

**Public Values Related to the Santa Cruz River in Southern Arizona - FOCUS GROUPS
EPA ICR No. 2205.02
SUPPORTING STATEMENT**

Part A

Section 1. Identification of the Information Collection

1(a) Title of the Information Collection:

Public Values Related to the Santa Cruz River in Southern Arizona

1(b) Short Characterization/Abstract:

The purpose of this study is to get feedback on what attributes of the Santa Cruz River are important to the public through focus groups and interviews, to inform subsequent environmental economics survey research. This project is part of the Southwest Ecosystem Services Project (SwESP), a place-based study within EPA's larger Ecosystem Services Research Program (ESRP). Water is a primary theme of SwESP, and the Santa Cruz River riparian area is hypothesized to supply significant ecosystem services to the public. This study seeks to identify indicators of these ecosystem services that will be relevant for riparian area management and public cost and benefit accounting. These indicators will be identified by querying members of the general public, as well as members of Santa Cruz River stakeholder groups.

The Santa Cruz Basin is a focal geography for SwESP research. Collaboration between numerous entities, led by USGS and EPA, is developing an 'Ecosystem Portfolio Model' (EPM) for the Basin. The EPM is designed to present tradeoffs in ecosystem services management through visualization and scenario analysis. The research from this collection and subsequent survey research will be integrated into the EPM. The Sonoran Institute (SI) is also a primary collaborator for this research. The SI is a Tucson, Arizona based NGO with a strong history with community-based conservation work in the Santa Cruz River. Diverse stakeholders are tied together by the Santa Cruz River, representing a microcosm of Southwestern water issues. The SI is executing on an EPA Targeted Watershed Grant to develop a 'health assessment' for the Santa Cruz that provides a means of presenting both current status, and future changes in aquatic and riparian condition for a general public readership. The variables listed in the health assessment form a starting hypothesis for important river indicators, but this collection would not be limited to these variables.

More and more waterways contain treated wastewater as some component of their flow. The Santa Cruz River is effluent-dominated. Groundwater pumping has lowered the water table and in most areas the river flows only in response to storm events, and where fed by a continuous supply of treated effluent. Continued effluent flow in the natural channel is uncertain. The City of Tucson currently delivers treated wastewater for landscaping purposes and eventually plans to treat wastewater for potable delivery. In the upper basin, much of the effluent is owned by Mexico. Treatment and infrastructure costs currently prevent Mexico's utilization of their effluent, and it is delivered to the US for treatment and discharge north of the border. As water resources become more scarce, tradeoffs regarding how to best manage the river system and the effluent face the region.

The purpose of focus groups and interviews is to determine what Santa Cruz River attributes are important to the public and to stakeholder groups. Attributes meaningful to the public at-large will then be used in a survey designed to elicit willingness-to-pay for changes in these attributes that mirror realistic management changes as a means of quantifying public values for the resource. An advantage of this collection is that it is being planned in conjunction with EPA natural science research for the Santa Cruz Basin. There is an opportunity to prioritize the natural science research agenda based on what participants in the collection indicate is important to them in regards to the riparian area. These natural science efforts are being

planned as part of EPM research referenced above. Thus not only will the focus groups and interviews guide attributes for a subsequent human subjects survey, they also inform partnering natural science research. For example, if participants indicate an interest in the riparian area being able to support biodiversity, or an equivalent idea, natural science modeling could prioritize that research direction.

Section 2. Need for and use of the Collection

2(a) Need/Authority for the Collection

Characterization of public benefits of environmental management is one of the goals of EPA's Ecosystem Services Research Program (ESRP). Further documentation of values associated with ecosystems is needed to make natural resources management choices in society's best collective interest.

This collection is meant to inform the development of a public survey to quantify environmental benefits associated with riparian resources of the Santa Cruz River in Southern Arizona. This research is a part of the Southwest Ecosystem Services Project (SwESP), and will be integrated into an Ecosystem Portfolio Model (EPM) for the basin. The EPM is a means of visioning future scenarios in the basin and assessing the impacts on ecosystem services and residents' quality of life. The EPM is a collaborative effort of numerous federal, non-federal, government and NGO entities working in the basin. The collection will aid the design of a survey instrument to investigate public values related to the Santa Cruz River, and will help pose meaningful tradeoffs related to water resources that are central to the EPM. If the survey proceeds without the opportunity to test ideas, refine language, and hone in on key attributes associated with the river system, there is substantial risk that the survey will be less meaningful to the public and less successful in isolating and quantifying the values of most interest.

Survey research is not the only way to quantify public environmental values. Techniques such as recreation demand analysis, and property value analysis for parcels proximate to an environmental amenity, may also be used. These latter techniques have limited ability to investigate how public values shift under different management scenarios, such as those considered for the Santa Cruz River. Such scenarios may be explicitly tested in a survey instrument. Survey methods are also the only known way to capture non-use values that members of the public may have for environmental amenities.

If this information is not collected, a vital link in developing a survey to better understand the economic benefits and costs associated with Santa Cruz River management will be lost.

The hoped outcome of the focus groups and individual interviews is a clearer understanding of if, and how, the Santa Cruz River is or could be important to people. The goal is to identify ecosystem service "endpoints" as described by Boyd and Banzhaf (2007). These endpoints will be parameters that have immediate meaning for human health and well-being. Note that the goal of identifying endpoints is distinct from some other ecosystem services research that seeks to describe processes and functioning of ecosystems at a more intermediate level. This project will use the supposition that valuation studies are more reliable to the extent that the environmental goods at issue are already meaningful to the public and do not need translation. For example, although water quality levels measured in terms of Biological Oxygen Demand (BOD) is a typical unit in natural science, a more likely endpoint would be specific changes in plant and animal life due to changes in BOD, rather than asking members of the public to value BOD changes directly after a loose description of what those changes might mean.

This data collection is conducted for research purposes; there are no legal requirements. The materials prepared for these discussions will fully conform to federal regulations – specifically the Privacy Act of 1974 (5 U.S.C. 552a), the Hawkins-Stafford Amendments of 1988 (P.L 100-297), and the Computer Security Act of 1987.

Boyd, J., and S. Banzhaf. 2007. What Are Ecosystem Services? The Need For Standardized

2(b) Practical Utility/Users of the Data

The information collected in the focus groups will be used to develop and improve an economic survey to estimate public values related to the Santa Cruz River. These public values will be integrated into an Ecosystem Portfolio Model (EPM) being developed for the Santa Cruz Basin, in collaboration with numerous entities working in the Santa Cruz Basin. This EPM will allow the user to pose different scenarios and visualize the outcome in terms of ecosystem services, with river-related values being one of the factors. The survey will serve to expand understanding of benefits and costs of a variety of actions affecting the river. Participation in the focus groups will be voluntary and the identity of the participants will be kept confidential. When stakeholder groups are engaged, only the names of the stakeholder groups will be reported, not the identity of any of the participating members.

Focus groups generally do not yield meaningful quantitative findings and do not yield data about public opinion that can be generalized. As such, they cannot be used directly to estimate benefits and costs associated with a specific environmental action. However, these focus groups are an important tool in the survey development process to test and refine ideas. Quantitative survey research would need to follow to develop new benefit estimates of specific changes to the riparian area.

Section 3. Non duplication, Consultations, and Other Collection Criteria

3(a) Non duplication

It is not expected that any of the information to be submitted to the EPA during these focus group studies is duplicative or is already in the possession of the Federal Government. The proposed focus groups will address the needs of the Agency and significantly improve our ability to test and redefine ideas that will allow EPA to conduct further quantitative research on willingness to pay estimates for environmental amenities related to the Santa Cruz River.

Prior survey research exists for many environmental resources. These studies vary in quality and in the environmental goods at issue. There is no known published valuation research on the Santa Cruz River. There are riparian valuation surveys for other sites in the Southwest but there is a relative lack of valuation data in the region. Across the West more generally, there is a theme in the literature of looking at the value of instream flow (see: Loomis 1987 and 1998). Some of the instream values documented across the West include whitewater rafting (Ward 1987; Leones et al. 1997), angling (Duffield et al. 1992; Loomis and Creel 1992), birdwatching (Eubanks et al. 1993), and maintaining endangered fish habitat (Berrens et al. 1996 and 2000). There are also a few studies under the broad theme of valuing riparian restoration (Loomis et al. 2000; Holmes et al. 2004; Collins et al. 2005; Weber and Stewart in press). There is also an in-process EPA Star Grant which includes valuation research for the San Pedro River; this watershed is just east of the Santa Cruz Watershed. The San Pedro River context is more rural in character and is overall far less impacted than the Santa Cruz River which flows through the metropolitan area of Tucson, Arizona. The hydrologic condition of the San Pedro is characterized as groundwater baseflow, while the Santa Cruz River is effluent-dominated. Thus the two resources vary greatly in quality although they are found in neighboring watersheds. Valuation results are not complete but will be useful as a regional comparison, further study background can be found at:

http://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.abstractDetail/abstract/6920/report/0.

The San Pedro valuation study is expected to be a high quality product with a primary wildlife focus of birds, and seems to have a focus more on use values than nonuse values. The Santa Cruz survey is open to multiple wildlife foci such as birds and fish, and may have a focus on nonuse values as guided by focus group feedback. Results of the San Pedro valuation study will be closely followed for comparison and for insights into Santa Cruz research, and the PI for this collection is in communication with members of the San Pedro study.

The Santa Cruz River is effluent-dominated, there are no known original studies that have investigated public values in relationship to management of such waterways. The US Army Corps of Engineers has a restoration project in Phoenix termed "Rio Salado Oeste" and that waterway is effluent dominated. Part of the project involved enhancing recreation values but no original research was done and no accounting of potential nonuse values was made. See the feasibility plan for the project at: http://www.spl.usace.army.mil/cms/index.php?option=com_content&task=view&id=84&Itemid=69
The recreation plan is Appendix L of the report and is not online but can be obtained from the Corps (or a copy can be furnished by the research team).

Berrens, R., P. Ganderton, and C. Silva. 1996. "Valuing the Protection of Minimum Instream Flows in New Mexico." *Journal of Agricultural and Resource Economics* 21(2):90-104.

Berrens, R., A. Bohara, C. Silva, M. McKee and D. Brookshire. 2000. "Contingent Valuation of Instream Flows in New Mexico: With Tests of Scope, Group-Size Reminder and Temporal Reliability." *Journal of Environmental Management* 58(1):73-90.

Collins, A., R. Rosenberger, and J. Fletcher. 2005. The economic value of stream restoration. *Water Resources Research* 41:W02017.

Duffield, J., C. Neher and T. Brown. 1992. "Recreation Benefits of Instream Flow: Application to Montana's Big Hole and Bitterroot Rivers." *Water Resources Research* 28:2169-2181.

Eubanks, T., P. Kerlinger, and R.H. Payne. 1993. "High Island, Texas: A Case Study in Avitourism." *Birding* 25(6):415-420.

Holmes, T. P., J. C. Bergstrom, E. Huszar, S. B. Kask, and F. Orr III. 2004. Contingent valuation, net marginal benefits, and the scale of riparian ecosystem restoration. *Ecological Economics* 49:19-30.

Leones, J., B. Colby, D. Cory, and L. Ryan. 1997. "Measuring Regional Economic Impacts of Streamflow Depletions." *Water Resources Research* 33:831-838.

Loomis, J., and M. Creel. 1992. "Recreation Benefits of Increased Flows in California's San Joaquin and Stanislaus Rivers." *Rivers* 3(1):1-13.

Loomis, J. 1987. "The Economic Value of Instream Flow: Methodology and Benefit Estimates of Optimum Flow." *Journal of Environmental Management* 24:169-179.

Loomis, J. 1998. "Estimating the Public's Values for Instream Flows: Economic Techniques and Dollar Values." *Journal of the American Water Resources Association* 34:1007-1114.

Loomis, J., P. Kent, L. Strange, K. Fausch, and C. Covich. 2000. Measuring the total economic value of restoring ecosystem services in an impaired river basin: results from a contingent valuation survey. *Ecological Economics* 33:103-117.

Ward, F. 1987. "Economics of Water Allocation to Instream Uses in a Fully Appropriated System: Evidence from a New Mexico Wild River." *Water Resources Research* 23: 381-392.

Weber, M., and S. Stewart, in press. Public Valuation of River Restoration and Saltcedar Removal on the Middle Rio Grande, *Restoration Ecology*.

3(b) Public Notice Required Prior to ICR Submission to OMB

On September 23, 2008 (73 FR 54798), EPA sought comments on this ICR pursuant to 5 CFR 1320.8(d). See Appendix 1 for a copy of this notice. EPA received no comments.

3(c) Consultations

Every effort will be made to incorporate best practices guidance for focus group and individual interviews for this study through a recent literature review. Communication is ongoing with environmental economists outside the Agency that have experience with focus group research. The persons that have been contacted are Marisa Mazzotta, Ph.D., and Robert Johnston, Ph.D. Dr. Mazzotta is an independent consultant and also adjunct faculty with the Department of Environmental and Natural Resource Economics at the University of Rhode Island. She has 19 years of experience in the field and is an expert in non-market valuation, and has conducted focus groups and large-scale survey research for three projects. The non-market subject matter for those projects included estuaries and wetlands. Dr. Mazzotta is an expert hire for the ESRP Wetlands theme. Dr. Johnston is director of the George Perkins Marsh Institute at Clark University, with ecosystem services an emphasized research area. He is also an expert in non-market valuation and survey studies and has numerous publications in this field, including a paper specifically on focus group techniques (Contingent Valuation Focus Groups: Insights from Ethnographic Interview Techniques. R.J. Johnston, T.F. Weaver, L.A. Smith, and S.K. Swallow. *Agricultural and Resource Economics Review*, April 1995, 56-68). Dr. Johnston was selected for his experience with non-market values of streams to participate in a recent EPA event titled "Workshop on Indicators of Final Ecosystem Services for Streams" held July 13-15, 2009 in Denver, CO. Further contacts within and outside the Agency will be pursued. The Principal Investigator for this collection request has limited prior experience conducting focus groups as part of restoration valuation research for the Rio Grande River in Albuquerque, New Mexico.

3(d) Effects of Less Frequent Collection

Each focus group will be a one-time collection exercise for the enrolled participants.

3(e) General Guidelines

This collection does not violate any of OMB's general guidelines for information collections.

Information will be collected according to the guidelines in 5 CFR 1320. Respondents will be asked to participate in one focus group or interview and their participation will be voluntary. There will be no need for participants to maintain records or submit documents or proprietary trade secrets. There will be complete protection of any demographic information collection from participants—full names, phone numbers and addresses will not be associated with responses.

EPA has developed EPA Information Quality Guidelines (2002) to ensure the utility, objectivity and integrity of information that is disseminated by the Agency. It is EPA's intention that collection of information under this ICR will result in information that will

be collected, maintained, and used in ways consistent with both the EPA Information Quality Guidelines (2002) and the OMB Information Quality Guidelines (2002). EPA intends to conduct a pre-dissemination review when the Agency prepares to disseminate information collected under this ICR.

3(f) Confidentiality

Each focus group and interview will fully conform to federal regulations – specifically the Privacy Act of 1974 (5 U.S.C. 552a), the Hawkins-Stafford Amendments of 1988 (P.L. 100-297), and the Computer Security Act of 1987.

3(g) Sensitive Questions

No questions will be asked that are of a personal or sensitive nature.

Section 4. The Respondents and the Information Requested

4(a) Respondents/SIC Codes

Up to one-hundred and one (101) focus group / interview participants who reside in the United States portion of the Santa Cruz Basin.

4(b) Information Requested

- (i) Data items, including record keeping requirements
- (ii) Respondent Activities

Respondents will be asked to participate in a moderated focus group discussion or an individual interview regarding the Santa Cruz River. It is expected that these sessions will be held in at least two locations, Rio Rico, Arizona, and Tucson, Arizona, to minimize travel requirements for respondents. Respondents will be asked their thoughts, perceptions and beliefs in relationship to the river. When possible, the moderator/interviewer will ask them to ground their responses with their experiences with the river. The collection will be a one time event and there will be no need for participants to maintain records or submit documents or proprietary trade secrets. There will be complete protection of any demographic information collection from participants -- names, phone numbers and addresses will not be associated with responses.

Section 5. The Information Collected - Agency Activities, Collection Methodology, and Information Management

5(a) Agency Activities

Agency activities associated with this information collection will include:

- Drafting focus groups scripts and accompanying materials. See Appendix 2 for a draft focus group script for members of the general public, as well as a general script for stakeholder groups.
- Moderating and in some cases observing focus group discussions. In-kind time by Sonoran Institute staff has been offered for focus groups when they need to be conducted in Spanish. In these circumstances EPA activity will be primarily observation.
- Summarizing focus group results and making changes to draft survey materials as appropriate

5(b) Collection Methodology and Management

Focus group studies are directed group discussions that do not produce quantitative data, but which enable skilled observers to infer the underlying views and assumptions of the group that are expressed in the discussion. To facilitate interpretation, discussions will be recorded and/or videotaped so that both a visual record and written transcript of the discussion are available for review. Participants are informed in advance that the sessions will be recorded. Transcripts and video tapes will be maintained in the individual project files over the appropriate time frame under records management procedures.

Stakeholder groups will be contacted directly and it is not anticipated that participants from these groups will require payment for their involvement. Stakeholders representing the range of EPA 'clients' will be sought, including municipal, industrial, agricultural, recreational, cultural, and environmental NGO groups. These categories are modeled after the matrix of "Stream Attributes Posited to be Components of Final Ecosystem Services to Specific User Categories and Subcategories" as revised at the EPA workshop July 13-15, 2009 on stream ecosystem services previously referenced, and as included as slide 8 in the presentation by Jim Boyd and Alan Krupnick to NCEE on August 26, 2009, entitled "The Definition and Choice of Environmental Commodities for Nonmarket Valuation". The list of potential stakeholder groups is not final but could include members of the NGO "Friends of the Santa Cruz River", tribal members, water supply and wastewater representatives, Dept of Water Resources and Dept. of Environmental Quality staff, and farmers and ranchers. Approximately half of the focus group participants are anticipated to be from stakeholder groups, with fifty persons anticipated to be from the general public. Members of the general public will be approached through means that include: advertising in the local paper; random digit dialing in the region; and posting on free websites frequented by a broad cross-section of persons. Once potential participants are contacted, they will be screened based on their location of residence, age, race, and income in attempts to match census characteristics for the region. Potential participants from the general public will be offered \$40 for their focus group attendance and will be told that refreshments will be provided.

Due to the focus on endpoints there is less burden on the researcher to attempt to describe all of the complexities of the ecosystem within the focus group setting. The intent is to elicit the aspects of the ecosystem that may be important more directly from the participants. General information will be offered in the focus group about probable endpoints at issue in the Santa Cruz River. This information will include both current environmental information as well as potential changes as found in the script, see part V of Appendices 1 and 2. Examples of photos that will be used as visual aids are also added as Appendix 3.

Focus group feedback with members of the general public is envisioned to provide salient and parsimonious attributes for inclusion in a choice experiment. These parameters have also been referred to as endpoints in this ICR submission. There is a limitation to the cognitive abilities of survey recipients to consider multidimensional tradeoffs thus only a few endpoints can reliably be included in choice experiments (Louviere et al. 2000). There is a trend towards choice experiment methods as compared with contingent valuation methods since more attributes can be valued with a single survey. Further methodological description can be found in Ben-Akiva and Lerman (1985). If numerous endpoints arise consistently within focus groups then a process of winnowing for the top priority variables will occur. Exploration of which changes in the resource are important to the public (possible changes are listed in the script) supply levels of change in the attributes for the choice experiment. Software such as SAS can be used to formulate choice questions and plan the number of survey versions needed to efficiently estimate tradeoffs. For efficient value estimation typically there are multiple survey versions with different tradeoffs posed to different recipients. Weber and Stewart (in press) offer a brief overview of how a choice experiment was developed for a river restoration study on the Middle Rio Grande. That survey development methodology is adaptable to this project although in this case the focus group stage would be much more extensive.

Ben-Akiva, M., and S. R. Lerman. 1985. Discrete choice analysis. MIT Press, Cambridge, Massachusetts.

Louviere, J., D. Hensher, and J. Swait. 2000. Stated choice methods: analysis and applications. Cambridge University Press, New York.

Weber, M., and S. Stewart. In Press. Public Values for River Restoration Options on the Middle Rio Grande. Restoration Ecology.

5(c) Small Entity Flexibility

As this project has the goal of contacting both members of the general public, as well as organized stakeholder groups, Information may be collected from small businesses, small organizations, or small governmental jurisdictions as a result of this information collection. It will be made clear that participation is completely voluntary. To reduce burden on representatives of small entities, conducting individual interviews by phone is a possibility.

5(d) Collection Schedule

Focus groups will be scheduled very shortly after approval of this ICR. No fixed schedule for this collection has been established.

Section 6. Estimating the Burden and Cost of Collection

6(a through e)

This burden statement includes the burden of focus groups and individual interviews for stakeholder groups and members of the general public. The only burden imposed by the interviews on respondents will be the time required to participate in focus group discussions and answer interview questions. It is estimated that this will require an average of 1.5 hours per respondent. Nine focus groups with nine participants, and twenty individual interviews is expected for a total of 101 respondents and a total of 151.5 hours.

TABLE 1. - **Average Annual Respondent Burden and Costs**

	Subject	Number of Focus Groups for Study	Average Number of Participants per Group	Number of Individual Cognitive Interviews for Study	Total Number of Individuals Participating in the Study	Avg Hours of Duration for Each Group/Cognitive Interview (includes screening)	Total Estimated "Respondent" Hours
Office of Research and Development	Public Values Related to the Santa Cruz River	9	9	20	101	1.5	151.5

6(f) Reasons for Change in Burden

This is a new request.

6(g) Burden Statement

Respondent focus group hours are expected to total 151.5 hours for this study. These hours will be spread over 9 focus groups and 20 individual interviews.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the

time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An Agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control number for EPA's regulations are listed in 40 CFR Part 9 and 48 CFR Chapter 15.

Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, D.C. 20503, Attention: Desk Officer for EPA. Include the EPA ICR number and OMB control number in any correspondence.

Part B.

There are no tabulated results for this information collection.

Information gathered from focus groups is qualitative in nature. They allow for a more in-depth understanding of respondents' attitudes, beliefs, motivations, and feelings than do quantitative studies. It serves the narrowly defined need for direct and informal opinion on a specific topic.

Appendix 2: Focus Group Draft Scripts (Two)

DRAFT “A” FOR: Members Recruited from the General Public

I. Session Introduction and Ground Rules

A. Introductions, Purpose of Focus Group, and Ground Rules

1. Moderator is PI for the EPA research
2. Review of recruitment process – trying to match census characteristics of this area (will be either the Tucson or the Rio Rico area).
3. Introductions, first names only, and general part of town you are from, major cross-streets is enough.
4. Purpose of focus group is to help develop a public survey about the Santa Cruz River.

B. Focus Group Particulars

1. Ground Rules

- a. Session is being audio-recorded
- b. The discussion is strictly confidential, no names will be used in anything I write up regarding this focus group, and there are no further commitments after this 1.5 hours.
- c. I want to hear from everyone, may call on individuals to ensure getting everyone’s opinion. I’m not looking for any particular response, just your honest opinion.
- d. I will call on people who want to speak, so that people speak one at a time. Please respect others’ time to speak and their opinions which may be different than yours. For each person here, try not to let others sway your opinion, just say what you think.
- e. My job is to make it easy for everyone to state their opinion, keep group on task, end on time, and to keep the cookie jar full
- f. Refreshments provided in back of room, help yourself at any time.
- g. I want to stress I’m not looking for any particular answer – I’ll repeat this throughout our time. There are no wrong answers.

2. Initial Questions

- a. Any questions or concerns before we begin

II. First Impressions

- A. When I say “Santa Cruz River” what comes to mind? But don’t say anything yet. Hold your thought and I’d like to hear them one at a time. Don’t change your thoughts after others speak! For example if you have few or no first impressions that is what I would like to know.

III. Awareness and Knowledge of the Santa Cruz River

- A. Do you know where the Santa Cruz River is?
- B. Do you know where the Santa Cruz River channel starts and stops?
- C. Do you know any of the history of the Santa Cruz River?
- D. Do you know if the Santa Cruz River has any water in it? In what locations that water is?
- E. Did you know that it has treated wastewater in it?
- F. What else do you know about the Santa Cruz River?

IV. Experiences with the Santa Cruz River

- A. Have you had any direct interactions with the Santa Cruz River?
- B. Have you had any indirect interactions with the Santa Cruz River?
- C. Have you had any experiences thinking about the Santa Cruz River?
- D. What locations have you had experiences with or have you thought about, if there are specific places?

V. Values Related to the Santa Cruz River

- A. Is there anything important to your household about the Santa Cruz River, either in terms of the river itself, or the forested area along its banks? What are those things?
- B. Is there anything you or members of your household don't like about the river or the areas near the river? What are those things?
- C. Who in the room is generally neutral about the Santa Cruz River, or would say that your household is generally neutral?
- D. The Santa Cruz River is one of the few waterways in Southern Arizona that has water year-round. Essentially all of the water is effluent (treated wastewater). This replaces water that used to be there naturally. This water supports a lot of vegetation, bird life, and other species that use parts of the river or its banks as habitat. Vegetation species include a lot of native cottonwood trees and willow trees as compared with other stretches that have only occasional mesquite or brushy vegetation (show photos). The water and vegetation can support a lot of bird life. The Upper Santa Cruz near Tumacacori National Park (will have map) is one of Audubon's global Important Bird Areas, with over 200 species of birds found there including some rare species. Currently few or no aquatic species live in the river because of poor water quality. There is a possibility of the water being clean enough to support fish, but not necessarily game fish. Near Rio Rico fish have returned to the river after the WWTP. Mosquitofish, a non-native fish have been found. No native fish such as the Gila Topminnow have been found. Is it important to you that the Santa Cruz River provides habitat for these plant, bird, and fish species? What other species might you be interested in? Is it just important that these species exist in the area or is it important to you to see the species during a visit to the river?
- E. Is the Santa Cruz River a place you or members of your household would be interested in visiting (if you aren't already a visitor)? (Either for yes or no answers -)Why?
- F. Is the Santa Cruz River important to your household even if you or others don't plan to visit? Why?
- G. What forms of management would make the Santa Cruz River more important to your household?
- H. What forms of management would make the Santa Cruz River less important to your household?
- I. A partial list of possible changes in the river to discuss:
 - Less effluent flow in the channel (more is used for off-channel purposes)
 - Less riparian vegetation in and alongside the channel (correlated with less water)
 - Less biodiversity and wildlife population abundance (correlated with less water and less vegetation)
 - Increased wastewater treatment and better conditions for aquatic species and other wildlife species
 - Increased recreational amenities

- J. Probe those who haven't answered. Ask if people are attempting "green" answers. What motivates the answers.

VI. Values for Substitutes

- A. Are there other places that you know of near Tucson (or Rio Rico) that have some of the same features that are important to your household about the Santa Cruz River (if anything was important)?

VII. Willingness To Pay

- A. Would it be worth it to your household to preserve the Santa Cruz River as it is today, in terms of the things that are important (if anything was)? How much would that be worth per year? Is that a small or large amount as compared to your household budget?
- B. Would it be worth it to your household to restore the Santa Cruz River? In what ways? How much would that be worth to your household per year? Is that a small or large amount as compared to your household budget?

VIII. Restoration Payment Vehicle

- A. What would be a fair way to fund preservation or restoration?

DRAFT "B" FOR: Members Recruited from Stakeholder Groups

(Written generically although will be applied to numerous distinct stakeholder groups)

I. Session Introduction and Ground Rules

A. Introductions, Purpose of Focus Group, and Ground Rules

1. Moderator is PI for the EPA research.
2. Review of stakeholder group recruitment process – trying to hear from agricultural, municipal, industrial, recreational, cultural, and environmental NGO groups, additionally there are focus groups for members of the general public. State that this is the focus group for Stakeholder Group _____ .
3. Introductions, first names only, and general capacity in which you fit in to this Stakeholder Group.
4. Purpose of focus group is to help EPA understand what attributes of the Santa Cruz River are important to different stakeholder groups and help develop a public survey.

B. Focus Group Particulars

1. Ground Rules

- a. Session is being audio-recorded
- b. The discussion is strictly confidential, no names will be used in anything I write up regarding this focus group, and there are no further commitments after this 1.5 hours.
- c. I want to hear from everyone, may call on individuals to ensure getting everyone's opinion. I'm not looking for any particular response, just your honest opinion whether it reflects the "typical" view in your stakeholder group or not.

- d. I will call on people who want to speak, so that people speak one at a time. Please respect others' time to speak and their opinions which may be different than yours. For each person here, try not to let others sway your opinion, just say what you think.
- e. My job is to make it easy for everyone to state their opinion, keep group on task, end on time, and to keep the cookie jar full
- f. Refreshments provided in back of room, help yourself at any time.
- g. I want to stress I'm not looking for any particular answer – I'll repeat this throughout our time. There are no wrong answers.

2. Initial Questions

- a. Any questions or concerns before we begin

II. First Impressions

- A. When I say "Santa Cruz River" what comes to mind to you as a representative of this stakeholder group? But don't say anything yet. Hold your thought and I'd like to hear them one at a time. Don't change your thoughts after others speak! For example if you have few or no first impressions, that is what I would like to know.

III. Awareness and Knowledge of the Santa Cruz River

- A. What do you know about the Santa Cruz River? (If necessary, start with: ...)
 - Do you know where the Santa Cruz River is?
 - Do you know where the Santa Cruz River starts and stops?
 - Do you know any of the history of the Santa Cruz River?
 - Do you know if the Santa Cruz River has any water in it?
 - Did you know that it has treated wastewater in it?

IV. Experiences with the Santa Cruz River

- A. In your capacity as a rep. of this Stakeholder Group, have you had any direct interactions with the Santa Cruz River?
- B. In your capacity as a rep. of this Stakeholder Group, have you had any indirect interactions with the Santa Cruz River?
- C. In your capacity as a rep. of this Stakeholder Group, have you had any experiences thinking about the Santa Cruz River?
- D. In your capacity as a rep. of this Stakeholder Group, what locations are you thinking about, if there is a specific place?

V. Values Related to the Santa Cruz River

- A. Is there anything important to you in your capacity as a member of Stakeholder Group _____ about the Santa Cruz River, either in terms of the river itself, or the forested area along its banks? What are those things?
- B. Is there anything you don't like about the river or the areas near the river in your capacity as a member of Stakeholder Group _____? What are those things?
- C. Who in the room is generally neutral about the Santa Cruz River?
- D. To best account for the impacts of stream management on different stakeholder groups EPA has been trying to organize the subcategories of these groups, and we have also listed some ways in which we think streams are important to them. Do the following categories apply to your Stakeholder Group, and do these checkmarks indicate ways in which the Santa Cruz River is important (show matrix referenced above in section 5b,

this matrix is also Table 1 in the draft “Report from the Workshop on Indicators of Final Ecosystem Services for Streams” currently in internal review).

- E. What forms of management would make the Santa Cruz River more important to you in your capacity as a member of the Stakeholder Group?
- F. What forms of management would make the Santa Cruz River less important to you in your capacity as a member of the Stakeholder Group?
- G. A partial list of possible changes:
 - Less effluent flow in the channel (more is used for off-channel purposes)
 - Less riparian vegetation in and alongside the channel (correlated with less water)
 - Less biodiversity and wildlife population abundance (correlated with less water and less vegetation)
 - Increased wastewater treatment and better conditions for aquatic species and other wildlife species
 - Increased recreational amenities
- H. Probe those who haven’t answered. Ask if people are attempting “green” answers. What motivates the answers.

VI. Values for Substitutes

- A. Are there other places that you know of near Tucson (or Rio Rico) that have some of the same features that are important to you as a rep. of this stakeholder group about the Santa Cruz River (if anything was important)?

VII. Ranking Priorities (as appropriate to the stakeholder group)

- A. Would it be worth it to you as a rep. of the stakeholder group to preserve the Santa Cruz River as it is today, in terms of the things that are important (if anything was)? How would you prioritize this preservation
- B. Would it be worth it you as a rep. of the stakeholder group to see any of the characteristics of the Santa Cruz River change, and how would you prioritize those changes?

VIII. Restoration Payment Vehicle (as appropriate to the stakeholder group)

- A. What would be a fair way to fund preservation or restoration?

Appendix 3: Photos used to describe different states of the Santa Cruz River



(no water and no trees)



(puddles and some trees)



(water but few trees)



(water and trees)