



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1399

AUG 13 2014

CESPD-DE

MEMORANDUM FOR Commander, Los Angeles District, ATTN: CESPL-PM-C, Mr. Brian Kenny

Subject: Rio Salado (Salt River) Environmental Restoration Project - McClintock Drive to Town Lake, Phase III, Tempe, Arizona, Review Plan Approval

1. The Rio Salado (Salt River) Environmental Restoration Project - McClintock Drive to Town Lake, Phase III, Tempe, Arizona, Review Plan that is enclosed is in accordance with Engineering Circular (EC) 1165-2-214, Review of Decision Documents, dated 15 Dec 2012. The South Pacific Division, Planning and Policy Division, Regional Business Technical Division, and Los Angeles District Support Team have reviewed the Review Plan that has been submitted. The South Pacific Division approves the Rio Salado (Salt River), Phase III, Tempe, Arizona, Review Plan.
2. With MSC approval the Review Plan will be made available for public comment via the internet and the comments received will be incorporated into future revisions of the Review Plans. The Review Plan excludes Independent External Peer Review Type II Safety Assurance Review (SAR).
3. I hereby approve the Review Plan which is subject to change as study circumstances require. This is consistent with study development under the Project Management Business Process. Subsequent revisions to the Review Plan after public comment or during project execution will require new written approval from this office.
4. Points of contact for this action are Mr. Marc J. Goodhue, CESPD-RBT, 415-503-6568, marc.j.goodhue@usace.army.mil and Mr. Paul Bowers, CESPD-PDC, 415-503-6556, paul.w.bowers@usace.army.mil.

BUILDING STRONG and Taking Care of People!

Encl


R. MARK TOY, P.E.
COL(P), EN
Commanding

REVIEW PLAN

Rio Salado (Salt River)
Environmental Restoration Project –
McClintock Drive to Town Lake
Phase III
Tempe, Arizona

Prepared by:

U.S. Army Corps of Engineers
Los Angeles District

Revised: August 1, 2014



REVIEW PLAN

RIO SALADO (SALT RIVER) ENVIRONMENTAL RESTORATION PROJECT -
McCLINTOCK DRIVE TO TOWN LAKE
PHASE III
TEMPE, ARIZONA

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REVIEW PLAN

Rio Salado (Salt River) Environmental Restoration Project – McClintock Drive to Town Lake Phase III Tempe, Arizona

August 1, 2014

1. INTRODUCTION.

A. Purpose. This Review Plan defines the scope and level of quality management activities for the Rio Salado (Salt River) Environmental Restoration Project – McClintock Drive to Town Lake, Phase III, in Tempe, Arizona.

B. References.

- (1) ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 Aug 1999
- (2) ER 1110-1-12, Engineering and Design Quality Management, 21 Jul 2006
- (3) WRDA 2007 H. R. 1495 Public Law 110-114, 8 Nov 2007
- (4) EC 1165-2-214, Civil Works Review, Water Resources Policies and Authorities, 15 Dec 2012
- (5) Army Regulation 15-1, Committee Management, 27 November 1992 (Federal Advisory Committee Act Requirements)
- (6) National Academy of Sciences, Background Information and Confidential Conflict Of Interest Disclosure, BI/COI FORM 3, May 2003

C. Review Requirements. This review plan was developed in accordance with EC 1165-2-214, which establishes the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision and implementation documents through independent review. This Review Plan describes the scope of review for the current phase of work. All appropriate levels of review (DQC, ATR, IEPR and Policy and Legal Review) will be included in this Review Plan and any levels not included will require documentation in the Review Plan of the risk-informed decision not to undertake that level of review. The RP identifies the most important skill sets needed in the reviews and the objective of the review and the specific advice sought, thus setting the appropriate scale and scope of review for the individual project.

2. PROJECT DESCRIPTION

A. Project Authority. The Rio Salado Project, Tempe, Arizona was authorized by Public Law 761, Seventy-fifth Congress, known as Section 6 of the Flood Control Act of 1938 and appropriated under the 1994 Senate Energy and Water Development Bill. Public Law 761 provides that \$56,355,000 in Federal funds is authorized for this project.

B. Location and Description. The Phase III project area includes the north and south banks of the Rio Salado in the reach from Tempe Town Lake's east dam and extends upstream/east to McClintock Drive. The Phase 3 project area also includes a small portion of Indian Bend Wash from where it ties into the Rio Salado to approx. 350-feet upstream. See Exhibit 1.

In 2008 Phase III construction plans and specifications (P/S) were prepared by Architect-Engineer (A/E) McGann/Novak under contract number DACW09-00-D-0006, Task Order number 0001, Mod No 06, 07 and 08 and approved by USACE Los Angeles District (refer to Appendix A). Construction of Phase III was delayed due to highway construction affecting the north bank and Indian Bend portion of the project. In 2009, a Performance Oriented Construction Action (POCA) contract was used to construct the south banks portion of the Phase III project. Construction was completed November 2010. The District is ready to complete construction of the remaining portions of the Phase III project and per recommendations from the 2011 Rio Salado Tempe Special Report (Appendix B), additional native plants will be included where feasible along the north bank.

3. PROJECT HISTORY

The Salt River (Rio Salado) is a significant tributary to the Gila River in the State of Arizona. The river originates in the White Mountains in eastern Arizona and flows westward through the metropolitan area to its confluence with the Gila River, approximately 12 miles west of downtown Phoenix.

Historically, the Salt River was a perennial stream fed by snowfall from the mountains to the east and the highlands to the northwest. Cottonwoods and willows and various species of mesquite covered hundreds of miles along the Salt River and are considered representative of the natural "climax" species for this area. Beginning in the early 1900's, the historical conditions of the river were radically altered by man-made activities. The most significant of these was the U.S. Bureau of Reclamation's Salt River Project, in which a series of dams in the Salt and Verde watersheds were built. The Indian Bend Wash flood control project, completed in 1982, also changed and controlled the flow of water into the river. Channelization, sand and gravel mining adjacent to

the river channel, and landfills within and along riverbanks have affected the river and its wildlife.

Due to the dams and diversions, perennial flows in the Salt River have ceased. The natural condition of the river has been drastically degraded compared to historic conditions. The elimination of natural base flows in recent decades has caused the groundwater table beneath the river to drop, resulting in the death of much of the river's cottonwood-willow river ecosystem. Until recently, most areas of the Salt River were barren or contained mainly non-native species, such as salt cedar. The dense riparian vegetation and abundant wildlife that historically characterized the Salt River in Tempe—mesquite habitat, cottonwood-willow riparian forest, and 3 fresh-water marsh—is now relegated to small, widely-spaced areas where local runoff or treatment plant discharge have provided opportunities for small stands of vegetation. This underlines the significance of several ecosystem restoration projects planned and being constructed along the Salt River.

The first construction contract for the authorized Corps of Engineers' Rio Salado Ecosystem Restoration Project in Tempe was awarded in 2002 for initial debris removal. A/E consultant team McGann & Associates / Novak Environmental Inc. - Joint Venture prepared construction documents for Phases I, II, & III. Construction of Phases I and II was completed in 2005. Construction of Phase III's south bank improvements was completed in 2010.

The Rio Salado Tempe phases are as follows:

Phase I – Indian Bend Wash

The Indian Bend Wash from Tempe Town Lake's east dam to McKellips Road serves as the initial phase of the three restoration areas. South of Curry Road the project has reestablished a riparian forest dominated by a combination of cottonwood and willow trees.

This plant community is typically found along the edge of the active streambeds. The understory includes desert broom, elderberry, and other native plants. Small wetland marsh areas are established with a mix of emergent vegetation and open water ponds. The edges outside of the cottonwood-willow habitat transition to mesquite bosque habitat dominated by honey, velvet or screwbean mesquite trees and elderberry, greythorn, and wolfberry used in the understory. The central channel of the Indian Bend Wash (Rio Salado Golf Course), contain mesquite bosque habitat plantings.

Multi-use paths provide visual and pedestrian access along the outer edges of the project. A system of signage and an overlook ramada are for use by pedestrians and bicyclists on the multi-use path, but entrance into the habitat is not permitted.

Phase II – Rio Salado Tempe – Downstream Reach

The Rio Salado Tempe – Downstream Reach has allowed the City of Tempe to extend the habitat value of the lake by creating a natural riparian habitat for the west end of Town Lake to Priest Road. Drought-tolerant plants, flowering shrubs and native trees were used to create a dramatic park environment. As portions of the habitat lie within 10,000 feet of Sky Harbor Airport, the needs of wildlife have been balanced with the need for aviation safety.

The Phase II habitat highlights the balance between the connection of landscape and community development. The habitat connects nature by creating migration corridors and connects people through surrounding communities while promoting healthy multi-model activity. Amenities include multi-use paths outside of the habitat, viewing areas for watching animals, ramadas, picnic areas, and interpretive signs detailing the types of trees and vegetation that can be found along the lake edge.

Phase III – Rio Salado Tempe - Upstream Reach

In the area upstream of Tempe Town Lake, the project was planned to establish a forested cottonwood/willow corridor on the north and south banks of the Rio Salado, with open water/wetland marsh interspersed with open space for flow conveyance. In 2008, A/E consultant team McGann & Associates / Novak Environmental Inc. - Joint Venture completed the Phase III construction documents (Appendix A) which included multi-use paths to run parallel to the corridor on both banks of the river, an overlook/rest stop at McClintock Road along the south bank, native plantings, lighting, irrigation.

In 2009, construction began, but due to highway construction activities affecting the project's north bank, only the south bank portion of the project was constructed and completed in 2010 (multi-use path, overlook/rest stop, lighting, native plantings along path). In addition, due to continuous water inundation in the river bottom, only a portion of the originally planned native plantings were planted.

In 2011, due to the water inundation in the river bottom portion of the Phase III project, the Rio Salado Tempe Special Report, Post-Authorization Change was completed and approved, (see Appendix B). In the report Alternative 4 was selected. Alternative 4 is the same design which was already completed and approved in the 2008 Phase III construction documents with the exception that additional habitat plantings will be included wherever possible on the north bank and overbank. The report also recognized that feasible planting locations is limited because of water inundation in the river, and the Arizona Department of Transportation's planting restrictions on the slopes that protect the highway.

Tempe Town Lake

Tempe Town Lake was not constructed as part of the Corps of Engineers' Rio Salado Ecosystem Restoration Project. The lake was completed in 1999 by the City of Tempe. It uses inflatable rubber barriers in the riverbed both upstream and downstream of the lake to confine water within its boundaries. It is nearly 2 miles long, with an average surface area of 224 acres, and an average depth of 13 ft, for a total average volume of approximately 2912 acre-feet. The maximum depth of the lake reaches 19 ft.

The lake was initially filled with water purchased from the Central Arizona Project. Annual evaporation losses average 1,388 acre-feet per year and are compensated through additional purchase of CAP water, exchanges of reclaimed water, and long-term storage credits. Seepage losses are virtually nil due to a system that recaptures virtually all seepage and pumps it back into the lake.

4. WORK PRODUCTS.

A. Description of Work Products. The work products for this project include a Plans and Specifications (P&S), Design Document Report (DDR), and an Operation and Maintenance (O&M) manual.

1. Plans and Specifications – The P&S for Phase III has already been developed by McGann & Associates, Inc. / Novak Environmental Inc. and approved in 2008 for construction.
2. Design Documentation Report - CESPL-ED will prepare the DDR. The DDR will include the basis of design of construction P/S. An estimate of the construction cost will also be included.
3. Operation and Maintenance Manual – CESPL-ED will prepare the O&M Manual. The O&M Manual will consist of maintenance procedures for planting and irrigation, and routine maintenance of the multi-use trail.

B. Required Level of Review

1. The P&S are implementation documents. The P&S for the project will not undergo further DQC and ATR due to prior technical reviews completed in accordance with the District Quality Management Plan for Independent Technical Review, (Appendices C and E). Applicable portions of the P&S for the remaining project, however, will be validated to be consistent with the original Independent Technical Review in

accordance with the District Quality Management Plan. A risk informed decision has been made not to undergo a Type II Independent External Peer Review (Type II IEPR) as documented in section 5F – Scope of Review.

2. The DDR is an implementation document. The DDR will undergo District Quality Control (DQC) and Agency Technical Review (ATR). A risk informed decision has been made not to undergo a Type II Independent External Peer Review (Type II IEPR) as documented in section 5F – Scope of Review.
3. The O&M manual is an implementation document. The O & M manual for the project will undergo DQC and ATR. A risk informed decision has been made not to undergo a Type II Independent External Peer Review (Type II IEPR) as documented in section 5F – Scope of Review

5. SCOPE OF REVIEW. McGann & Associates, Inc. / Novak Environmental Inc. / Joint Venture under contract no. DACW09-00-D-0006, Task Order No. 0001, Modifications No. 06, 07, & 08 completed the plans and specifications (P&S) for the originally authorized Rio Salado (Salt River) Environmental Restoration Project- McClintock Drive to Town Lake, Phase III, Tempe, Arizona. The quality control activities appropriate to the level of risk and complexity inherent in the product have been completed. Documentation of the quality control process is enclosed (Appendix E). The A/E and project delivery team had reviewed the Phase III plans and specifications for technical and functional adequacy. The P&S have been revised in response to the comments provided by the review team. In 2008, the plans and specifications were approved for construction. In 2009 a construction contract was awarded and construction of the south banks was completed in 2010. The remaining portion of the project is ready for construction.

A. AE Quality Control Activities.

A general Quality Control Plan (QCP) was developed for the P&S and DDR which describes the procedure that was implemented to assure quality control. The QCP included the breakdown of the responsibilities of each member of the A/E design staff. The QCP was in accordance with the USACE regulation CESP R 1110-1-8 Quality Management Plan and the guidance provided by USACE-LAD. A copy of the general QCP is included in Appendix E.

B. Plans and Specifications, District Quality Management Activities

The Los Angeles District of the Corps of Engineers reviewed the draft and final P&S design documents. Design, cost, and construction engineers provided Quality Assurance reviews on the

AE design from the standpoint of design adequacy and compliance to USACE standards, contracting and managing the construction of this project.

C. Plans & Specifications, Local Agencies Review

The following agencies performed reviews of the P&S for project consistency, adequacy and compliance to local permit requirement:

The City of Tempe, Arizona

Maricopa County Flood Control District, Arizona

D. District Quality Control Activities. DQC activities for the O&M manual and DDR will consist of Quality Checks and Reviews, Supervisory Reviews, PDT Review, including input from the Non-Federal Sponsor as required by the District's Quality Management Plan, CESPL OM 1105-1-2.

E. USACE Agency Technical Review.

Based on the A/E Quality Control activities and District Quality Management activities already performed, it is the Los Angeles District's conclusion that the existing 2008 Plans and Specifications for construction of the remaining portion of the Phase III project's multi-use trail and habitat restoration do not require an USACE Agency Technical Review.

An external Agency Technical Review to be managed by the Los Angeles District will be required for the Design Documentation Report and Operation and Maintenance (O&M) manual for Rio Salado (Salt River), Environmental Restoration Project – McClintock Drive to Town Lake, Phase III, Tempe Arizona will be required. The documents will be developed by USACE Los Angeles District.

The ATR team will review the DDR and O&M Manual. A brief description of the points of emphasis for each document is below, followed by general review guidelines for the ATR team

1. Emphasis of Review for Work Products.

- (a) When reviewing the O&M Manual and DDR, the ATR team should verify that the requirements adequately maintain the conditions assumed during design and validated during construction and verify that the project monitoring will adequately reveal any deviations from the assumptions made for performance.

- (b) When reviewing the DDR, the ATR team should verify that it is sufficiently detailed for each technical specialty. In this way, the criteria which were used, the critical assumptions which were made, and the analytical methods which were used will be evident for the purpose of review and historical documentation. Verify that it contains summaries of important calculations results and selected example calculations for all critical elements of the design.
- (c) When reviewing the O&M manual and DDR, The ATR team should verify that the requirements adequately maintain the conditions assumed during design and validated during construction and verify that the project monitoring will adequately reveal any deviations from the assumptions made for performance.
- (d) General Review Guidelines. ATR is undertaken to “ensure the quality and credibility of the government’s scientific information” in accordance with ER 1110-1-12 and EC 1165-2-214. The review shall focus on compliance with established policy, principles, and procedures using clearly justified and valid assumptions. It includes the verification of assumptions, methods, procedures, and material used in analyses based on the level of complexity of the analysis. The ATR should verify the alternatives evaluated, appropriateness of data used, level of data obtained, functionality of the project and verify the reasonableness of the results including whether the project meets the customer’s needs, consistent with law and existing policy and engineering and scientific principles. The ATR should also determine if the proposed project is feasible, safe, functional, constructible, and environmentally sustainable within the Federal interest, and whether the concepts and project costs are valid. The final review will confirm whether all relevant engineering and scientific disciplines have been effectively integrated and that the content is sufficiently complete for the current phase of the project.

2. ATR Team Responsibilities.

- (a) Reviewers shall review project design documents to confirm that the work was done in accordance with established professional principles, practices, codes, and criteria and for compliance with laws and policy. Comments on

the design documents shall be submitted into Document Review and Checking System (DrChecks).

- (b) Reviewers shall pay particular attention to one's discipline but may also comment on other aspects, as appropriate. Reviewers that do not have any significant comments pertaining to their assigned discipline shall provide a comment stating this.
- (c) Grammatical and editorial comments shall not be submitted into DrChecks. Comments should be submitted to the ATR manager via electronic mail using tracked changes feature in the Word document or as a hard copy mark-up. The ATR manager shall provide these comments to the Study Manager.
- (d) Structure of review comments will be described in the charge.
- (e) The "Critical" comment flag in DrChecks shall not be used unless the comment is discussed with the ATR manager and/or the Technical Project Leader first.

3. PDT Responsibilities.

- (a) The PDT shall review comments provided by the ATR team in DrChecks and provide responses to each comment using "*Concur*", "*Non-Concur*", or "*For Information Only*". *Concur* responses shall state what action was taken and provide revised text from the report, if applicable. *Non-Concur* responses shall state the basis for the disagreement or clarification of the concern and suggest actions to negotiate the closure of the comment. Team members shall contact the PDT and ATR managers to discuss any "Non-Concur" responses prior to submission.

F. Independent External Peer Review. EC 1165-2-214 requires that a Type II IEPR (also known as a Safety Assurance Review) shall be conducted for any project addressing hurricane and storm risk management or flood risk management or any other project where the Federal action is justified by life safety or the failure of the project would pose a significant threat to human life.

Other factors to consider for conducting a Type II review of a project or components of a project are:

1. The project involves the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices;
2. The project design requires redundancy, resiliency, and robustness.
 - (a) Redundancy. Redundancy is the duplication of critical components of a system with the intention of increasing reliability of the system, usually in the case of a backup or failsafe.
 - (b) Resiliency. Resiliency is the ability to avoid, minimize, withstand, and recover from the effects of adversity, whether natural or manmade, under all circumstances of use.
 - (c) Robustness. Robustness is the ability of a system to continue to operate correctly across a wide range of operational conditions (the wider the range of conditions, the more robust the system), with minimal damage, alteration or loss of functionality, and to fail gracefully outside of that range.
3. The project has unique construction sequencing or a reduced or overlapping design construction schedule; for example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems.

The Rio Salado (Salt River) Environmental Restoration Project – McClintock Drive to Town Lake, Phase III, Tempe, Arizona project is an environmental restoration project with a multi-use path and is not being constructed for the purposes of hurricane and storm risk management or flood risk management. The project is not justified by life safety. The failure of the project is not likely to pose a significant threat to human life. The project does not involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices. The project design does not require redundancy, resiliency, and robustness. The project does not have unique construction sequencing or a reduced or overlapping design construction schedule.

Therefore, the Los Angeles District Chief of Engineering Division has concluded that the Plans and Specifications, Design Documentation Report, and O&M Manual for the Rio Salado (Salt River) Environmental Restoration Project – McClintock Drive to Town Lake, Phase III, Tempe, Arizona, multi-use path and habitat restoration do not require a Type II Independent External Peer Review.

6. REVIEW TEAM In addition to the A/E's own independent reviewers, the PDT team that reviewed the design for the Rio Salado (Salt River) Environmental Restoration Project – McClintock Drive to Town Lake, Phase III, Tempe, Arizona, consisted of multiple agencies and their staff from engineering, utilities, and maintenance departments and SPL staff from Engineering, Planning, and Construction divisions. A list of the review team members from each agency and a brief description of their technical discipline or expertise used during the review can be found in Appendix D.

The District Quality Control (DQC) Review Team and the Agency Technical Review (ATR) Team will be required to review the Design Documentation Report and O&M Manual for the Rio Salado (Salt River) Environmental Restoration Project – McClintock Drive to Town Lake, Phase III, Tempe, Arizona. The plans and specification have already gone through an Independent Technical Review (ITR) and do not require any further review.

A. USACE Agency Technical Review (ATR) Team. The ATR team will be established per ER 1110-1-12 and EC 1165-2-214. The Corps will manage the ATR internally and it will be conducted by individuals and organizations that are separate and independent from those that accomplished the work, in accordance with policy. As discussed with the RMO, the PDT will assemble the ATR team and request RMO support, if necessary. The RMO will procure the ATR Lead. The major subordinate command (MSC) is the RMO for this project. ATR members will be sought from the following sources: regional technical specialists (RTS); appointed subject matter experts (SME) from other districts; senior level experts from other districts; Center of Expertise staff; appointed SME or senior level experts from the responsible district; experts from other Corps commands; contractors; academic or other technical experts; or a combination of the above. Special emphasis will be put on the Wastewater Engineer team positions since the most critical component of the project is the sewer line extension. All ATR reviewers in engineering and construction disciplines will need to be certified in Corps of Engineers Reviewer Certification and Access Program (CERCAP). The ATR Team Leader will be a Corps of Engineers employee outside SPD.

The disciplines and required experience for the ATR team are included below.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead should also serve as a reviewer for a specific discipline.
Civil Engineering	The team member should have 10 or more years experience with civil/site work projects to include design and evaluation of site grading, drainage, shallow foundations, retaining walls and utility connections.
Landscape Architecture	The team member should have 10 or more years experience as a landscape architect with experience in the evaluation and design of irrigation systems, pedestrian circulation and site development.
Environmental Resources	The team member should have 10 or more years experience in environmental resources with experience evaluating ecosystem restoration features in flood control channels.
Hydrologic & Hydrologic Engineer	The team member should have 10 or more years experience in conducting and evaluating hydrologic and hydraulic analyses for flood risk management projects involving ecosystem restoration features. The panel member should be experienced in Local Flood Damage Reduction Projects including levees; floodwalls; gravity outlets; lined and unlined flood control channels and improvement structures.
Cost Engineer	The team member should have 10 or more years experience in evaluating cost estimates for ecosystem restoration features in flood control channels.

7. PUBLIC COMMENT To ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the Federal Government, this Review Plan will be published on the district’s public internet site following approval by SPD at http://spl.usace.army.mil/review_plans . This is not a formal comment period and there is no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary. The public is invited to review and submit comments on the plan as described on the web site.

8. SCHEDULE AND FUNDING

A. The project schedule is shown below.

Rio Salado (Salt River) Environmental Restoration Project –Plans and Specifications
 McClintock Drive to Town Lake, Phase III, Tempe, Arizona

Final P&S Package	19-Jun-2008
Complete QA Back Check Review	19-Jun-2008
Review Plan Approved by RMO (SPD)	Jul-2014
QC/QA Certification by SPL	19-Jun-2008
BCOE Certification Complete	19-Jun-2008
Approve Plans and Specifications	19-Jun-2008
Request Proposal from Contractor	10-Jul-2014
Construction Contract Award	10-Sep-2014

Rio Salado (Salt River) Environmental Restoration Project –DDR & O&M manual
 McClintock Drive to Town Lake, Phase III, Tempe, Arizona

District Quality Control review	1-Sep-2014
Agency Technical Review	1-Nov-2014

B. Funding. It is anticipated that the total cost for the review efforts described in this plan will be approximately \$65,000. SPL will provide labor funding by cross charge labor codes. Funding for travel, if needed, will be provided by way of a government order. The Project Manager will work with the DQC and ATR team leaders to ensure that adequate funding is available and is commensurate with the level of review needed. Any funding shortages will be negotiated on a case by case basis and in advance of a negative charge occurring.

The DQC and ATR team leaders shall provide organization codes for each team member and a responsible financial point of contact (CEFMS responsible employee) for creation of labor codes. Reviewers shall monitor individual labor code balances and alert the DQC and ATR team leaders to any possible funding shortages. No additional costs for plan and specification reviews are anticipated.

The funds needed for the DQC Team and ATR Team are listed below.

DQC Review of O&M and DDR	\$35,000
ATR Review of O&M and DDR	\$30,000

9. DOCUMENTATION OF REVIEW

A. DQC and ATR Documentation for the O&M Manual and DDR. DrChecks review software will be used to document all DQC and ATR comments, responses and associated resolutions accomplished through the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

1. The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures.
2. The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed.
3. The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability.
4. The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The DQC and ATR documentation in DrChecks will include the text of each concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an DQC or ATR concern cannot be satisfactorily resolved between the DQC or ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-2-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

B. DQC and ATR Reports. At the conclusion of each review effort, the DQC and ATR teams will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

1. Identify the document(s) reviewed and the purpose of the review.
2. Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer.
3. Include the charge to the reviewers.

4. Describe the nature of their review and their findings and conclusions.
5. Identify and summarize each unresolved issue (if any).
6. Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

C. DQC and ATR Certification. To fully document the DQC and ATR process, a statement of technical review will be prepared for each product reviewed. The DQC and ATR documentation will include the text of each comment, the PDT response, a brief summary of the pertinent points in the ensuing discussion, including any vertical coordination, and the agreed upon resolution. Certification by the DQC and ATR team leaders and the Technical Project Leaders will occur once issues raised by the reviewers have been addressed to the review team's satisfaction. Indication of this concurrence will be documented by the signing of a certification statement.

D. Plans and Specifications. The District Quality Control activities for the Rio Salado (Salt River) Environmental Restoration Project – McClintock Drive to Town Lake, Phase III, Tempe, Arizona for the construction P&S documents were completed under the previous Corps of Engineers Quality Management policy for Independent Technical Review. The team independently submitted their review comments to the District Quality Control Manager who submitted them to the A/E. The A/E documented the review comments, responses and resolutions. Reviewers were responsible for backchecking the A/E's responses to the review comments. It is also noted that the A/E was required to have all the design drawings stamped by a registered professional engineer. (Appendix A)

In addition, a District Engineer's Quality Control Certification was prepared to document completion of quality control review and any issues have been addressed to the review team's satisfaction. Indication of this concurrence was documented by the signing of a quality assurance certification statement by the Review Team Leader which states that the PDT team concurs with the project design and that it is ready for advertising. (Appendix C)

10. POINTS OF CONTACT Questions about this Review Plan may be directed to the Los Angeles District Project Delivery Team Lead, Ms. Sandra Willis at (213) 452-3638, or to the Phase III, Project Manager, Mr. Brian Kenny at (602) 230-6934. The Chief of the Engineering Division is Mr. Richard J. Leifield at (213) 452-3629. Inquiries to the MSC should be directed

to Mr. Paul Bowers at (415) 503-6556.

11. REVIEW PLAN APPROVAL The Los Angeles District recommends that further technical reviews, including the District Quality Control Review and Agency Technical Review, are not warranted for the Plans and Specifications for construction of remaining portion of the Rio Salado (Salt River) Environmental Restoration Project – McClintock Drive to Town Lake, Phase III, Tempe, Arizona project. The District Quality Control and the Independent Technical Review activities already completed for the original Plans and Specifications are adequate and appropriate. Applicable portions of the P&S for the remaining project, however, will be validated to be consistent with the original Independent Technical Review in accordance with the District Quality Management Plan. In addition, the Los Angeles District recommends that a Type II Independent External Peer Review (Safety Assurance Review) is not required for the Plans and Specifications.

The District further recommends that a District Quality Control Review and Agency Technical Review be performed for the Design Documentation Report and for the Operation & Maintenance Manual. District acknowledges that comments from the Agency Technical Review could potentially result in the need to revise the Plans and Specifications. The District also recommends that a Type II Independent External Peer Review (Safety Assurance Review) is not required for the Design Documentation Report and for the Operation & Maintenance Manual.

The Los Angeles District requests that the South Pacific Division endorse the above recommendations and approve this Review Plan which was prepared in accordance with EC 1165-2-214.

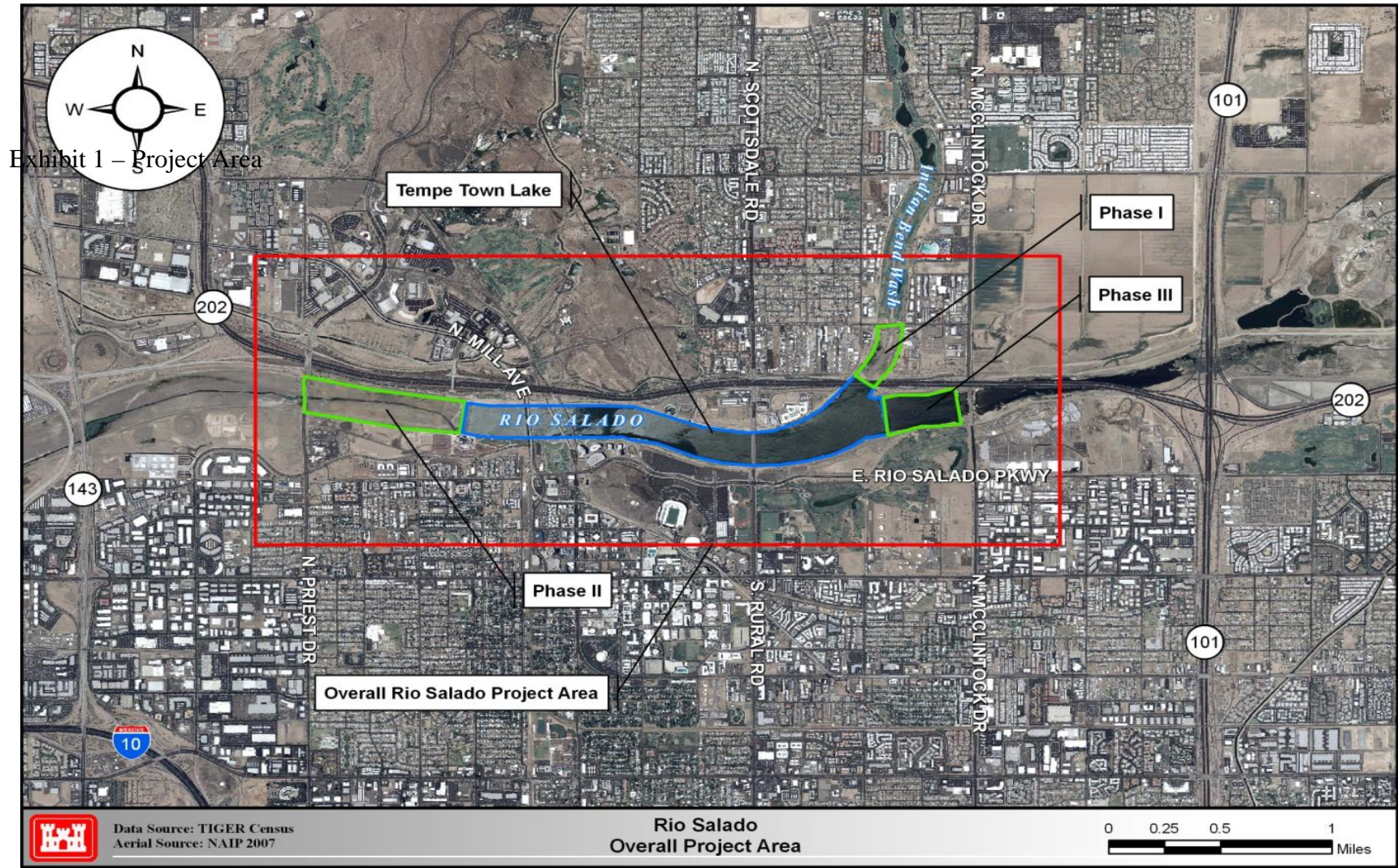


Exhibit 1 – Project Location

Appendix A

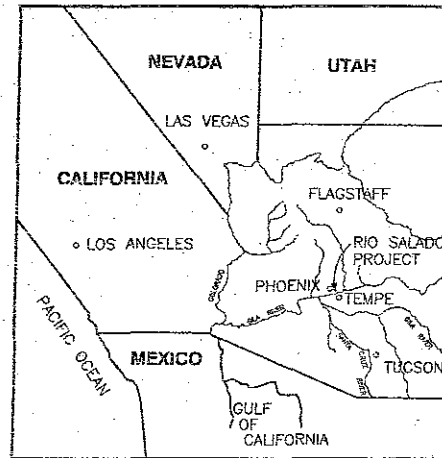
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RIO SALADO (SALT RIVER), TEMPE, ARIZONA Environmental Restoration Project - McClintock Drive to Town Lake PHASE 3 June 2008

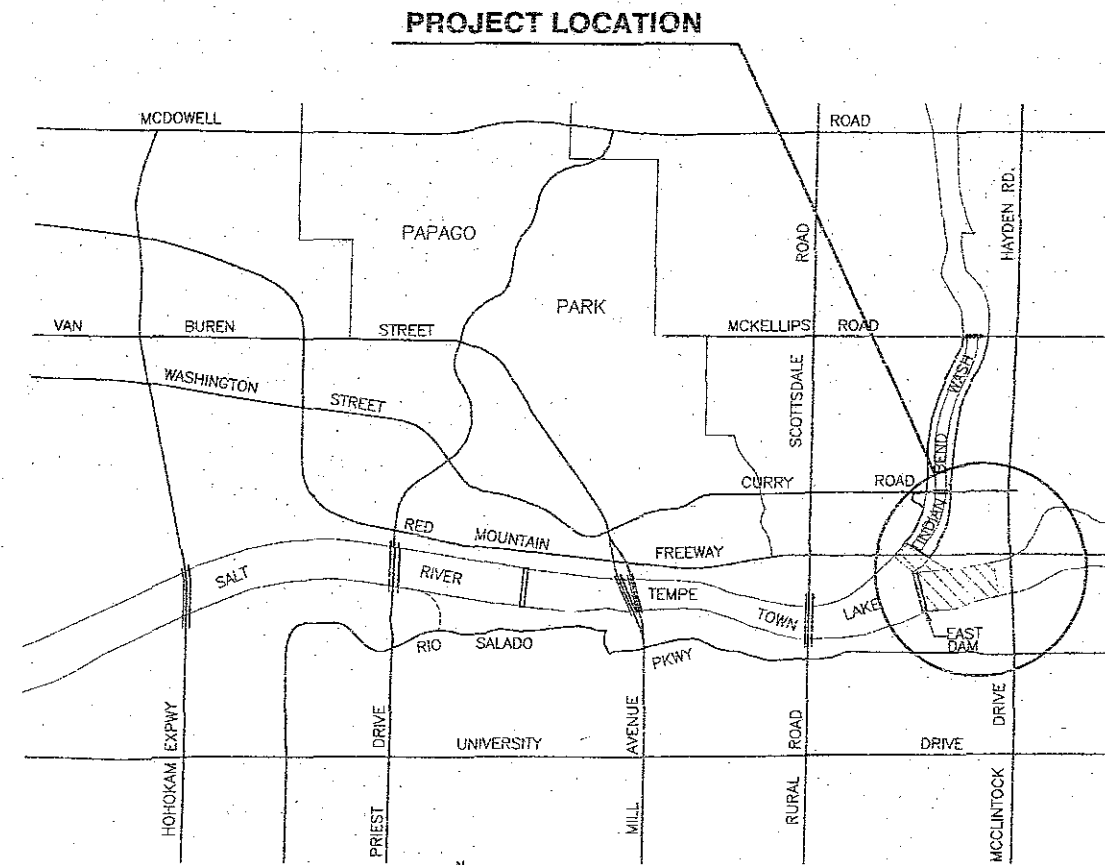
LIST OF ABBREVIATIONS

A.B.C.	AGGREGATE BASE COURSE	MAX.	MAXIMUM
A.C.	ASPHALTIC CONCRETE	MCJ	MASONRY CONTROL JOINT
A.C.O.E.	U.S. ARMY CORPS OF ENGINEERS	M.H.	MANHOLE
APPROX.	APPROXIMATE	MIN.	MINIMUM
ARV	AIR RELIEF VALVE	MJ	MECHANICAL JOINT
B.M.	BENCH MARK	MM	MILLIMETER
C	CUT	N.E.C.	NATIONAL ELECTRIC CODE
C	RUNOFF COEFFICIENT	N.T.S.	NOT TO SCALE
C-C-C	CUT (LIMIT OF CUT)	O.C.	ON-CENTER
C.F.	CUBIC FEET	O.D.	OUTSIDE DIAMETER
C.F.S.	CUBIC FEET PER SECOND	O.H.E.	OVERHEAD ELECTRIC LINE
C.I.	CAST IRON	P	PAVEMENT (PAVEMENT ELEVATION)
C.L.	CENTERLINE	PAV/MT.	PAVEMENT
C.M.P.	CORRUGATED METAL PIPE	PC	POINT OF CURVATURE
C.M.U.	CONCRETE MASONRY UNIT	P.L.	PROPERTY LINE
C.O.T.	CITY OF TEMPE	P.S.I.	POUNDS PER SQUARE INCH
C.Y.	CUBIC YARD	PVC	POLYVINYL CHLORIDE
DIA	DIAMETER	PT	POINT OF TANGENCY
D.I.P.	DUCTILE IRON PIPE	PVC	POINT OF VERTICAL CURVATURE
EA	EACH	PM	POINT OF VERTICAL INTERSECTION
EL.	ELEVATION	PVT	POINT OF VERTICAL TANGENCY
ELEC.	ELECTRIC	R.C.P.	REINFORCED CONCRETE PIPE
ELEV.	ELEVATION	RCV	REMOTE CONTROL VALVE
ENG.	ENGINEER	REQ'D.	REQUIRED
EX.	EXISTING	RIM EL.	RIM ELEVATION
F	FREEBORD	R.O.W.	RIGHT-OF-WAY
FH	FIRE HYDRANT	RT	RIGHT-OF-WAY
FS	FINISHED SURFACE	R/W	RIGHT
FT.	FOOT	S	SEWER (SANITARY SEWER PIPE)
GA	GAUGE	SCH40	SCHEDULE 40
GAZ.	GALLON (CONTAINER SIZE)	S.F.	SQUARE FEET
GAS	GAS (BURIED GAS LINE)	SHT.	SHEET
GS	GRADE BREAK	SPEC(S)	SPECIFICATIONS
GPH	GALLONS PER HOUR	SQ	SQUARE
GRND.	GROUND	SS	STAINLESS STEEL
I.D.	INSIDE DIAMETER	STA.	STATION
I.E.	INVERT ELEVATION	STD.	STANDARD
IN.	INCH	STL.	STEEL
INV.	INVERT	S.Y.	SQUARE YARD
IRR.	IRRIGATION	S.S.	STAINLESS STEEL
LBS	POUNDS	T.C.	TOP-OF-CURB
L.F.	LINEAR FOOT	TEL.	TELEPHONE
LFT	LEFT	T.F.	TOP-OF-FOOTING
LSL	LEVEL SENSOR - LOW	T.W.	TOP-OF-WALL
LSH	LEVEL SENSOR - HIGH	TYP.	TYPICAL
		UNK.	UNKNOWN
		U.N.O.	UNLESS NOTED OTHERWISE
		V	VOLTS
		VAC	VOLTS ALTERNATING CURRENT
		VCP	VITRIFIED CLAY PIPE
		W	WATER (BURIED WATER LINE)
		W.S.E.	WATER SURFACE ELEVATION
		YD.	YARD

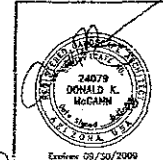
SEE SHEET E1 FOR ELECTRICAL SYMBOLS AND ABBREVIATIONS



VICINITY MAP
NOT TO SCALE



PROJECT LOCATION
NOT TO SCALE



THIS PROJECT WAS PREPARED UNDER THE SUPERVISION OF THE DISTRICT ENGINEER, LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS. THE DESIGN AND CONSTRUCTION RESPONSIBILITIES OF THE DISTRICT ENGINEER ARE LIMITED TO THE SCOPE OF HIS EMPLOYMENT.

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES
CORPS OF ENGINEERS
SUBMITTED BY:
NOVAR ENVIRONMENTAL, INC.
4074 N. 44th Street, Suite 100
Phoenix, AZ 85018
Phone: 602-998-0881 Fax: 602-998-0882
PREPARED UNDER THE DIRECTION OF:
THOMAS H. JACQUES, IV
DISTRICT FILE NO. 24-1/081
DATE: 09/20/2008

SYMBOL	DESCRIPTIONS	DATE	APPROVAL

RIO SALADO (SALT RIVER), TEMPE, ARIZONA
ENVIRONMENTAL RESTORATION PROJECT
MCCLINTOCK DRIVE TO TOWN LAKE
COVER SHEET



DRAWING INDEX

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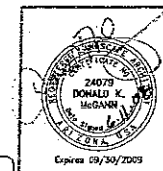
SYMBOL	DESCRIPTIONS	DATE	APPROVAL

RIO SALADO (SALT RIVER), TEMPE, ARIZONA
 ENVIRONMENTAL RESTORATION PROJECT
 MCCLINTOCK DRIVE TO TOWN LAKE
 DRAWING INDEX

DATE	BY	DATE	BY

U.S. ARMY ENGINEER DISTRICT
 LOS ANGELES
 CORPS OF ENGINEERS
 APPROVED BY: ROBERT L. KOPLIN, P.E.
 CIVIL ENGINEERING DIVISION
 FILE NAME: e183000.dwg

McGOWN & ASSOCIATES
 NOVAK JOINT VENTURE
 2407 S. DONALD K. McDAVIA
 LOS ANGELES, CALIF. 90058-2505
 PREPARED UNDER THE DIRECTION OF:
 THOMAS H. MAGNESS, IV
 COL. CEE. SPT. COMMANDER
 DISTRICT FILE NO. 244/382



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G-2

2 OF 56 SHEETS

GENERAL NOTES:

SITE ACCESS:

- ACCESS TO THE INDIAN BEND WASH EAST BANK, THE SALT RIVER NORTH BANK, AND THE SALT RIVER SOUTH BANK WORK AREAS SHALL BE AS APPROVED BY THE CITY OF TEMPE AND THE CONTRACTING OFFICER. TRAFFIC CONTROL AT POINTS OF ACCESS SHALL BE IN ACCORDANCE WITH THE APPROVED TRAFFIC CONTROL PLAN.

CONTRACTOR STAGING AREA:

- A STAGING/FIELD OFFICE AREA SHALL BE MADE AVAILABLE TO THE CONTRACTOR BY THE CITY OF TEMPE ON CITY OWNED PROPERTY WITHIN 1/2 MILE OF THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL OFFICE AND STORAGE TRAILERS, FENCING, UTILITIES AND OTHER TEMPORARY IMPROVEMENTS AND FACILITIES AS MAY BE NEEDED FOR THE PROJECT. THE FIELD OFFICE SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

GENERAL DESCRIPTION - SCOPE OF PROJECT WORK:

- THE SCOPE OF WORK ASSOCIATED WITH THIS PROJECT INCLUDES, BUT IS NOT LIMITED TO:
 - THE CONSTRUCTION OF A NEW PORTLAND CEMENT CONCRETE MULTI-USE PATH WITHIN INDIAN BEND WASH (IBW) AND ALONG THE NORTH BANK OF THE SALT RIVER BETWEEN THE IBW AND MCCLINTOCK DRIVE.
 - THE PREPARATION OF ENGINEERED SHOP DRAWINGS AND THE CONSTRUCTION OF A SEGMENTAL CONCRETE BLOCK RETAINING WALL.
 - THE CONSTRUCTION OF A NEW PORTLAND CEMENT CONCRETE MULTI-USE PATH ALONG THE SOUTH BANK OF THE SALT RIVER BETWEEN THE PROPOSED PIER 202 PROJECT AND MCCLINTOCK DRIVE.
 - THE CONSTRUCTION OF A NEW ENTRY PLAZA ON THE SOUTH BANK OF THE SALT RIVER WEST OF MCCLINTOCK DRIVE.
 - THE INSTALLATION OF AREA LIGHTING WITHIN THE SOUTH BANK ENTRY PLAZA AREA.
 - THE INSTALLATION / MODIFICATION / REPLACEMENT OF FENCES AND GATES AS NOTED ON THE PROJECT PLANS.
 - THE INSTALLATION OF SAFETY FENCES, DECORATIVE METAL FENCES, AND ACCESS CONTROL BOLLARDS.
 - THE INSTALLATION OF SAFETY RAILS ADJACENT TO THE NEW MULTI-USE PATH(S) AS SHOWN ON THE PROJECT PLANS.
 - THE INSTALLATION OF NEW WATER SERVICES FOR IRRIGATION AND NEW ELECTRICAL / TELEPHONE SERVICES FOR IRRIGATION CONTROL SYSTEMS.
 - THE INSTALLATION AND TESTING OF IRRIGATION CONTROL VALVES, LATERAL LINES, AND DRIP EMITTERS AS SHOWN ON THE PROJECT PLANS.
 - THE INSTALLATION OF TREES, SHRUBS, AND OTHER PLANTS AS SHOWN ON THE PROJECT PLANS.
 - THE HYDROSEEDING OF DESIGNATED AREAS AS SHOWN ON THE PROJECT PLANS.
 - THE INITIAL OPERATION AND MAINTENANCE OF THE PROJECT LANDSCAPE, IRRIGATION, AND OTHER IMPROVEMENTS.

PROTECTION OF EXISTING FLOOD CONTROL IMPROVEMENTS:

- ALL EXISTING FLOOD CONTROL IMPROVEMENTS SHALL BE PROTECTED DURING PROJECT CONSTRUCTION. FLOOD CONTROL IMPROVEMENTS INCLUDE, BUT ARE NOT LIMITED TO: LEVEES, GRADE CONTROL STRUCTURES, SOIL CEMENT EMBANKMENTS, RENO MATTRESS PROTECTED EMBANKMENTS, EARTHEN EMBANKMENTS, AND OTHER MISCELLANEOUS FEATURES. ALL FLOOD CONTROL IMPROVEMENTS SHALL BE PROTECTED DURING PROJECT CONSTRUCTION OR AS NOTED ON THE PLANS.
- ALL MODIFICATIONS TO THE EXISTING RENO MATTRESSES ALONG THE SALT RIVER LEVEE ARE TO BE INSPECTED AND APPROVED BY THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY. LEAVE MODIFICATION EXPOSED UNTIL THEY HAVE BEEN INSPECTED AND APPROVED BY THE FLOOD CONTROL DISTRICT. COORDINATE ALL INSPECTIONS WITH THE CONTRACTING OFFICER'S REPRESENTATIVE.

LANDSCAPE AND IRRIGATION IMPROVEMENTS WITHIN INDIAN BEND WASH:

- LANDSCAPE AND IRRIGATION IMPROVEMENTS WITHIN INDIAN BEND WASH INCLUDE:
 - INSTALLATION OF HABITAT PLANTINGS (TREES, SHRUBS, CACTI, AND SEEDING) IN AN AREA ALONG THE WEST SIDE OF INDIAN BEND WASH NEAR THE SR-202 HIGHWAY.
 - INSTALLATION OF A SUPPORTING IRRIGATION SYSTEM, WITH CONNECTION TO THE EXISTING WATER SUPPLY AND CONTROL SYSTEMS WITHIN INDIAN BEND WASH.
 - MULTI-USE PATH.
 - SAFETY FENCING.

LANDSCAPE AND IRRIGATION IMPROVEMENT ADJACENT TO THE SALT RIVER:

- LANDSCAPE AND IRRIGATION IMPROVEMENTS ADJACENT TO THE SALT RIVER CHANNEL INCLUDE:
 - INSTALLATION OF PLANTINGS ADJACENT TO THE NEW MULTI-USE PATH(S) AND WITHIN THE SOUTH BANK ENTRY PLAZA.
 - INSTALLATION OF NEW WATER AND ELECTRICAL SERVICES FOR IRRIGATION SYSTEM.
 - THE INSTALLATION AND TESTING OF A SUPPORTING DRIP IRRIGATION SYSTEM.
 - MULTI-USE PATH.
 - SAFETY FENCING.

COORDINATION WITH THE CITY OF TEMPE

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING PERMITS, FOR REQUESTING INSPECTIONS, AND FOR OBTAINING APPROVALS AS MAY BE REQUIRED BY THE CITY OF TEMPE.

DATUM

HORIZONTAL AND VERTICAL DATUM ARE CITY OF TEMPE

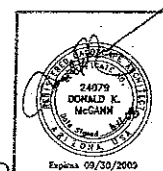
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SYMBOL	DESCRIPTIONS	DATE	APPROVAL

RIO SALADO (SALT RIVER), TEMPE, ARIZONA
 ENVIRONMENTAL RESTORATION PROJECT
 MCCLINTOCK DRIVE TO TOWN LAKE
 GENERAL NOTES

DRAWN BY DS/PB	DATE 04/04
APPROVED BY ROBERT L. ICELIN, P.E. CHIEF, ENGINEERING DIVISION	FILE NAME: #130024.dwg

NOVAK ENVIRONMENTAL, INC. 24079 DONALD R. MCGANN PHOENIX, AZ 85024 PREPARED UNDER THE DIRECTION OF: THOMAS H. WAGNESS, IV COLLEGE OF ENGINEERING	U.S. ARMY ENGINEER DISTRICT LOS ANGELES CORPS OF ENGINEERS SUBMITTED BY: ARTHUR J. JONES, P.E. CHIEF, DESIGN BRANCH SPEC. NO. W912PL-04-R-0004
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3 of 56 SHEETS

Appendix B



**US Army Corps
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Los Angeles District

FINAL

**Rio Salado Tempe
SPECIAL REPORT**



**Post-Authorization Change
Rio Salado, Tempe, Arizona**

March 2011

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**RIO SALADO TEMPE SPECIAL REPORT
RIO SALADO (SALT RIVER), TEMPE, ARIZONA**

1. STUDY AUTHORITY

The feasibility study that determined Federal interest in constructing an ecosystem restoration project within the Salt River in Tempe, Arizona, was conducted under the authority of Section 6 of the Flood Control Act of 1938, Public Law 761, 75th Congress, which states:

“...the Secretary of War (now Secretary of the Army) is hereby authorized and directed to cause preliminary examinations and surveys...at the following localities...Gila River and tributaries, Arizona...”

Subsequent construction of the Rio Salado, Phoenix and Tempe, Arizona Project was first authorized by Section 101(a)(4) of the Water Resources Development Act of 1999 (WRDA 1999), Public Law 106-53, 106th Congress, which states:

“RIO SALADO (SALT RIVER), PHOENIX AND TEMPE, ARIZONA. The project for flood control and environmental restoration, Rio Salado (Salt River), Phoenix and Tempe, Arizona: Report of the Chief of Engineers dated August 20, 1998, at a total cost of \$88,048,000 with an estimated Federal cost of \$56,355,000 and an estimated non-Federal cost of \$31,693,000.

2. STUDY PURPOSE

The purpose of this Special Report is to evaluate the problems and opportunities associated with excess water in the Phase III portion of the authorized Rio Salado Tempe Project (upstream of Tempe Town Lake to 200 feet downstream of McClintock Road). The overall Rio Salado Tempe project area, and Phase III location map, may be seen on Figures 1 and 2, respectively.

Specifically, the report seeks to:

- a. Investigate the source of excess water in Town Lake which is precluding the construction of Phase III of the project, as authorized.
- b. Investigate if there is a way to economically dewater the flooded area so that Phase III can be constructed as authorized.

- c. Develop alternatives for the Phase III study area in its current condition, and identify potential benefits and costs for each alternative.
- d. Investigate if the authorized Phase III project can be modified to extend upstream to Loop-101, the downstream limit for the Va Shly'ay Akimel (VSA) Ecosystem Restoration Project.
- e. Investigate if the Phase III multi-use trail can be extended upstream to tie-into the multi-use trail along the VSA project
- f. Identify the study cost to complete a Post-Authorization Study and Report if a viable alternative is identified herein.

3. STUDY AREA

The overall Rio Salado Tempe project area, and Phase III location map, may be seen on Figures 1 and 2, respectively.

The Salt River (Rio Salado) is a significant tributary to the Gila River in the State of Arizona. The river originates in the White Mountains in eastern Arizona and flows westward through the metropolitan area to its confluence with the Gila River, approximately 12 miles west of downtown Phoenix.

Historically, the Salt River was a perennial stream fed by snowfall from the mountains to the east and the highlands to the northwest. Cottonwoods and willows and various species of mesquite covered hundreds of miles along the Salt River and are considered representative of the natural "climax" species for this area. Beginning in the early 1900's, the historical conditions of the river were radically altered by man-made activities. The most significant of these was the U.S. Bureau of Reclamation's Salt River Project, in which a series of dams in the Salt and Verde watersheds were built. The Indian Bend Wash flood control project, completed in 1982, also changed and controlled the flow of water into the river. Channelization, sand and gravel mining adjacent to the river channel, and landfills within and along riverbanks have affected the river and its wildlife.

Due to the dams and diversions, perennial flows in the Salt River have ceased. The natural condition of the river has been drastically degraded compared to historic conditions. The elimination of natural base flows in recent decades has caused the groundwater table beneath the river to drop, resulting in the death of much of the river's cottonwood-willow river ecosystem.

Until recently, most areas of the Salt River were barren or contained mainly non-native species, such as salt cedar. The dense riparian vegetation and abundant wildlife that historically characterized the Salt River in Tempe—mesquite habitat, cottonwood-willow riparian forest, and

fresh-water marsh—is now relegated to small, widely-spaced areas where local runoff or treatment plant discharge have provided opportunities for small stands of vegetation. This underlines the significance of several ecosystem restoration projects planned and being constructed along the Salt River.

The first construction contract for the authorized Corps of Engineers' Rio Salado Ecosystem Restoration Project in Tempe was awarded in 2002 for initial debris removal. Construction of the remainder of Phases I and II was completed in 2005.

The Tempe phases are as follows:

a. Phase I – Indian Bend Wash

The Indian Bend Wash from Tempe Town Lake's east dam to McKellips Road serves as the initial phase of the three restoration areas. South of Curry Road the project has reestablished a riparian forest dominated by a combination of cottonwood and willow trees.

This plant community is typically found along the edge of the active streambeds. The understory includes desert broom, elderberry, and other native plants. Small wetland marsh areas are established with a mix of emergent vegetation and open water ponds. The edges outside of the cottonwood-willow habitat transition to mesquite bosque habitat dominated by honey, velvet or screwbean mesquite trees and elderberry, greythorn, and wolfberry used in the understory. The central channel of the Indian Bend Wash (Rio Salado Golf Course), contain mesquite bosque habitat plantings.

Multi-use paths provide visual and pedestrian access along the outer edges of the project. A system of signage and an overlook ramada are for use by pedestrians and bicyclists on the multi-use path, but entrance into the habitat is not permitted.

b. Phase II – Rio Salado Tempe – Downstream Reach

The Rio Salado Tempe – Downstream Reach has allowed the City of Tempe to extend the habitat value of the lake by creating a natural riparian habitat for the west end of Town Lake to Priest Road. Drought-tolerant plants, flowering shrubs and native trees were used to create a dramatic park environment. As portions of the habitat lie within 10,000 feet of sky Harbor Airport, the needs of wildlife have been balanced with the need for aviation safety.

The Phase II habitat highlights the balance between the connection of landscape and community development. The habitat connects nature by creating migration corridors and connects people through surrounding communities while promoting healthy multi-modal activity. Amenities include multi-use paths outside of the habitat, viewing areas for watching animals, ramadas,

picnic areas, and interpretive signs detailing the types of trees and vegetation that can be found along the lake edge.

c. Phase III – Rio Salado Tempe - Upstream Reach

In the area upstream of Tempe Town Lake, the project was planned to establish a forested cottonwood/willow corridor on the north and south banks of the Rio Salado, with open water/wetland marsh interspersed with open space for flow conveyance. Multi-use paths were planned to run parallel to the corridor on both banks of the river. An overlook/rest stop was planned to be constructed at McClintock Road along the south bank. Construction of Phase III has been initiated. Figure 3, from 2001, shows the pre-project condition in the study area that was typical during the planning and design of Phase III.

d. Tempe Town Lake

Tempe Town Lake was not constructed as part of the Corps of Engineers' Rio Salado Ecosystem Restoration Project. The lake was completed in 1999 by the City of Tempe. It uses inflatable rubber barriers in the riverbed both upstream and downstream of the lake to confine water within its boundaries. It is nearly 2 miles long, with an average surface area of 224 acres, and an average depth of 13 ft, for a total average volume of approximately 2912 acre-feet. The maximum depth of the lake reaches 19 ft.

The lake was initially filled with water purchased from the Central Arizona Project. Annual evaporation losses average 1,388 acre-feet per year¹ and are compensated through additional purchase of CAP water, exchanges of reclaimed water, and long-term storage credits. Seepage losses are virtually nil due to a system that recaptures virtually all seepage and pumps it back into the lake.

4. REVISED WITHOUT-PROJECT CONDITIONS

Phase III of the Rio Salado Tempe Project has been inundated with water since the completion of Phases I and II, in 2005. Figures 3 through 7 display the increase in saturated conditions over time, between 2001 and 2008 (Figure 2, the "Study Area Location Map" shows current conditions). Soon after completion of the lake, even at low flow levels, the Phase III area just upstream of the lake has been under water. As can be seen from the figures, this ponding extends well past the east end of the upstream Tempe Town Lake rubber dam and upstream beyond the 101 Freeway overpass. The area between the rubber dam and the 101 Freeway overpass is

¹ City of Tempe, Tempe Town Lake website: "Using Town Lake Water Efficiently," at http://www.tempe.gov/lake/Water/using_water.htm

approximately 140 acres (top-of-bank acreage for Phase III equals approximately 35 acres; for the area upstream of Phase III to the 101 freeway, approximately 105 acres).

Currently, the Phase III study area is completely inundated with little habitat value beyond the low-valued open water. Little-to-no fringe habitat currently exists. In the area upstream of McClintock Drive to the 101 Freeway, various stands of volunteer habitat have established, mostly consisting of cottonwoods, willows, salt cedar, and marsh species such as cattails, bulrush, sedges, rushes and other emergent vegetation. Approximately 20 acres of this type of habitat exist—not counting open water or denuded sand bars. Typically, this type of riparian and marsh habitat supports a large variety of wildlife species such as bats, skunks, raccoons, amphibians, reptiles, and a host of birds including hooded orioles, Abert's towhees, yellow and yellow-rumped warblers, red-winged blackbirds, rails, egrets, herons, shorebirds, Cooper's hawks, and various flycatchers.

a. Ongoing Problems and Issues

The authorized Phase III of the Rio Salado Tempe Project cannot be constructed as planned due to the continuously-ponded condition in the study area. The following problems and issues exist for this area.

(1) The City of Tempe needs to continue renting pumps to dewater the ponded Phase III Project Area so that the Tempe Town Lake water quality is not compromised by run-of-the-river water which contains high algae content and pH. Since the spring of 2007, water has been pumped into a parallel 20 MGD bypass pipeline when the river's water surface elevation is high enough to flow over the upper dam. This occurs during the two swimming seasons, Spring and Fall. The six months of pumping activity costs over \$300,000/year for the rental and fuel.¹

(2) Construction of the Phase III restoration measures as authorized cannot be accomplished without dewatering the construction area, a prohibitively expensive potential cost.

(3) Vector concerns from the ponded water exist. Both mosquitoes and midge flies have been reported from surrounding businesses, residents, and Tribal representatives from the Salt River Pima Maricopa Indian Community (SRPMIC). The problem is challenged by the existence of cattails and Tamarisk that restricts flow, and has been treated with larvaecide and biological controls. Bottom-feeders such as Israeli carp help control midge flies, and top-feeders such as mosquito fish (*Gambusia* spp.) help control mosquitoes. Mosquito counts over the past few years are often over 30 per trap per night (typically a trigger-level for treatment) and have

¹ Personal communication: Mr. Basil Boyd, Water Resources Hydrologist, City of Tempe

gotten as high as several hundred per trap per night; and, occasionally, can get a positive reading for West Nile virus.¹

(4) Periodic fish mortality associated with periodic drying, increased water temperature, reduced oxygen content, and reduced aquatic area.

(5) Periodic disturbance and clearing occurs by the Flood Control District of Maricopa County (FCDMC) to maintain flood conveyance in the pinch-point.

(6) The existing trail effectively ends just downstream of the transition ramp from eastbound traffic on the 202 Freeway to southbound/eastbound traffic on the 101 Freeway, with no direct connection to the recreation trail that exists along the Salt River upstream of the 101 Freeway.

b. Water Sources

There are no definitive studies that have identified the water source(s) causing the ponding in the study area. However, it is reasonable that one or more of the following sources contributes to inundation:²

(1) Extremely high and sustained flows occurred in the Rio Salado following a series of winter storms in late December, 2004. This raised the water level of the aquifer below the river and potentially contributed to the pool upstream of the dam by reducing localized infiltration.

(2) The City of Mesa's Northwest Water Reclamation Plant (NWWRP) discharges approximately 9-10 MGD to the following: (a) directly from the plant outfall to the riverbed, (b) into the south pond infiltration facilities, and/or (c) to the Granite Reef Underground Storage Project (GRUSP) when allowed (per their operating permit, discharge to the GRUSP is currently not allowed due to a high groundwater condition). The 9-10 MGD has been fairly steady for years, but the plant has a discharge capacity of approximately 18 MGD. While the plant could expand to a discharge capacity of 30 MGD, there is no expectation for expansion in the foreseeable future.³

(3) Agricultural return flow from surrounding fields and urban "nuisance" flow from surrounding developments. Some of this flow, for example, is conveyed from the Cypress Drain,

¹ Personal communication: Dr. Rick Amalfi, Vice President, Aquatic Consulting & Testing, Inc.

² Personal communications: (1) Ms. Nancy Ryan, Rio Salado Project Manager, City of Tempe; (2) Mr. Basil Boyd, Water Resources Hydrologist, City of Tempe; (3) Ms. Felicia Terry, Regional Area Planning Manager, Flood Control District of Maricopa County;

³ Personal communication: Ms. Jen Hetherington, City of Mesa, Wastewater Compliance

Price Drain, and Tempe Drain into the Salt River. Price Drain alone contributes approximately 8 MGD (12-13 cfs).¹

(4) Dewatering and wash water from mining activities at quarry facilities in and around the Salt River would contribute to flow in the river and potentially pond behind the rubber dam in the Phase III area.

(5) The Arizona Department of Transportation (ADOT) drains the freeway and other surrounding transportation projects into the Salt River.

(6) Normal seepage underneath Tempe Town Lake reduces water infiltration potential and lateral groundwater transmissivity upstream of the dam.

The revised without-project condition recognizes these potential water sources without being able to specifically identify a single source or cause of the ponding. The array of alternatives has been chosen to address the study area in the without-project, ponded condition.

c. Opportunities

The original planning objectives for the study area were to (1) restore habitat that is crucial to the survival of threatened and endangered species, (2) restore historically-occurring riparian native plant species within the study area to a more natural condition, and (3) increase the recreational opportunities within the study area.

Changes in physical conditions within the Phase III project area since the original plan was authorized have created new opportunities in this area that include the following:

- (1) Extending the current project to fill a gap between two authorized projects (Rio Salado and VSA)
- (2) Newly available water within the Phase III reach and portions of the channel upstream from Phase III.
- (3) Providing additional high quality riparian strand and cottonwood/willow strands in the study area and in the upstream reach between Rio Salado Phase III and VSA
- (4) Reducing periodic fish mortality associated with periodic drying, increased water temperature, reduced oxygen content, and reduced aquatic area.

¹ Approximately 3 MGD (~5 cfs) is being used for restoration in for the Va Shly'ay Akimel Salt River Ecosystem Restoration Project

- (5) Connecting the multi-use trail on the south bank with the trail that exists upstream of the 101 Freeway.

5. PLAN FORMULATION

The Authorized Project provides one alternative that can be constructed under the current authorization, though the costs for constructing that alternative would change because of substantial changes in conditions within this reach of the river. The information below summarizes the Authorized Plan features for Phase III, and describes four additional alternatives for consideration to address new opportunities within this area.

a. Authorized Project

The Authorized Project is significant in a plan formulation context as it provides the comparative basis for any alternative being considered. The following briefly describes the characteristics of the Authorized Project – Phase III of Rio Salado Tempe.

The project would provide freshwater marsh and cottonwood/willow riparian forest adjacent to open water which would be impounded on the upstream side of the Tempe Town Lake rubber dam. Mesquite would be planted and established at various locations on the banks and overbanks. Open water/edge habitat types would be areas that are allowed to develop naturally and would serve as buffer areas between habitat and non-habitat areas.

Habitat restoration acreage is authorized for the following:

- Mesquite - 5 acres
- Cottonwood-Willow – 10 acres
- Wetland Marsh (including open water) – 8 acres
- Open Space Habitat – 12 acres

In order to support restoration activities, water would be pumped through a 350-foot-long, 24-inch reinforced concrete pipe (RCP) with a slope of 0.015, from the left bank toe of Indian Bend Wash to the right bank of the Phase III site.

The authorized project also includes a pump and pump house (to be funded by the City of Tempe) on the left bank of the Salt River, just upstream of Tempe Town Lake, the purpose of which is to supply water via a 3,600-foot-long pipe to the riparian area in the Salt River downstream of Tempe Town Lake. This pump would also help dewater the ponding behind Tempe Town Lake.

Under the Authorized Plan, multi-use trails would be constructed along both banks of the Salt River and within the river channel.

b. Alternative 1

Dewater the Phase III project area by constructing the authorized pump station. The pump station would discharge into the existing 36" pipe that the City of Tempe currently uses when reducing the size of the ponded area. A variation related to dewatering would be to extend the authorized 3,600-foot-long bypass pipe an additional 5 miles to 16th Street downstream of the airport to convey water for additional habitat creation in the Rio Salado Phoenix reach. In addition, extend the multi-use trails upstream to the 101 Freeway (Figure 8).

c. Alternative 2

Let the existing condition in the Phase III project area continue into the future, with dewatering taking place only when the water reaches critical elevations at which flow occurs over the east dam of Tempe Town Lake. The pump station described under the Authorized Plan would not be constructed. Dewatering would take place using rented pumps. Implement modified Phase III features in the area upstream of Phase III, between McClintock Drive and the 101 Freeway. Additional habitat would be created through planting within the river and on the banks. Extend the multi-use trails upstream to the 101 Freeway (Figure 9).

d. Alternative 3

This alternative is an areal combination of Alternatives 1 and 2, with the authorized Phase III project being implemented, and additional habitat being added in the area upstream of Phase III, between McClintock Drive and the 101 Freeway. The pump station described for the Authorized Plan would be constructed. Additional habitat would be created through planting within the river and on the banks. The multi-use trail would be extended upstream to the 101 Freeway (Figure 10).

e. Alternative 4

Alternative 4 represents features that can still be constructed within the Authorized Plan's overall footprint but without the in-channel features that would require dewatering and larger-scale planting. These features would all be along the north bank, and include a multi-use trail and the following vegetation types: (1) mesquite/palo verde community in the less-hydric areas, (2) cottonwood/willows in the wetter areas, and (3) marsh and emergent vegetation (cattails, bulrush, sedges, rushes, etc.) along the fringe of the northern water line. The habitat area is limited due to the importance of limiting planting on the slopes that protect the freeway

embankment, columns, and freeway off-ramp in the project area. The slopes—currently supporting sparse desert shrubs—could be planted with a denser palette of mesquite and palo verde if subsequent analysis indicates a minimal erosion threat to the upper banks. The mesquite/palo verde planting would be on both sides of the trail, similar to what has been designed as part of the previous phase. Additionally, cottonwoods, willows, and emergent vegetation would be planted at the toe of the northern shore and within the water’s fringe to take advantage of soil deposition and shallow water in those areas. Cottonwoods, willows, and mesquite/palo verde would be planted in the currently open area of Indian Bend Wash, just upstream of State Route 202.¹ The multi-use trail would tie into the trail on the western side of Indian Bend Wash, as well as tie into McClintock Drive (Figure 11).

f. Alternative 5

This alternative is the “No-Action Alternative” as required by the National Environmental Policy Act to describe what would happen in lieu of Federal action. This alternative assumes that the without-project condition continues into the future. Under this alternative, no future Phase III features of the Authorized Project would be constructed, and objectives for ecosystem restoration in the study area would not be met. The Authorized Project for Rio Salado Tempe Phase III would also have to be formally de-authorized.

g. Extension of the Multi-use Trail

Alternatives 1, 2, and 3 all would include the extension of the existing recreation trail approximately 3,000 feet upstream to the 101 Freeway. The trail would include an underpass structure under the 202 Freeway, and would follow the existing access road upstream and downstream of the underpass. The path would be 12-feet wide and include lighting and safety railings. Funding for this trail is concurrently being sought by the Arizona Department of Transportation in a joint effort with the City of Tempe Community Development/ Transportation Department. In May, 2010, application was made for Transportation Enhancement Funding from the Federal Highway Administration for the trail extension. Coordination and participation took place among the City of Tempe, the City of Mesa, Maricopa Association of Governments, Arizona Department of Transportation, Salt River Pima Maricopa Community, Flood Control District of Maricopa County, and the Army Corps of Engineers.

¹ This area, approximately 2 acres, is part of the overall Authorized Plan; it was shown on the design plans for Phase III since it was not originally implemented as part of the Indian Bend Wash portion of Rio Salado-Tempe.

6. BENEFITS OF ALTERNATIVES

The comparison of habitat values anticipated with implementation of the authorized Phase III project and viable alternatives for restoration upstream in the study area is shown in Table 1, below. The acreage of the area upstream of Phase III—between the drop structure approximately 200-feet downstream of McClintock Drive, upstream to the 101 Freeway—represents approximately 105 acres, top-of-bank to top-of-bank. By comparison, the Phase III area is approximately 35 acres. Therefore, this initial assessment assumes that approximately three times the habitat value of the Phase III project could be realized upstream of Phase III. More detailed analysis would of course have to be conducted.

Table 1. Comparison of Habitat Types and Associated Habitat Value

Habitat Type	Alternative 1 Authorized Project *			Alternative 2 From 200' d/s of McClintock to the 101			Alternative 3 From the Upstream Edge of Town Lake to the 101			Alternative 4 From the Upstream Edge of Town Lake 200' d/s of McClintock		
	Acreage	Average Annual Habitat Units (Over 50 Years)	Sum of Habitat Units over 50 years	Acreage	Average Annual Habitat Units (Over 50 Years)	Sum of Habitat Units over 50 years	Acreage	Average Annual Habitat Units (Over 50 Years)	Sum of Habitat Units over 50 years	Acreage	Average Annual Habitat Units (Over 50 Years)	Sum of Habitat Units over 50 years
Mesquite / Palo Verde	5	1.590	79.50	15	4.770	238.5	20	6.36	318	1.2	0.382	19.1
Cottonwood / Willow	10	2.640	132.0	30	7.920	396.0	40	10.56	528	1.8	0.475	23.8
Open Water with Emergent / Wetland / Marsh	8	2.464	123.2	24	7.392	369.6	32	9.86	492.8	0.5	0.154	7.70
Open Space	12	1.055	52.80	36	3.165	158.4	48	4.22	211.2	0	0	0
Open Water	0	0	0	0	0	0	0	0	0	33.5	1.340	67.0
TOTALS	35	7.75	387.5	105	23.25	1162.5	140	31.0	1550.0	37	2.35	117.6

* Source: *Rio Salado, Salt River, Arizona Feasibility Report and Environmental Impact Statement*, Appendix B, "Habitat Evaluation," US Army Corps of Engineers, April 1998; Habitat units for Alternatives 2 & 3 are prorated based on acreage. Alternative 1 is the Authorized Project plus the additional multi-use trail feature.

7. COSTS OF ALTERNATIVES

The Authorized Phase III project costs are broken down in Table 2, below. These costs are from the April, 1998, Rio Salado, Salt River, Arizona Feasibility Report and Environmental Impact Statement. The costs are prorated based on relative acreage from the overall Tempe Reach costs for each of the habitat types. The costs are still in October 1997 price levels.

The subsequent three tables display costs for the alternatives. Alternative 1 is the Authorized Project plus the additional multi-use trail feature. The cost reflects updated unit costs for the habitat based on actual construction on recent restoration projects in the area. It also reflects a cost estimate for (1) the pump and pipe system, and (2) the 202 multi-use trail underpass structure based on estimated costs provided by the City of Tempe.

Project monitoring is intended to ascertain whether: (1) the project is functioning in accordance with project objectives and performance criteria; and/or (2) changes to project features or management techniques are required due to incorrect assumptions or unforeseen circumstances. Identical costs for adaptive management of the project are included for any remedial action.

Table 2. Costs of the Authorized Project
(October 1997 price levels)

Item	Quantity	Unit	Unit Cost	Sub Total
Mesquite Bosque Upland	5	AC	\$ 11,000	\$ 55,000
Cottonwood/Willow	10	AC	\$ 12,800	\$ 128,000
Wetland Marsh	8	AC	\$ 14,125	\$ 113,000
Pump and pipe system for providing water to Phase II and dewatering Phase III	1	EA	\$ 660,000	\$ 660,000
Pipe, 36 inch conveyance pipe to Phase II	4150	LF	\$ 162	\$ 672,000
Pipe, 24 inch for conveying water from IBW	1250	LF	\$ 95	\$ 119,000
<i>SUBTOTAL</i>				\$ 1,747,000
Additional prorated features for Phase III ¹				\$ 511,077
<i>SUBTOTAL</i>				\$ 2,258,077
Contingencies (20%)				\$ 451,615
<i>SUBTOTAL</i>				\$ 2,709,693
PE&D (7%)				\$ 189,678
S&A (6.5%)				\$ 176,130
<i>SUBTOTAL</i>				\$ 3,075,501
Project monitoring				\$ 58,000
Adaptive Management				\$ 58,000
TOTAL				\$ 3,191,501

¹ Prorated (x0.308) for Phase III costs compared to overall costs for the Tempe Reach; includes recreation features, maintenance roads, mob/demob/site prep work, and water distribution/irrigation.

Table 3. Costs of Alternative 1

Item	Quantity	Unit	Unit Cost	Sub Total
Mesquite Bosque Upland	5	AC	\$ 10,000	\$ 50,000
Cottonwood/Willow	10	AC	\$ 14,000	\$ 140,000
Wetland Marsh	8	AC	\$ 16,000	\$ 128,000
Pump and pipe system for providing water to Phase II and dewatering Phase III	1	EA	\$ 4,800,000	\$ 4,800,000
Pipe, 36 inch conveyance pipe to Phase II	4150	LF	\$ 120	\$ 498,000
Pipe, 24 inch for conveying water from IBW	1250	LF	\$ 80	\$ 100,000
Bike Trail, (elevated structure - 202 underpass)	520	LF	\$ 2,600	\$ 1,352,000
Bike Trail (Asphaltic Paving)	27,600	SF	\$ 6.70	\$ 184,920
<i>SUBTOTAL</i>				\$ 7,252,920
Additional prorated features for Phase III				\$ 779,392
<i>SUBTOTAL</i>				\$ 8,032,312
Contingencies (20%)				\$ 1,606,462
<i>SUBTOTAL</i>				\$ 9,638,775
PE&D (7%)				\$ 674,714
S&A (6.5%)				\$ 626,520
<i>SUBTOTAL</i>				\$ 10,940,010
Project monitoring				\$ 88,450
Adaptive Management				\$ 88,450
TOTAL				\$ 11,116,910

Table 4. Costs of Alternative 2

Item	Quantity	Unit	Unit Cost	Sub Total
Mesquite Bosque Upland	15	AC	\$ 10,000	\$ 150,000
Cottonwood/Willow	30	AC	\$ 14,000	\$ 420,000
Wetland Marsh	24	AC	\$ 16,000	\$ 384,000
Pump and pipe system for providing water to Phase II and dewatering Phase III	1	EA	\$ -	\$ -
Pipe, 36 inch conveyance pipe to Phase II	4150	LF	\$ -	\$ -
Pipe, 24 inch for conveying water from IBW	1250	LF	\$ -	\$ -
Bike Trail, (elevated structure - 202 underpass)	520	LF	\$ 2,600	\$ 1,352,000
Bike Trail (Asphaltic Paving)	27,600	SF	\$ 6.70	\$ 184,920
<i>SUBTOTAL</i>				\$ 2,490,920
Additional prorated features for Phase III				\$ 779,392
<i>SUBTOTAL</i>				\$ 3,270,312
Contingencies (20%)				\$ 654,062
<i>SUBTOTAL</i>				\$ 3,924,375
PE&D (7%)				\$ 274,706
S&A (6.5%)				\$ 255,084
<i>SUBTOTAL</i>				\$ 4,454,166
Project monitoring				\$ 265,350
Adaptive Management				\$ 265,350
TOTAL				\$ 4,984,866

Table 5. Costs of Alternative 3

Item	Quantity	Unit	Unit Cost	Sub Total
Mesquite Bosque Upland	20	AC	\$ 10,000	\$ 200,000
Cottonwood/Willow	40	AC	\$ 14,000	\$ 560,000
Wetland Marsh	32	AC	\$ 16,000	\$ 512,000
Pump and pipe system for providing water to Phase II and dewatering Phase III	1	EA	\$ 4,800,000	\$ 4,800,000
Pipe, 36 inch conveyance pipe to Phase II	4150	LF	\$ 120	\$ 498,000
Pipe, 24 inch for conveying water from IBW	1250	LF	\$ 80	\$ 100,000
Bike Trail, (elevated structure - 202 underpass)	520	LF	\$ 2,600	\$ 1,352,000
Bike Trail (Asphaltic Paving)	27,600	SF	\$ 6.70	\$ 184,920
<i>SUBTOTAL</i>				\$ 8,206,920
Additional prorated features for Phase III				\$ 779,392
<i>SUBTOTAL</i>				\$ 8,986,312
Contingencies (20%)				\$ 1,797,300
<i>SUBTOTAL</i>				\$ 10,783,612
PE&D (7%)				\$ 754,900
S&A (6.5%)				\$ 701,000
<i>SUBTOTAL</i>				\$ 12,239,512
Project monitoring				\$ 353,800
Adaptive Management				\$ 353,800
TOTAL				\$ 12,947,112

Table 6. Costs of Alternative 4

Item	Quantity	Unit	Unit Cost	Sub Total
Mesquite Bosque Upland	1.2	AC	\$ 20,000	\$ 24,000
Cottonwood/Willow	1.8	AC	\$ 22,000	\$ 39,600
Emergent Veg / Marsh	0.5	AC	\$ 25,000	\$ 12,500
Multi-use Path (6" concrete; partial railing)	42,000	SF	\$ 21.00	\$ 882,000
Fencing	1,000	LF	\$ 35.00	\$ 35,000
<i>SUBTOTAL</i>				\$ 993,100
PE&D (7%)				\$ 69,517
S&A (6.5%)				\$ 64,552
<i>SUBTOTAL</i>				\$ 1,127,169
Adaptive Management				\$ 30,000
TOTAL				\$ 1,157,169

Table 7. Annualized Costs

Alternative	First Cost	Interest During Construction	Interest & Amortization ¹	OMRR&R	Total Annual Cost
1	\$ 11,116,910	\$ 243,182	\$ 563,201	\$ 200,000	\$ 763,201
2	\$ 4,984,866	\$ 109,044	\$ 252,542	\$ 600,000 ²	\$ 852,542
3	\$ 12,947,112	\$ 283,218	\$ 655,922	\$ 500,000	\$ 1,155,922
4	\$ 1,157,169	\$ 25,313	\$ 58,624	\$ 30,000	\$ 88,624

¹ Based on 50-yr amortization at 4.375% - midlife full expenditure pattern for IDC

² O&M costs for Alternative 2 include the annual \$300,000 for habitat O&M as well as the \$300,000/year O&M for pump rental and fuel.

8. BENEFIT-COST COMPARISON

Table 7 displays the benefits of each alternative compared to its costs.

Table 8. Benefits and Costs

Alternative	Cost	Sum of Habitat Value over 50 years	Total Cost per Habitat Unit	Annual Cost	Annual Habitat Units	Annualized Cost per Habitat Unit
1	\$ 11,116,910	387.5	\$ 28,689	\$ 763,201	7.75	\$ 98,478
2	\$ 4,984,866	1162.5	\$ 4,288	\$ 852,542	23.25	\$ 36,668
3	\$ 12,947,112	1550.0	\$ 8,353	\$ 1,155,922	31.00	\$ 37,288
4	\$ 1,157,169	117.6	\$ 9,840	\$ 88,624	2.35	\$ 37,712

Based on this assessment, Alternatives 2-4 all provide similar annualized costs per habitat unit, which are all lower than the Authorized Plan. Alternative 3 provides the most habitat units, but also has the highest cost at approximately \$13 million. At a much lower \$5 million, Alternative 2 displays about the same cost per habitat unit, and has 40% of the cost of Alternative 3 while yielding 75% of its benefits. Since a more detailed study would need to take place to verify the cost and benefit assumptions, it can only be said, at this time, that any of them could be considered as an economic alternative to Alternative 1 *from the point of view of the benefits and costs*. From the point of view of the overall cost expenditure, however, Alternative 4 represents the lowest cost alternative.

9. ENVIRONMENTAL CONSIDERATIONS OF ALTERNATIVES

All alternatives except Alternative 5, the “No-Action Alternative,” would require an updated NEPA document that supplements the previous EIS completed in 1998. While it is not anticipated that any long-term, adverse impacts exist, the various alternatives do have differing environmental considerations.

One common consideration is the extension of the elevated multi-use trail in Alternatives 1, 2, and 3. Temporary construction impacts would be expected to occur from the construction of the underpass and the pier structures that would be necessary within the channel.

Alternative 1 has the option of pumping additional water downstream of Tempe Town Lake to create additional habitat in the Rio Salado Phoenix reach. This has not been displayed in the cost or benefit assessment, but it’s a potential beneficial use of the pumped water. The alternative also reduces the vector nuisance that currently exists.

Alternatives 2 and 3 would provide a more viable upstream habitat than the current volunteer habitat by the creation of specific habitat areas that are designed around low-flow conditions. Currently, the habitat responds to a flow path that may not continue into the future, especially if the downstream, Phase III section is dewatered.

Further, by creating the proposed habitat conditions, salt cedar eradication would become part of maintenance activities and thereby benefit downstream habitat, as well.

Alternatives 2 and 4 would not change the vector nuisance in the Phase III study area beyond what is being done in the without-project condition. Alternative 3, however, through dewatering, would improve the vector nuisance.

Alternative 4 would provide minimal habitat value but represents features of the Authorized Plan that can still be constructed given the current and expected future inundation condition in the

Phase III study area. The authorized multi-use trail would be constructed, with additional habitat plantings wherever possible on the bank and overbank.

Alternative 5, the “No-Action Alternative,” would continue to provide environmental benefits but, as mentioned above, may or may not continue to be viable if the flow path changes in time, which could effectively dry out the established vegetation. Compared to the Authorized Project, it *could* result in similar habitat benefits due to the acreage of cottonwood/willow and wetland marsh, for example, which is currently approximately 20 acres but that could increase in time.

This alternative would not help eradicate salt cedar, and in fact could contribute to its increase both in the study area and downstream.

Vector issues would also be expected to reflect current conditions.

10. POLICY CONSIDERATIONS

a. Project Purposes

Alternative 4 is the lowest cost alternative. Nevertheless, it should be recognized that most of its costs are for construction of the multi-use trail, with minimal habitat acreage compared to the other alternatives. While recreational components in a project are typically limited to 10% of the project construction cost, implementation of Alternative 4 should still be considered consistent with planning and budgetary policy in the context of the overall Rio Salado project. This is because (1) the alternative includes components that are in the Authorized Project; additional habitat and recreation features not included in the alternative are unable to be constructed due to the inundation in the project area; (2) the recreation costs should be compared to the overall Rio Salado project and not just the Phase III increment; and (3) the recreation components provide a critical link to the multi-purpose path that would connect the already-constructed portions of the Rio Salado project on the opposite bank as well as to upstream trails.

b. Post-Authorization Change Requirements

Changes to a project authorized by Congress for construction require a Post-Authorization Change (PAC) report if (1) the site conditions for the project change between the time of authorization and the initiation of construction, (2) significant design changes are proposed, and/or (3) significant cost or scope increases occur that exceed the limit established by Section 902 of the Water Resources Development Act (WRDA) of 1986 (33 U.S.C. 2280).

Approval of changes in the design can be undertaken by the Division Commander, if delegated by the Director of Civil Works, HQUSACE, provided that all of the following conditions are met:

(1) Projects authorized by the Water Resources Development Act of 1986, and subsequent legislation, with an increase in the total authorized cost no greater than 20 percent over the increases in price level changes and cost of modifications required by subsequent legislation. This is referred to as the “Section 902 limit.”

(2) At this time, cumulative project costs are approximately \$2 million below the 20 percent limit. Most of the alternatives herein, including Alternative 1 which is similar to the Authorized Project, would require a Post-Authorization Change due to costs exceeding \$2 million; at this time, renewed environmental documentation, hydraulics, and coordination would also need to take place.

(3) An increase or decrease in scope no greater than 20 percent of the scope authorized by Congress. If the scope can be defined by several parameters, and the changes of any one parameter exceed 20 percent, the change must be approved by the Chief of Engineers.

(4) Change in the location or the design of the project to the extent that the location and magnitude of the impacts of the change are determined to be insignificant compared to the impacts assessed for the authorized project. The Division Commander may not approve a change where an Environmental Impact Statement or Supplement to an Environmental Impact Statement is required.

(5) The change does not add or delete a project purpose, except for the deletion of water quality where compliant with Section 65 of the Water Resources Development Act of 1974.

11. POST-AUTHORIZATION CHANGE REPORT

a. Study Costs

The following costs are proposed as a preliminary estimate for a Post-Authorization Change (PAC) Report, *if one is needed*. It is anticipated that a PAC Report—most likely a Limited Reevaluation Report (LRR)—would be needed for Alternatives 2 or 3 due to their significant scope change compared to the Authorized Plan, and for Alternative 1 based on it exceeding the Section 902 limit. It is unlikely that a PAC Report would be necessary for implementing Alternative 4, but that would require further verification from the Division Commander.

Table 9. Study Costs – Post-Authorization Change Report

Project Management	\$ 100,000
Plan Formulation and Policy Compliance	\$ 120,000
Mapping and GIS	\$ 45,000
Hydraulics	\$ 90,000
Geotechnical Investigations	\$ 75,000
Environmental Considerations	\$ 110,000
Cultural Resources	\$ 25,000
Design	\$ 90,000
Economics	\$ 45,000
Cost Engineering	\$ 40,000
Real Estate	\$ 30,000
Report Preparation	\$ 60,000
Agency Review	\$ 70,000
Subtotal	\$ 900,000
Contingencies (20%)	\$ 180,000
TOTAL	\$ 1,080,000

b. Report Content

As a PAC Report, *if determined to be required*, the report would need to represent a typical feasibility analysis related to economic, environmental, and policy issues, as well as specifically include the 16 items shown below.¹

- (1) Description of the authorized project, including its location, functions, size, land requirements and local cooperation requirements.
- (2) Authorization act including its section, public law, title, date and statute citation.
- (3) Funding history by fiscal year and funding category.
- (4) Changes in scope of the authorized project with rationales and comparisons between the authorized and recommended features' and their costs.
- (5) Changes in project purpose(s) and reasons for the changes from those of the authorized project.
- (6) Changes in local cooperation requirements, including any modifications of the wording used in the recommendation language adopted by Congress in the authorization act or in subsequent legislation.

¹ From the Planning Guidance Notebook, ER 1105-2-100, 22 Apr 2000, §G-16, "Processing Changes."

(7) Changes in the location of the project or project elements, including the reasons for the changes and requirements for additional land.

(8) Changes in design changes including the reasons for the changes.

(9) Changes in total project first costs, displayed in a table comparing estimated costs of the authorized project, the authorized project updated to current price levels, the project last presented to Congress, and the project being recommended; reasons for the cost changes shall also be displayed.

(10) Changes in project benefits, displayed in a table comparing benefits given in the project document, the benefits last reported to Congress, and the benefits based on reevaluations which have been done to support the recommended changes to the project; the affect of using the current interest rate and price levels shall also be indicated.

(11) The benefit-cost ratio shall be compared between the recommended project and the authorized project.

(12) Changes in cost allocation among the project purposes for the authorized project and the recommended project.

(13) Changes in cost apportionment among the Federal and non-Federal costs of the authorized project and the recommended project.

(14) Environmental considerations of the recommended changes, including appropriate NEPA documentation.

(15) Public involvement and coordination effected in formulating the recommended changes to the project, and how the coordination impacted the recommendations.

History of the project since authorization, including other studies accomplished, directions from Appropriations Committees, any litigation, relationship of project to basin plans and other pertinent information not found elsewhere in the report.

12. CONCLUSIONS AND RECOMMENDATIONS

Implementation of Phase III of the authorized Rio Salado-Tempe project is challenged by long-term inundation of the project area. Currently, implementation of the Authorized Plan as well as the three alternative plans evaluated herein would exceed the Section 902 budget limit for the Project and therefore require a Post-Authorization Change report. Due to the associated study and project costs, the City of Tempe is requesting implementation of Alternative 4.

Alternative 4 consists of authorized features that can still be constructed within the project's overall footprint but without the in-channel features that would require dewatering and larger-scale planting. It therefore represents the most efficient use of the project area given the existing conditions.

It is recommended that the project's remaining funds be requested for pursuit of Alternative 4 for Fiscal Year 2013. To this end, the City of Tempe is planning on submitting a letter of continued support for finishing Phase III as identified by this Special Study.

It is further recommended that Alternative 2 be pursued in a separate Section 206 study under the Continuing Authorities Program. This will provide habitat linkage between the Phase III project area (from the grade control structure that is just downstream of McClintock Dr.) and Loop 101. The City of Tempe is planning on submitting a letter requesting 206 funding.

FIGURES

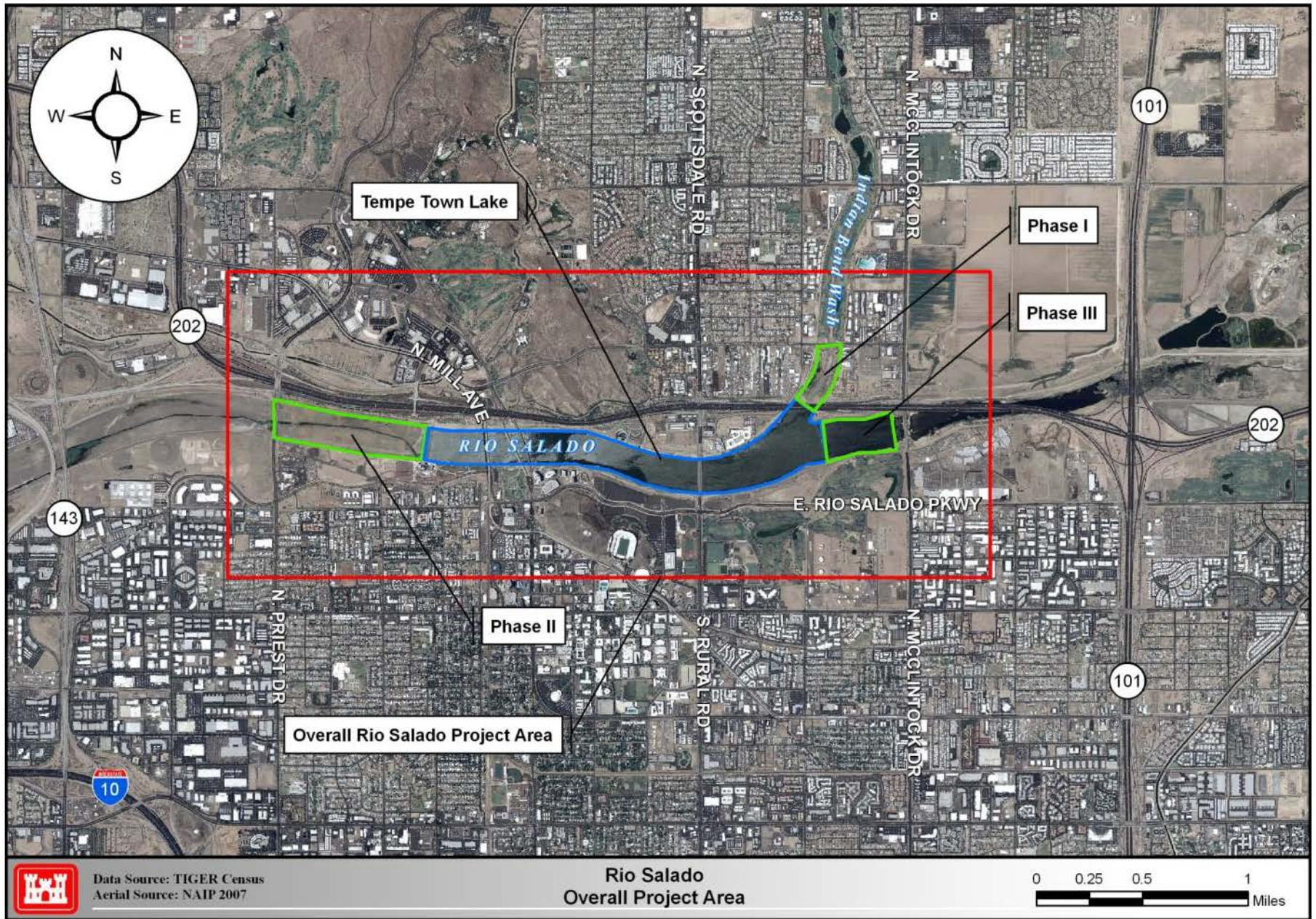


FIGURE 1 – OVERALL PROJECT AREA – RIO SALADO TEMPE



FIGURE 2 – STUDY AREA LOCATION MAP



FIGURE 3 – POND CHRONOLOGY 2001



FIGURE 4 – POND CHRONOLOGY 2003



FIGURE 5 – POND CHRONOLOGY 2005



FIGURE 6 – POND CHRONOLOGY 2006

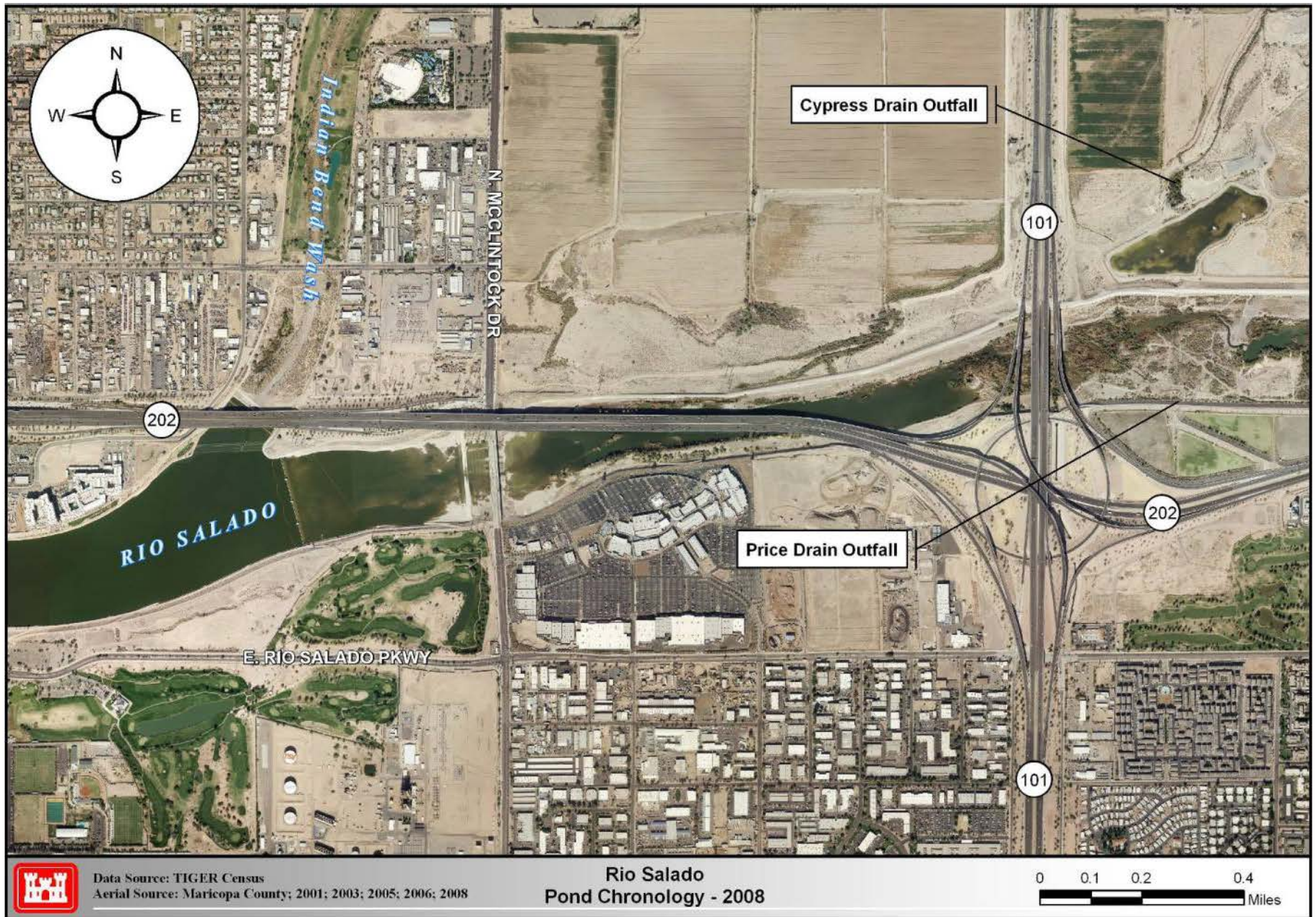


FIGURE 7 – POND CHRONOLOGY 2008

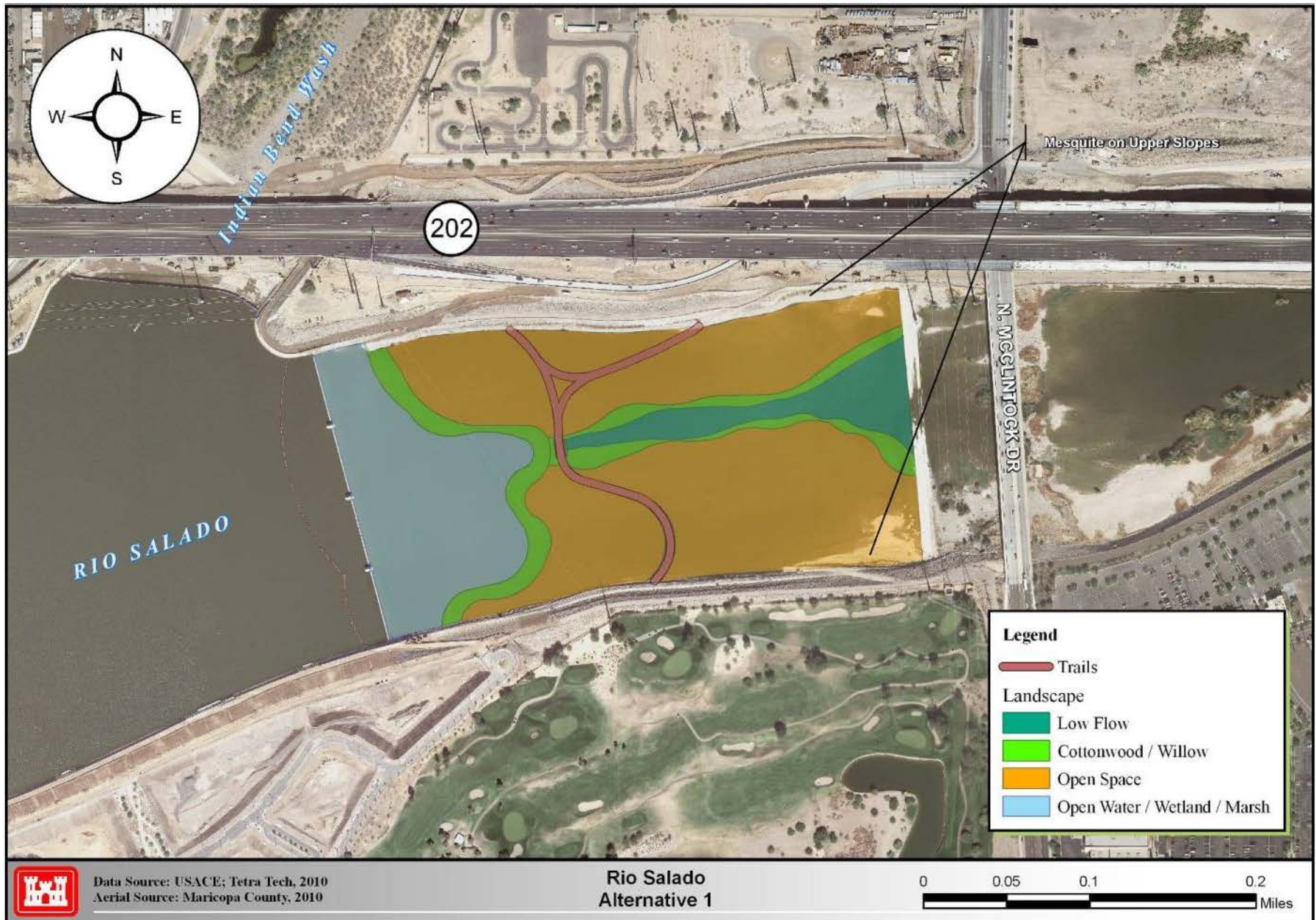


FIGURE 8 – ALTERNATIVE 1

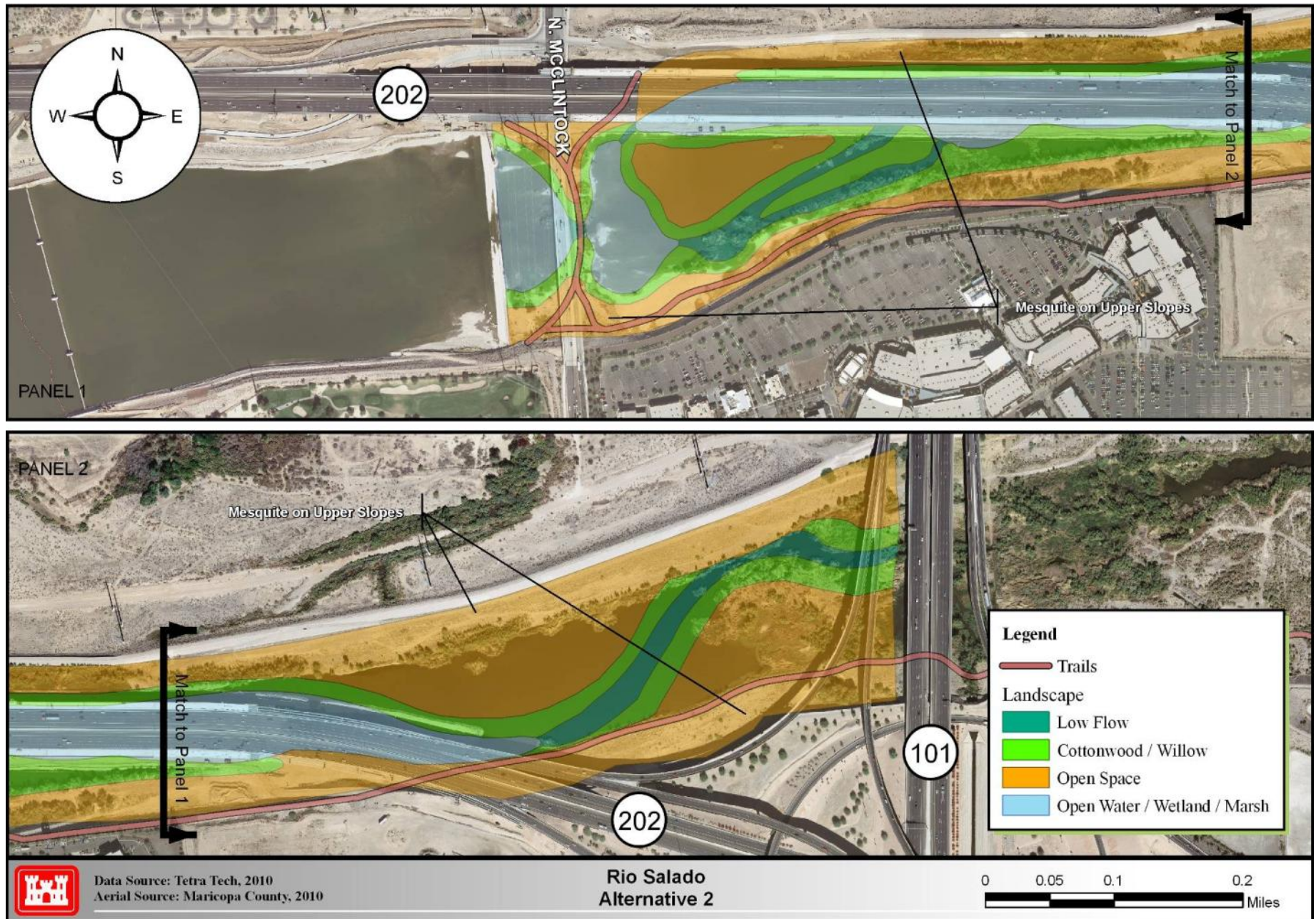


FIGURE 9 – ALTERNATIVE 2

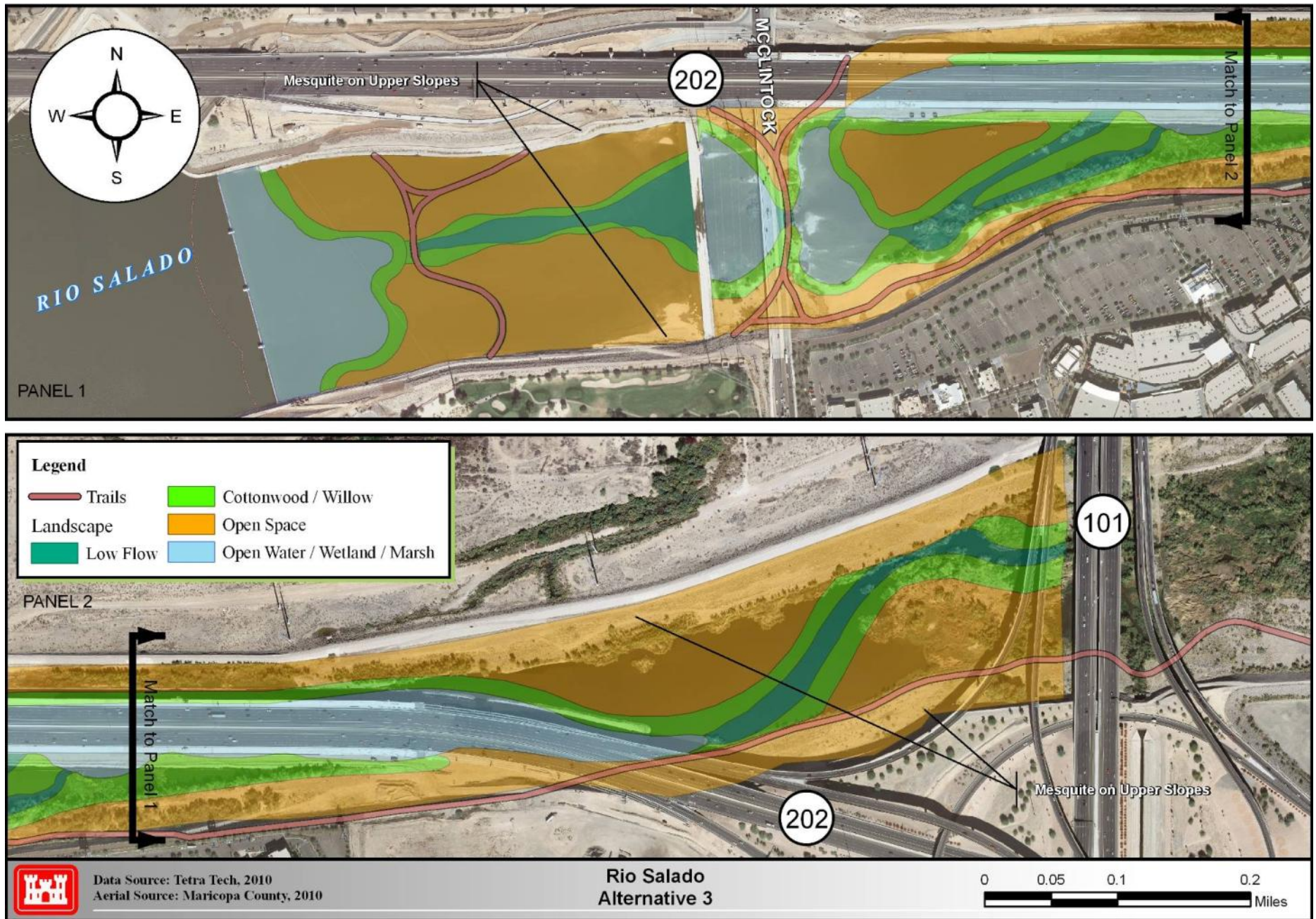


FIGURE 10 – ALTERNATIVE 3

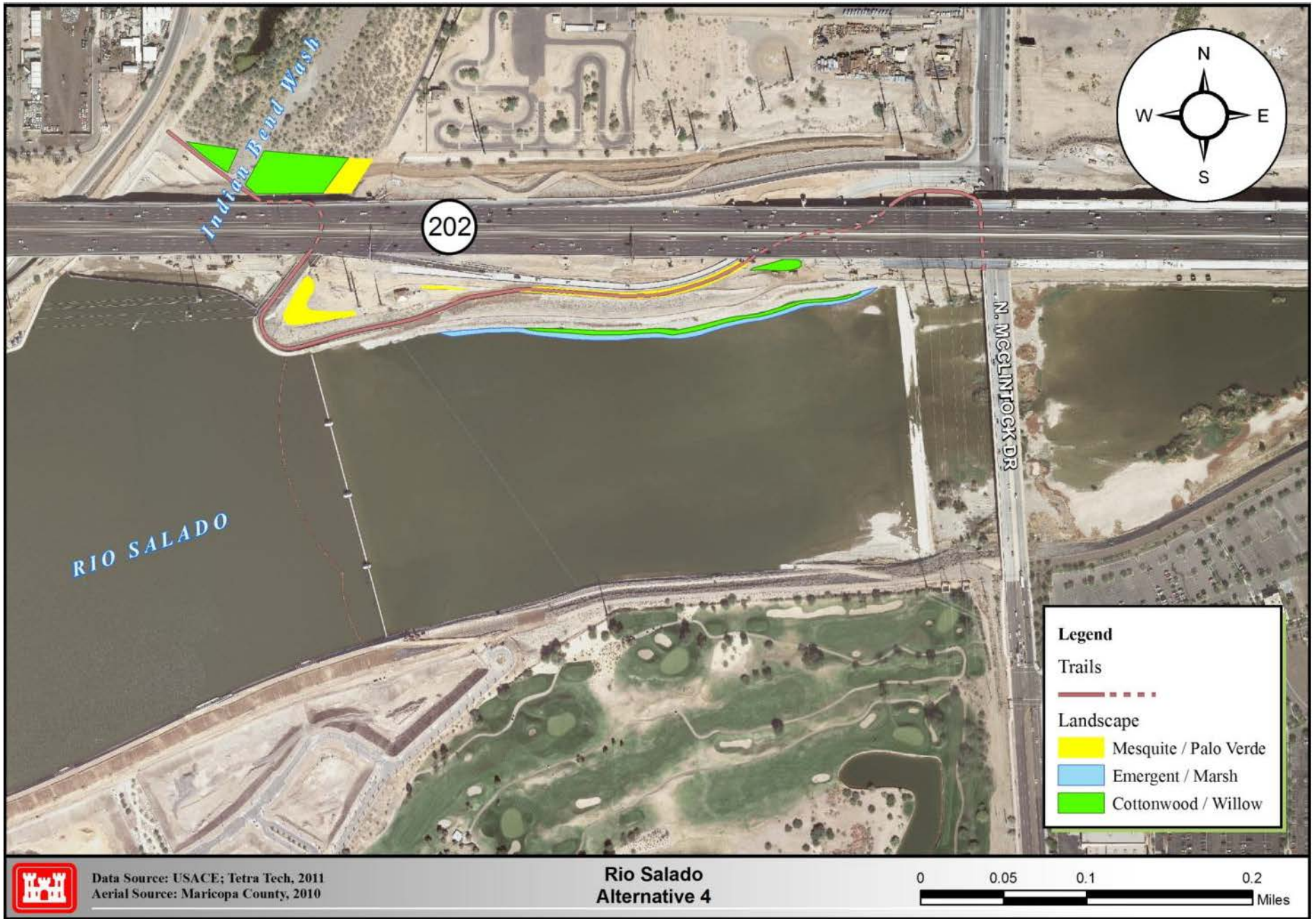


FIGURE 11 – ALTERNATIVE 4

Appendix C


DISTRICT ENGINEER'S QUALITY CONTROL CERTIFICATION

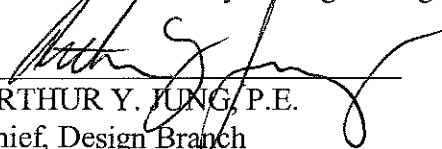
PLANS & SPECIFICATIONS

Rio Salado Environmental Restoration Project – Tempe Reach, Phase 3
McClintock Drive to Town Lake
Maricopa County, Arizona

COMPLETION OF QUALITY CONTROL ACTIVITIES

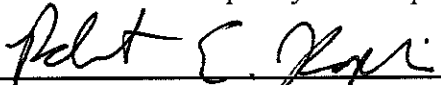
McGann & Associates, Inc. / Novak Environmental Inc. / Joint Venture have completed the plans and specifications (P&S) for the Rio Salado Environmental Restoration Project-Tempe Reach, Phase 3, Tempe, Arizona. Certification is hereby given that all quality control activities defined in the Quality Control Plan appropriate to the level of risk and complexity inherent in the product have been completed. Documentation of the quality control process is enclosed. An independent review of the Plans and Specifications has been completed. They have been reviewed for technical and functional adequacy. They have been revised in response to the comments provided by the review team. The plans and specifications are now ready for negotiating.

for  19 June 88
THOMAS L. LUZANO
Review Team Leader


ARTHUR Y. JUNG, P.E.
Chief, Design Branch

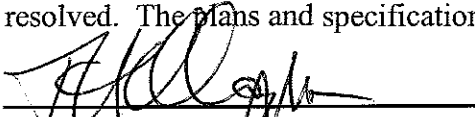
GENERAL FINDINGS

Compliance with clearly established policy principles and procedures, utilizing clearly justified and valid assumptions, has been verified. This includes assumptions; methods, procedures and materials used in analyses; alternatives evaluated; the appropriateness of data used and level of data obtained; and the reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. The undersigned recommends certification of the quality control process for this product.


ROBERT E. KOPLIN, P.E.
Chief, Engineering Division

QUALITY CONTROL CERTIFICATION

As noted above, all issues and concerns resulting from technical review of the product have been resolved. The plans and specifications may proceed to advertisement.


THOMAS H. MAGNESS
COL, EN
Commanding

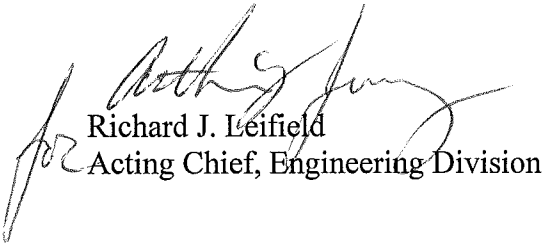
Appendix D

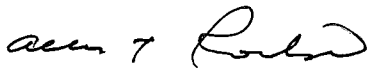
Appendix E

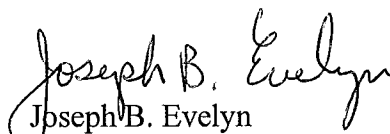
Statement of Approval

Quality Control Plan
Rio Salado
Low Flow Channel Phase 2 and Environmental Restoration Phases 1, 2 and 3
Maricopa County, Arizona
Plans and Specifications and Design Documentation Report

This is to Certify that the undersigned have reviewed and approve the subject Quality Control Plan.


Richard J. Leifield
Acting Chief, Engineering Division


Rudy Roodsari
Chief, Geotechnical Branch


Joseph B. Evelyn
Chief, Hydrology and Hydraulics Branch


Thomas H. Sage
Chief, Design Branch

QUALITY CONTROL PLAN
RIO SALADO
Low Flow Channel Phase 2 and Environmental Restoration
Phases 1, 2 and 3
Maricopa County, Arizona

PLANS, SPECIFICATIONS AND DDR

1. NAME OF PROJECT: Rio Salado - Phoenix, Phoenix, Arizona.
2. DESCRIPTION OF PROJECT: The project consists of environmental restoration and recreation along approximately five miles of Salt River as it flows westward through Phoenix, Arizona from the Interstate 10 (I-10) Highway bridge to the 19th Avenue bridge. Along this reach are five bridges namely 24th Street, 16th Street, 7th Street, Central Avenue and 7th Avenue. Construction of an entrenched Low Flow Channel (LFC) within the river bottom is planned to mitigate the capacity reduction induced by the restoration features. The environmental restoration features of the project consist of biological improvements including mesquite terraces, pockets of willow and cottonwood, wetland marshes, aquatic strands and open edges. The recreational plan includes trails, parking lots, rest rooms, educational signage, shelters and associated features. A maintenance facility and visitor center is also planned.

Current PA for the project is \$89M spread over several years.

3. NAME AND LOCATION OF SPONSORS: The City of Phoenix (COP) is the sponsor for this project. COP in turn is partnering with the Flood Control District of Maricopa County (FCDMC) for construction of LFC for the entire reach, in two phases. Following information is provided for POCs at COP and FCDMC:

Mr. Walt Kinsler
Project Manager
City of Phoenix - EASD
200 West Washington Street
Phoenix, AZ 85003
(602) 534-2160
(602) 261-8881 FAX

Mr. Don Rerick
Project Manager
FCDMC
2801 West Durango Street
Phoenix, AZ 85009
(602) 506-4878
(602) 506-4601

4. QUALITY CONTROL PLAN OBJECTIVE: The objective of this QCP is to ensure high quality contract documents, completed on schedule and within budget. The Chief, Engineering Division and the

District Engineer will certify the quality control process. This certification will be submitted to SPD for information.

5. QUALITY GUIDELINES FOR TECHNICAL REVIEW: The products will undergo an independent technical review (ITR) by the Los Angeles District consistent with CESPd Regulation No. 1110-108, Directorate of Engineering and Technical Services, Quality Management Plan, dated 30 June 1997. It will be reviewed by appropriate discipline for:

- a. Scope
- b. Adequate level of detail
- c. Compliance with appropriate guidelines and established policy
- d. Consistency
- e. Accuracy
- f. Comprehensiveness

6. REVIEWS TO BE PERFORMED:

- a. ITR by CESPL at 50%, 90%, and 100% design phases
- b. Supervisory
- c. Sponsors
- d. BCOE

The sponsor's review comments will not be done on ARMS system because they have not shown interest, have objected to it, are not equipped to use the system and generally provide comments via the WORD tracking system and with marked up sets of drawings at the review meetings. However, comments from within the SPL ITR team will be via ARMS.

7. PRODUCT DEVELOPMENT TEAM:

a. The Engineering Division Independent Technical Review (ITR) Team Leader for this project is Jatin T. Desai, Design B Section, Design Branch, (213) 452-3721.

b. The design of Phase 1 of LFC was accomplished by the in-house personnel from Design A section and other appropriate offices from Geotechnical and H/H Branch with a small portion by other outside A/E firms. Design of Phase 1 LFC was completed in February 2000 and a QC Plan, BCOE and QC Certification are on files in Design Section B. All of the design effort for Phase 2 LFC will be accomplished by the AE firm of Montgomery Watson, including development of DDR. The A/E firms of Novak Environmental/McGann & Associates Joint Venture will accomplish design for the Environmental Restoration portion of the project,

to be done in several phases due to funding constraints as opposed to three phases as originally planned. The product development team for LFC Phase 2 (Montgomery Watson) is shown in Table 1 and for Environmental Restoration (Novak/McGann) is shown in Table 1a.

c. Both A/Es have submitted a detailed Design Quality Control Plan, which was reviewed by the ITR Team Leader. The design quality will be reviewed during the design review process and the Plan will be amended, as needed, as the project requirement changes and/or as seen fit to maintain the expected high level of quality. SPL Geotechnical Branch personnel will serve the A/Es in an advisory capacity for geotechnical and materials related issues.

TABLE 1
DESIGN TEAM
Montgomery Watson

NAME/TITLE/ORGANIZATION	RESPONSIBILITY	TELEPHONE
Harold Glaser, P.E. Vice President Montgomery Watson	Contract Manager	(619) 239-3888 (619) 239-3895 (fax)
Jeff Weien, P.E. Principal Engineer Montgomery Watson	Program Manager Quality Control Manager	(619) 239-3888 (619) 239-3895 (fax)
Kevin Kammerzell, P.E. Project Engineer Montgomery Watson	Project Manager	(480) 755-8201 (480) 755-8203 (fax)
Steve Lowry, P.E. Supervising Engineer Montgomery Watson	Senior Technical Advisor	(303) 382-5000 (303) 382-5001 (fax)
Dennis Dorratcague, P.E. Principal Engineer Montgomery Watson	Independent Technical Review Member	(425) 881-1100 (425) 881-8937 (fax)
Edwin Zurawski Supervising Estimator Montgomery Watson	Project Estimator	(925) 933-2250 (925) 945-1760 (fax)
Thomas Lishner Senior Designer Montgomery Watson	CADD Designer	(480) 755-8201 (480) 755-8203 (fax)

TABLE 1a
DESIGN TEAM
McGann/Novak

NAME/TITLE/ORGANIZATION	RESPONSIBILITY	TELEPHONE
Don McGann, RLA Principal McGann and Associates	Project Manager Landscape Architect	(520) 297-9540 (520) 297-9545 (fax)
Karen Novak, RLA Principal Novak Environmental	Project Manager Landscape Architect	(520) 206-0591 (520) 623-3507 (fax)
Clint Glass Novak Environmental	Hydrologist	(520) 206-0591 (520) 623-3507 (fax)
Thomas Lenczycki Stantec Consulting Inc.	Civil Engineer	(602) 438-2200 (602) 431-9562 (fax)
Darwin Reynolds DARcor & Associates	Electrical Designer	(602) 787-8460 (602) 787-6465 (fax)
Andrea Forman Forman Architect	Architect	(480) 941-1369 (480) 941-4258 (fax)
Steve Hagadorn McGann and Associates	Landscape Architect	(520) 297-9540 (520) 297-9545 (fax)

8. INDEPENDENT TECHNICAL REVIEW TEAM: The ITR will be performed by CESPL. The list of ITR team members is shown in Table 2. The BCOE review will be conducted by the Los Angeles District, Construction Division, Luke Project Office, Luke AFB, Arizona. The BCOE reviews will be done at 50%, 90%, and 100% phases.

TABLE 2
ITR TEAM MEMBERS
Los Angeles District COE

NAME	RESPONSIBILITY	NO OF YEARS	TELEPHONE
Jatin T. Desai	ITR Team Leader	36	(213) 452-3721
David Van Dorpe	Structural Review	2	(213) 452-3706
Huma Nisar	Civil Review	8	(213) 452-3665
Tom Luzano	Landscape Review	25	(213) 452-3651
Rey Farve	Environmental Review	20	(213) 452-3864
Don Nguyen	Cost Eng Review	10	(213) 452-3712
James Aldrich	BCO Review	-	(623) 935-0820
Jeff Devine	Geology Review	10	(213) 452-3578
Jon Vivanti	Soils Review	15	(213) 452-3601
Francis Omoregie	Materials Review	12	(213) 452-3599
Glenn Mashburn	Hydraulics Review	26	(213) 452-3549

MAJOR MILESTONES

Low Flow Channel - Phase 2 - P/S and DDR

Award Contract for Design 11 Dec 99
 Design Quality Control Plan by A/E 15 Feb 00
 50% Design Submittal. 15 May 00
 90% Design Submittal 30 Oct 00
 100% Design Submittal 16 Jan 01

The advertising, award and construction management of

the LFC Phase 2 will be done by the FCDMC.

Concept Design Report and Habitat Criteria Report

Preliminary Habitat Criteria Report Submittal.....	24 Feb 00
Draft Conceptual Design Report Submittal.....	20 May 00
Final Complete Report Submittal	23 Aug 00
Approved Report Submittal.....	13 Sep 00

Environmental Restoration - Phase 1a

Award Contract for Design	01 Nov 00
Design Quality Control Plan by A/E.....	27 Nov 00
50% Design Submittal.....	04 Jan 01
90% Design Submittal	15 Mar 01
100% Design Submittal.....	07 May 01

NOTE: Schedules for Design of other phases of Environmental Restoration Project will be developed when the SOW for those phases is negotiated and contract awarded to A/E.

10. CONFLICT RESOLUTION PROCEDURES: Specific issues raised in the review shall be documented in a comment, response, action required and action taken format. The Independent Technical Review Team (ITRT) leader (Jatin Desai) shall review the documentation to identify any outstanding disagreements between members of the design team and the ITRT. Any disagreements shall be brought to the attention of the appropriate section chief to facilitate resolution of technical disagreements between the A/E design team and ITRT counterparts. If a resolution is not possible, the issues shall be brought to the attention of the Los Angeles District, Engineering Division Design Branch Chief to facilitate resolution of technical disagreements.

11. ITR COST ESTIMATE: The funding for the ITRT is provided by the PM to each branch doing the review using project funds available. The review cost estimate for LFC Phase 2, Concept Design Report and Phase 1 Habitat Restoration for Design Branch is approximately \$75,000 and will be used to review the P&S, Cost Estimate and the DDR for the following disciplines:

- a. Environmental
- b. Civil
- c. Landscaping
- d. Structural
- e. Cost Estimate

12. VALUE ENGINEERING (VE) STUDY: VE Study was performed during the feasibility study and recommendations incorporated in the design of LFC and will be taken into account during Environmental Restoration design phases.

13. ACQUISITION STRATEGY: Invitation for Bid (IFB) solicitation will be used for this project. Use of EBS is planned for the Environmental Restoration phases of the project.

14. ENVIRONMENTAL DOCUMENTATION: The EA for the project was prepared by CESPL in April 1998 and ROD signed by HQ USACE in March 2000.

15. PROJECT ISSUES/CONCERNS:

a. FAA's safety concerns have resulted in reconfiguration of Habitat types to be concentrated within shorter reach of the project. This has resulted in total Habitat Units/ acreage to be different than originally envisioned.

**Rio Salado Environmental Restoration Project - Tempe Reach - Phase 3
Review Comments and Responses**

Documents: 100% Plans and Specifications for Rio Salado Tempe - Phase 3

Document Date: September, 2007

Reviewer(s): Robert Crist and Jack Silcox

Agency / Department: Corps of Engineers - Construction

Document	Section / Sheet No.	Comment	A/E Response
Specs	01 45 01	Quality Control - Minor Construction - This section refers to the Contracting Officer as the KO	KO changed to Contracting Officer's Representative (COR).
Specs	01 45 01	Para. 1.8 QCM conducts meetings every two weeks. Change to once a week.	Done
Specs	01 45 01	Para. 1.5.2 (Alternate QC) - Change from 2 weeks to 1 week absence.	Done
Specs	01 45 01	Para. 1.3 - Change from KO to Contracting Officer's Representative (COR) and going this section and change KO to COR	KO changed to Contracting Officer's Representative (COR).
Specs	01 45 01	Para. 1.3(a) & (b) - remove wording "after each week that work is performed".	Text deleted
Specs		Provide a section for RMS (Resident Management System)	Section 01 45 01.10 (USACE Quality Control System - QCS) added
Specs	01 58 00	Project Identification - Last page - Provide Plate 1 for Sign Graphics and Text	Done
Specs		Provide a section for Health and Safety	Section 01 35 26 (Governmental Safety Requirements) added
Specs		Provide the front end portion of the specifications	Per A/E Scope of Work and discussions with Tom Luzano - this work to be completed by Los Angeles District Office
Specs	01 77 00.0020	Closeout Procedures - Provide project As-Built drawings - Needs to include 2 full size sets of As-Built and 2 disks in current AutoCad at the end of the project. During the project, a set of original drawings should be in the Contractor's trailer and marked in red for changes in the field as it happens	Done. See Paragraph 1.3

Specs	01 78 00. 0040	Closeout Submittals: For O&M Manuals - Do we want copies of the O&M Manuals as well as the manuals on disk.	Edited to require submittal of both 3-ring binder and CD
Specs	01 78 00.0040	Operations and Maintenance Data - Para. 1.2.2 (Package Content) - What is Data Package [3][4][5]?	Reference to "Data Package" deleted.
Specs	03 30 04	Concrete for Minor Structures - Para 3.6 Test and Inspections - Specs don't provide SLUMP, AIR, TEMP requirements, they refer to ASTMs)	Slump and air are specified in Paragraph 1.3.2. Hot weather requirements are specified in 3.2.4
Specs	03 30 04	I'm not seeing ADA requirements (SLOPE/CROSS SLOPE) for the Multi use trails, I see 1% TYPE, that's it?	Additional information added. See Paragraph 3.1.1
Specs	03 30 04	Any requirements on the concrete for steel or wire? See CG 12, 13, 14	Reinforcing specified in Paragraph 2.1.5
Specs	32 05 33	Landscape Establishment Period - Para 3.1 - (Duration for maintenance period and Extent of Work) - This calls for 30 calendar days for the maintenance period. Is that what you want?	The 30 day maintenance period is as requested by the City of Tempe
Specs	32 05 33	A section needs to be provided for permits that are required and who is responsible for payment for these permits	Paragraph 3.3 added to address requirements for pesticide applicators to be licensed applicators. No other permits required for landscape maintenance work.
Specs	32 05 33	Have these drawings been reviewed by the appropriate parties in the Flood Control District as well as the City of Tempe?	Both the Flood Control District and the City of Tempe have reviewed the documents. The revised plan include changes required by these comments.
Specs	32-93 00	Exterior Plants - Include wording that all plants installed need to be tagged. The tag should be metal and identify the plant in English not Latin name.	Done. See Paragraph 2.1.1.1
Specs		CG-18 Detail 2 Removable Bollard Detail - Does the City really want removable bollards that are 6" in Dia Sch 40 steel pipe, concrete filled?	Pipe size changed to 4". Incorrect reference to "concrete filled" has been deleted.
Specs		Specification Book - Every page needs to be identified as the spec section, this addition that I'm reviewing only identifies the spec section at the beginning, a lot of time is wasted trying to find the spec section. Also the pages keep repeating, every spec section starts over	Done.

**Rio Salado Environmental Restoration Project - Tempe Reach - Phase 3
Review Comments and Responses**

Documents: 100% Plans and Specifications for Rio Salado Tempe - Phase 3

Document Date: September, 2007

Reviewer(s): Tom Luzano - Landscape Architect

Agency / Department: Corps of Engineers - Los Angeles District

Document	Section / Sheet No.	Comment	A/E Response
Drawings	Cover Sheet	Project name on sheet and project name in title block should match exactly	Done (Cover Sheet and all other Sheets)
Drawings	Cover Sheet	Change "Area Map" to "Project Location"	Done
Drawings	Cover Sheet	Use updated title block (to be provided by Corps)	Done (Information updated per David Pham, COE)
Drawings	G-2	Name of Sheet G-2 in Index should be the same as name of sheet in title block	Done
Drawings	G-2	District File Numbers not yet assigned. (To be added by Corps)	File numbers (as provided by David Phan, COE, Los Angeles) added to each drawing sheet
Drawings	G-3	Contractor Staging Area Notes: Need to coordinate with City of Tempe to identify location of staging area. Show staging area on plans.	The staging area has not been identified by the City of Tempe. The plans include a note that the City will provide this area and that it will be within 1/2 mile of the project site.
Drawings	CG-2	Show new slope along path between grade-control structures on plan	Done
Drawings	CG-2	Show limits of safety fence on plan - as shown in detail on CG-18	Done
Drawings	CG-2	Note transition (with station points) from condition shown in Detail 1-CG-12, to Detail 4-CG-18, to Detail 2-CG-12	Done
Drawings	CG-2	In profile - note where conditions associated with Detail 4-CG-18 start and stop.	Done

Drawings	CG-8	Indicate if safety rail and/or decorative metal fence are to be installed in soil cement or rock mattress	In most instances fence / safety rail posts do not need to penetrate the reno mattress, but it is not possible to tell without extensive pot-holing. A new detail has been added indicating requirements where there is a conflict. (This detail is referenced on other appropriate details).
Drawings	CG-10	Indicate distance between edge of plaza paving and new fence	Done
Drawings	CG-12	Call out Reno Mattress in Detail 3	In most instances fence / safety rail posts do not need to penetrate the reno mattress, but it is not possible to tell without extensive pot-holing. A new detail has been added indicating requirements where there is a conflict. (This detail is referenced on other appropriate details).
Drawings	CG-12	Note minimum clear distance from path to lake wall in Detail 2	Done
Drawings	CG-12	Note thickness / depth of Decomposed Granite in Detail 2	Done
Drawings	CG-12	Add tracer tape above conduit in Detail 2. Move conduit out from under pavement.	Done
Drawings	CG-13	Note direction of flow in Scupper Plan	Scupper deleted per comments from Flood Control District of Maricopa County
Drawings	CG-13	Check dimensions in Partial Plan and Section A-A	Scupper deleted. See above.
Drawings	CG-14	In Details 1 and 2. Make requirement for concrete consistent (2500 psi vs 3000 psi)	Done (3,000 psi used throughout)
Drawings	CG-14	Show / note type of fence in Detail 5	Done
Drawings	CG-15	Detail 1 (Elevation) Show Safety Rail with installation in Reno Mattress	In most instances fence / safety rail posts do not need to penetrate the reno mattress, but it is not possible to tell without extensive pot-holing. A new detail has been added indicating requirements where there is a conflict. (This detail is referenced on other appropriate details).
Drawings	CG-17	Detail 3 - Does retaining wall need to be keyed into soil cement. Can the top of the concrete footing / leveling course be flush with the top of the soil cement.	Details have been approved by the Flood Control District of Maricopa County. (See attached Minutes of Meeting).

Drawings	CG-18	Call out type of safety fence shown in Detail 4	Done
Drawings	CG-18	Add information on size / gauge of WWM in Detail 4	Per comments from Flood Control District of Maricopa County, WWM has been replaced with No. 4 rebar at 12" O.C., both ways
Drawings	LP- Sheets	Are the trees to be planted along the path to be 24' box size?	Yes. Drawings updated to make this clear.
Drawings	LI-5	12 Station Controller is noted - but only one station is utilized.	A 12 station controller is the "smallest" available controller that is compatible with the City of Tempe's central irrigation control system. The 12 station controller retained.
Drawings	LI-9	12 Station Controller is notes - but only three stations are utilized	A 12 station controller is the "smallest" available controller that is compatible with the City of Tempe's central irrigation control system. The 12 station controller retained.
Drawings	LI-9	Note meter size in water service diagram	Done. Meter size (1") added to drawings.

**Rio Salado Environmental Restoration Project - Tempe Reach - Phase 3
Review Comments and Responses**

Documents: 100% Plans and Specifications for Rio Salado Tempe - Phase 3

Document Date: September, 2007

Reviewer(s): Bills Kersbergen (and others)

Agency / Department: City of Tempe - Development Services

Document	Section / Sheet No.	Comment	A/E Response
Drawings		Submit for this approval, and do not resubmit to the Building Safety/Planning Plan Check process, until after DPR approval is granted. (Clarified by 5/14/08 Conference Call: City will required that the documents be (re)submitted as a Development Plan. Once the Development Plan is approved, the documents can be resubmitted for Building Safety approval. An completed application form - and a Design Summary narrative need to be submitted with the development plan.	Project plans, application, and supporting narrative have been submitted to the City of Tempe as a Development Plan.
Drawings		Document set reviewed for compliance with Zoning and Development Code, additional comment may occur upon future review, based upon Development Review conditions of approval.	Acknowledged.
Drawings		Do not submit for permit, documents labeled: "Not for Construction"	Notation "Not for Construction" has ben removed from revised plans submitted to the City of Tempe.
Drawings	Sh. CG-15	Do not propose chain link fence or gates. (Clarified by 5/14/08 Conference Call: This is a general note. City acknowledged that preliminary plans with fences had been reviewed by the Police Department. Provide minutes of that meeting with Development Plan application).	The only chain link fence and gates proposed for the project are replacement section of fence and replacement gates as required by the Flood Control District. Fence type(s), heights, and locations, have been reviewed and tentatively approved by the City of Tempe Police Dept. (See Minutes of 7/6/07 Meeting with Police Dept. representative, attached).
Drawings	Shts. LP1/ E3	All shrub materials listed are taller than 3'-0", maintain minimum 12'-0" separation between edge of pedestrian walk and planting location. (except for Sphaeralcea, which must be a minimum 6'-0" from edge of walk.	Plans updated to meet these requirements.

Drawings		Maintain 20'-0" minimum separation between light fixture head and tree trunk. (Clarified by 5/14/08 Conference Call: Staff acknowledged that plaza was a special condition. If photometric diagram shows appropriate distribution of light, existing layout will be approved).	
Drawings		Indicate tree locations (screened) on electrical plans to demonstrate compliance with ZDC 4-704 (C)(6)	Done
Drawings		Provide photometric drawings to demonstrate compliance with ZDC 4-803 (D)(6), 0.5 foot-candles at pedestrian walks.	Done
General		Per 5/14/08 Conference Call: Will need to submit Water Meter Application (Water Services Permit) to City Engineering. To do this, there needs to be an address where the meter is to be installed. Addresses will also be required for electrical service application(s).	MA/NE to provide site plan to City of Tempe (Rio Salado Project Office). City staff to request / obtain addresses).
Drawings	CG-12	Details 1, 2, 3, and 4: City would like to modify detail for multi-use path to provide for 6" of 3,000 psi concrete over a 4" aggregate base course.	Details revised to show 6" of 3,000 psi concrete over +/- 2" base course. The path is being constructed on top of soil cement and/or an engineered embankment. The base course is intended to level the subgrade for the concrete surfacing. An additional depth of base course will not increase the loading capacity over-and-above that proposed by the existing soil cement / embankment.
Drawings	E-2	Provide Site Plan and address for location of new electrical service	Done
Drawings	E-5	Provide Site Plan and indicate locations of Panelboards "N-1" and "S-1."	Done
Drawings	E-6	Detail 4 - Single Line Diagram: Note 6' separation between ground rods.	Done
Drawings	E-6	Detail 4 - Single Line Diagram - Key Note 7: Provide detail of pedestal noted in this key note.	Done
Drawings	E- Sheets	Include City of Tempe Standard Detail for "Electrical Underground Junction Box" (Standard Detail T-411)	Done

Drawings	CG-13	Provide additional dimensions for Scupper	No longer applicable. Scupper has been removed from the scope of the project at the request of the Flood Control District of Maricopa County.
Drawings	LI-6 and LI-9	Note size of water meter(s) in enlarged plan(s)	Done. Water meter size (1") noted on drawings.
Drawings	LI-13	Confirm that 1" meter is adequate for this project	A 1" meter is adequate for the project needs and provided some additional capacity for potential future expansion.

**Rio Salado Environmental Restoration Project - Tempe Reach - Phase 3
Review Comments and Responses**

Documents: 100% Plans and Specifications for Rio Salado Tempe - Phase 3

Document Date: September, 2007

Reviewer(s): Shelby Brown

Agency / Department: Flood Control District of Maricopa County

Document	Section / Sheet No.	Comment	A/E Response
Drawings		Compaction stipulations will be needed for the retaining walls.	The Corps of Engineers requires that the specifications for the segmental concrete block retaining wall be non-proprietary. Since each product is slightly different, the specifications require that the Contractor (wall system manufacturer) provide engineered shop drawings for the specific wall type to be installed. The shop drawings will note minimum compaction requirements.
Drawings	Sheet CG-12	Indicates that the south bank multi use path is 10' wide. If this is also our maintenance access, a 12' minimum is required.	Per on-site meeting with Flood Control District staff (See Minutes of 5/13/08 Field Review Meeting, attached), a portion of the south bank path will be widened to 12'. The balance will be retained at 10' as this is the maximum width that will fit on top of the existing levee.
Drawings		All plantings within 20' of our gabions/reno mattress' will need a root barrier.	Notation on root barrier requirement added to details.
Drawings	Sheet L1-12	A gabion repair detail needs to be provided on Plan Sheet L1-12	A gabion (Reno Mattress) repair detail is provided. See Detail 8, Sheet LP-11.
Drawings	Sheet E1	The general note on E-1 needs to be corrected from Pima County to Maricopa County.	Correction made.

**Rio Salado Environmental Restoration Project - Tempe Reach - Phase 3
Review Comments and Responses**

Documents: 100% Plans and Specifications for Rio Salado Tempe - Phase 3

Document Date: September, 2007

Reviewer(s): Kenneth Rackstraw

Agency / Department: Flood Control District of Maricopa County - Hydrology and Hydraulics Branch

Document	Section / Sheet No.	Comment	A/E Response
Plans	Not Identified	All fencing work shown is to be replacement fencing. If additional fencing is required in the floodplain, we request that it be collapsible or breakaway so as not to impede flows.	Replacement fencing across Indian Bend Wash has been replaced with break-away fence type. See Detail 1, Sheet CG-13. In all other locations fence type(s) as detailed have been approved by Flood Control District staff. (See Minutes of 5/13/08 Field Review Meeting, attached).
Plans	Not Identified	As shown on the drawings, any required modifications to the gabions / Reno mattresses due to the landscaping plantings are to be left exposed until inspected and approved by an FCD inspector.	Notation related to this requirement is included on the drawings. (See Detail 8, Sheet LP-11.
Plans	Not Identified	Railings parallel to multi use path on incline along north levee from Station 22+20 to Station 27+65 have the potential to catch large amounts of debris during high flows. We request that collapsible rail mounts be used for the railings in this reach.	Fence type, location, and alignment proposed for subject location have been updated per Flood Control District staff comments. (See Minutes of 5/13/08 Field Review Meeting, attached).
Plans	Not Identified	The bollards planned for the south levee near McClintock Drive should not block access by FCD operations and maintenance personnel performing routine and emergency functions in the area. It is noted that the center bollard will be removable.	The center bollard is removable. See Detail 2, Sheet CG-18.
Plans	Not Identified	Additional design detail should be included to address the erosion protection provided by the cement stabilized alluvium bank protection (and Reno mattress / gabions if affected) in the reach along the north levee from approximately Station 26+20 to Station 27+50 where up to 2 feet of cut is planned for the multi use path. See drawings CG-3/4 and CG-16/17.	Details / sections, etc. on the revised plans reflect approvals provide by Flood Control District staff. See Minutes of 5/13/08 Field Review Meeting).

Plans	Not Identified	<p>The tree and shrub planting planned for the left overbank of Indian Bend Wash near the grade control structure is quite extensive, consisting mostly of varieties of mesquite. A Report for the "Indian Bend Wash Flood Control Improvements" dated June 2002 by McGann & Associates Inc., Novak Environmental Inc., Joint Venture shows a project Manning "n" roughness coefficient of 0.070 in this area. Consistent with the comprehensive environmental design of the Rio Salado Environmental Restoration Project, the density of planting in this area should not exceed the density of planting of vegetation immediately upstream.</p>	<p>The density of the proposed planting is consistent with the density of upstream planting.</p>

**Rio Salado Environmental Restoration Project - Tempe Reach - Phase 3
Review Comments and Responses**

Documents: 100% Plans and Specifications for Rio Salado Tempe - Phase 3

Document Date: September, 2007

Reviewer(s): Kenneth Rackstraw / Mike Ramirez / Kumar Hanumaiah

Agency / Department: Flood Control District of Maricopa County - Engineering and O&M Divisions

Document	Section / Sheet No.	Comment	A/E Response
The Comments below provided during 5/13/08 Field Review Meeting			
Drawings	CG-1 and CG-13	Delete Scupper. FCD is concerned that this will necessitate undue maintenance requirements to keep the scupper clean. Replace with dip crossing.	Scupper deleted.
Drawings	CG-2 and CG-18	Make the following changes to the "ramp / sloped walkway" that crosses over the grade control structure. (1) Reduce the paved path to 10'. (2) Reduce the overall width of the fill to 14'. (3) Increase the depth of the slope paving from 4" to 6". (4) replace the WWM with No. 4 rebar at 12" O.C.	Requested changes made. See Detail 4, Sheet CG-18.
Drawings	CG-2	Show the extent of the railing on Plan Sheet CG-2	Done
Drawings	CG-17	Details 1 and 2: Add note to this sheet (or the specifications, as appropriate) that the geo-grid must be designed to resist the soil pressure loading and pressures due to surcharge loading of vehicular traffic on the retaining wall.	The Corps of Engineers requires that the specifications for the segmental concrete block retaining wall be non-proprietary. Since each product / retaining wall system is slightly different, the specifications require that the Contractor (wall system manufacturer) provide engineered shop drawings for the specific wall type to be installed. The shop drawings will note the geo-grid type, length, and spacing. The requirement to provide this information has been added to the specifications.
Drawings	CG-18	The south bank path from the intersection with McClintock Road to approximately Station 23+00 should be increased from 10' wide to 12' wide to better accommodate maintenance vehicle traffic to the river channel at this location.	Done

April 29, 2010

Mr. Rob Crist, Project Engineer
U.S. Army Corps of Engineers, Los Angeles District
Luke Air Force Base Project Office
7046 North Fighter Country, Building 470
Luke Air Force Base, Arizona 85309-1636

Re: Rio Salado - Tempe Reach - Phase 3

Dear Rob,

Based on the various RFI's that you have forwarded to us it is our understanding that several issues have come up during project construction related to the source of irrigation water and the source of electrical power for the Rio Salado, Tempe Reach, Phase 3 project. We appreciate that addressing these issues has been a challenge for you and the construction contractor. At the same time, we want you to understand that the proposed water and electrical services, as shown on the project plans, were:

- Identified early in the design process
- Based on a survey of the site and on various documents provided by the City of Tempe
- Based on multiple visits to the site as needed to field check existing conditions
- Reviewed on multiple occasions by the Corps of Engineers and the City of Tempe, and
- Were examined and acknowledged by the Corps and the City during these reviews.

It is also worth noting that this project was initially authorized in December of 2005 and has been on-going for nearly five years. The original scope of the project called for planting in the Salt River channel as envisioned by the Feasibility Study. This concept was abandoned due to persistent flooding in the channel and the project put on hold for an extended period of time. It was then re-started with a limited scope and reduced budget.

During the period of time between the initial project start and commencement of construction activities, conditions adjacent to the project site have changed significantly. Some of the changes include:

- The construction of the Tempe Marketplace, located east of the site, has been completed.
- The intersection of McClintock Drive and East Pima Street (the entry to the Tempe Marketplace) has been modified and improved.

McGann & Associates, Inc. / Novak Environmental, Inc. / Joint Venture
6814 North Oracle Road, Suite 210
Tucson, Arizona 85704
Phone (520) 297-9540
Fax (520) 297-9545

4574 North First Ave., Suite 100
Tucson, Arizona 85718
Phone (520) 206-0591
Fax (520) 882-3006

- The Pier 202 development, located west of the project site, has changed from a parcel of vacant land to an approved project that is under construction.
- The widening of the Red Mountain Freeway (SR 202) was initiated by the Arizona Department of Transportation, necessitating the deletion of the north bank and Indian Bend Wash improvements from the scope of this project.

Provided below is a brief chronology of related project events, activities, and actions. We are providing you with this information so that you are aware of the steps that were taken, the coordination activities that were performed, and the external events that occurred during the design phase of the project.

- June 2005 Contract Modification for Phase 3 was received from the Corps of Engineers
- August 2005 The project site was surveyed for culture, topography, and existing utilities. The survey showed an existing 12" and an existing 36" water line on the south side of the Salt River, west of McClintock. The survey also showed existing electrical transformers, cabinets, meter pedestals, and devices within the east side of the McClintock Drive right-of-way, south of the Salt River bridge. (See Attachment A)
- February 2006 30% Plans were submitted to the Corps of Engineers and the City of Tempe for review. Plans showed the irrigation water source as a new meter and backflow preventer located on the south bank of the Salt River on the west side of McClintock Drive. (See Attachment B).
- July 2006 Updated 30% Progress Plans were submitted to the Corps of Engineers. A/E contract was subsequently put on hold due to persistent water present in the Salt River Channel and decision made that concept as envisioned by the Feasibility Report could not be implemented.
- December 2006 Project re-started with revised reduced scope and reduced budget. The proposed improvements limited to the overbank areas only.
- April 2007 Field reconnaissance was conducted by the A/E (with Corps and City of Tempe staff) to review / confirm existing conditions. Numerous site features with existing electrical services were found in the immediate vicinity of the proposed entry to the project from McClintock Drive. (See Photos, Attachment C).
- June 2007 90% Progress Plans and Outline Specifications were submitted to the Corps of Engineers and the City of Tempe. Plans showed the irrigation water source as a new meter and backflow preventer located on the south bank of the Salt River on the west side of McClintock Drive. The plans also show a new irrigation controller with electrical service in this location. The Outline Specifications specifically state: "*Water Source for South Bank: New potable water meter to be installed on west side of McClintock Drive, south of the River.*" (See Attachment D).

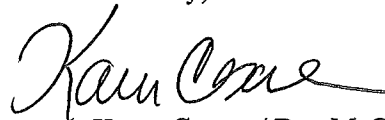
- June 2007 A review meeting was conducted at the Corps of Engineers Los Angeles District office on June 13, 2007 with Corps and City of Tempe representatives present. The minutes of the review meeting do not include any comments related to the proposed water or electrical points of connection. (See Attachment E).
- July 2007 A drawing was provided by the City of Tempe, showing intersection improvements at McClintock and the (then planned) west entry drive to the Tempe Marketplace. The drawing showed an existing 12" and an existing 36" water line on the south side of the Salt River, within the McClintock Drive right-of-way. The plan also notes existing light poles with existing electrical services in this area to be relocated. (See Attachment F).
- July 2007 Assessor's Drawings were provided by the City of Tempe, showing existing water lines / meters in the vicinity of the proposed point-of-connection. The drawings show an existing 36" water line and a parallel 8" water line (with meter connections) in the McClintock Drive right-of-way, south of the Salt River. (See Attachment G).
- July 2007 A/E received email from City of Tempe confirming that there is a 36" water line in the McClintock Drive right-of-way. (See Attachment H).
- September 2007 The 100% Plans and Specifications were submitted to the Corps of Engineers and the City of Tempe for review. Plans showed the irrigation water source as a new meter and backflow preventer located on the south bank of the Salt River, west of McClintock Drive. The plans also show a new electrical service (meter / lighting control pedestal) on the south bank of the Salt River west of McClintock Drive. (See Attachment I).
- January 2008 A redlined set of the 100% Design Plans was received from Tom Luzano (Corps of Engineers Project Manager). Comments related to the water meter size are included, but there are no comments or questions related to the proposed points-of-connection for the water and electrical systems. (See Attachment J).
- June 2008 The Final (100%) Plans and Specification files dated June 2008 are submitted to the Corps of Engineers and the City of Tempe. The plans show the irrigation water and electrical points-of-connection on the south side of the Salt River, west of McClintock Drive. The plans also show a new electrical service (meter / lighting control pedestal) on the south bank of the Salt River west of McClintock Drive. The specifications (Section 32-24-84, Paragraph 2.4.1), which were based on the Corps' Specs-Intact template, state:
- "All new water meters shall be provided and installed by the City of Tempe Water Department. The Contractor shall be responsible for requesting the water meter, for coordinating its installation, and for paying all charges and fees associated with meter installation."* (See Attachment K).

Mr. Rob Crist
April 29, 2010
Page 4

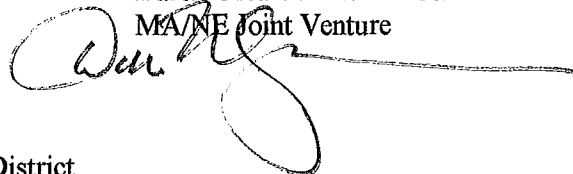
- June 2008 The Final Plans are submitted to the City of Tempe Development Services Department for development review. The plans show the irrigation water and electrical points-of-connection on the south side of the Salt River, west of McClintock Drive. Review comments are received noting that addresses must be provided for the proposed water and electrical meter locations. Redlined notes related to the water and electrical meters indicate that reviewer has seen and concurred with proposed meter locations. (See Attachment L).
- June 2008 City of Tempe obtains addresses for water and electrical meters. (See Attachment M).
- July 2008 City of Tempe Development Services Department approves plans. (See Attachment N).
- July 2008 Final Plans are submitted to the City of Tempe Building Safety Department for final engineering review. The plans show the irrigation water and electrical points-of-connection on the south side of the Salt River, west of McClintock Drive. The electrical plans note a specific address for the electrical meter pedestal (40 South McClintock Drive). (See Attachment O).
- May 2008 Prepared an exhibit at the request of City of Tempe staff which showed the project relative to existing SRP and APS easements and ADOT right-of-way and showed proposed electrical and water service meters. Exhibit was prepared to support the permit needed from the BLM for project construction. Per the City of Tempe the exhibit was to be used by the BLM as part of their required notification of surrounding property owners about the project. (See Attachment P).
- 2008 / 2009 The Flood Control District of Maricopa County, SRP and APS provide multiple versions of new, post-design comments that are addressed by the A/E and the City of Tempe. There are no comments or questions related to the proposed meter / service locations.
- December 2009 The A/E receives written notice from the Contracting Officer (Department of the Army, Los Angeles District, Corps of Engineers) that the project work has been completed and accepted by the Corps. (See Attachment Q).

Rob, we hope this helps clarify what has been a rather lengthy design process. We remain committed to working with the Corps of Engineers to identify solutions to field conditions and utility company requirements as they now exist. Please feel free to contact us if you have any questions or need any input from the A/E team.

Sincerely,



Karen Cesare / Don McGann
MA/NE Joint Venture



x.c. Tom Luzano, Project Manager
U.S. Army Corps of Engineers, Los Angeles District

ATTACHMENT D
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**Rio Salado Environmental
Restoration Project
Tempe Reach - Phase 3
Tempe Town Lake to McClintock Drive**

**Outline Specifications
June 2007**

U.S. Army Corps of Engineers
City of Tempe - Rio Salado Project Office
McGann & Associates / Novak Environmental Joint-Venture

Rio Salado - Tempe - Phase 3 Improvements

Comments from June 13, 2007 Review Conference at Corps of Engineers, Los Angeles District Office
Draft 90% Plans, Outline Specifications, and Order-of-Magnitude Cost Estimate

Participants:	Tom Luzano, Corps of Engineers Mike Ternak, Corps of Engineers Nancy Ryan, City of Tempe	Karen Cesare, MA/NE Don McGann, MA/NE
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Document:	Reviewer:	Comment:	A/E Response - Action
N/A	NR	General: The City of Tempe is continuing to work with ADOT regarding the widening of SR 202. Design work is proceeding and construction of these improvements is scheduled for 2009. The City of Tempe has or will request that ADOT include multi-use path lighting under the bridge structures at IBW and at McClintock as part of the widening project.	N/A
N/A	NR	General: The City of Tempe is continuing to work with BLM regarding the triangle of land near the confluence of Indian Bend Wash and Town Lake.	N/A
Sheet G-2	TL	Electrical Plans shown in Index not included in Drawing Set.	Agree. Drawings will be added to revised set.
Sheet D-1	TL	Key note suggests "demolition work" in Tempe Town Lake	Agree. Extra key note will be deleted.
Sheet CG-1	TL	Low-flow scupper at centerline of IBW seems like appropriate, cost effective way to address nuisance flows.	N/A
Sheet CG-2	TL	Profile for section of multi-use path under the 202 is incomplete and there may be conflicts with bridge piers.	Agree. Will modify and complete the design of this area when supplemental field survey work has been completed.
Sheet CG-2	TL / MT	It is likely that storm drain outfall under the 202 bridge will flow across the multi-use path. Need to confirm that flows occur only during and immediately following storm events. If flows are continuous, flows will need to be conveyed under path.	Agree. All field work done to date suggests area is dry except when storm events occur. Will work with City of Tempe to confirm.
Sheet CG-3	TL / NR	The section of multi-use path between Stations 22+00 and 24+00 should be moved north and away from the top of the bank. In its current location a safety rail may be needed.	Agree. Will move north as far as possible. If setback is sufficient, no safety rail will be shown. If not, safety rail will be added.

ATTACHMENT E
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Sheet CG-4	NR	General: Modifications to flatten ramp at Station 26+00 will be necessary but will need Flood Control District approval.	Agree. Revised / completed 90% documents will be submitted to the Flood Control District for review.
Sheet CG-9	NR	Existing Flood Control District warning sign at proposed plaza location will need to be salvaged and relocated.	Agree. Will add this information to the plans.
Sheet CG-9	TL / NR	Access control bollards on the section of use-use path that extends from the plaza to McClintock Drive need to be added.	Agree. Will add this information to the plans.
Sheet CG-9	NR	Try to terminate new multi-use path at the McClintock Road crosswalk to new commercial development east of McClintock Drive	Agree. Will update to make this connection.
Sheet CG-10	NR/TL	General: Scope and character of proposed entry plaza are appropriate. City and Corps concur with approach of using trees for shade in this location (under the OH power lines) but trees need to meet SRP standards.	Agree. Will confirm that tree species specified are in accordance with SRP guidelines.
Sheet CG-14	NR	City of Tempe prefers expanded metal benches with center arm rests (as manufactured by Wabash). These do not attract tagging and do no encourage use of the bench for sleeping.	Agree. Will specify benches that meet this criteria.
Sheets LP-1 to LP-9	NR / TL	Suggest deleting the hydroseeding shown along the edges of the new multi-use path. Allow native plants to volunteer in these locations.	Agree. Will delete hydroseeding from these locations.
Sheets LP-1 to LP-9	NR / TL	The City's standard for the setback for trees from a sidewalk or multi-use path is 5'. The Flood Control District will likely want 10'. Need to provide reasonable setbacks - but at the same time minimize impacts on the existing Reno mattresses.	Agree. Will attempt to reconcile these competing interests.
Sheets LP-1 to LP-9	NR / TL	Suggest use of Honey Mesquite in some locations.	Agree. Will specify this species as appropriate.
Sheet LP-5	TL	Does the layout of piers under the 202 west of McClintock Drive reflect the existing or proposed new condition. Modify if-needed.	Agree. Will make certain that piers are shown per preliminary plans provided to MA/NE from Parsons-Brinkerhoff (ADOT Consultant).

ATTACHMENT E
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Sheet LP-7 and LP-8	NR / TL	Along sides of south bank multi-use path consider adding a few shrubs in areas where hydroseeding is deleted. This should be done only if it will not significantly impact the existing Reno mattresses. It is acceptable to the City and to the Corps to irrigate these shrubs using the tree-zone lateral - rather than adding a valve and new laterals.	Agree. Will investigate and add shrubs if appropriate.
Sheet LP-9	NR / TL	Note clean-up of bank on west side of McClintock. OK to add more trees and possibly some shrubs to the planting scheme for this area.	Agree. Will note clean-up requirement and add plants of conflicts with UG utilities can be avoided.
Sheet LP-10	TL / NR	Planting scheme for plaza needs to be coordinated with lighting plan for area in order to comply with City Guidelines for CPTED.	Agree. Will make certain that planting does not obstruct required lighting.
Sheet LP-12	NR	Need to add details for tree planting within and/or adjacent to bank protection Reno Mattress. Nancy Ryan to provide detail from previous project.	Agree. Will add detail when received.
Sheet LI-1	TL	Show or note the length of additional mainline the contractor will need to install where the existing IBW mainline is being extended to serve the (BLM) triangle area.	Agree. Will show this information.
Sheet LI-9	NR	Move new irrigation controller and backflow preventer away from McClintock Drive to reduce the risk of damage by vehicles.	Agree. Will move this equipment.
Electrical	TL / NR	City would like to install empty conduit for future lighting along multi-use path. This would be on the south bank and on the north bank between McClintock and the Town Lake upstream dam. If installation required modifications to the levee, and the Flood Control District objects, this should be omitted. If included in the project scope, it should be shown as a separate bid item so that appropriate cost sharing formulas can be applied.	Agree. Will coordinate with Electrical Engineer and shown on plans.
Cost Estimate	TL / MT	Preliminary costs as shown on the Order-of-Magnitude Cost Estimate are acceptable, but it is important the scope not be added to the project that would increase the estimated construction cost.	Agree. Will make all necessary changes but will not add scope items.
Cost Estimate	TL	Tom Luzano recommended that the AE provide detailed quantity take-offs for the project work so that the Corps of Engineers cost estimating staff can prepare the MCACES cost estimate.	Agree. Will provide quantities as requested for Corps to use in preparation of MCACES Cost Estimate.

ATTACHMENT E
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U.S. Army Corps of Engineers - Los Angeles District

in cooperation with
The City of Tempe

Rio Salado Environmental Restoration Project -
Tempe Reach - McClintock Drive to Town Lake

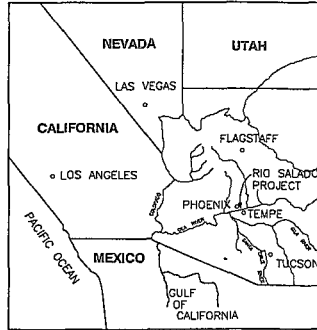
100% DESIGN SUBMITTAL

September 2007
DATE 2008

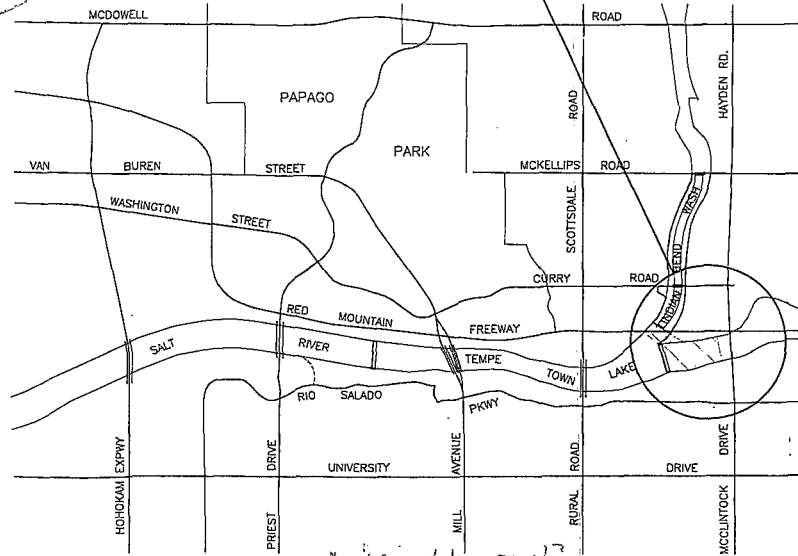
LIST OF ABBREVIATIONS

A.B.C.	AGGREGATE BASE COURSE	MAX.	MAXIMUM
A.C.	ASPHALTIC CONCRETE	MCJ	MASONRY CONTROL JOINT
A.C.D.E.	U.S. ARMY CORPS OF ENGINEERS	M.H.	MANHOLE
APPROX.	APPROXIMATE	MIL.	MILIRUM
ARV	AIR RELIEF VALVE	MJ	MECHANICAL JOINT
B.M.	BENCH MARK	MM	MILLIMETER
C	CUT	N.E.C.	NATIONAL ELECTRIC CODE
C	RUNOFF COEFFICIENT	N.T.S.	NOT TO SCALE
C	(DRAINAGE CALCULATIONS)	O.C.	ON-CENTER
C-C-C	CUT (LIMIT OF CUT)	O.D.	OUTSIDE DIAMETER
C.F.	CUBIC FEET	O.H.E.	OVERHEAD ELECTRIC LINE
C.F.S.	CUBIC FEET PER SECOND	P	PAVEMENT (PAVEMENT ELEVATION)
C.I.	CAST IRON	PAVMT.	PAVEMENT
C.L.	CENTERLINE	P.L.	PROPERTY LINE
C.M.P.	CORRUGATED METAL PIPE	P.S.I.	POUNDS PER SQUARE INCH
C.M.U.	CONCRETE MASONRY UNIT	PVC	POLYVINYL CHLORIDE
C.O.T.	CITY OF TEMPE	R.C.P.	REINFORCED CONCRETE PIPE
C.Y.	CUBIC YARD	REQD.	REQUIRED
D.I.P.	DUCTILE IRON PIPE	RIM EL.	RIM ELEVATION
EA	EACH	R/W	RIGHT OF WAY
ELEV.	ELEVATION	R/W	RIGHT-OF-WAY
ELEC.	ELECTRIC	S	SEWER (SANITARY SEWER PIPE)
ELEV.	ELEVATION	S.F.	SQUARE FEET
ENG.	ENGINEER	SHT.	SHEET
EX.	EXISTING	SPEC(S)	SPECIFICATIONS
F	FREEBOARD	SS	STAINLESS STEEL
FH	FIRE HYDRANT	STA.	STATION
FS	FINISHED SURFACE	STD.	STANDARD
FT.	FOOT	STL.	STEEL
GAL.	GALLON (CONTAINER SIZE)	S.Y.	SQUARE YARD
GALV.	GALVANIZED	S.S.	STAINLESS STEEL
GAS	GAS (BURIED GAS LINE)	T.C.	TOP-OF-CURB
GPH	GALLONS PER HOUR	T.E.	TELEPHONE
GRND.	GROUND	T.W.	TOP-OF-WALL
I.D.	INSIDE DIAMETER	TYP.	TYPICAL
I.E.	INVERT ELEVATION	UNK.	UNKNOWN
IN.	INCH	UNK.	UNLESS NOTED OTHERWISE
INV.	INVERT	V.C.P.	VITRIFIED CLAY PIPE
IRR.	IRRIGATION	W	WATER (BURIED WATER LINE)
L.F.	LINEAR FOOT	W.S.E.	WATER SURFACE ELEVATION
LSL	LEVEL SENSOR - LOW	YD.	YARD
LSH	LEVEL SENSOR - HIGH		

See Sheet E-1 For Elec Sheet ADM



VICINITY MAP
NOT TO SCALE



PROJECT LOCATION?
AREA MAP
NOT TO SCALE

*Tom [unclear]
1504-1055 - rec'd
Jan 16, 2008*

ATTACHMENT d
193

NEEDS TO
MATCH

NO.	DESCRIPTION	DATE	APPROVAL

SLALDO (SALT RIVER), TEMPE REACH, ARIZONA
ENVIRONMENTAL RESTORATION
McCLINTOCK DRIVE TO TOWN LAKE
COVER SHEET

THIS PROJECT HAS BEEN REVIEWED UNDER THE PROVISIONS OF THE FEDERAL ACQUISITION REGULATION (FAR) 101-11.6. THE CONTRACTOR SHALL MAINTAIN THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR CONTRACT AS REQUIRED BY FAR 101-11.6.

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS	CITY OF LOS ANGELES
DESIGNED BY: [unclear]	DATE: [unclear]
APPROVED BY: [unclear]	DATE: [unclear]
DESIGNED BY: [unclear]	DATE: [unclear]
APPROVED BY: [unclear]	DATE: [unclear]
DESIGNED BY: [unclear]	DATE: [unclear]
APPROVED BY: [unclear]	DATE: [unclear]
DESIGNED BY: [unclear]	DATE: [unclear]
APPROVED BY: [unclear]	DATE: [unclear]

1-800-782-5348

ATTACHMENT L
193

DEVELOPMENT PLAN

RIO SALADO (SALT RIVER), TEMPE, ARIZONA

Environmental Restoration Project - McClintock Drive to Town Lake

PHASE 3

June 2008

SUBMITTED BY

Rio Salado Project Office
620 N. Mill Avenue
Tempe, AZ 85281
480-350-8625

SITE DATA

SITE ADDRESS:
40 S. McCLINTOCK DRIVE, TEMPE, AZ

EXISTING LAND USE:
PUBLIC OPEN SPACE, CITY OF TEMPE GENERAL PLAN 2030 ADOPTED
DEC. 4, 2003

PROJECTED LAND USE:
PUBLIC OPEN SPACE, CITY OF TEMPE GENERAL PLAN 2030 ADOPTED
DEC. 4, 2003

PROJECTED DENSITY - N/A

ZONING:
AGRICULTURAL AND GENERAL INDUSTRIAL
PROJECT AREA LOCATED WITHIN THE RIO SALADO OVERLAY DISTRICT

PARCEL SIZE: AREA WITHIN THE PROJECT BOUNDARY IS
APPROXIMATELY 72 ACRES

BUILDING AREA - N/A

TYPE OF CONSTRUCTION - N/A

FIRE PROTECTION - N/A

PROPOSED USES:
PUBLIC OPEN SPACE/RECREATION

NUMBER AND TYPE OF RESIDENTIAL UNITS - N/A

DENSITY - N/A

PARKING REQUIRED AND PROVIDED - N/A

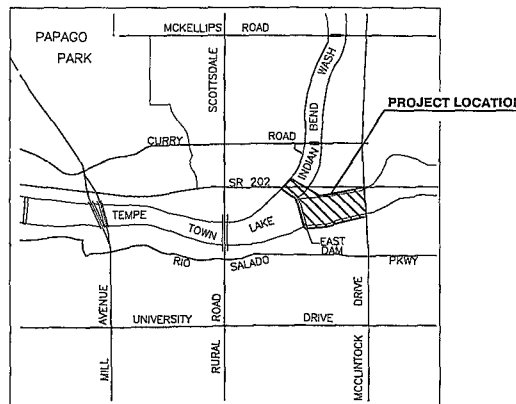
LANDSCAPING ON SITE - N/A

PERMITS, VARIANCES REQUESTED OR PAD OVERLAY DISTRICTS - N/A

CLOSEST FIRE HYDRANT:
LOCATED ON THE WEST SIDE OF McCLINTOCK DRIVE NEAR RIO SALADO
PKWY

EXISTING AND PROPOSED REFUSE ENCLOSURES - N/A

LOCATION MAP



THE NE QUARTER, SECTION 14
T. 1 N., R. 4 E.
C.&S.R.B.&M., CITY OF TEMPE
MARICOPA COUNTY, ARIZONA
NOT TO SCALE

RIO SALADO (SALT RIVER), TEMPE, ARIZONA
ENVIRONMENTAL RESTORATION PROJECT
McCLINTOCK DRIVE TO TOWN LAKE
COVER SHEET

APPROVED BY:
ROBERT L. KOPLIN, P.E.
CIVIL ENGINEER
DATE: 06/20/08
FILE NAME: 24079-0000.dwg

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SUBMITTED BY:
ARTHUR J. KING, P.E.
CIVIL ENGINEER
DATE: 06/19/08
SHEET NO. 01 OF 55
SHEET NO. 01 OF 55



1-800-782-5348
DATE: 06/20/08

COVER

0 of 55
SHEET

FILE COPY

234 E. 6th Street
Tucson, Arizona 85705
798-FAST or 622-7747



234 E. 6th Street
Tucson, Arizona 85705
798-FAST or 622-7747



FW: Addresses

Subject: FW: Addresses
From: "Kimbrell, Deedee" <deedee_kimbrell@tempe.gov>
Date: Wed, 4 Jun 2008 08:01:03 -0700
To: "Darlene Showalter" <DShowalter@mcgannland.com>, "Karen Cesare" <karen@novakenvironmental.com>, "Don McGann" <dmcgann@mcgannland.com>
CC: "Ryan, Nancy" <nancy_ryan@tempe.gov>, "Ternak, William \ (Mike) SPL" <Mike.Ternak@usace.army.mil>

Hi All,
We got 'em. Please read below for the assigned addresses. If you have any questions or need additional information, please give me a holler.
Thanks & have a great day!

DeeDee (D2) Kimbrell
City of Tempe - Rio Salado
tel 480.350.8081 fax 480.858.2194

P Please consider the environment before printing this e-mail

From: Lane, Stuart
Sent: Wednesday, June 04, 2008 6:56 AM
To: Kimbrell, Deedee
Subject: RE: Addresses

Hi Deedee,

Addresses are assigned and in PermitsPlus. The plans are ready for pick-up. The North set of meters are 404 N. McClintock Drive & the South set of meters are 40 S. McClintock Drive. The division between North & South addresses is the center of the river, but because of the way the river meanders, the first address on the North side of the river at McClintock Dr. is 400, thus the 404 number for the meters.

Stuart

From: Kimbrell, Deedee
Sent: Tuesday, June 03, 2008 5:11 PM
To: Lane, Stuart
Subject: Addresses

Hey Stuart~
What's the status on the addresses?

DeeDee (D2) Kimbrell
City of Tempe - Rio Salado
tel 480.350.8081 fax 480.858.2194

P Please consider the environment before printing this e-mail

ATTACHMENT N
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Subject: Environmental Restoration Phase 3 Approval Letter
From: "Kimbrell, Deedee" <deedee_kimbrell@tempe.gov>
Date: Tue, 29 Jul 2008 11:41:59 -0700
To: "Mike Ternak " <mike.ternak@usace.army.mil>, "Karen Cesare" <karen@novakenvironmental.com>, "Don McGann" <dmcgann@mcgannland.com>
CC: "Ryan, Nancy" <nancy_ryan@tempe.gov>

Hi All~

Here's a copy of the approval letter from Development Services, Planning Department for the "Design Review" portion of the project. I have re-submitted the plans for plan review.....hopefully soon we will have all necessary approvals and be ready to rock and roll! If you have any questions, please give me a holler.

Thanks & have a great day!

DeeDee (D2) Kimbrell
City of Tempe - Rio Salado
tel 480.350.8081 fax 480.858.2194

P Please consider the environment before printing this e-mail

Content-Description: 20080729120700961.tif
20080729120700961.tif Content-Type: image/tiff
Content-Encoding: base64

City of Tempe
PO Box 9000
111 North 1st Avenue
Tempe, AZ 85281
480 345 8933 (TDD)



Development Services
Regulatory

(480) 345-4337

July 15, 2008

Nancy Ryan
Rio Salado Project Office
620 North Mill Avenue
Tempe, AZ 85281

RE: RIO SALADO ENVIRONMENTAL RESTORATION PROJECT
Landscape Development Plan Review
6 South McClintock Drive
PL050230 / DPR00144/ DS071280

Dear Ms. Ryan:

The Development Review Staff has approved your request for an ADA Accessible pathway around the east end of Tempe Town Lake, and enhanced landscaping along the pathway and within the project area.

This site is generally located at 6 South McClintock Drive in the A15, Agricultural District and G10, General Industrial District.

This approval is based on compliance with the plans submitted as part of the application with such modifications as may be required by any conditions listed below. Your proposal must be completed prior to final inspection. This approval is valid for one year or the Development Plan Review approval will lapse.

Approved subject to the following conditions:

1. Your drawings must be submitted to the Development Services Department's Building Safety Division for building permit by July 15, 2009, or Development Plan Review approval will expire.
2. Approval is valid for plans as submitted to and approved by the Development Review staff.
3. Provide cut sheets for Planning Plan Check review. All site lighting and fixtures must be in compliance with City of Tempe standards. Provide photometric plans for Planning Plan Check review.

If you have any questions, please contact me at (480) 350-8439. If there are any issues which remain after discussions with staff, you have the opportunity to have the case heard before the Development Review Commission. A written request must be forwarded to staff in order to have the application placed on the next available agenda.

Sincerely,

Alan Conza
Planner II
Development Services Department
Copy: PIC
AC/dg

ATTACHMENT Q



DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
P.O. BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

REPLY TO
ATTENTION OF:

Office of the Chief
A-E Contracting Branch

DEC - 9 2008

McGann & Associates, Inc./Novak Environmental, Inc./JV
4574 North First Avenue
Tucson, Arizona 85718

Gentlemen:

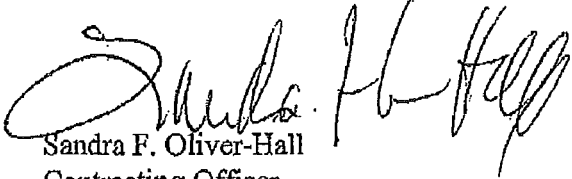
Reference is made to our Contract No. DACW09-00-D-0006 as modified by Task Order No. 0001, including Modifications 01 thru 08 for Architect-Engineer Services for with Emphasis on Landscape Architecture for Civil Works Projects in the Los Angeles District (Arizona and Nevada).

You are notified that all work and services of the Task Order No. 0001, including Modifications 01 thru 08 indicated above for Item: Design Documentation Report and Final Design Material for the Rio Salado Project, Rio Salado, Tempe, Arizona are completed and are hereby accepted by me on behalf of the United States of America, as of this date.

In accordance with EFARS 36.604(c), a copy of completed DD Form 2631, Performance Evaluation (Architect-Engineer), is enclosed.

In accordance with Clause I.66 52.232-0010 "Payments Under Fixed-Price Architect-Engineer Contracts" (Aug 1987), of the contract, it is necessary that the attached release for the above Task Order No. 0001, including Modifications 01 thru 08 only, be signed by you, attested by two witnesses, and returned to this office before final payment can be made.

Sincerely,


Sandra F. Oliver-Hall
Contracting Officer

Attachment