US Army Corps of Engineers
Los Angeles District

Santa Cruz River, Paseo de las Iglesias
Pima County, Arizona

Feasibility Study Draft Report

APPENDIX K

PUBLIC INVOLVEMENT APPENDIX

July 2004

U.S. ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT
PLANNING DIVISION, WATER RESOURCES BRANCH
P.O. BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers (the "Corps") is conducting a feasibility study in the Paseo de las Iglesias reach of the Santa Cruz River to identify, define and solve environmental degradation, flooding and related water resource problems. These efforts are proceeding in partnership with the Pima County Flood Control District. Throughout the planning process for this project, public input has been solicited utilizing a variety of avenues including local newspaper articles, public information mailings, and coordination with special-interest groups, public workshops and formal public hearings. This appendix provides details of the public involvement activities completed as of October 2003.

2.0 NOTICE OF INTENT

The Corps and the Pima County Flood Control District (the project's local sponsor) implemented a public involvement program to obtain input from various groups, organizations, or individuals that represent business, homeowner, educational, environmental, government, neighborhood, and community interests. The program established a mailing list of interested parties. The mailing list was used for the distribution of invitations to public meetings and dissemination of project documents. Announcements for public meetings were also made in local newspapers, including date, time, place, and subject matter.

In April 2001, the USACOE prepared a Notice of Intent (NOI) for the Paseo de las Iglesias Ecosystem Restoration EIS (Attachment A). This notice was published in the *Federal Register* (April 6,2001, Volume 66, Number 67) in compliance with 40 C.F.R. 1508.22. As recommended in 40 C.F.R. 1501.7(b), public scoping meetings also were held for the project.

3.0 PUBLIC SCOPING MEETINGS

The meetings were held on March 30 and 31, 2001 at 450 W. Paseo Redondo in Tucson. An evening meeting was held on March 30 from 5:00 p.m. to 8:00 p.m. and an all day meeting was conducted on March 31 between 8:00 a.m. and 3:00 p.m. Guided site visits were available on April 1, 2001 for all who expressed interest.

Public comments received during the public scoping meeting, have been incorporated into the plan formulation, feasibility, and evaluation process associated with this flood control project. The key issues that were raised during the public scoping process are summarized below. A more detailed summary of the comments may be found in Attachment B.

Process: Many people expressed concern about what process should take place to address the Santa Cruz River. Attendees at the scoping meeting advocated bringing together a diverse group of people (government officials, scientists, citizens, nonprofits, and schools) to address the technical, ecological, political, community, and business issues affecting river restoration.

River Channel and Banks: People expressed a desire to have the river channel restored to a more natural pattern. Specifically, the public advocated removing soil cement banks completely where possible and re-evaluating their use. Other comments addressed allowing a more natural meandering pattern and establishing terraces along the banks vegetated with native plants.

Natural Habitat Restoration: Most respondents expressed a desire to see a restoration of natural habitats along the river. Clean ups and native vegetation plantings were suggested and the need to control invasive plants was noted. People indicated a desire to see vegetation supported by rain, flood, and/or reclaimed water. No one source of water was favored.

River Flow and Water: Comments regarding the use and presence of water in the river varied. Some called for the addition of water in some form (e.g. effluent, Central Arizona Project water and reclaimed water) while others recognized the potential problems in committing substantial volumes of water to restoration. Creation of standing water would have the undesirable consequence of breeding of mosquitoes.

Recreation: People expressed a strong desire to have recreation integrated with restoration. Specific recreation requirements identified included trails, interpretive signage and picnic/resting spots.

Rio Nuevo and Redevelopment: With regard to redevelopment plans and the Rio Nuevo project, people raised concerns about how restoration might be integrated with re-development.

4.0 OTHER PUBLIC INVOLVEMENT EFFORTS

Several meetings have been held during the course of the study to obtain additional public input. In March of 2002 representatives of the Corps, the local sponsor and local entities met to discuss potential restoration approaches (Attachment C). In April of 2003 representatives of the Corps and the local sponsor met with representatives of other local government and members of the public to obtain additional input to the plan formulation process (Attachment D). In September of 2003 representatives of the Corps and the local sponsor met with representatives of other government agencies and members of the public to obtain input regarding potential recreational features of the tentatively selected plan (Attachment E).

5.0 REQUIRED FUTURE COORDINATION

Following completion of internal review a Draft Feasibility Report and EIS will be circulated for public review and comment. The review period will be initiated by publication of a Notice of Availability (NOA) for the initial draft EIS in the Federal Register in compliance with 40 C.F.R. 1508.22. Copies of the report will be provided to concerned Federal, state and local agencies as well as being made available to the general public. A public meeting will be held in area of the tentatively proposed project during the review period to provide further opportunity for public comment.

The local sponsor will also utilize the services of a Public relations Firm to disseminate information and conduct public workshops on any recommended plans.

ATTACHMENT A
NOTICE OF INTENT

SUMMARY: Development of environmentally sustainable flood protection alternatives for the St. Johns Bayou and New Madrid Floodway basins is the purpose of the proposed reevaluation. A Notice of Availability for the Final Supplemental Environmental Impact Statement (FSEIS) on the St. Johns Bayou and New Madrid Floodway, Missouri, First Phase, Supplement to the 1982 St. Johns Bayou-New Madrid Floodway Final Supplemental Environmental Impact Statement and the Mississippi River and Tributaries Project, Mississippi River Levees and Channel Improvement 1976 Final Environmental Impact Statement was published in the **Federal Register** on September 8, 2000. The FSEIS was distributed to Federal and State agencies and the public. The FSEIS evaluated plans that provide flood protection in the St. Johns Bayou and New Madrid Floodway Basins in southeast Missouri. Substantive comments promulgated by the Department of the Interior, U.S. Environmental Protection Agency (EPA), and the State of Missouri concerning the FSEIS array of alternatives resulted in the Corps of Engineers decision to prepare a revised DSEIS to evaluate alternative levee closure alignments and relevant mitigation options.

FOR FURTHER INFORMATION CONTACT: Mr. Larry Sharpe, telephone (901) 544–3476, CEMVM–PM–P, 167 North Main street, B–202, Memphis, TN 38103–1894. Questions or comments regarding the revised DSEIS (including scoping input) may be directed to Mr. David L. Reece, Chief, Environmental and Economic Analysis Branch, telephone (901) 544–3970, CEMVM–PM–E, or Mr. John Rumancik, telephone (901) 544–3975, CEMVM–PM–E.

SUPPLEMENTARY INFORMATION: The St. Johns Bayou Basin and New Madrid Floodway are located in the Bootheel region of southeast Missouri, and include all or portions of New Madrid, Scott, and Mississippi counties. The basins are adjacent to the Mississippi River, and subject to both backwater and interior headwater flooding. Congress authorized the Mississippi River and Tributaries (MR&T) Project in the Flood Control Act of 1928, to construct the mainline Mississippi River levees. The Birds Point—New Madrid Floodway was a portion of the 1928 Flood Control Act. A levee closure and outlet structure at New Madrid, Missouri, were authorized in the Flood Control Act of 1954 (Pub. L. 780–83), but not constructed. The St. Johns Bayou Basin levee closure, with drainage structure, was authorized in the Flood Control Act of July 24, 1946, and subsequently constructed. An EIS for the MR&T and Channel Improvement was filed with the Council on Environmental Quality on July 2, 1976, which addressed the New Madrid Floodway levee closure. The St. Johns Bayou/New Madrid Floodway Project Final Supplemental Environmental Impact Statement (SEIS) was filed with the EPA on July 23, 1982. The current project was authorized for construction by the Water Resources Development Act of 1986 (Pub. L. 99–662), section 401(a). The authorized project is based on the Report of the Chief of Engineers, dated January 4, 1983, which is part of the Phase I General Design Memorandum (GDM) documents prepared in response to section 101(a) of the Water Resources Development Act of 1976 (Pub. L. 94–587). This revised DSEIS is being prepared to supplement the 1976 MR&T EIS and the 1982 St. Johns Bayou/New Madrid Floodway Project Final SEIS.

1. Proposed Action

The recommended plan of improvement for the First Phase work, as evaluated in the September 2000 FSEIS, includes about 23 miles of channel modification, a 1,000 cfs pumping station for the St. Johns Bayou Basin area, a 1,500 cfs pumping station for the New Madrid Floodway area, and a 1,500 foot closure levee and gravity outlet structure at the southern end of the New Madrid Floodway. The revised DSEIS will address and evaluate the environmental and economic impacts of alternative levee closure locations, develop and discuss the locations of potential compensatory mitigation sites, and further address concerns from Federal and State resource agencies.

2. Alternatives

Several flood reduction alternatives, including mitigation, were evaluated in the previous EIS(s). In addition to the recommended plan, the September 2000 FSEIS included a reevaluation of the 1986 authorized plan for flood protection and NO Action alternative. The revised DSEIS will analyze other alternative levee closure alignments and options inside the New Madrid Floodway. Each alternative levee closure alignment would result in different amounts of cropland and wooded land available for periodic Mississippi River backwater flooding to provide fishery spawning and rearing habitats.

3. Scoping Process

An intensive public involvement program has been ongoing. There have been additional interagency environmental and project sponsor meetings since the September 2000 FSEIS was produced. Interagency environmental meetings will continue to be held as needed. Significant issues to be addressed in the revised DSEIS will include alternative levee closure locations for the New Madrid Floodway, related impacts, and fish and wildlife mitigation alternatives. This NOI will serve as a request for scoping input. Interested parties are invited to provide comments or concerns to the above address. It is anticipated that the revised DSEIS will be available for public review in the Fall of 2001.

Luz D. Ortiz,

Army Federal Register Liaison Officer.

[FR Doc. 01–8554 Filed 4–5–01; 8:45 am]

BILLING CODE 3710–KS–M

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare a Draft Environmental Impact Statement (DEIS) Pertaining to the Santa Cruz River Where Its Course From the South Enters the City of Tucson, Pima County, AZ

AGENCY: U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: Analyses of foreseeable environmental impacts from potential actions along the Santa Cruz River in the City of Tucson, Pima County, Arizona, will commence. No explicit plans have been advanced as yet, so contents of the Draft EIS remain to be determined during the public scoping process. The portion of the river to be studied extends from about Valencia Road (upstream) to about Congress Road (downstream), a distance of about 6.9 river miles. Pima County has identified within this length of the river needs associated with loss of riparian habitat and the presence of cultural resources. Those needs will guide the formulation of plans for this region, the *Paseo de las Iglesis* (way, or walk of the churches) segment of the Santa Cruz River.

The U.S. Army Corps of Engineers and Pima County, Arizona, will cooperate in conducting this feasibility study.

ADDRESSES: District Engineer, U.S. Army Corps of Engineers, Los Angeles District, ATTN: CESPL–PD–RP, P.O. Box 532711, Los Angeles, California 90053–2325.

FOR FURTHER INFORMATION CONTACT: Mr. John E. Moeur, Environmental

Coordinator, telephone (213) 452–3874, or Mr. John E. Drake, Study Manager, telephone (602) 640–2033. The cooperating entity, Pima County, requests inquiries be made to Ms. Mary Lou Johnson, telephone (520) 740–6444, for any additional information.

SUPPLEMENTARY INFORMATION:

1. Authorization

Feasibility studies for Paseo de las Iglesias were authorized by Section 6 of the Flood Control Act of 1938. The 75th Congress of the United States passed what became Public Law 761. This legislation states, in part: ''* * * the Secretary of War [Secretary of the Army since 1947] is hereby authorized and directed to cause preliminary examinations and surveys * * * at the following locations * * * Gila River and tributaries, Arizona, * * *.'' The Santa Cruz River once flowed into the Gila when a wetter climate prevailed in the southwest, and its watershed still joins that of the Gila near Laveen, Arizona.

2. Background

The Santa Cruz River arises in southeastern Arizona, passes southwesterly into Sonora, Mexico, then turns northward again and re-enters the United States at Nogales, Arizona. Since before the late 16th century when the Spanish explored the southwest, the Santa Cruz River never ran continuously all the way to the Gila. Where underlying bedrock along its course forced water to the surface, the Santa Cruz was perennial. Historically, reliable surface flows along the Santa Cruz could be found intermittently between Nogales and Martinez Hill, to the east Mission San Xavier in the southerly parts of what is now metropolitan Tucson. Subsurface flow farther north sustained a riparian community. Downstream of the confluence with the so called West Branch of the Santa Cruz the water table again rose above the surface around Sentinel Hill. Year-round water supplied the needs of Mission San Agustín, built on the west side of the river at the foot of the hill where Tohono O'Odham people kept a village (called *stjukshon* by them), and the *presidio* on the east side of the Santa Cruz. These two historic locations became the origin modern day Tucson.

The Feasibility Studies to be evaluated by this Draft EIS will evaluate: (1) Alternative means of structural stabilization to the river's banks between Valencia Road (upstream) and the site of Mission San Agustín (downstream); (2) opportunities to reclaim lotic properties of the Santa Cruz near downtown Tucson, and elements of the riparian community on its banks; (3) modifications of upland surfaces adjacent to the incised banks to promote growth of appropriate native upland vegetation; (4) designs for recreational facilities which would feature prehistoric elements, historic properties, and biological traits of this portion of the Santa Cruz; (5) integrate these recreational considerations into the Juan Bautista de Anza National Trail; and (6) the efficacy of recharging subsurface aquifers by means of water released into the river bottom downstream of Valencia Road.

Prehistoric and historic cultural resources are abundant along this stretch of the Santa Cruz. Neither Federally protected species nor critical habitat for listed species have been identified here.

3. Proposed Action

No plan of action has yet been identified.

4. Alternatives

a. *No Action:* No improvement or reinforcement of existing banks or uplands.

b. *Proposed Alternative Plans:* None have been formulated to date.

5. Scoping Process

Participation of all interested Federal, State, and County resource agencies, as well as Native American peoples, groups with environmental interests, and all interested individuals is encouraged. Public involvement will be most beneficial and worthwhile in identifying pertinent environmental issues, offering useful information such as published or unpublished data, direct personal experience or knowledge which inform decision making, assistance in defining the scope of plans which ought to be considered, and recommending suitable mitigation measures warranted by such plans. Those wishing to contribute information, ideas, alternatives for actions, and so forth can furnish these contributions in writing to the points of contacts indicated above, or by attending public scoping opportunities.

The scoping period will conclude 30 days after publication of this NOI and simultaneous publication in newspapers circulated in the greater Tucson area.

When plans have been devised and alternatives formulated to embody those plans, potential impacts will be evaluated in the DEIS. These assessments will emphasize at least fourteen categories of resources: Land use, impromptu historic landfills created by dumping trash over the banks, hazardous wastes, physical environment, hydrology, groundwater, biological, archaeological, geological, air quality, noise, transportation, socioeconomic, and safety.

Luz D. Ortiz,

Army Federal Register Liaison Officer.

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BILLING CODE 3710–KF–M

DEPARTMENT OF EDUCATION

[CFDA No.: 84.299B]

Indian Education Discretionary Grant Programs—Professional Development

AGENCY: Department of Education.

ACTION: Notice inviting applications for new awards for fiscal year (FY) 2001.

Purpose of Program: The purposes of this program are to (1) increase the number of qualified Indian individuals in professions that serve Indian people; (2) provide training to qualified Indian individuals to become teachers, administrators, teacher aides, social workers, and ancillary educational personnel; and (3) improve the skills of qualified Indian individuals who serve in the capacities described in (2). Activities may include, but are not limited to, continuing programs, symposia, workshops, conferences, and direct financial support.

Grants for training educational personnel may be for preservice or inservice training. For individuals who are being trained to enter any field other than education, the training received must be in a program resulting in a graduate degree.

For FY 2001, the competition for new awards is restricted to projects designed to meet the absolute priority described in the PRIORITY section of this application notice.

Eligible Applicants: Eligible applicants for this program are institutions of higher education, including Indian institutions of higher education; State or local educational agencies, in consortium with institutions of higher education; and Indian tribes or organizations, in consortium with institutions of higher education. An application from a consortium of eligible entities must meet the requirements of 34 CFR 75.127 through 75.129. The written consortium agreement must be submitted with the application. The agreement must be signed or the applicant must submit other evidence that all the members of the consortium agree to the contents of the agreement. Letters of support do not meet the consortium requirements. The

ATTACHMENT B
SUMMARY OF PUBLIC SCOPING MEETING

1.0 PUBLIC INPUT FROM THE PASEO DE LAS IGLESIAS SCOPING MEETINGS EXECUTIVE SUMMARY

Seventy-six people submitted written responses to the question "If I were in charge of the Santa Cruz River, I would…" The open-ended question allowed individuals to select the topic or concern that interested them most. There was a remarkable congruence of opinions about certain topics. The responses have been categorized into the following areas of interest: process, river channel and banks, natural habitat restoration, river flow and water, Rio Nuevo and redevelopment.

Process: Many people responded about what process should take place to address the Santa Cruz River. People advocated bringing together a diverse group of people, including government officials, scientists, citizens, nonprofits, and schools. This group should address various concerns that affect river restoration: technical, ecological, political, community, and business issues. These issues and restoration plans could be addressed through workshops, conferences, and social events.

River Channel and Banks: People commented on restoring the river channel to a more natural pattern. Numerous comments dealt specifically with the soil cement banks, either advocating removing them completely, where possible, or at least re-evaluating their use. Other comments addressed allowing a more natural meandering pattern and vegetating the banks along terraces with native plants.

Natural Habitat Restoration: Most respondents expressed a desire to see a restoration of natural habitats along the river. Clean ups, natural and native vegetation plantings were suggested. People indicated a desire to see vegetation supported by rain, flood, and reclaimed and/or reclaimed water. No one source of water was favored.

River Flow and Water: Comments regarding the use and presence of water in the river varied. Some called for the addition of water in some form – effluent, CAP water, reclaimed water, while others pointed out the connection between the pumping of groundwater and the reduction in river flow.

Rio Nuevo and Redevelopment: With regard to redevelopment plans and the Rio Nuevo project, people put forth many ideas for what they would like to see such as gardens, trails, wildlife corridors, museums, access routes for different modes, and special event centers.

2.0 SPECIFIC COMMENTS

Many people responded about what process should take place to address the Santa Cruz River. People advocated bringing together a diverse group of people, including government officials, scientists, citizens, nonprofits, and schools. This group should address various concerns that affect river restoration: technical, ecological, political, community, and business issues. These issues and restoration plans could be addressed through workshops, conferences, and social events.

People commented on restoring the river channel to a more natural pattern. Nine out of the 15 comments dealt specifically with the soil cement banks, either advocating removing them completely, where possible, or at least re-evaluating their use. Other comments addressed allowing a more natural meandering pattern and vegetating the banks along terraces with native plants.

Many respondents expressed a desire to see a restoration of natural habitats along the river. Clean ups, natural and native vegetation plantings, supported by rain, flood, reclaimed and/or reclaimed water was the predominant message in these comments.

Comments regarding the use and presence of water in the river varied. Some called for the addition of water in some form – effluent, CAP water, reclaimed water, while others pointed out the connection between the pumping of groundwater and the reduction in river flow.

With regard to redevelopment plans and the Rio Nuevo project, people put forth many ideas for what they would like to see such as gardens, trails, wildlife corridors, museums, access routes for different modes, and special event centers.

2.1 Verbatim Responses to "If I were in charge of the Santa Cruz River, I would…"

2.1.1 PROCESS

Create public service announcements to inform the public about ALL ongoing that concern the SCRA's projects. Work with school districts to form workshops and fieldtrips for students. Devise a plan to integrate the SCRA with other businesses that initially do not seem to relate… "opposites attract" (e.g. automotive industry with water conservation).

Make the City and County work together on a watershed-wide flood control, runoff, drainage, restoration plan with a NON-STRUCTURAL focus wherever possible.

First, pull in all issues that have and foreseeable will have an impact on the river and issues the river will create. Bring together all types of people and be ready to hear and open to consider all concerns. Gather a base of technical information and residential desires. E.g. how much water is "sustainable," then what things will increase and what things will reduce this, then how can we balance the desires and the impact they will have with this knowledge.

Convene a workshop, 3 to 4 days, with Ann Riley as the leader, bring together hydrologists, geomorphologists, Corps, bureaucrats, citizens, politicians to design a restoration plan for a reach of the river, in context of the entire watershed.

Bring organizations that are interested in Santa Cruz River restoration (those in this symposium) together to work out a comprehensive plan to make this a "living river."

Show people what the issues are. Explain tensions among various interests. Create

"what if" scenarios that give approximate costs of choices. Provide ways for public input/feedback. Allow for different levels of "management" at different points along the river. Make as much of it as self-maintainable as possible.

Make sure that River Keepers were initially involved with River Planners.

Far more complicated than most people realize. Balance ecologically appears to "require" economic as well as political cooperation. All of the diverse groups need to form some sort of coalition to define and prioritize projects then work the projects jointly. Need to activate and involve everyday citizens.

Dare to dream but be totally aware of the technical and ecological challenges of river restoration. Think of creating a river of green, but not necessarily a river of water. Your commitment is wonderful. But we can't go back to where we were.

Appoint Ann Riley and Regenesis as project facilitators; schedule regular river and wash walks and workshops in neighborhoods who choose to participate and co-facilitate, linking the river to its network of people and uplands; hold annual social/cultural events in the river and its uplands; secure adequate funding for this immensely important work, schedule monsoon and winter rain celebrations; start at the top where water is manageable and healing work is easier.

Promote cooperation among the NGOs/citizens who care about the river – the FOSCR, SCRA, Arizona Center for Law, Defenders of Wildlife, etc.

2.1.2 RIVER CHANNEL AND BANKS

NO soil cement where the river has not been already soil cemented, particularly between Ajo Road and 29th.

Remove the concrete (soil concrete) stabilizations and restore natural flow and boundaries, protect what exists upstream in natural watershed areas. Begin with a ceremonial request and acknowledgement to the river spirit by local medicine people.

Consider Ann Riley's vision of terraced channel (as in her slides) and not trapezoidal channel as part of Rio Nuevo Project. Make meanders to fit grade of river.

Refrain from use of sand cement siding.

Go to a more natural channel that is at the proper gradient and is allowed to meander as described by Ann Riley. Get rid of soil cement!

I know the bank stabilization is important, but can't animal paths be included instead of this rock barrier. It is another barrier like I-10.

Remove all the soil cement and enforced areas around the bridges only. If any

embankment is done or needed, use riprap embankment.

I would remove as much soil cement as is practical and add not one more inch of soil cement.

Widen the channel as it flows through Rio Nuevo Project. Make two terraces. Widening the channel would better accommodate floods. The raised "terrace" would be planted in cottonwood/willow and irrigated with reclaimed effluent from a pipe along the uppermost terrace.

Restore the land regionally – stop channelization of banks in the Rio and all drainage leading to it. Hold water on the land as has been done in Turkey Creek in the Chiracauas.

Let river meander – stop controlling it in soil cement that encourages inappropriate development along the sides.

Give it more space; soften the bank protection.

Design for catastrophic floods, not "100 year" events.

Re-evaluate use of soil concrete and create meandering, low flow section of river with native vegetation.

Take away the soil cement.

Replace soil cement with vegetated banks and a meandering stream.

Install barriers so that cars, trucks, and other motorized vehicles (ATVs, etc.) would not be able to enter the wash.

2.1.3 NATURAL HABITAT RESTORATION

Help trees grow; hear running water here and there.

Leave it be natural; allow vegetation to grow.

Restore as much of the riparian growth as is practical – re-plant grass, cottonwoods, mesquites on the banks; re-plant cottonwood trees along Cottonwood Lane, a historic irrigation district. Recharge? I'm not sure how effective that would be.

Celebrate for water, air, contact with nature.

Grow as much natural vegetation as possible in as wide and area as possible. Do NOT WASTE the precious water. Vegetation must be diverse. Do not allow any motorized vehicles of any type. Dogs and cats are detrimental to wildlife.

I want the vision of a living river to move this community that it chooses to begin the

long work of learning (and relearning) how to inhabit this place in a regenerative way.

I would encourage funds and water allocation, primarily recycled (highest quality treatment) water for habitat enhancement and restoration projects, i.e. wild habitat (not highly developed parks), native species, with a focus on conserving and restoring lost historic riparian habitat along the Santa Cruz.

Work on a holistic plan to incorporate recharge, some instream flow, and enhanced vegetation into Santa Cruz River rehabilitation. We can never return river to the many things it was historically – but we can create something living, something that is appropriate to our landscape and water needs.

I recently visited the Tres Rios Wetland Demonstration Project in Phoenix. I have to say I was stunned that a place like that existed in Phoenix. Over the years, the consortium has effectively created a viable ecosystem. It was incredible… an established beaver population, a resident bobcat, an incredible diversity of native plant communities, and – in the month of March anyway – great egrets, snowy egrets, cormorants, nesting Gambels quail, black necked stilts, whistling ducks. The Santa Cruz River needs ecosystem-based ecological restoration/creation most of all. Tucson needs its lifeblood – the Santa Cruz River. We need the river as a wildlife corridor MOST of all before it's too late for so many species. We need a Santa Cruz River ecosystem with many types of habitat to nurture and sustain ourselves, our city.

Clean the banks, remove the landfills; plant and MAINTAIN native vegetation. Recreate wildlife habitat: self-maintaining, low cost; healthy and self-perpetuating; arranged by nature; managed by nature; natural processes maximize beauty!

Re-vegetate using the natural water – rain, floodwater.

Try to recapture the traditional flavor and usage of the natural environment – farming is not an option – trees, native plants – accessibility to populace for natural and spiritual experience.

Open the nasal passages of every river keeper to the odor of wet dirt, which precedes the rain. That they might remember the river of green before the greed for water. That they might equate the fragile wetness of their own throats to a living river. That they might re-envision our poor plumbing experiment and begin to re-design ditches where crows fly into channels, where pup fish swim, that they learn from the children and for the children how to re-inherit this wetland – that is if they plan to stay.

Try to keep all of the cultural as well as the desert plantation the same. I would not try to turn it into California scenery.

Given need to make beautiful cottonwood forest between 29th/Ajo and Congress, the Rio Nuevo Project must find an up-stream location for a new sewage plant that can feed Rio Nuevo riparian with effluent. Need cost study with 30-year time line for re-use gallonage

costs.

Make it become alive again – shady trees on the side, benches, etc.

Restore it and protect it for the future generations and not just in Rio Nuevo, but make it a park for the length of it and for as wide on either side of the river as I could control. I would then restore the water and vegetation as I could afford to.

Replant cottonwoods trees in historic Cottonwood Lane.

Purchase all land that borders the river and preserve that land. Some of the land could go to recreational parks (watered with recharged water) and the remainder/majority of the land would remain natural.

Try to raise money to buy area along the river, which would be used to allow natural flooding, and channel movement – this would help in natural (passive) regeneration of native vegetation.

2.1.4 RIVER FLOW AND WATER

Phase out groundwater pumping rights in areas adjacent to the river to allow groundwater table to recover underneath the channel (where flood flows infiltrate).

Run effluent and other re-use water in the channel.

Create not a living river but the hub of a living watershed. Restore the river as natural and cultural center of Tucson, then facilitate its use as a model for washes and tributaries throughout the rest of the watershed - resources for schools, neighborhood associations, and "friends of" groups to accomplish similar projects in their areas of Tucson.

Do reasonable mosquito management by referring to the University of Arizona entomology department.

Try to increase (or protect current allocation) allocation of effluent for river/riparian restoration.

Fill up the dry river with its water from the Sea of Cortez and use the wastewater from the Roger Road treatment plant to raise bamboo, fish, and blue green algae, to make hydrogen for fuel cells to offset the cost of pumping water to the residents.

Like to see water flowing.

Put water in it and plant BIG trees!
Emphasize the need for "cleaner" regenerated wastewater, the need to conserve water and to prioritize water use. There is no clear program that is preventing further destruction of the water table – this needs to be done first before other programs can be effective.

If I were in charge of the Santa Cruz River and the City of Tucson's water allocation, including effluent, I would use all effluent supplies to recharge into the Santa Cruz, as there seems a strong correlation (which I need to learn more about) between aquifer pumping and the decrease in surface flows. So, put it back (to a degree) where it came from. I like the idea of creating more "natural" streambeds to avoid increasingly expensive flood control measures.

Use CAP water in the Santa Cruz River – make it a river again!

Whiskeys for drinking, water's for fighting. Nothing can be done unless the 50,000 AF from the sewage plants is totally dedicated to instream flows (now it's none!). And another 50,000 AF for riparian projects near the Santa Cruz. That's 100,000 AF for the river please – ensured by law. And maybe some more from the CAP.

Dedicate CAP water to create a Tucson version of San Antonio's Riverwalk (with water in a riverine corridor) and coordinate this with central well field recharge needs.

If I were in charge of the Santa Cruz River, I would do everything possible to bring back the water, in a river form. If a river was not possible, maybe a lake - if they could put water at the lake at Kennedy Park, why not the Santa Cruz River?!!!! Bring back the water!!

I would place two small dividing dams, one located at 22nd and the other near Grant. They would be an overflow type with a water level set at 4 feet. I would also create a recirculation pump system at the near Grant dam, pumping water back to the first dam at 22nd. Being that the river flows in the north direction.

Propose we learn to live on our annual budget of rain and sun.

Create in-stream flow rights for riparian habitat. Depending on effluent flows: keep the effluent in the river, have ADWE allow 100% recharge credits for the channel effluent recharge.

Test effluent/CAP water for hormones/antibiotics.

Add water only if there is leftover reclaimed water after golf courses and other non-essential amenities have been watered with it.

Ensure adequate and effective enforcement of point and nonpoint source pollution into the river.

Make as natural as possible, do not waste the water, reinforce to everyone that water is a precious commodity, keep to minimal cost, do not display CAP water as if were in abundance.

2.1.5 RIO NUEVO AND REDEVELOPMENT

Clean up the litter and ORU trails north of Camino del Cerro and make a natural park in that area.

Contact Barbara Grygutis, Tucson's best public artist who wrote a report on urban art projects for downtown Santa Cruz. Included: 1) elder's hummingbird garden, 2) cactus maze garden with local sculptor, 3) "clock" garden of seasonal blooms, 4) "palo verde" walk-like Washington, DC cherry blossom walk, 5) a "rock garden" with geology story of Santa Cruz in tiles, 6) in channel junk-sculptor's project with viewing location, 7) in channel dance stage.

I would like to get it like the river in San Antonio with boutiques along its banks.

Like to have a lake somewhere as near as possible to the gift shops. Try to keep cottonwood trees, elms, and mesquites and entertainment for children like even a carousel or train for the area for sightseers. Think of the children too!

Design the west branch as a feature of Rio Nuevo.

I'd like to see the Regional Visitor Center feature natural and cultural past, present and future rather than being a big commercial front for Tucson businesses.

Bundrick commented that his experience with managing recreation along Santa Cruz was extremely trying. What management/enforcement will be used with Rio Nuevo recreational activities?

City might be able to sponsor special events along river, a great place to watch July fireworks. Hope the Rio Nuevo project makes good use of what the Santa Cruz has to offer.

Make it a better place to play.

Stop trying to turn it into another San Antonio – some development/amenities, yes! But not just another tourism attraction.

Make recycling facilities convenient and available; have more nature trails/activities than commercial activities; have shuttle or public transportation and limited parking; consent with communities already living there before anything begins at all.

To have it be saved for the future. As parks, trails, multiuse community centers, riparian and animal habitat areas. Industry should be kept away from the riverbanks. Flood control would need to be considered. Redo bridge at Sunset Rd. Idea: nature trails, botanical garden, museum of river history/interpretive center, Indian cultural center. In the short term, just clean up the garbage, provide some trails and restrict some areas for certain activities.

Encourage the Santa Cruz River as a recreation destination through picnic areas, trails, and information plaques.

A wildlife corridor to A Mountain (probably near Mission Gardens); foot and bicycle trails by river expanded; more business opportunities for locally owned businesses; use Rio Nuevo money for river restoration; use historic approach to architecture, i.e. Southwestern, Hispanic, Native American, etc.

Create access to the river.

Make accessible to people – recreation, alternative transportation (Tucson's Central Park, Hyde Park, Bois de Boulogne), works better for our BIG city rather than old-fashioned downtown.

Raise money and community support to restore the Santa Cruz River to the healthiest habitat that it can be today for wildlife and compatible recreation and education: education programs in schools and programs for adults in English and Spanish on both sides of the border; make the Santa Cruz the centerpiece of our community and give it the respect it deserves; clear the trash out of the river bed; make the urban restoration (Rio Nuevo) extend beyond 22nd to Congress to St. Mary's, Speedway and Grant.

Be more mindful of Native American, Hispanic culture – would love to see more Native Americans recognized or tribal recognition, after all, they were here before all of us and what better way to thank and acknowledge them.

Make it a mass transit and bicycle transportation corridor along the river, restoring the river as much as possible to its natural state. Once it is developed that way, it may be used for community centers as well. Plant trees to restore.

Get trash out of the river, extend walking/bike path, plant more trees and tell stories about its life and renewal.

There really needs to be a massive clean-up in and along the river – lets get the junk out!! I'd like to see the bike path complete farther south – from 29th Street to the Mission.

Do not allow a bus barn or bus park and maintenance center in area as pollution will reach under water flow.

Mi opinion serea que si reconstruyeran todo el area del Rio, para que la misma comunidad se beneficiara, pero todo lo natural posible, sin un canal de cementa. (My opinion would be that if they reconstruct the whole river area, that the local community benefits while making it as natural as possible and without a cement canal.)

3.0 DISCUSSION GROUPS BY TOPICS AT LUNCH 128 PARTICIPANTS

3.1 Topic: FLOOD CONTROL

What opportunity do you see to rehabilitate the river? Put habitat in washes where the water is. Moral and legal responsibility to store water upstream rather than speeding it up. Impacting downstream residents. Look at full gamut of flows – annual up to 100 year. Setting aside land to create a wider floodplain. Be creative with remnant natural areas (not bank protected). Don't do standard soil cement. To perhaps channel drainageways into auxiliary treatment plant to apply smaller, sustainable flows to stormwater of effluent into the river.

Where do we go from here? Ask how the river will adjust itself and then adjust rest. Look at watershed management and nonstructural solutions including reducing damageable structures in the way (as in Rio Nuevo). Upstream areas have the most promise for rehabilitation. Erosion areas = deal with bioengineering (like willows) in upstream areas. Noted CONCERN that the B.P. (soil cement) 1:1 sided currently in place downstream of Silverlake, will be done between Silverlake and Ajo. Buy land and let river do its thing. Ensure wildlife habitat co-exist with river – wildlife preservation/enhancement. How is valuable wildlife to be preserved in Rio Nuevo? Forget soil cement or put it in at 5:1 side slopes.

3.2 Topic: INTERGOVERNMENTAL COOPERATION

What opportunity do you see to rehabilitate the river? Have to get all stakeholders in participation including and importantly, citizens.

Where do we go from here? A) Need to include state agencies like AZSLD and citizens along rivers in planning. B) Need to devise water sources. Create Watershed Council that includes Sonora, Santa Cruz County, ambos Nogales, Tucson, Marana, Pima County, Corps. Need paid staff for Council! Need citizens, experts, government, ALL together as equals on Council. 1) Joint funding could come out to create funded position that would be equally funded by all governments (to staff the Council). 2) Will have both CAP and effluent available to put in river. 3) Riparian restoration is one of key elements to the County's Sonoran Desert Conservation Plan.

3.3 Topic: MOSQUITOES

What opportunity do you see to rehabilitate the river? If restored to conditions similar to estimate of original Fort Lowell, will lead to problems of health. Solution: engineering to avoid pockets of still water. Or, be sure to have fish (Gila top minnows and pupfish). Have good capacity but are endangered species. Would have high maintenance requirements.

3.4 Topic: RECHARGE

What opportunity do you see to rehabilitate the river Perching conditions where present would be more favorable sites for restoration projects; would need to conduct historical research using air photos. Could verify with geotechnical methods if budget available. Using permeable bank protection would aid restoration efforts.

Where do we go from here? Standardize data collection (QA/QC)

3.5 Topic: RECREATION – SANTA CRUZ

What opportunity do you see to rehabilitate the river? Underutilization: Need to increase safety – drawing people (non-transients). Make a self-guided historic walk with benches and written info, shade and benches. Picnic areas – eat lunch – ramadas with BBQs.

Where do we go from here? Establish continuity with Rillito-Santa Cruz. Have paths on full length of urban area. Expand adopt-a-wash. More police presence/call boxes (? We didn't all agree). Make riverbed more natural and scenic (even without water).

3.6 Topic: RIO NUEVO

What opportunity do you see to rehabilitate the river? With the Rio Nuevo project concentrated in the heart of downtown on both sides of the river, it will be a crucial part of the Santa Cruz. How that project proceeds will have a major impact on the future of the Santa Cruz, but little time has been spent on how the Santa Cruz will dovetail with the Rio Nuevo project. East side of river appears to be commercial. How do we preserve the west side in the context of its historical context?

Where do we go from here? Citizen groups (Rio Nuevo Citizens Task Force and Neighborhood Associations) have to introduce the importance of the Santa Cruz into their discussions. The beautification of the Santa Cruz is a major theme of Rio Nuevo and ties the whole project together. Don't loose sight of the core of Rio Nuevo is the river. With better engineering, can we remove the cement soil banks, return it to a meandering river again (Riley talk).

3.7 Topic: URBAN RESTORATION

What opportunity do you see to rehabilitate the river? Multiple objectives – recreation, wildlife, beauty, economics. Re-evaluate soil cement.

Where do we go from here? Three-day workshop with Ann Riley as leader/facilitator. Bring together cities, County, Corps, Bureau, citizens to learn the techniques Ann espouses and to pick a reach of the SCR to work up a plan for.

3.8 Topic: VEGETATION, REHABILITATION, REVEGETATION

What opportunity do you see to rehabilitate the river? Attention to upper reaches of watershed and retention of native vegetation will cause less impact to trunk stream. Important to maintain present wash and tributary boundaries. Define river boundaries so you know where to revegetate.

Where do we go from here? Focus on whole watershed. Use only water from natural watershed. More permacultural programs for whole communities. Sing and dance and tell stories together. Learn from the O'odham elders that EVERY living thing is to be respected.

3.9 Topic: VEGETATION AND REGENERATION

What opportunity do you see to rehabilitate the river? 1. Work with forces of nature (tensile strength of trees). Rillito River problems cited. Engineers worked in vacuum. No participation, no landscape architects. Best part is area without soil cement. Erosion already present at St. Phillips. 2. Damaged property can be rehabilitated. Need for invasive plant weeding.

Where do we go from here? Community involvement, networking with neighborhoods and others, adopt a river (clean up party), education – kids educate parent and newcomers need understanding. Need meetings like this one annually.

10. Topic: VEGETATION/REVEGETATION

***What opportunity do you see to rehabilitate the river*?** The opportunity is limited/bounded only by imagination and creativity. We need to start with working with the available water we have now. The will is there – now we are finally addressing what is ecologically appropriate in the Sonoran Desert ecosystem. Need to incorporate more permaculture techniques in water harvesting/planning/design/implementation.

Where do we go from here? More small projects, using a variety of funding sources. More local incentive, involvement, public input. More show-me trips to those making decisions on the development phase; take ecologically successful (working) restoration sites. Hire good people who know how to promote public involvement (Freda is excellent.

3.11 Topic: WATER RESOURCES FOR RIVER RESTORATION

What opportunity do you see to rehabilitate the river? Creative landscaping, not cottonwoods. Opportunistic plantings – eddy's etc. where plants can thrive is more naturalistic. Funding stream is vital. West branch of the river might be more manageable to rehabilitate – near Mission Gardens and convents – in better shape than the main channel.

Where do we go from here? Explore alternative funding to pay for water to these areas (surcharge, impact fees, user fees, taxes). Opportunities for effluent to support riparian vegetation – sources for effluent, i.e. Green Valley. Zoning and [unclear word] use to encourage water harvesting along the river. Explore the region-specific opportunities for landfill mitigation (just as recharge is region-specific). River – acequia system is something that has been very important to people so water could be in them rather than the river itself. Can be intermittent – need not have perennial flow of water. Let Tucson show how to create a river amenity without constant water flows. Water to support vegetation can come from water harvesting. Greater participation in decisions being made that affect the river. Focus on the west branch to showcase a living river.

3.12 Topic: WATER SUPPLY FOR INSTREAM HABITAT

What opportunity do you see to rehabilitate the river? Concept of WWTP upstream of Roger Rd. More remote sites. Localized WWTP at Rio Nuevo. Can Ann Riley's ideas be incorporated here? Aquarium backwash water. Create xeric riparian habitat to use episodic flows when there is uncertainty about effluent supply. Need to balance needs of COT and river recharge (for Indians) for effluent recharge credits and ADWR credit allowance and instream flow rights. Talked about dedicating water to riparian uses as part of SDCP process. Rio Nuevo – reconfigure channel, add bridges, make better connections to river. Mosquito issues/attraction of wildlife to water sources – secondary effects.

3.13. Topic: WILDLIFE

What opportunity do you see to rehabilitate the river? Restore water, vegetation, diverse structure of native vegetation (grasses, shrubs, trees). Consult O'odham, Yaqui about the goals of restoration should be – particular species? Diversity? Habitats? Keeping Rio Nuevo to its original commitments to enhance the river area and restore wildlife. Insist that the restoration be natural and native vegetation.

Where do we go from here? Bring people to the river – cleanups, wildlife counts, educational fieldtrips – develop appreciation for nature. Use restoration of the Santa Cruz proper as model for citizens to see what might be possible for their branches of the SC watershed (e.g. neighborhood washes, etc.). Educate our children to love and respect our Sonoran heritage.

ATTACHMENT C
MEETING MINUTES
MARCH 21, 2002

Paseo de las Iglesias/Santa Cruz River
Summary of Planning Brainstorming Workshop
March 21, 2002

I. Participants

NAME	ADDRESS	PHONE
1. Thomas Helfrich	PCFCD 201 North Stone	740-6350
2. M.J. Dillard	TDOT 201 N. Stone	791-3115 X419
3. John S. Jones	City of Tucson Rio Nuevo	791-5580
4. Eldon Kraft	David Miller Assoc.	818-833-9728
5. Sue Morman	Tetra Tech	623-7980
6. Kevin Eddy	Tetra Tech	623-7980
7. Bob Aston	Pima College Facilities Planning	206-4730
8. Sam Arrowood	Army Corps of Engineers	602-640-2015 X246
9. Barbara Strelke	Tetra Tech	623-7980
10. Julia Fonseca	PCFCD	740-6350
11. Diana Hadley	Santa Cruz River Alliance	622-7301
12. Kathleen Bergmann	Army Corps of Engineers	602-640-2003 X2

Workshop Moderators:
Sam Arrowood, Project Manager for U.S. Army Corps of Engineers [USACE]
Thomas Helfrich, Project Manager for Pima County Flood Control District
Barbara Strelke, Project Manager for Tetra Tech

The following summary documents the major topics of discussion. It is not intended to be a verbatim record of workshop proceedings. It is important to stress that the workshop was a preliminary step in the USACE planning process. It reflects opportunities that are being looked at rather than plans or formal proposals for construction. This brainstorming discussion was a preliminary step that will be followed by many iterations in the planning process. [Clarifications and/or additional information appear in brackets].

II. Project Introduction

Thomas Helfrich
Tom introduced the project and noted that the original study area was expanded beyond the Santa Cruz River Channel to include tributaries and the West Branch of the Santa Cruz. The expanded study area extends from Congress Street south to the Tohono O'odham/San Xavier District and Mission Road east to I-10/I-19.

The project is viewed by Pima County as similar to a Multiple Objective Management Project with the purpose to create a plan that incorporates environmental restoration, recreation, recharge, and flood control measures within the study area environment. Pima County Flood Control District (PCFCD) is the local sponsor of the project and the U.S. Army Corps of Engineers is the federal funding source in a 50-50 partnership.

What we hope to accomplish in today's workshop :

Brainstorming session to identify components of plan alternatives that the Army Corps can analyze for support for future funding and programming. This session offers the opportunity for input by participants who have a variety of backgrounds and interests.

How we plan to accomplish this:

1. Brainstorm design components for the objectives introduced in the Paseo de Iglesias Reconnaissance Study, July 1999, 905b Analysis.
2. Encourage participants to plan water features into the alternatives (if appropriate); consider proposed recreational loop through Indian Reservation into San Xavier Mission area, and the Sonoran Desert Conservation Plan Biological Reserve areas in the study area.

Sam Arrowood

Sam provided background on the Rio Salado and water supply issues. Rio Salado's water source is artificial, pumped, and supplied locally. Sam posed the question to committee members, "Would the City of Tucson pay to pump water into the study area for habitat restoration?"

Corps Scope of Study

- Original goal was to stabilize riverbank using vegetation bank to bank. As the Corps researched the study area, we saw potential for expanding the study into a master planning process that includes opportunities for cultural, recreation, and land acquisition planning. This study is an evolving process.

What the Corps hopes to accomplish in today's workshop:

- Develop 3 to 4 Preliminary Restoration Plan Alternatives that will provide a basis for the Corps to begin to evaluate the environmental resource value and implementation cost of the project components.
- Because of the Corps time frame for project implementation, now is the time to initiate improvements and approvals for improvements because it will be at least 7 years before physical construction would begin.

Barbara Strelke

Barbara noted that the Corps is looking at new ideas for flood control and is thinking holistically. This is a planning process that projects what we want the river/study area to look like in 20 years. This is an opportunity for key resource people who are familiar with the existing conditions along this portion of the Santa Cruz River to brainstorm and provide their vision of how they would like to see the study area restored.

Today's Workshop Goal is to 1) get our creative juices flowing; 2) develop elements or components of plan alternatives; and 3) generate plan alternatives that represent a blending of ideas based on existing conditions and knowledge of future land uses planned for this area in the future.

Land use and habitat mapping shows that today's existing conditions in this study area are

- 60% Urban (Developed residential, commercial, and industrial)
- 18% Undeveloped/fallow/vacant
- The remaining approximately 20% includes mapped habitat areas

Many studies have been done to analyze existing conditions and define objectives for the study area. Participants received excerpts of some of those in information packet:

- *U.S. Army Corps of Engineers Reconnaissance Report*, July 1999, 905b Analysis

- Material from Julia Fonseca: *Santa Cruz River, San Agustín Mission to San Xavier District – Water Resource, Wildlife, and Recreation Concepts*

Today's Approach:

1. Discuss the opportunities and constraints reach by reach, beginning with Congress to 22nd Streets.

2. Evaluate the components noted in the Memo/Agenda of March 14, 2002.

3. Select appropriate components and incorporate them into the alternatives.

III. Rio Nuevo Reach [Congress to 22nd Street]

John Jones, Project Manager for Rio Nuevo

John noted Rio Nuevo means New River of Life -- not as a flowing river, but as the imagery of the river. Rio Nuevo is also a commercial development project that is the first step in revitalizing Downtown Tucson.

What the Rio Nuevo project hopes to achieve:

1. Emphasize – Green in Rio Nuevo Area. Propose a mini-oasis that brings the vegetation and habitat of the River back into the Downtown area.
2. Sustain grasses in the area.
3. Remove soil- cement bank- protection; widen the river and look at bank protection that incorporates design and plants. Look at sculptured, artistic embankments, similar to Larson Company designs.
4. Top of bank – propose upland trees with high canopies to provide shade.
   Over-story Vegetation (Requires ongoing irrigation):
   - Cottonwood
   - Ash
   - Willow

Planning Process:

The section of the property between Clearwater and Congress will be the Cultural Plaza area for Rio Nuevo and will include water features, irrigated landscaping, shaded river walk. The idea in this area is to create a shaded corridor effect.

Water Source

A possible irrigation water source for this area may be to use water from an existing underground culvert that encloses a tributary. City has obtained a 404 Permit in order to implement this.

Remediation of Landfill

Currently underway is a City pilot program for the remediation of landfills so that this land can be developed. The pilot program by AZDEQ will hopefully accelerate the decomposition process. Pilot program has an aquifer protection permit to pipe water into the Nearmont Landfill to aide the decomposition process. This is a method that has been used successfully elsewhere. The Nearmont Landfill is composed of construction debris and organic materials (hide and tallow operations discarded organic waste products). The City hopes to begin remediation on the other landfills in the site area as soon as possible. Final remediation would require removal of solid waste materials. [The landfills in the study area are expected to be remediated prior to Corps involvement in any restoration project].

Other
Rio Nuevo redevelopment plan proposes the reconstruction of the San Agustín Convento site, near Tucson's birthplace. Also, three pedestrian bridges; commercial and residential uses.

Potential Corps involvement in Rio Nuevo?
[Sam Arrowood to John Jones]

1. It would be helpful to the Corps to know how the Rio Nuevo team has evaluated potential river changes and has already eliminated ideas that are not appropriate.
2. Corps is open to any information that can help it determine possible restoration concepts that fit into the Rio Nuevo vision. Corps would evaluate the proposed concepts and attach costs to it. In the case of landfill remediation, the Corps can pursue restoration at remediated sites--can revegetate or build on a remediated landfill.

   Response: Evaluation of landfill usually has constraints and unknowns. It will take a minimum of 2 years to compost out the landfill in this pilot program before it can be determined what is feasible development on the landfill.
3. Corps may look at restoration at remediated landfills as an opportunity.
4. Remediation is an expensive process but if the Corps can show positive tradeoffs then the Corps may be interested in getting involved.

IV. Overview of Corps process [by Sam Arrowood]

The Corps' F3 project milestone explores the end use without placing conditions on the possibilities.

Starting point, 3-22-02

2002 Evaluate existing conditions to make possible project assumptions.

2012 Base year – begin Project Implementation (Base year is ***2002*** plus usually 5-8 or more years).

Corps will need to project what the existing conditions of the project area will be by the base year (2012).

Then the Corps will project 50 years [future conditions]. If nothing is implemented ["without-project conditions"] what will the study area look like in 50 years?

Compare possible changes perceived in 50 years, then develop alternatives according to these perceptions.

Four questions that the Corps needs to address to obtain project approval:

1. Technical feasibility
2. Environmental restoration value
3. Costs
4. Public acceptability

Question/Examples [for Rio Nuevo]
What is the end use within the Santa Cruz study area? A nature park? An urbanized area with high economic/tax base?

What are the landfill reuse options? Cap the landfill and then top it with soil and plant grassland?

What types of projects are applicable for Corps funding?

Water features to celebrate the original spring that became Tucson's first water source.
Damming the 18th Street Wash to create a water feature.
Other controlled water features.

How to achieve water features/restored areas that require about 225 acre-feet of water per year? [brainstorming by participants]

1. [Use reclaimed water from the joint agreement conservation pool between COT and Pima County].
2. Water harvesting, then release into the restored natural areas
3. Stormwater irrigation
4. System of check dams, may need to be replaced approximately every 2 years – cheap labor makes it feasible
5. Low-flow channels
6. Create a weir (permanent or inexpensive) to replace after flooding

Grade Control Structures [comments by USACE and PCFCD]

Corps evaluates costs and opportunities for grade control structures. Inflatable dams may be possible for the Rio Nuevo area reach. Grade control structures may be difficult because river is narrow in this area. Inflatable dam would be designed over grade control structures and would be deflated in a storm event to prevent flooding outside of the channel.

Erosion control/ bank stability [comments by Sam]

Factors to consider:

- Channels & velocity
- How important is it to create a stable system? Is it acceptable if habitat in channel is washed away? Is it feasible to reduce erosion by widening channel?

V. Brainstorming by Participants based on knowledge of existing conditions:

Possible to widen channel south of Mission Lane to 22nd Street.
Clearwater Street and Mission Lane to Congress reach – narrow channel [not possible to widen because of Rio Nuevo master plan land needs]; requires a minimum erosion setback of 100'
Challenges: Protect or rebuild the Congress Street Bridge?
Provide sinuosity in the river channel – Coordinate watering with storm drains and weirs
Volunteer vegetation in high water table areas in the channel (willows, tamarisk, Rhus lancea).
Arroyo Chico example of habitat restoration in the Tucson area.
Restore hydraulics to tributaries that drain into the Santa Cruz. (Daylight storm sewers to widen wash channel and provide vegetation.)
A-Mountain landfill restoration would provide a significant wildlife habitat corridor connection between Tumamoc Hill and the Santa Cruz River [and to the Tucson Mountains].
Learn from past mistakes: Vegetation selection is important – in the past did not select the right trees for the given environment. Planted trees were not desert species and required irrigation. Trees died due to lack of water. Need engineered solutions in place as a back up plan to irrigate vegetation when necessary.

VI. General Comments and Projections for Study Area

General

High likelihood for development in the area (use property ownership and zoning information for projections).

Indicate where development will occur.

Based on projections, develop a case for improvements that the Corps can defend. Corps needs to demonstrate importance of restoration value. Generally speaking, the more dire the future outlook, the better the restoration project looks.

Development will occur in areas with soil cement [bank protection] and private land.

What does Tucson value? Down the road, what will be the value of open space? Plan now?

PCFCD has a land acquisition program for vacant properties along the Santa Cruz River and West Branch of the Santa Cruz. Implementation is ongoing.

Determining Opportunities for West Branch of the Santa Cruz from 29th Street to Ajo

- Formulate process for purchasing property.
- What happens if jurisdictions do nothing?
- How will the river continue to degrade?
- Evaluate Corps opportunities.

Empowerment Zone

Rio Nuevo [and the Paseo de las Iglesias] is within the newly created Empowerment Zone. Empowerment Zone creates a development opportunity through tax credits. This promotes development within the Santa Cruz [Paseo de las Iglesias] study area. Industrial [and Park Industrial] zoning in the area provides opportunities and development pressure to establish more Campus Park Industrial developments.

What does Tucson want for the Santa Cruz River Corridor?
It becomes a political decision. Develop or preserve or both?

What will be the existing conditions in 2012?

What is the 50-year projection for the existing conditions of the study area in 2062? Consideration implies that it could be a great opportunity for habitat restoration. The interstate is the eastern edge of the study area. This creates positive reason to develop the area. What is the reality for 2012? 2062? Tucson needs to decide what its vision is for this area. Political support and a plan of development and open space will help the Corps tell a convincing story for project improvements and funding.

VII. Discussion/Brainstorming on Paseo Project Objectives [& Design Solutions]

What are the long-term Objectives?

- Create continuity of habitat?
- Create a wildlife preserve?
- How much open space should be environmentally restored?
- How much urban areas developed?

1. Utilize Transportation Corridors for storm drain system to capture then recharge water for irrigation.

2. Maintain the Rural Character of Cottonwood Lane
   - Cottonwood neighborhood is anxious to preserve the area
   - Currently, land to the south and west of Cottonwood Lane is up for sale
   - Create linkage of the old West Branch of the Santa Cruz and the new West Branch
   - Can propose a trail as part of the habitat component
3. Avoid soil cement for future bank improvements
4. Encourage bio-restoration on steep embankments
5. Lower, widen and design laid back and terraced banks where appropriate
6. Restore wetland
7. Restore habitat for fish and wildlife (maximize acreage)
8. Restore hydraulics of tributaries at entry points along the Santa Cruz River
9. Create an optimal mix of habitats (Minimize disturbance in existing habitat areas)
10. Establish habitat corridors
11. Re-establish tributary integrity

VIII. Focus on Components [Elements] to Create Alternatives [Sam/USACE]
Need a bag of tools. What tools are needed? Use the tools to create opportunities. What tools do we need to evaluate?

For example: what components are required to create a natural, low-flow channel? Define the low flow channel's location, purpose, and then evaluate what is needed to create it.

<u>Possible Tools (Components) for Paseo [Brainstorming List by Participants]</u>

1. Develop Water Sources.
   TARP Remediated water Acquisition and Transfer Type II rights
   CAP TARP Effluent Other groundwater
   Reclaimed Runoff from Indian Reservation

2. Natural Water Sources
   Passive Capture – grading and contouring
   Active Capture – pumping into a basin

3. Low Flow Channel

4. Open Water
   Flowing or standing water, pools
   May be seasonal – benefit for migratory birds

5. Laid Back Banks / Channel Widening (changing bank angle)

6. Terracing

7. Islands/ sand bars /oasis

8. Modify confluence/distribute incoming flows

9. In-channel vegetation

10. Bank vegetation

11. Upland vegetation

(Viable Tools continued)

12. Berms/debris/obstruction removal

13. Soil cement removal [Isn't soil cement an option or tool as well in particular reaches?]

14. Palisades/fence jetties

15. Drop structures/weirs

    - Stabilize Channel
    - Catch Water
    - Semi-permanent

16. Erosion Protection for Restored Areas

17. Elements conducive to wildlife/fish

18. Recreation Components
    Trails
    Viewing area
    4-wheel area [ATV]
    Equestrian area
    Dirt bike area
    Kiosks
    Educational experience/ecology

19. Agricultural Education

20. Cultural Education / Interpretation/Ecological Interpretation

21. Land Acquisition
    - Purchase Land
    - Conservation Easements

IX. Alternatives

Based on brainstorming the application of the above 21 components, three alternatives were developed in a very preliminary fashion during the last half hour of the workshop. They are:

Alternative 1: Water Resources and Riparian Habitat
Alternative 2: Sonoran Grassland and Floodplain Restoration
Alternative 3: Wildlife Corridors through Infrastructure Modifications

Components proposed for **Alternative 1 (Water Resources and Riparian Habitat)** include aspects of nearly all of the 21 components listed in the Workshop Summary. Components #5, #12, #13, #14, and #19 are not specifically illustrated but may be necessary to support the other components as the alternative concept is developed in more detail. Those components or plan features that are most important to implement the Water Resources and Riparian Habitat concept are those that require major water sources. This concept will utilize both developed and natural water sources to restore and sustain high value vegetative communities. Components are listed in the legend in the order of relative importance for the alternative.

Components proposed for **Alternative 2 (Sonoran Grassland and Floodplain Restoration)** include nearly all of the list of 21 components listed in the Workshop Summary, with the possible exception of components #5, #9, and #15. Those components or plan features that are most important to implement the concept of the alternative are illustrated, and listed in the legend in the order of relative importance for the alternative.

Components proposed for **Alternative 3 (Wildlife Corridors through Infrastructure Modifications)** include aspects of nearly all of the 21 components listed in the Workshop Summary. This concept proposes to reestablish habitat connections between the Santa Cruz River and public lands in the Tucson Mountains by removing road barriers, restoring tributary washes, and enlarging culverts for wildlife movement. To support and sustain high quality habitat resources within the Santa Cruz River corridor, water resources will need to be developed and maintained. Those components or plan features that are most important to implement this concept are listed in the legend in the order of relative importance for the alternative.

Participants were invited to take home a map of the study area and generate further ideas.

ATTACHMENT D
MEETING NOTES
APRIL 9, 2003

Meeting Notes (by K. Gavigan)
Wednesday, April 09, 2003, 9:00am – 3:00pm
PCFCD Offices, 201 N. Stone, Tucson, AZ
Conference Room B

Attendees: Tom Helfrich, Pima County
Jennifer Becker, Pima County
Kim Gavigan, USACE Study Manager
Steve Peacock, USACE Environmental Coordinator
Eldon Kraft, DMA
Bill Bissell, DMA
Mike McGarry, DMA
Phil Rosen, UA/West Branch Neighbors
Glenn Hicks, Tucson Parks and Recreation
Jason Bill, Pima Association of Governments
Ries Lindley, City of Tucson
M.J. Dillard, City of Tucson DOT
Mike Martinez, USFWS
John Jones, City of Tucson Rio Nuevo
Diana Freshwater, AZ Open Land Trust

Meeting Purpose:

1) Re-evaluate without project assumptions, goal and objectives; 2) new plan formulation exercise.

Meeting Notes:

Kim Gavigan, Lead Planner for the Corps of Engineers, opened the meeting. After introductions Kim reviewed the study process. The study area was defined and the rationale for the study limits was reviewed: San Xavier District to the South, El Rio Medio study area to the North, I-19 Freeway to the East and Mission Road (to allow inclusion of the two major tributaries) to the West. The ecosystem restoration goal was reviewed and the there were no comments on any of the above items.

The next step was for the group to review the future without project assumptions. While in general agreement, the group raised several issues. First, it was noted that a restoration project consisting of vegetative bank stabilization would be in place on Irvington Wash prior to the first project year (2010). Second, Tom Helfrich indicated that not all the remaining stands of mesquite would necessarily disappear since he (Pima County) was required, pursuant to a 404 permit, to purchase 73.2 acres and manage them as natural floodplain. The purchased land has some mesquite and it is not clear if they will survive. The expected topographic condition of the gravel mine site was questioned and it was decided, based on the lack of a required closeout plan, to assume the current physical condition would be maintained. The group also asked that that Assumption No. 1 be revised to read, "No new large or medium ecosystem restoration projects will be in place prior to the construction of a Federal project." The future without project assumptions

regarding Rio Nuevo will be reviewed and adjusted as appropriate.

The group discussed the planning objectives and the only issues raised concerned the possibility of providing incidental benefits in the areas of bank erosion, flood damage reduction and water quality. The City of Tucson expressed particular interest in having bank stabilization included in the restoration on the east bank in the area of Irvington to Drexel. Mr. Helfrich and Ms. Dillard discussed the possibility of the City of Tucson submitting a letter to the County regarding this matter. Mr. Gavigan reviewed the results of the Corps hydraulic analysis using HEC-RAS reporting that it showed no flooding on the main stem, moderate flooding on the New West Branch and substantial flooding on the Old West Branch. It was noted that implementation of flood protection measures on the Old West Branch would not be environmentally sustainable and for that reason would not be investigated. Mr. Gavigan affirmed that all engineering solutions that were consistent with restoration would be evaluated. A number of data needs were identified by Mike McGarry of David Miller & Associates including; a Point of Contact at Pima Community College (Jenny Becker will provide), the 5 year transportation plan (PAG will provide), and the water plan and underground stratigraphy (Tucson City Water will try to provide). A review of the plan formulation ground rules produced no comments and the group took a short break.

After the break the group began a discussion of restoration measures by reviewing the measures included in the Corps' Without Project Condition (F3) Report:

On subject of Natural Water Sources it was suggested that a study by the Yaqui Tribe of storm water capture on Black Wash be reviewed. Recharge upstream of Martinez Hill was also suggested, however a Record of Decision regarding TCE might conflict with this measure.

On the subject of Low Flow Channel the issue of coordinating local bank protection actions was raised again.

The possibility on negative (e.g., groundwater quality) recharge impacts was raised when Open Water was discussed.

The following measures were accepted without comment:

- Laid Back Banks/Channel Widening
- Terracing
- Islands/Sand Bars/Oasis (place clay lenses)
- Modify Confluence/Distribute Incoming Flows
- In Channel, Bank and Floodplain Vegetation

The measure named Berms/Debris/Obstruction Removal was clarified as meaning cleaning up the main stem channel with removal of any constructed obstructions being limited to tributaries, if at all.

It was pointed out that Soil Cement Removal was intended to be confined to the Rio Nuevo area.

Ms. Becker volunteered to provide the study team plans of the Palisades/Fence Jetties. Root wad revetments were suggested as an approach to this measure. Concept drawings will be needed.

The discussion of Drop Structures/Weirs suggested that these measures be aligned with existing or new grade control structures.

It was noted that Erosion Protection for Restored Areas might address City concerns and it was suggested that local environmental interests would view any bank hardening critically.

After considerable discussion it was decided to leave fish in the Elements Conducive to Wildlife/Fish measure. The potential for vector control issues was raised and designs targeting ephemeral aquatic species were suggested. The concept of developing a hierarchy of alternatives based on species habitat demand was put forward.

The group agreed to delete references to off-road vehicles under Recreation Components.

Following the discussion of restoration measures lunch was delivered and the group took a short break before reconvening to eat lunch while listening to a discussion of vision of Rio Nuevo as it pertained to Paseo de las Iglesias.

John Jones described the Rio Nuevo vision of a "river of green" (not necessarily perennial water). A particular emphasis was placed on using reestablishing connectivity between the river and the existing A Mountain preserve. Mr. Jones broke the Rio Nuevo area into three reaches and outlined the following associated features:

Starr Pass to Mission Lane:

- Maintain soil cement on the east bank
- Low flow channel
- Vegetate islands in the river
- Gallery forests on banks
- Remove some soil cement on the west bank to broaden bend
- Landfill (originally a clay extraction operation) remediation is anticipated to be complete in 10 years. Organics removed in one year. Methane gas is a problem now
- Mesquite-Palo Verde forest between A-Mountain and Santa Cruz River.

Mission Lane to Clearwater:

- Reestablish Mission at San Augustine
- Interpret historic/prehistoric agricultural practices
- Gallery forests on banks
- Planting in the channel
- 18th Street Wash water harvesting
- New non-vehicular bridge at Mission Lane

Clearwater to Congress:

- Replace soil cement with sculpted concrete (e.g., fake boulders/rocks)
- Establish culturally significant access to the river
- Add pedestrian bridge (by 2007) from Convention Center
- Add trolley/transit, pedestrian, vehicular bridge (by 2007)
- Gallery forests along banks (100-150 feet wide) using reclaim water
- UofA hydrology lab and Desert Museum satellite office
- Promote agricultural practices of Cienega.
- Replacing existing grade control structure with a weir

Following this presentation the discussion moved on to how best to incorporate restoration measures into distinct alternatives. Mike McGarry led the group in compiling various measures based on the following areas of the ecosystem:

1) Active Channel: bundles, clay liners, aquitards, grade control, seasonal pools, low flow channel, palisades/jetties, increase sinuosity, cottonwood/willow, and perennial flow.
2) Terraces and Banks: tributary deltas, distributary floodplains, soil cement removal, terracing, gallery forest, palisades/jetties, and aquitards upstream of confluences.
3) Historic Overbank Floodplain: gallery forest, water harvesting, blue Palo Verde, Bosque floodplain, distributary floodplain.
4) Old West Branch: fish habitat, New West branch connection, and irrigation.
5) Gravel Pit: wetlands, perennial flow, cottonwood-willow, and water storage.

NOTE: The preceding notes were prepared by Eldon Kraft and Kim Gavigan and are their interpretation and/or understanding of the issues discussed therein. Meeting attendees are asked to advise Mr. Gavigan of any discrepancies and/or omissions.

ATTACHMENT E
MEETING NOTES
SEPTEMBER 24, 2003

Recreation Plan Meeting Notes
Wednesday, September 24, 2003,1:30am – 4:00pm
PCFCD Offices, 201 N. Stone, Tucson, AZ
4th Floor Conference Room

The following notes were prepared by Kim Gavigan, USACE Study Manager and are his interpretation and/or understanding of the issues discussed therein. Meeting attendees are asked to advise Mr. Gavigan of any discrepancies and/or omissions. Thank you.

Attendees: Tom Helfrich, PCFCD Project Manager
Jennifer Becker, PCFCD
Kim Gavigan, USACE Study Manager
Mike Fink, USACE Environmental Coordinator
Glenn Hicks, COT Parks & Rec.
Steve Anderson, COT Parks & Rec.
Lucy Amparano, COT Rio Nuevo
Frank Jesus Reyes, COT-DOT
Shellie Ginn, COT- DOT
J.T. Fey, COT Planning
Peg Weber, COT Parks & Rec.
Richard Corbett, PAG
Roger Anyon, PC Cultural Resources
Linda Mayro, PC Cultural Resources
Doug Potts, PC Nat. Res. And Parks & Rec.
Darrin Brightman, PC Nat. Res. And Parks & Rec.
Michael Ingraldi, AZ Game & Fish
Laurie Averill-Murray, AZ Game & Fish
Mark Holden, Saguaro Nat. Park/National Park Service

Meeting Purpose: Gain insight on recreations plans in the community and discuss applicability to the Paseo de las Iglesias restoration project.

Meeting Notes:

The meeting was opened at 1:40pm with introductions. Mr. Gavigan gave an overview of the Corps' study process, cost-sharing responsibilities, and progress to date on the Paseo study. The study area and alternative formulation process to date were described to the group. The discussion was then opened up to input from the group regarding master plans, trail needs, future development plans, etc.

Mr. Reyes, from City of Tucson, indicated that the City plans on constructing a hard-surfaced trail from the north side of Ajo Way (on the west side of the river) to the east end of Cottonwood Lane. Plans for this trail are at a 90% design stage and have been submitted to the County for review. The trail alignment apparently encroaches down into the Santa Cruz River channel. Construction is scheduled approximately 18 months from

now.

The group asked about the Corps policies on participation in recreation features and lands needed for trails. Mr. Gavigan indicated that the Corps policy does not allow for federal cost sharing for lands purchased for a recreation purpose. However, lands needed and acquired for the basic ecosystem project can also be used for recreation development. Recreation lands outside the restoration projects lands become a 100% non-federal cost. Mr. Gavigan emphasized that recreation development at an ecosystem restoration project should be totally ancillary. Recreation facilities may be added to take advantage of the education and recreation potential of the ecosystem project, but the project cannot be specifically formulated for a recreation purpose. The recreation potential may be satisfied only to the extent that recreation does not diminish the ecosystem restoration purpose. Mr. Gavigan also reviewed the 10% Limit Rule an indicated that the 10% limit should not be used as a target. All separable recreation features must be justified through economic analysis in order to be cost-shared.

Mr. Anyon gave a description of the Juan Batista de Anza Historic Trail and emphasized the importance of this route as a "cornerstone" of any recreation plan along the Santa Cruz River. There is an existing Environmental Impact Statement for the de Anza Trail and the National Parks Service has already certified portion of the existing trail from Mission Lane to Irvington Road. The intent is for this to be a multi-purpose, natural surface trail surrounded by pre-settlement vegetation. A 200-foot wide corridor is desired with a minimum width of 50-feet. Mr. Anderson added that the minimum width would be revised soon to 100-feet. Directional signing will also be added at points along Mission Road to direct interested parties to the trail. The San Xavier District of the Tohono O'odham Nation is apparently not supportive (at this time) of showing (on maps) or having the trail through tribal lands. A County bond proposal to fund portions of the trail is being proposed. Mr. Anyon will supply USACE with a proposed trail alignment in hard copy format.

The City of Tucson's' Parks Master Plan identifies the Paseo study reach as a "River Park" with both paved and unpaved trails on both sides of the Santa Cruz River channel. Additional amenities such as rest areas, water fountains, bird watching areas, and public restroom facilities are also identified in the plan.

Mr, Helfrich indicated that maintenance roads, including access ramps would be needed as part of the restoration project. Width of maintenance roads can vary from 12 – 20 feet depending on access requirements and equipment.

Mr. Hicks indicated that a trail connection from the Tucson Diversion Channel (Julian Wash) is need to the Paseo system. The same is true for the wash immediately south of the Pima Community College campus.

Ball fields are being planned for north of Ajo Way, west of Interstate 19.

The Rio Nuevo Project will incorporate numerous amenities including, but not limited to

natural resources at the bend/landfill area, trails system, pedestrian bridges over the SCR, trolley bridge over SCR, cultural park, and a U of A facility. Mr. Fey shared a draft (i.e., not for distribution) site plan for the Tucson Origins Cultural Park.

Ms. Mayro indicated that numerous cultural resources and archeological sites exist within the study area. Chances are that some mitigation will be required due to uncertainty of many of these sites. Mr. Gavigan indicated that a programmatic agreement is typically entered into between the Corps and SHPO, with concurrence from sponsor(s) and Native American Tribes.

The meeting was adjourned at approximately 4:00pm.

ATTACHMENT F
MEETING NOTES
JANUARY 22, 2004

Paseo de las Iglesias

Feasibility Study for Santa Cruz River and West Branch Ecosystem Restoration
January 22, 2004 Open House (6:00-8:00 p.m.)

A G E N D A

1. **Welcome and Introductions**
   Freda Johnson, Moderator

2. **Presentation**
   Thomas Helfrich, Water Resources Division,
   Pima County Flood Control District

3. **Question/Answer Session**

4. **Open House**

*****

Paseo de las Iglesias Study Objective

Increase size, health and diversity of native riparian habitat within the historic floodplain. This will be accomplished by enhancing and protecting habitat within the river corridor.

Additional opportunities:

- **Provide passive recreation sites**
- **Establish 'River Park' connectivity**
- **Reduce bank erosion and sedimentation issues**
- **Provide incidental flood reduction benefits**
- **Establish wildlife corridors**
- **Improve surface water quality**
- **Control invasive species**
- **Protect cultural resources**
- **Other community interests**

*****

For more information, contact Jennifer Becker, Program Coordinator, Water Resources Division, Pima County Flood Control District at 740-6350.

Under construction! Paseo de las Iglesias website
http://www.dot.co.pima.az.us/flood/envrest/paseo.htm

Paseo de las Iglesias
Habitat Explanations

Xeroriparian Restoration Approach.

Xeroriparian habitats are associated with streams that flow in response to rainfall (ephemeral streams). Plant species present are similar to those in upland areas, but in greater densities due to the extra water.

Restored mesquite and palo verde trees would provide limited shade to the channel invert and would be bordered by Sonoran desertscrub species. Vegetative stabilization of the riverbanks, and an increase in flood retention and incidental recharge would result. Mostly small trees and shrub-sized vegetation would provide improved habitat for native wildlife and a setting for passive recreation. Irrigation would be needed for vegetation establishment, with planned delivery via water trucks. No irrigation system would be installed. After establishment, only water captured by water harvesting techniques would be used to sustain vegetation. An increase in abundance of ~65 native wildlife species would be expected. Project goals are harmonious with the Sonoran Desert Conservation Plan (SDCP).

Mesoriparian Restoration Approach.

Mesoriparian habitats are associated with areas with shallow groundwater and or intermittent flow. Dense mesquite forest (bosque) is characteristic of this habitat type.

Restored and irrigated mesquite-hackberry bosques would provide shade to the channel invert and would be bordered by mesquite and palo verde woodland and Sonoran desertscrub species. The outcome of this approach is expected to be most similar to the historic vegetation communities in this river reach. Vegetative stabilization of the riverbanks, and an increase in flood retention and incidental recharge would result. Both tree and shrub vegetation would provide improved habitat for native wildlife and a pleasant setting for passive recreation. Permanent irrigation would be needed to accomplish design goals, and an irrigation system would be installed. An increase in abundance of ~80 native wildlife species would be expected. Project goals are harmonious with the SDCP.

Hydro-meso Riparian Restoration Approach.

Hydro-mesoriparian habitats are associated with perennial watercourses where plant species such as cottonwoods and willow are present.

Restored and irrigated cottonwood-willow galleries would shade the intermittently flowing channel and be bordered by both mesquite bosques and Sonoran desertscrub species. Vegetative stabilization of the riverbanks, and an increase in flood retention and incidental recharge would result. Both tree and shrub vegetation would provide improved habitat for native wildlife and a pleasant setting for passive recreation. Permanent and extensive irrigation would be needed to accomplish design goals, and an irrigation system would be installed. Depending on period of stream flow; roughly one-third to two-thirds of all irrigation water would be used to maintain intermittent to perennial flow in the main channel. An increase in abundance of ~95 native wildlife species would be expected. Project goals are harmonious with the SDCP

Paseo de las Iglesias
Open House
Pima Community College Desert Vista Campus
January 22, 2004

Summary of Question and Answer Session

Beryl Baker asked about plans for erosion control. Tom Helfrich of Pima County answered that numerous alternatives are being considered. The Corps Project Manager, Kim Gavigan, added that the Corps environmental restoration feasibility studies evaluate projects for flood control, but not erosion control. He also said that based on the flood risk analysis the Corps is not recommending any soil cement, and that design engineering work will evaluate erosion control options when designing a future project. Freda Johnson noted that a description of the types of erosion control measures could be put on the project website if there was interest.

Connie Harris asked about the location of the 30 acres to be developed near the West Branch. Tom showed the audience the location on the map noting the location is near the bend of the West Branch Diversion Channel located at Irvington and Mission. Another question was asked if the New West Branch Diversion is new. Tom answered that the diversion is the same one built in the 1980s.

Tom Wilson commented that the maps used at the meeting seem outdated. In addition, he said the lack of space adjacent to the river would not allow for future development of trails and other facilities, and he noted that power line runs along the river. Tom Helfrich mentioned that he does not see any conflicts regarding lack of space, and that most photos and maps being used for the study are less than a couple years old. He also noted that the project has and will continue to collaborate with the City of Tucson and others in planning trails and other recreational areas.

A question was asked regarding bank-to-bank flood flows on the Santa Cruz River. The concern was for the preservation of the new vegetation and the riverbanks. The Corps spokesperson answered that the project will be designed to withstand a certain amount of water but there will be funds allocated for maintenance and revegetation.

Kendall Kroesen asked about the water harvesting in the third option (XXX). He also noted that water harvesting could be carried out in the other two options. Staff responded that water harvesting from storm drains could be included in all options. This would occur in the design phase of the project. Mike Fink said that development impacts water flow. The future design work will examine areas where additional water is available to harvest. Kendall also asked if the estimated water usage included harvesting. Staff said it does include capture of local rainfall, but not stormwater run-off harvesting.

Don Kucera asked if pedestrian underpasses at Irvington and Congress (for the DeAnza Trail) would be included in the project. Staff said that at the present time these underpasses are not included but that connectivity of trails will be examined.

Yolanda Herrera asked how the Iglesias project ties in with the work done by the Santa Cruz River Neighborhood Task Force. She also asked if the project has the information from the Task Force. Freda noted that she will give this information from the City of Tucson's Multiple Benefits Water Projects to the Pima County staff.

Teddie Burch asked whether reclaimed water could be used to establish perennial flow in the Santa Cruz. Tom Helfrich commented that the project is identifying water sources and looking at subsequent feasibility and permitting. Sherry Barfield noted that reclaimed water can be a health issue and is generally not used in situations where people may come in contact with it.

A comment was made regarding the lack of bank protection of the river from Silverlake to Ajo. The situation in this area is dangerous because the water speeds up through the other bank protected areas upstream and then erodes the bank from Silverlake to Ajo. Jennifer Becker asked the audience to add comments about soil stabilization to the comment form.

John Titus commented that the xeroriparian option (XXX) might not result in "stunted" trees as stated in the presentation, and that non-irrigated trees would be stronger during droughts if the irrigation water is taken away. He added that true xeriscape has good growth and provides a nice riparian habitat. Jennifer Becker responded that "stunted" may have been a poor word choice, but due to the lack of groundwater available to tree roots and the limited rainfall, un-irrigated trees are not expected to ever reach full maturity height.

Josefina Cardenas said she hopes that the neighbors can count on the County because she does not trust the City. She added that families and neighbors are important as well as acequias (canals). She thinks the riverfront should be preserved.

Don Kucera asked when the project would end. Kim answered that the feasibility study would be completed by the end of the 2003-2004 fiscal year in July. The design phase would take 2-3 years and 2008-2010 would be the soonest construction might begin. Staff added that local and congressional leaders have to work together to make the project happen. Matching funds can be in the form of land, infrastructure, etc.

Beryl Baker asked how the Corps proves to Congress that this project is important. She noted that the presentation and slide show demonstrated what will happen if nothing is done. Staff said that over 95% of the riparian areas in Arizona has been lost. The feasibility documents will have to persuade Congress. Mike Fink also said that the Corps is using new methods to evaluate non-monetary and monetary value of projects.

Teddie Burch commented that she sits on PAGs Transportation Enhancement (TE) Committee. She asked if TE funds could be used on the project. Tom Helfrich noted that TE funds might be able to be used as part of the matching funds. An audience member

noted that these funds could be used for trail development providing connectivity to multi-modal opportunities.

Phil Rosen asked how this project will compete in Congress for funding given the increase in local species and how that value may compare to a project along the Mississippi River. Staff stated that the Corps will have to tell the story. It is hard to convince lawmakers in the east that in the early 1900s the desert southwest looked very different than it does today. It is also important to include that the increase of species provides habitat for even more species, and may attract endangered species.

Diana Hadley noted that TIF financing (Tax Increment Financing) could provide matching funds for landfill clean up. She also thinks the Rio Nuevo Project needs to be more river-oriented. Staff said that this project will not conflict with Rio Nuevo. Lucy Amparano noted that the City and Rio Nuevo team are collaborating with many projects, neighborhoods, transportation planners, the Tucson Origins Heritage Park Project, and others. She added that there is still a lot of planning to do.

Yolanda Herrera asked how trees will be protected from washing away. Staff answered that vegetation could be taken out in a big flood. The project will be designed to take into account the need for replacement.

Robin West asked why there is not a 50-foot linear park shown in the project. She also noted that Rio Nuevo Project has a plat with no linear park in order to fill and put buildings up to the river. Tom Helfrich noted that the Paseo de las Iglesias project is within City jurisdiction, but the City is not a sponsor of the project. The recreation elements of this study have not yet been incorporated. Lucy Amparano mentioned that a Master Planner for Rio Nuevo has been hired and will take everything into consideration.

Beryl Baker commented that small species are not often included. She encouraged the project to add up even the smallest species that will inhabit the river area. Mike Fink noted that all species have and will be taken into consideration to show the biggest possible impact.

Paseo de las Iglesias
Feasibility Study for Santa Cruz River and West Branch Ecosystem Restoration
January 22, 2004
Open House Comment Form

Tally of Responses from 20 Returned Comment Forms as of February 9, 2004

1. Do you support ecosystem restoration along the Santa Cruz River and tributaries?

Yes: 19
No: 1

Explain:

- The plants, animals, insects, etc. need it.
- Restoration is necessary and an important goal for our community.
- It's an important community value.
- The Santa Cruz could be a real attraction in Tucson—unique southwestern restored river.
- It is our social responsibility to restore/rehab the river.
- We don't know what we've lost and if a riparian woodland were back we would be so glad!
- Riparian restoration is the most pro-active measure that can be done to preserve and enhance Arizona's wildlife species.
- As long as it is in conjunction with construction of concrete bank protection.
- We've got a unique opportunity to assist mother nature with one of her gems in our Old Pueblo which will benefit our community.
- Reestablish native vegetation and wildlife, reduce or abate degradation and erosion.
- We would like to see more vegetation and water.
- Focus needs to be on increasing wildlife and wildlife viewing opportunities through habitat restoration. The Santa Cruz River is a foundation on which Tucson was built around. From ancient times up to the early 1900s, the river provided essential resources for surrounding communities and defined much of who we are. Today, we have lost most of what the river was and stood for. As a result, generations today do not have the opportunity to appreciate the once great attributes of this once great river. All we have are memories and stories from our elders who were fortunate enough to see the last living days of the Santa Cruz. As a community, we would benefit in many regards from restoring the Santa Cruz. Not only is it a moral prerogative to restore what we have destroyed, but it is a responsibility we share for the benefit of future generations. When children and families can once again picnic along the verdant banks of this great river, we will have mended a deep wound that has festered for much too long.
- The traditional ecosystem has been and is very important to the Native-Americans of this area.
- You have not been realistic on the study.

2. Based on what you learned during the presentation about types of habitat, which type listed below would you prefer to see along the Santa Cruz River. Definitions are on the back of the agenda. Choose the one type you believe would best suit our community.

Xeroriparian:	3
Mesoriparian:	13
Hydro-mesoriparian:	5
No action or status quo:	0
Combination:	3

Explain your response:

- Given limited funding and water availability, mesoriparian appears to make the most sense.
- An appropriately designed mosaic with xeroriparian being the "work horse" plant community that has the best chance of long-term survival.
- Unless water is provided in small portions of the river channel in particular locations riparian vegetation will not survive—better to stay with mesquite, hackberry, palo verde and possibly willow.
- I don't wish to pick one of those options; a mosaic of the above options would be most effective and realistic.
- Water resources are unpredictable! With some irrigation during the seedling/sapling phase mesquites, palo verdes, hackberries, graythorns etc. will thrive when the water is cut off. With a million more people in the area water will be an issue. Plan for a waterless future.
- The need for surface water that would be available to wildlife is imperative. Available surface water with an established mesquite bosque (i.e., hydro-meso) will more closely resemble historic conditions.
- [Mesoriparian] would best enhance the existing native areas. Please include security lighting along the river park.
- [Mesoriparian is the] most prudent and water responsible and sustainable. Best represents the area.
- [Mesoriparian] bank protection along the river.
- [Mesoriparian is] a good compromise between the five extremes and probably more acceptable to general public than the hydro-meso riparian proposal. This would provide shade and shelter in a desert setting.
- I would like to see a more economically modest proposal with some chance of successfully being funded, but one done in such a way that more mesic features could be added or upgraded in future.
- [Mesoriparian] seems to be the balance between the other two options.
- I believe that useful habitat restoration can be done by combining the water allocation envisioned in the mesoriparian option with the water harvesting strategies in the xeroriparian option. The hydroriparian option allocates too

much scarce water for too little return. Techniques such as tributary wash gabions, detention basins behind soil cement, microbasin rainfall catchment, and perched aquifers should all be considered.

- Mesoriparian would be, overall, a more appropriate and fiscally responsible way of restoring the river although historically, Cottonwood-willow gallery forests were present immediately south of Congress St. If a combination of mostly mesoriparian with a small stretch of hydro-mesoriparian could be accomplished, we will succeed in creating a more diverse and enjoyable river.
- Some help is necessary to re-establish and maintain the traditional eco-system now. This is necessary because the water has been diverted by the increased human demands.
- This whole concept is so flawed with this presentation that it is a joke.

3. If a restoration project proceeds, recreational opportunities can be incorporated into the plan. Tell us how important each of these potential recreation activities are to you:

	Very Important	Somewhat Important	Not Important
Trail system for walking:	17	1	1
Trail system for bicycling:	9	5	3
Trail system for bird watching:	17	0	1
Trail system for wildlife viewing:	17	0	1
Picnicking:	4	7	6
Horseback riding:	7	6	4

Other ideas or comments:

- Create wildlife thickets inaccessible to humans for true protection of species.
- Bicycle trails usually involve too much soil cement and reduction of restoration potential.
- Safe pedestrian connectivity with other passive recreation areas.
- Opportunities for public education; i.e. nonprofit groups.
- Education/interpretation.
- Trails that connect Santa Cruz to Tucson Mountain Park.
- The Santa Cruz River has always been used by traditional Native Americans as a roadway or trail, especially during ceremonial times.

4. Are there specific areas you recommend we consider for ecosystem restoration? If so, describe them here and explain briefly why each area is important to you.

- The pit @ south of Valencia, east of river @ sand gravel co. that support willows and cattails.
- All vacant land in the area.
- Enhance vegetation along West Branch

- Pima County land on West Branch - still has existing remnant riparian area
- First of all, why not just arrest degradation of the West Branch? Emphasize restoration at spot locations where water harvesting techniques are appropriate.
- Most restoration projects fail. So use areas where water harvesting is most effective and establish mesquite there. Not EVERYWHERE can be a mesquite bosque…the riparian zone vegetation will vary. Your restoration needs to reflect this.
- Erosion control on Cottonwood Lane
- Please install concrete bank protection between Silverlake and Ajo where there are very dangerous earthen vertical banks.
- South of Irvington – all areas. 29th to Ajo Way. Blank canvas areas with great potential.
- Ecosystem restoration would be wonderful for the area between Valencia Road and Irvington Road. Currently there is nothing there and it looks terribly ugly.
- The west bank between Irvington and Valencia as I have personally worked for many years on extending the river park at this site. It is adjacent to a large neighborhood (Midvale Park). Also, there were approved County bonds (1998?) for this purpose.
- West Branch restoration of hydro-riparian conditions would be most feasible there.
- The land owned by the County between Cottonwood Lane and the Santa Cruz River should be used as an area for re-vegetation.
- I am in favor of habitat restoration to the maximum extent possible. There should be a program that promotes carrying over project restoration techniques to private land and commercial landscaping in the area.
- The area immediately south of Congress down to 29th Street or so, historically the area with the highest level of above surface flow. This area, because of its proximity to downtown and communities, may be most appropriate for significant restoration, although I do not intend to "cherrypick" areas – the entire stretch has ecological, historical and recreational significance.

5. Tell us about any other issues you want us to consider as we proceed with next steps in the Restoration Study.

- Please be sure to read the landscape and restore the vegetation in concordance with that. Riparian tress are very flood tolerant but in a restoration you can't know where the trees would've survived…then after the flood you can see the flood "safe sites". I'd opt for zeroriparian.
- Maintaining connectivity (i.e., habitat connectivity) north and south (upstream and downstream) of the project area. Unlike other Federal projects, incorporate a post monitoring plan and implement the plan so that we can see what works and what does not.
- More water harvesting.
- Concrete bank protection is an absolute must.
- Multi-use trail system should continue on the Santa Cruz along with all the restoration projects.
- Bridge extension for Drexel Road to connect the Midvale Neighborhood area with the South Tucson area. Try harder to generate community involvement. It's necessary to

do door-to-door outreach. Encourage support through neighborhood iglesias (churches). Also, go after support from major entities like Hughes, TAA, Sunnyside School District, Starr Pass, Native American Tribes, Home Depot, Pima CC.

- Purchase the common area (West Branch SC) along Cottonwood Park.
- 1) wetlands area. 2) perennial flow of reclaimed water (in limited area). 3) interpretive trails, kiosks, signage at Valencia and Julian Wash archaeological sites.
- Please check the number of species likely to benefit. 1) a conservative estimate is good but only if the same rigorous standard is equally applied to competing restoration proposals. 2) I suspect a reasonable consideration would indicate that 2-3 times the 95 vertebrates species will actually benefit.
- Please make all information available on the website, including conceptual drawings, plant lists, water harvesting strategies being considered, locations of the 1000 acres available for restoration, details of the three current alternatives, timeline (or at least order and nature) of upcoming events in the project, and comment forms. People who could not go to the meetings need to be able to keep up with the project and comment at various stages. It would be interesting to have a better understanding of how the County and the Corps will come to a final plan recommendation and to what extent it can involve new elements or combinations of elements currently contained in the three alternatives. What is the timetable for continued opportunities for public comment?
- I am interested in the feasibility of using treated effluent for irrigation and above surface flows. While Sweetwater has a long reputation for smelling bad, are there remedies or different procedures for efficiently providing a more sustainable source of water? Using water from the Colorado River or much less our aquifers for this restoration project seems to defeat the purpose of restoration. Storm runoff catchments and slow releases? Other ways of wastewater treatment?
- There is one small mobile home park which has been densely populated for at least thirty years by low-income old Tucson families; this property should be bank protected so that the low-income families can continue to use it and preserve their homes (mobile homes).

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Notes submitted by Julia Fonseca on behalf of various people.

- Prefers reclaimed, not groundwater, Wonders if cottonwoods really feasible. Recognizes equity issue if bank protect5ion is provided one place perhaps it's only fair to protect all, but questions whether it's good for the river.
- Yolanda Herrera tells me that we need to get better notification to neighborhoods along the SC River; e.g. Midvale neighbors weren't here, were they notified? Try e-mail. City doesn't have e-mail notification but they do send newsletters by e-mail so they have some kind of list.
- Kendall Kroesen suggests you put the water harvesting basin images on the website so that others can see them.
- Diana Hadley suggests pockets in the soil cement a la Phil Rosen. I mentioned that there are gaps in fp [floodplain] on Rillito. Either way, it provides areas where veg

gets flooded, but velocities are so low that it doesn't get torn out. I can give you Phil's image to put on your website, just remind me.