
8. Develop hydraulic and process options for expansion/modification of the existing plant:
  - Expansion of existing process in kind
  - Conversion to alternative process (i.e., MBR)Based on the processes selected for expansion, run modeling scenarios to identify ultimate capacity both hydraulics and process for each selected option.
9. Prepare technical memorandum for submittal and review by the City. This technical memorandum will summarize the results of the modeling runs and identify limitations of the existing facilities. Conduct a workshop with City and plant staff to review results of technical memorandum and identify additional modeling requirements, if necessary.
10. Develop recommendations for expansion/modification of the Ocotillo WRF including:
  - Hydraulics
  - Process Modifications
  - Site Improvements
11. Prepare and submit to City and plant staff a draft Feasibility Study which summarizes work accomplished and defines recommended expansion/modification improvements at Ocotillo WRF specifically providing:
  - Ultimate Flow/Process Capacity
  - Basis of Design for Plant Improvements
  - Site Layout of New Facilities
  - Preliminary Cost Estimates for Construction of the New Facilities
  - Hydraulic Profile
12. Meet with City and plant staff to review draft Feasibility Study and accept comments.
13. Prepare a Final Feasibility Study Report, which addresses City and plant staff's comments as appropriate.

### **West Chandler Pipeline Corridor Feasibility/Alignment Study (Pump Back System)**

14. Kick-Off Meeting  
A kick-off meeting will be held with the City prior to beginning the alignment investigation. The purpose of the kick-off meeting is to define roles and responsibilities, lines of communication and

milestone dates. Any design considerations specific to this work should be provided by the City at this meeting. Meeting notes will be prepared and distributed.

The proposed pipeline corridor may be used for one of two alternative purposes:

- A. Wastewater pump back from a West Chandler pump station to the Ocotillo WRF, or
- B. New West Chandler WRF and pump station pumping reclaimed water back to the reclaimed water distribution system in the vicinity of the Ocotillo WRF.

15. Research Available Rights-of-Way

Collect readily available quarter section maps, aerial photography, contour maps, easement maps, studies, laboratory tests, records, rights-of-way, and parcel/property line information from the City and Arizona Department of Transportation (ADOT) as needed. From the data collected, key project limitations will be identified including limitations on the use of easements and rights-of-way.

16. Utility Research

Collect existing available utility mapping for the proposed alignments including contacting Arizona Blue Stake. A site visit will be conducted to verify utility markings and above-ground features observed in the field. A summary of the utilities collected and the field observations will be provided in technical memoranda.

17. Identify Alternative Alignments

Review up to four alternative alignments for the pipeline connection from the New West Chandler WRF to the existing Ocotillo WRF. The distance between the two facilities is approximately 6 miles via shortest driving route. For the four pipeline alignments, eight copies of a brief design memorandum will be prepared describing the alignment, right-of-way restrictions, data collected for the project, major utility conflicts, pipeline constructability and neighborhood/traffic disruptions including a schematic drawing.

Alternative alignments will be developed as follows:

- Pipeline from the New West Chandler WRF to the existing lift station located near Price Freeway and Ray Road (need to verify location). Carollo will evaluate the ability of the existing lift station and force main to convey these additional flows to the Ocotillo WRF including any improvements or upgrades required.
- Pipeline from the New West Chandler WRF to the existing Ocotillo WRF via the Loop 202 alignment to Price Road and Price Road to the Ocotillo WRF. Coordination with ADOT will be critical to the successful use of this alignment. Up to two coordination meetings will be held between the City and ADOT to determine potential alignments within the freeway right-of-way, construction methods, limitations and restrictions and pipeline materials required.
- Identify two additional pipeline alignments from the New West Chandler WRF to the existing Ocotillo WRF.

18. Prepare Draft Route Study Report

Draft route study report will be prepared describing the four alignments developed, each alignment analysis will include a discussion of design and construction concerns, design criteria and utility impacts. For each of the four alternatives, 11x17 conceptual drawings will be prepared showing existing rights-of-way, identified easements from information gathered, utility information based upon information gathered, and a proposed pipeline alignment.

19. Review Meeting

A review meeting will be held with the City staff to discuss the details of the four alignments and to solicit feedback on the draft route study memorandum.

20. Prepare Final Route Study Report

After receiving comments from the Review Meeting, a Final Route Study Report will be prepared.

**Lone Butte WWTP Upgrade and New West Chandler Wrf Construction Costs**

The intent of Task 7.6 is to develop costs for upgrading the existing Lone Butte WWTP to a level capable of treating wastewater and producing a Class A+ effluent. Additionally, the costs developed in the West Chandler Water Reclamation Facility Evaluation Methodology Study (June 2001) for a New West Chandler WRF would be reanalyzed and updated to reflect the actual schedule for anticipated construction.

21. Review and analyze studies/data previously performed for the Lone Butte WWTP.
22. Develop a preliminary treatment process schedule (incorporating as much of the existing Lone Butte WWTP as possible) capable of meeting a Class A+ effluent.
23. Based on the preliminary treatment process developed, compile an estimate of construction cost.
24. Analyze the details of the New West Chandler WRF estimated construction costs developed in the 2001 West Chandler Water Reclamation Facility Evaluation Methodology Study and update to reflect current costs.
25. Prepare draft report summarizing the work accomplished in Tasks 1-4 for submittal and review by City.
26. Meet with City staff to discuss updated costs and receive comments on report.
27. Prepare a Final Report, which provides updated construction cost estimates for both facilities.

**Evaluate Alternatives (including Costs) and Provide Recommendation**

28. Based on the information and analysis developed in Tasks 7.4, 7.5, and 7.6, evaluate the various options based on costs, constructability, planning/design/construction schedule, and institutional implementation.
29. The results of the alternative evaluation will be a set of implementable options, which can be inserted into the decision matrix.
30. Meet with City staff in a workshop(s) setting to discuss the decision matrix and alternative option and develop a joint City and CONSULTANT recommendation for inclusion in the Master Plan Update.

**Prepare Technical Memorandum**

CONSULTANT will prepare a technical memorandum incorporating all of the documents prepared from the above tasks, a description of the decision making process, a summary of activities that were completed as a part of the decision making process, and the recommended action resulting from these activities.

**Deliverable:** Technical Memorandum No. 7 – Decision Making Tool, Evaluation Methodology, and a Recommended Technical Alternative.

**EXISTING WASTEWATER SYSTEM EVALUATION**

The purpose of this Task is to develop an updated understanding of the existing wastewater treatment and collection system, determine if there are any existing system deficiencies that need attention, and provide a basis for the development of the Wastewater System Master Plan.

**Existing System Model**

The CONSULTANT will review and evaluate the status of the City's existing collection system model, which has been developed using the SWMM software. It is assumed that the model is up to date with respect to infrastructure, flows, and lift station operating controls, and is calibrated. If it is determined that additional updating is necessary, the CONSULTANT will recommend actions that need to be taken by City staff to complete the updates.

**Performance Criteria**

The CONSULTANT will develop and update the wastewater system performance and design criteria to be used in the evaluation of the existing collection system, and development of the Wastewater System Master Plan.

**Develop Existing Flows**

Based on the current wastewater flow measurement records and unit flows developed from existing land use, the CONSULTANT will review the existing model load projections to determine if current flow conditions are reasonably depicted in the model. If not, the CONSULTANT will recommend steps to be taken by City staff to update the model load predictions.

### **Selected Flow Monitoring**

The CONSULTANT will plan and coordinate a flow monitoring program at selected locations such as Wills Road east of Price. A flow monitoring program will be developed and coordinated in consultation with City staff. The Cameron Group will provide flowmeter installation services and collect the flow monitoring records for further evaluation by the CONSULTANT.

### **Existing System Assessment**

The CONSULTANT will conduct an assessment of the performance of the existing wastewater collection system using the City's current wastewater system model. The existing system modeling assessment will include evaluation of the system performance under average day, maximum day, and peak flow conditions. The CONSULTANT will define the scenarios to be modeled by City staff, and evaluate the results. City staff will be responsible for setting up the scenarios and running the models. The CONSULTANT will provide oversight of the City modeling staff.

### **Existing Lift Station Evaluation**

The CONSULTANT will evaluate the performance of the existing lift stations based on the results of the above modeling scenarios, and recommend required upgrades/modifications. It is assumed that the wastewater model has the current lift station pump curves.

### **Existing System Deficiencies**

The CONSULTANT will evaluate the performance of the existing collection system against the established criteria, and identify any existing system deficiencies. Existing system deficiencies will be incorporated into the Wastewater System Master Plan under Task 9.0, and become part of the City's CIP.

**Deliverables:** Technical Memorandum No. 8 – Existing Wastewater System Evaluation.

## **WASTEWATER SYSTEM MASTER PLAN**

The purpose of this Task is to prepare an update to the City's existing Wastewater System Master Plan that incorporates an updated planning framework, recent infrastructure decisions made by the City, and new wastewater infrastructure studies completed since the last Master Plan Update.

### **Wastewater Flow Projections**

The CONSULTANT will update the long-term wastewater flow projections based on the City's recently prepared Water Resources Plan and revised water demand projections from Task 3.0, modified land use, and unit flow projections. The updated demand projections from Task 3.0 are based on a re-evaluation land use and General Plan modifications, together with projections from the Water Resources Plan.

### **Update Wastewater Model**

The CONSULTANT will develop a protocol/strategy for updating the wastewater model with long-term wastewater flow projections, and new/proposed infrastructure. Chandler modeling staff will be responsible for updating the wastewater model, with oversight by the CONSULTANT.

### **West Chandler Wastewater Management Study**

The CONSULTANT will incorporate the results of the West Chandler Wastewater Management Study defining location, capacity, and timing of required wastewater treatment needs and proposed facilities as documented in Task 7.0. The wastewater model will be updated to reflect the decisions made in Task 7.0 that will become the long-term strategy for the Wastewater Master Plan. The CONSULTANT will provide oversight to City modeling staff for completing these upgrades to the model.

### **Corridor Studies**

The CONSULTANT will evaluate infrastructure adequacy with the results of updated corridor studies and predicted future high flow areas. This Task will incorporate increased load projections from the land use, planning framework, and General Plan amendments that contemplate vertical development or other high flow impacts. Increased flow scenarios will be developed by the CONSULTANT for up to seven (7) corridor study areas, and the City's modeling staff will model these scenarios, with oversight and result review by the CONSULTANT. If appropriate, relief and/or new sewers may be recommended.

### **Master Plan Alternatives**

The CONSULTANT will develop alternative infrastructure scenarios that meet the wastewater collection system needs, performance criteria and updated projections, including up to seven (7) corridor study

areas. These scenarios will then be input into the model and run under average day, maximum day, and peak flow conditions, to assess the adequacy of the proposed system improvements. Chandler modeling staff will perform these functions with oversight and results review by the CONSULTANT. Based on the results review and input from Utilities staff, the recommended infrastructure improvements will be incorporated into the Master Plan.

(Note: Alternative master plan overlays will be produced for the general plan update process. Reference Task 6.9.)

#### **Cost Methodology**

The CONSULTANT will develop the CIP cost methodology for the wastewater system that includes planning level cost estimates for design, construction, permitting, construction management, taxes, bonds, and insurance. The cost methodology will incorporate specific project allowances provided by the City, together with appropriate contingencies.

#### **Wastewater System Master Plan**

Based on the foregoing Tasks, the CONSULTANT will develop the long-term Wastewater System Master Plan describing required infrastructure to meet projected buildup and buildout flow conditions. The plan will include maps displaying system improvements, together with a phasing plan by 5-year planning periods to buildout. The plan will include construction as well as project costs for each recommended improvement.

#### **CIP and Implementation Plan**

Based on the results of Task 9.7, the CONSULTANT will prepare a Capital Improvement Plan and an Implementation Plan for recommended wastewater system improvements by planning period.

**Deliverable:** Technical Memorandum No. 9 – Wastewater System Master Plan.

#### **EXISTING RECLAIMED WATER SYSTEM EVALUATION**

The purpose of this Task is to develop an updated understanding of the existing reclaimed water system, determine if there are any existing system deficiencies, and to provide a basis for development of the reclaimed water system master plan.

#### **Existing System Model**

The CONSULTANT will review and evaluate the status of the City's existing reclaimed water system model. It is assumed that the model is up to date with respect to infrastructure, demands, and operating controls, and is calibrated. It is further assumed that the identification, location, and demands for reuse sites cataloged in the 2004 Master Plan are still valid. If it is determined that additional updating of the model and/or reuse locations is necessary, then the CONSULTANT will recommend actions that need to be taken by City staff to complete the updates.

#### **Performance Criteria**

The CONSULTANT will develop and update the reclaimed water system performance and design criteria to be used in the evaluation of the existing reclaimed water distribution system and development of the Reclaimed Water System Master Plan.

#### **Existing System Assessment**

The CONSULTANT will conduct an assessment of the performance of the existing reclaimed water distribution system using the City's current reclaimed water system model. The existing system modeling assessment will include evaluation of the system performance under average day, maximum day, and peak hour demand conditions. The CONSULTANT will define the scenarios to be modeled, and evaluate the results. City staff will be responsible for setting up the scenarios and running the models. The CONSULTANT will provide oversight of the City modeling staff. From an operational perspective, it is important to implement a scheduled delivery strategy so as to not over burden the delivery system. The CONSULTANT will evaluate existing delivery scheduling, assess with the model, and make scheduling recommendations to facilitate reclaimed water delivery.

#### **Evaluate Existing Booster Stations**

The CONSULTANT will evaluate the performance of the existing booster pump stations based on the results of the above modeling scenarios, and recommend required upgrades/ modifications as necessary. It is assumed that the reclaimed water model has the current booster pump curves.

### **Existing System Deficiencies**

The CONSULTANT will evaluate the performance of the existing reclaimed water distribution system against the established criteria, and identify any existing system deficiencies. Existing system deficiencies will be incorporated into the Reclaimed Water System Master Plan under Task 11.0, and become part of the City's CIP.

**Deliverables:** Technical Memorandum No. 10 – Existing Reclaimed Water System Evaluation.

### **RECLAIMED WATER SYSTEM MASTER PLAN**

The purpose of this Task is to prepare an update to the City's existing Reclaimed Water System Master Plan that addresses an updated planning framework and incorporates recent decisions and new infrastructure studies into the Master Plan.

### **Update Supply and Demand**

The CONSULTANT will update the reclaimed water supply availability and needs based on the City's recently prepared Water Resources Plan, and revised water demand/flow projections from Task 3.0. The updated reclaimed demand projections from Task 3.0 are based on a re-evaluation land use and General Plan modifications, together with projections from the Water Resources Plan. This Task will include incorporating the results of a historic use study to be conducted by Chandler. Carollo will evaluate the results of this study, and together with updated land use based demand projections, develop the reclaimed water system demand projections.

### **Reclaimed Water Supply Availability**

The CONSULTANT will update the reclaimed water supply availability projections based on the results of the wastewater system flow projections. Appropriate factors for system losses and evaporation will be developed.

### **ASR Program Evaluation**

The CONSULTANT will evaluate Chandler's overall recharge and recovery program, including adequacy of long-term recharge capacity plans/capability, capability of ASR wells to meet instantaneous recharge needs, and overall recharge and recovery reliability/redundancy. Based on Chandler's updated water resources plan, the CONSULTANT will determine the long-term reclaimed water supply needed for recharge credits versus the supply needed to meet direct delivery demands.

### **Reclaimed Water Delivery Strategy**

The CONSULTANT will develop a reclaimed water delivery strategy to meet the direct use demands. This will include seasonal and diurnal peaking needs, system pumping requirements, ASR recovery during peak demands, and scheduling of user demands to minimize extreme delivery requirements. Part of the reclaimed water delivery strategy includes planning for recovery well input to meet peak demands. This Task will include planning for where and when recovery needs to take place, and will consider using low quality/shallow aquifer recovered water.

### **Update Reclaimed Water System Model**

The CONSULTANT will develop a protocol/strategy for updating the reclaimed water model with long-term reclaimed water demand projections, scheduling of demands, and new/proposed infrastructure. Chandler modeling staff will be responsible for updating the reclaimed water model, with oversight by the CONSULTANT.

### **Master Plan Alternatives**

The CONSULTANT will develop alternative infrastructure scenarios that meet the reclaimed water system needs, criteria and updated projections. These scenarios will then be input into the model and run under maximum day, peak hour, and emergency conditions to assess the adequacy of the proposed system improvements. Chandler modeling staff will perform the modeling functions with oversight and results review by the CONSULTANT. Based on the results review and input from Utilities staff, the recommended infrastructure improvements will be incorporated into the Master Plan. Part of the modeling assessment will include re-evaluation of the 24-inch system looping requirements, particularly in the Ocotillo development area.

### **Cost Methodology**

The CONSULTANT will develop the CIP cost methodology that includes planning level cost estimates for design, construction, permitting, construction management, taxes, bonds, and insurance. The cost

methodology will incorporate specific project allowances provided by the City, together with appropriate contingencies.

#### **Reclaimed Water System Master Plan**

Based on the foregoing Tasks, the CONSULTANT will develop the long-term Reclaimed Water System Master Plan describing required infrastructure to meet projected buildup and buildout demand conditions. The plan will include maps displaying system improvements, together with a phasing plan by 5-year planning periods to buildout. The plan will include construction as well as project costs for each recommended improvement.

#### **CIP and Implementation Plan**

Based on the results of Task 11.8, the CONSULTANT will prepare a Capital Improvement Plan and an Implementation Plan for recommended reclaimed water system improvements by planning period.

**Deliverables:** Technical Memorandum No. 11 – Reclaimed Water System Master Plan. The CONSULTANT will prepare TM10 documenting the results of the Reclaimed Water System completed under Task 11.0.

#### **PROJECT ADMINISTRATION AND DELIVERABLES**

#### **Project Management**

The CONSULTANT will perform various project management and monitoring activities for this Master Plan Update Project. Specific project management services include development of a project plan (including Quality Management Plan), development and update of Project Schedule, development of progress reports and invoices for inclusion into the overall monthly progress report and invoice, management of individual project team resources and subconsultants to assist in the project delivery.

#### **Project Meetings**

The CONSULTANT will schedule, prepare for, and attend up to 24 project meetings (schedule 2 per month) for the purpose of reviewing the project status, to report findings, and to discuss project issues. The project status will include a monthly review of project budget and schedule.

#### **Project Workshops**

The CONSULTANT will establish a schedule for up to four (4) Project Workshops for the purpose of presenting study results at major project milestones. Presentation materials will be prepared.

#### **Prepare Deliverables**

The CONSULTANT will prepare technical memoranda, and draft and final reports documenting the development of the Master Plan Update.

Technical memoranda will be prepared to document the results of specific Tasks as defined previously. These documents will serve as mechanism to convey information and study results, solicit comments from the City staff, and to gain a consensus with the conclusions and recommendations of intermediate Tasks. The CONSULTANT will prepare 10 spiral bound copies of each Technical Memorandum for distribution to the City staff for review and comment.

The CONSULTANT will prepare an outline of the Water, Wastewater, Reclaimed Water Master Plan Report for review and approval by the City prior to publishing the draft and final reports.

The Master Plan Report will be based on the content of previously approved technical memoranda. The Master Plan Report and Appendices will be bound in 3-ring binders with tabs, and will contain color graphs, charts, and maps explaining the master planning process and results. A color brochure-style Executive Summary will be prepared. The CONSULTANT will prepare and deliver twelve (12) 3-ring bound copies of the draft and final report to the City. In addition, 25 CDs of the entire report will be delivered to the City.

The City of Chandler will be responsible for the printing costs associated with the General Plan overlays, multiple copies of the Final Report, color executive summary brochure, and any additional CDs.

The CONSULTANT will provide to Chandler an electronic file of the final deliverables in a reproducible format.

#### **STANDARD OF CARE**

CONSULTANT will be responsible for the level of competency and standard of care presently maintained by other practicing Professional Engineers performing the same or similar type of work at the time Notice to Proceed is issued. CONSULTANT and the Client mutually agree that the standard of care, as applied to design professionals, shall be defined as the ordinary and reasonable care required and established by

expert testimony of what a reasonable and prudent professional would have done under the same or similar circumstances.

CONSULTANT has no control over the cost of labor, materials, equipment, or services furnished by others, or over contractor's methods of determining prices, or other competitive bidding or market conditions, practices, or bidding strategies. Cost estimates provided as part of the Project are based on CONSULTANT 's opinion, experience, and judgment only. CONSULTANT cannot and does not guarantee that proposals, bids, or actual project construction costs will not vary from cost estimates prepared by CONSULTANT.

#### *PROJECT ASSUMPTIONS*

- The following project assumptions/data requests form the basis for the Scope of Work, Engineering Services Costs, and Project Schedule detailed herein:
- Chandler will provide all current water, wastewater, reclaimed water Geographical Information Service (GIS) data.
- Chandler will provide new, updated models: EPA NET, SWMM; it is assumed that these models reflect current infrastructure and are calibrated.
- It is assumed that water/wastewater infrastructure reflected in the models is updated and current from City's GIS.
- The customer billing record analysis from the 2004 Master Plan will be used as the basis for land use demand analysis.
- Scenario modeling for water, reclaimed water, and wastewater systems will be performed by Chandler modeling staff under the guidance of Carollo Engineers for input and results interpretation.
- Chandler will provide copies of reports and analyses concerning water and wastewater infrastructure studies completed since the last master plan update (2004); i.e., Joint Water Treatment Plant Study; New Pressure Zone Study.
- Chandler will provide a copy of their updated water resources plan for use by the CONSULTANT in preparation of this Master Plan Update.
- Chandler will provide pertinent ordinances, policies, and regulations affecting the master plan development.
- Chandler will provide a copy of the City's current groundwater development program.
- Chandler will provide a copy of the Initial Distribution System Evaluation (IDSE) Study.
- The Scope of Work, estimated manhours and costs are based on a project duration of twelve (12) months.
- If deemed necessary, the CONSULTANT and City will jointly select and retain a facilitator to assist in managing workshops.

# EXHIBIT B FEE SCHEDULE

TASKS	Carelle Manhours							Carelle Manhours Per Task	Carelle Labor Cost	BAC Manhours	BAC Labor Costs	Total Project Labor Costs																	
	Senior Professional	Project Professional	Professional	Assistant Professional	Senior Technician	Chief	Chief																						
<b>TASK 1.0 GENERAL PLAN COORDINATION</b>																													
Task 1.1 Coordination Meetings with General Plan Consultant	12	8					18	\$3,397																					
Task 1.2 Documentation/Review of Land Use/Zoning Modifications	7		8				6	\$1,321																					
Task 1.3 Corridor Study Areas - Growth/Density/Verticality, and Use	4		8				12	\$2,025																					
Task 1.4 Public/Council Meetings Related to General Plan Update	12	8					18	\$3,397																					
Subtotals - Task 1.0	30	12	14	0	0	0	66	\$10,136	0	60	\$10,136																		
<b>TASK 2.0 DEVELOP PLANNING FRAMEWORK</b>																													
Task 2.1 Review Updated Water Resources Strategy, Incorporate	4		4				8	\$1,409																					
Task 2.2 Update Land Use Plan for Master Planning Purposes, Incorporate Other	7	4	4	24	2		40	\$6,582																					
Task 2.3 Update Population Projections	7		4	18	2		24	\$3,284																					
Task 2.4 Vary Growth Trends - Buildout Time Frame	7		12				19	\$2,434																					
Task 2.5 Update Economic Development Growth Projections	7		12				19	\$2,434																					
Task 2.6 Identify County Island Impact Areas, and Private Water Companies	7		12				19	\$2,434																					
Task 2.7 Identify and Summarize Water Quality Regulations	7		12				19	\$2,434																					
Subtotals - Task 2.0	10	4	60	64	10	0	144	\$20,781	0	60	\$20,781																		
<b>TASK 3.0 DEVELOP DEMAND AND FLOW PROJECTIONS</b>																													
Task 3.1 Revise 2004 Master Plan Demand Projections	2		4	2			8	\$1,271																					
Task 3.2 Revise 2004 Master Plan Flow Projections	2		4	2			8	\$1,271																					
Task 3.3 Water Resources Plan - Demand/Flow Assessment	2	2	18	30			48	\$8,874																					
Task 3.4 Historic Record Analysis	2		4	4			8	\$1,137																					
Task 3.5 Peakflow Factors	2		4	4			8	\$1,137																					
Subtotals - Task 3.0	6	2	30	44	0	0	66	\$12,760	0	60	\$12,760																		
<b>TASK 4.0 ASSET MANAGEMENT</b>																													
Task 4.1 Review and Update Existing Asset Management Activities	2						2	\$398	8																				
Task 4.2 Recommend Future Asset Management Plan	2						2	\$398	18																				
Task 4.3 Recommend Future Water Distribution Pipe Replacement Program with Appropriate Funding Levels	4						4	\$793	18																				
Subtotals - Task 4.0	8	0	0	0	0	0	8	\$1,589	40	\$6,000	\$7,589																		
<b>TASK 5.0 EXISTING WATER SYSTEM EVALUATION</b>																													
Task 5.1 Existing System Model	2	4	20				24	\$3,782																					
Task 5.2 Performance Criteria	2		4	10			16	\$2,402																					
Task 5.3 Existing System Assessment	2	8	24	30			64	\$9,272																					
Task 5.4 Evaluate Existing Booster Stations	2	4	10				16	\$2,402																					
Task 5.5 Evaluate Existing Zone Hydraulic Conditions	2	4	10				16	\$2,402																					
Task 5.6 Existing System Deficiencies	2	4	10				16	\$2,402																					
Subtotals - Task 5.0	12	20	80	40	0	0	160	\$24,618	0	60	\$24,618																		
<b>TASK 6.0 WATER SYSTEM MASTER PLAN</b>																													
Task 6.1 Update Supply and Demand	2		2	6			8	\$1,092																					
Task 6.2 Update Water Model	2	4	20				24	\$3,782																					
Task 6.3 Incorporate Joint Water Treatment Plant	1	2	12				15	\$2,521																					
Task 6.4 System Reliability and Redundancy	2	4	12				18	\$2,521																					
Task 6.5 Water Production	2	4	12				18	\$2,521																					
Task 6.6 Pressure Zone Evaluation	2	4	12	4			24	\$3,883																					
Task 6.7 Storage/Booster Pumping Requirements	2	4	12	4			24	\$3,883																					
Task 6.8 Corridor Studies	2	4	12	4			24	\$3,883																					
Task 6.9 Master Plan Alternatives	2	4	12	4			24	\$3,883																					
Task 6.10 CIP and Implementation Plan	2	4	12	4			24	\$3,883																					
Task 6.11 Water System Master Plan	2	4	12	4			24	\$3,883																					
Task 6.12 Cost Methodology	2	4	12	4			24	\$3,883																					
Subtotals - Task 6.0	20	48	208	62	32	24	414	\$69,247	0	60	\$69,247																		
<b>TASK 7.0 WEST CHANDLER WASTEWATER MANAGEMENT STUDY</b>																													
Task 7.1 Gather Data and Information	0	4	4				8	\$1,298	8		\$1,298																		
Task 7.2 Review Data and Develop Summary of Previous Actions	2	6	40				48	\$7,880	48		\$7,880																		
Task 7.3 Decision Matrix with Timeline	8	8	24				40	\$6,842	8		\$1,520																		
Task 7.4 Corridor WRF Expansion/Upgrade Study	48	18	340				506	\$7,212																					
Task 7.5 West Chandler WRF Expansion/Upgrade Study	8	8	40				56	\$8,692																					
Task 7.6 West Chandler Pipeline Corridor Feasibility/Alignment Study	8	8	40				56	\$8,692																					
Task 7.7 Lanes Bure/WRF Upgrade and Pipe West Chandler WRF Construction Co.	16	16	18				49	\$6,853	16		\$2,560																		
Task 7.8 Evaluate Alternatives (Including Costs) and Provide Recommendation	8	16	24				48	\$6,853	24		\$3,640																		
Task 7.9 Prepare Technical Memorandum	8	16	24				48	\$6,853																					
Subtotals - Task 7.0	66	74	466	0	60	16	724	\$110,883	784	\$128,880	\$237,743																		
<b>TASK 8.0 EXISTING WASTEWATER SYSTEM EVALUATION</b>																													
Task 8.1 Existing System Model	2	2	14				18	\$2,487																					
Task 8.2 Performance Criteria	2		4	10			16	\$2,248																					
Task 8.3 Existing System Assessment	2	2	4	10			18	\$2,487																					
Task 8.4 Selected Flow Monitoring	2	2	4	10			18	\$2,487																					
Task 8.5 Existing System Assessment	2	2	4	10			18	\$2,487																					
Task 8.6 Existing System Assessment	2	2	4	10			18	\$2,487																					
Task 8.7 Existing System Deficiencies	2	2	4	10			18	\$2,487																					
Task 8.8 Existing LID System Evaluation	2	2	4	10			18	\$2,487																					
Subtotals - Task 8.0	4	10	61	64	0	0	132	\$19,112	0	60	\$19,112																		
<b>TASK 9.0 WASTEWATER SYSTEM MASTER PLAN</b>																													
Task 9.1 Wastewater Flow Equations	2		2	6			8	\$1,092																					
Task 9.2 Update Wastewater Model	2	4	20				24	\$3,782																					
Task 9.3 West Chandler Wastewater Management Study	2	4	12				18	\$2,521																					
Task 9.4 Corridor Studies	2	4	12				18	\$2,521																					
Task 9.5 Master Plan Alternatives	2	4	12				18	\$2,521																					
Task 9.6 Cost Methodology	2	4	12				18	\$2,521																					
Task 9.7 Wastewater System Master Plan	2	4	12				18	\$2,521																					
Task 9.8 CIP and Implementation Plan	2	4	12				18	\$2,521																					
Subtotals - Task 9.0	16	40	158	62	20	12	314	\$46,433	0	60	\$46,433																		
<b>TASK 10.0 EXISTING RECLAIMED WATER SYSTEM EVALUATION</b>																													
Task 10.1 Existing System Model	2	4	20				24	\$3,782																					
Task 10.2 Performance Criteria	2		4	10			16	\$2,402																					
Task 10.3 Existing System Assessment	2	4	12				18	\$2,402																					
Task 10.4 Evaluate Existing Booster Stations	2	4	12				18	\$2,402																					
Task 10.5 Existing System Deficiencies	2	4	12				18	\$2,402																					
Subtotals - Task 10.0	3	16	70	32	0	0	120	\$18,006	0	60	\$18,006																		
<b>TASK 11.0 RECLAIMED WATER SYSTEM MASTER PLAN</b>																													
Task 11.1 Update Supply and Demand	2		2	6			8	\$1,092																					
Task 11.2 Reclaimed Water Supply Availability	2	4	12				18	\$2,402																					
Task 11.3 ASR Program Evaluation	2	4	12				18	\$2,402																					
Task 11.4 Reclaimed Water Demand Strategy	2	4	12				18	\$2,402																					
Task 11.5 Update Reclaimed Water System Model	2	4	12				18	\$2,402																					
Task 11.6 Master Plan Alternatives	2	4	12				18	\$2,402																					
Task 11.7 Cost Methodology	2	4	12				18	\$2,402																					
Task 11.8 Reclaimed Water System Master Plan	2	4	12				18	\$2,402																					
Task 11.9 CIP and Implementation Plan	2	4	12				18	\$2,402																					
Subtotals - Task 11.0	16	16	122	60	4	4	242	\$34,839	0	60	\$34,839																		
<b>TASK 12.0 PROJECT ADMINISTRATION AND DELIVERABLES</b>																													
Task 12.1 Project Management	72		20				92	\$17,875																					
Task 12.2 Project Meetings	48	48	12				108	\$19,242	88																				
Task 12.3 Project Workshops	9		12				21	\$3,872	18																				
Task 12.4 Deliverables	24	24	60				108	\$20,390	209																				
Subtotals - Task 12.0	152	64	160	64	16	48	524	\$91,971	112	\$22,178	\$104,147																		
<b>Total Estimated Manhours</b>	381	336	1403	812	100	112	2,824																						
<b>Hourly Rates</b>	\$188	\$170	\$164	\$129	\$94	\$88																							
<b>Total Labor Costs</b>	\$83,068	\$58,028	\$229,734	\$76,776	\$10,740	\$9,408		\$439,164		\$166,065	\$604,229																		
<b>Notes:</b>	<ul style="list-style-type: none"> <li>1. Hourly rates based on April 2007 City of Chandler Approved Fee Schedule.</li> <li>2. Rates include direct labor, overhead and profit.</li> <li>3. Manhours estimated and associated costs based on a project schedule of twelve (12) months in duration.</li> <li>4. Carelle Engineers has the right to reallocate the estimated hours among specific tasks to accomplish the goals and intent of the Scope of Work, as long as the contract limit is not exceeded. If additional work or out of scope work is required, Carelle will negotiate with Chandler for a contract amendment.</li> <li>5. The City of Chandler will be responsible for printing costs associated with the General Plan updates, multiple copies of the Final Report, color executive summary brochure, and any additional CO's.</li> <li>6. The CONSULTANT will provide to Chandler an electronic file of the final deliverables in a reproducible format.</li> </ul>																												
	<table border="0" style="width: 100%;"> <tr> <td style="width: 80%;"></td> <td style="text-align: right;">Direct Cost Allowances</td> <td style="text-align: right;">\$10,000</td> </tr> <tr> <td></td> <td style="text-align: right;">- Catering Group (Pipework Monitoring)</td> <td style="text-align: right;">\$7,500</td> </tr> <tr> <td></td> <td style="text-align: right;">- Printing</td> <td style="text-align: right;">\$1,000</td> </tr> <tr> <td></td> <td style="text-align: right;">- Travel</td> <td style="text-align: right;">\$1,500</td> </tr> <tr> <td></td> <td style="text-align: right;">Subtotal Direct Cost Allowances</td> <td style="text-align: right;">\$19,500</td> </tr> <tr> <td></td> <td style="text-align: right;"><b>TOTAL ESTIMATED PROJECT COST</b></td> <td style="text-align: right;"><b>\$612,720</b></td> </tr> </table>												Direct Cost Allowances	\$10,000		- Catering Group (Pipework Monitoring)	\$7,500		- Printing	\$1,000		- Travel	\$1,500		Subtotal Direct Cost Allowances	\$19,500		<b>TOTAL ESTIMATED PROJECT COST</b>	<b>\$612,720</b>
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	<b>TOTAL ESTIMATED PROJECT COST</b>	<b>\$612,720</b>																											

**EXHIBIT C**  
**INSURANCE REQUIREMENTS**

1. CONSULTANT, at its own expense, shall purchase and maintain insurance of the types and amounts required in this section, with companies possessing a current A.M. Best, Inc. rating of B++6, or better and legally authorized to do business in the State of Arizona with policies and forms satisfactory to CITY.
2. Policies written on a "Claims made" basis are not acceptable without written permission from the City's Risk Manager.
3. All insurance required herein shall be maintained in full force and effect until all work or services required to be performed under the terms of this Agreement is satisfactorily completed and formally accepted. Failure to do so may, at the sole discretion of CITY, constitute a material breach of this Agreement and may result in termination of this contract.
4. If any of the insurance policies are not renewed prior to expiration, payments to the CONSULTANT may be withheld until these requirements have been met, or at the option of the City, the City may pay the Renewal Premium and withhold such payments from any monies due the CONSULTANT.
5. All insurance policies, except Workers' Compensation and Professional Liability required by this Agreement, and self-insured retention or deductible portions, shall name, to the fullest extent permitted by law for claims arising out of the performance of this contract, the City of Chandler, its agents, representatives, officers, directors, officials and employees as Additional Insureds.
6. CONSULTANT's insurance shall be primary insurance over any insurance available to the CITY and as to any claims resulting from this contract, it being the intention of the parties that the insurance policies so effected shall protect both parties and be primary coverage for any and all losses covered by the described insurance.
7. The insurance policies, except Workers' Compensation, shall contain a waiver of transfer rights of recovery (subrogation) against CITY, its agents, representatives, officers, directors, officials and employees for any claims arising out of CONSULTANT's acts, errors, mistakes, omissions, work or service.
8. The insurance policies may provide coverage, which contain deductibles or self-insured retentions. Such deductible and/or self-insured retentions shall be assumed by and be for the account of, and at the sole risk of CONSULTANT. CONSULTANT shall be solely responsible for the deductible and/or self-insured retention. The amounts of any self-insured retentions shall be noted on the Certificate of Insurance. CITY, at its option, may require CONSULTANT to secure payment of such deductibles or self-insured retentions by a Surety Bond or an irrevocable and unconditional letter of credit. Self-insured retentions (SIR) in excess of \$25,000 will only be accepted with the permission of the Management Services Director/designee..
9. All policies and certificates shall contain an endorsement providing that the coverage afforded under such policies shall not be reduced, canceled or allowed to expire until at least thirty (30) days prior written notice has been given to CITY.
10. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the CONSULTANT with reasonable promptness in accordance with the CONSULTANT's information and belief.

11. In the event that claims in excess of the insured amounts provided herein, are filed by reason of any operations under this contract, the amount of excess of such claims, or any portion thereof, may be withheld from payment due or to become due the CONSULTANT until such time as the CONSULTANT shall furnish such additional security covering such claims as may be determined by the CITY.

#### C.1 PROOF OF INSURANCE - CERTIFICATES OF INSURANCE

1. Prior to commencing work or services under this Agreement, CONSULTANT shall furnish to CITY Certificates of Insurance, issued by CONSULTANT's insurer(s), as evidence that policies providing the required coverages, conditions and limits required by this Agreement are in full force and effect and obtain from the City's Risk Management Division approval of such Certificates.
2. If a policy does expire during the life of this Agreement, a renewal certificate must be sent to the City of Chandler five (5) days prior to the expiration date.
3. All Certificates of Insurance shall identify the policies in effect on behalf of CONSULTANT, their policy period(s), and limits of liability. Each Certificate shall include the job site and project number and title. Coverage shown on the Certificate of Insurance must coincide with the requirements in the text of the contract documents. Information required to be on the certificate of Insurance may be typed on the reverse of the Certificate and countersigned by an authorized representative of the insurance company.
4. CITY reserves the right to request and to receive, within 10 working days, certified copies of any or all of the herein required insurance policies and/or endorsements. CITY shall not be obligated, however, to review same 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 CITY's right to insist on, strict fulfillment of CONSULTANT's obligations under this Agreement.

#### C.2 REQUIRED COVERAGE

1. Such insurance shall protect CONSULTANT from claims set forth below which may arise out of or result from the operations of CONSULTANT under this Contract and for which CONSULTANT may be legally liable, whether such operations be by the CONSULTANT or by a Sub-consultant or subconsultant or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Coverage under the policy will be at least as broad as Insurance Services Office, Inc., policy form CG00011093 or equivalent thereof, including but not limited to severability of interest and waiver of subrogation clauses.
2. Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
3. Claims for damages because of bodily injury, occupational sickness or disease, or death of the CONSULTANT's employees;
4. Claims for damages because of bodily injury, sickness or disease, or death of any person other than the CONSULTANT's employees;
5. Claims for damages insured by usual personal injury liability coverage;
6. Claims for damages, other than to Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

7. Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; Coverage will be at least as broad as Insurance Service Office, Inc., coverage Code "1" "any auto" policy form CA00011293 or equivalent thereof.
8. Claims for bodily injury or property damage arising out of completed operations;
9. Claims involving contractual liability insurance applicable to the CONSULTANT's obligations under the Indemnification Agreement;
10. Claims for injury or damages in connection with one's professional services;
11. Claims involving construction projects while they are in progress. Such insurance shall include coverage for loading and off loading hazards. If any hazardous material, as defined by any local, state or federal authorities are to be transported, MCS 90 endorsement shall be included.

#### C.2.1 Commercial General Liability - Minimum Coverage Limits

The Commercial General Liability insurance required herein shall be written for not less than \$1,000,000 limits of liability or ten percent (10%) of the Contract Price, whichever coverage is greater. Any combination between general liability and excess general liability alone amounting to a minimum of \$1,000,000 per occurrence (or 10% per occurrence) and an aggregate of \$2,000,000 (or 20% whichever is greater) in coverage will be acceptable. The Commercial General Liability additional insured endorsement shall be as broad as the Insurance Services, Inc.'s (ISO) Additional Insured, Form B, CG 20101001, and shall include coverage for CONSULTANT's operations and products, and completed operations.

#### C.2.2 General Liability - Minimum Coverage Limits

The General Liability insurance required herein, including, Comprehensive Form, Premises-Operations, Explosion and Collapse, Underground Hazard, Products/Completed Operations, Contractual Insurance, Broad Form Property Damage, Independent CONSULTANT's, and Personal Injury shall be written for Bodily Injury and Property Damage Combined shall be written for not less than \$1,000,000 or 10% of the contract cost and with a \$2,000,000 aggregate.

#### C.2.3 Automobile Liability

CONSULTANT shall maintain Commercial/Business Automobile Liability insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 each occurrence with respect to any owned, hired, and non-owned vehicles assigned to or used in performance of the CONSULTANT's work. Coverage shall be at least as broad as coverage code 1, "any auto", (Insurance Service Office, Inc. Policy Form CA 00011293, or any replacements thereof). Such insurance shall include coverage for loading and off loading hazards if hazardous substances, materials or wastes are to be transported and a MCS 90 endorsement shall be included with coverage limits of \$5,000,000 per accident for bodily injury and property damage.

#### C.2.4 Worker's Compensation and Employer's Liability

CONSULTANT shall maintain Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction over CONSULTANT's employees engaged in the performance of the work or services; and, Employer's Liability insurance of

not less than \$1,000,000 for each accident, \$1,000,000 disease coverage for each employee, and \$1,000,000 disease policy limit.

In case any work is subcontracted, CONSULTANT will require the subconsultant to provide Workers' Compensation and Employer's Liability to at least the same extent as required of CONSULTANT.

#### C.2.5 Professional Liability

CONSULTANT shall maintain Professional Liability insurance covering acts, errors, mistakes and omissions arising out of the work or services performed by DESIGN CONSULTANT, or any person employed by CONSULTANT, with a claims made policy limit of not less than \$1,000,000.