PUBLIC NOTICE

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

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Proposed Authorization of an In-Lieu Fee Program

Public Notice/Application No.: SPL-2015-00559-WHM
Project: Pima County Regional Flood Control District In-Lieu Fee Program
Comment Period: August 21, 2015 – September 21, 2015
Project Manager: William Miller; 602-230-6954; William.H.Miller@usace.army.mil

Applicant
Suzanne Shields. P.E.
Director
Pima County Regional Flood Control District
97 E. Congress Street, 3rd Floor
Tucson, Arizona 85701

Location
The Program service area would encompass the following watersheds:

- Upper Santa Cruz River sub-basin (HUC 15050301)
- Lower Santa Cruz River sub-basin (HUC 15050303)
- Brawley Wash sub-basin (HUC 15050304)
- Rillito River sub-basin (HUC 15050302)

Activity
The Pima County Regional Flood Control District is initiating the process to be a third-party In-Lieu Fee Sponsor, pursuant to the requirements of the Corps-EPA Compensatory Mitigation Rule[1] (33 CFR 332.8(d)) ("Mitigation Rule") (see attached Prospectus).

Interested parties are hereby notified that a Prospectus has been received in order to authorize an ILF Program for the purpose of mitigating impacts to waters of the United States authorized, or enforcement actions resolved, under section 404 of the Clean Water Act. Interested parties are invited to provide their comments on the proposed authorization of this Program, which will become a part of the record and will be considered as part of this proposal.

Comments should be mailed to:

[1] The mitigation rule was promulgated by the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency at 33 C.F.R. Part 332 and 40 C.F.R. Part 230, respectively.

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
ATTN: William Miller
3636 N CENTRAL AVE SUITE 900
PHOENIX AZ 85012-1939

Alternatively, comments can be sent electronically to: William.H.Miller@usace.army.mil

Background

The PCRFCD has requested the Corps authorize them to sponsor an ILF Program. If authorized, this Program would receive monies from individuals or entities ("project proponent") receiving Corps authorization under section 404 of the Clean Water Act and, when appropriate, to resolve Section 404 enforcement actions within the proposed service area (Figures 1-5 in attached Prospectus).

The PCRFCD (http://rfcd.pima.gov/) is a special taxing District of the State of Arizona authorized under Title 48 Arizona Revised Statutes and is a highly qualified agency responsible for flood control and riparian management in Pima County. PCRFCD has been a recognized leader in characterizing and protecting, as well as managing and restoring, riparian resources in Southern Arizona. PCRFCD began regulating riparian habitat in 1994 and embarked upon their Floodprone Land Acquisition Program (FLAP) and the Riparian Restoration Program in the past two decades. It has also been a participant in the Sonoran Desert Conservation Plan planning team. Projects completed by the PCRFCD include the Kino Environmental Restoration Project, the Cienega Creek Natural Preserve, the Cortaro Mesquite Bosque, and the Swan Wetlands.

Mitigation Approval and Permitting Processes

Mitigation requirements for a particular project are negotiated between the project proponent and the Corps. The project proponent must therefore first submit a mitigation proposal to the Corps that describes the proposed use of an ILF Program or Mitigation Bank. If appropriate credits are not available at a Mitigation Bank located within the service area, and the Corps determines that the Program is the most appropriate approach to mitigation implementation, then the project proponent would contact the Program sponsor to discuss mitigation options. The Program sponsor would review copies of all permits issued to the project proponent and then submit a proposal to the project proponent, including the estimated cost of the proposed mitigation work. Prior to acceptance of payment ("credit sale"), the Program sponsor would also contact the Corps in order to verify the Corps' requirements.

Upon receipt of payment, the Program sponsor becomes legally responsible for initiating the necessary mitigation and monitoring within three growing seasons of receipt of payment. During this time, the Program sponsor would submit a complete Mitigation Plan[2] to the Corps and Interagency Review Team (IRT)[3] as well as an application for Corps permit(s)[4] should the proposed ILF mitigation

[2] The content of a complete Mitigation Plan is described in the Mitigation Rule, at 33 CFR 332.4(c)(2-14).

[3] The Interagency Review Team (IRT) consists of member Agencies and includes U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Arizona Game and Fish Department, Arizona Department of Environmental Quality, Pima County Regional Flood Control District, Pima County Office of Conservation and Science, and City of Phoenix Office of Environmental Programs.

project activities involve a discharge of dredge or fill material within waters of the U.S. or work within navigable waters of the U.S. The Corps would complete consultation, as appropriate, under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, the National Historic Preservation Act and other applicable laws, prior to any permit authorization.

Program funds would be held in a Program account, and all credit sales would be tracked and reported by the Program sponsor to the Corps at a minimum on an annual basis, and also uploaded to the Corps' Regulatory In-lieu Fee and Banking Information Tracking System (RIBITS) .

To ensure permanent protection of the ILF mitigation sites, the sponsors will provide a fully encumbered site protection instrument which may consist of a perpetual conservation easement, deed restriction, or other similar, legal restriction.

The Corps is soliciting comments from the public; Federal, state, and local agencies and officials; Indian tribes; and other interested parties in order to consider and evaluate the impacts and benefits of the proposed authorization of the Program. Any comments received will be considered by the Corps to determine whether the proposal has the potential to provide mitigation opportunities for permitees authorized to impact waters of the U.S. under section 404 of the Clean Water Act or as a means of resolving Section 404 enforcement actions.

Additional details are provided in the Prospectus attached to this Public Notice.

For additional information please call William Miller of my staff at 602-230-6954 or via e-mail at William.H.Miller@usace.army.mil. This public notice is issued by the Chief, Regulatory Division.

Regulatory Program Goals:

- To provide strong protection of the nation's aquatic environment, including wetlands.
- To ensure the Corps provides the regulated public with fair and reasonable decisions.
- To enhance the efficiency of the Corps' administration of its regulatory program.

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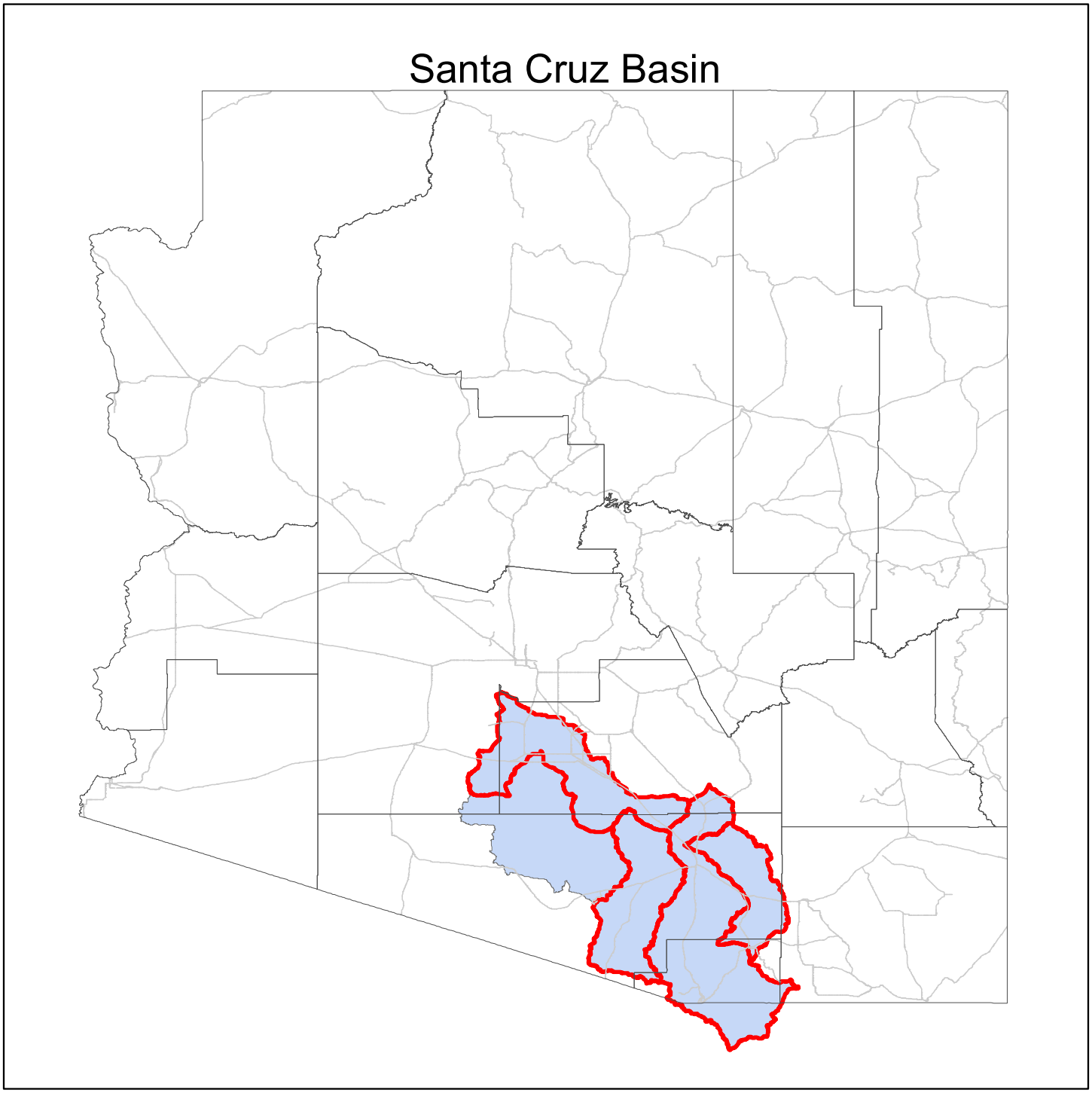
[4] The proposed mitigation activities may also require separate approval from the Arizona Department of Environmental Quality.

Pima County Regional Flood Control District

In-Lieu Fee Mitigation Program

Prospectus



Submitted to:

The US Army Corps of Engineers and Interagency Review Team

June 2015

Pima County Regional Flood Control District
In-Lieu Fee Mitigation Program
Prospectus

I. INTRODUCTION

The Pima County Regional Flood Control District (RFCD) is pleased to present to the US Army Corps of Engineers, Los Angeles District (Corps) and the Interagency Review Team (IRT) this Prospectus for the establishment of an In-Lieu Fee Program (ILF Program) for Southern Arizona. After thoughtful analysis, this Prospectus is being submitted as an indication of the RFCD's firm commitment to develop and implement the program in full accordance with 33 CFR 332 requirements.

The RFCD is uniquely positioned to develop and implement an ILF Program that is fully complementary to, and integrated with, other environmental preservation and restoration activities in the area to meet the goals of a strategy of environmental mitigation that extends into sub-watersheds within the Santa Cruz River Basin and potentially the San Pedro Basin.

This Prospectus has been developed and organized in accordance with 33 CFR 332.8(d)(2) requirements.

II. OBJECTIVES – 33 CFR 332.8(d)(2)(i)

The primary goal of the proposed ILF Program is to provide a mechanism for local governments to effectively mitigate unavoidable losses to aquatic resources in the Santa Cruz River Basin within a cohesive, integrated, locally-managed ILF Program. Mitigation activities including preservation, enhancement, and restoration will be planned, implemented and managed at select mitigation sites within the Santa Cruz River Basin, identified by the United States Geological Survey as (USGS) Hydrologic Unit Code (HUC) 150503.

Specific objectives for the ILF Program include:

- Selecting multiple sites within sub-basins and watersheds of the Santa Cruz River Basin so that mitigation will occur in close proximity to impacts, where feasible;
- Identifying appropriate mitigation sites and projects based upon their location and proximity to uplands and preserves for purposes of continuity and connectivity, their need for protection, the level of degradation observed, as well as the potential for success of restoration activities;
- Conducting baseline studies and inventories for each proposed mitigation project site and partnering with experienced local natural resource management entities as appropriate;
- Developing site-specific mitigation plans which will begin with land preservation that may include invasive species removal, environmental enhancements, access restrictions, and physical site modifications to enhance ecosystem restoration;
- Developing and implementing effective short and long-term management, monitoring and maintenance activities; and
- Planning and addressing as needed repairs and adaptive management strategies to ensure

successful mitigation in perpetuity.

III. ESTABLISHMENT OF OPERATION – 33 CFR 332.8(d)(2)(ii)

The RFCD will develop and operate a regional ILF Program in accordance with federal regulations under 33 CFR 332, Compensatory Mitigation for Losses of Aquatic Resources. This final mitigation rule articulates that mitigation banks and in-lieu fee programs are preferred alternatives when compared to permittee-responsible mitigation projects because they consolidate compensatory mitigation projects in environmentally sensitive areas, thus increasing the probability of long-term project success in addition to consolidating technical and financial resources and scientific expertise.

The ILF Program is intended to serve southern Arizona and the Santa Cruz River Basin primarily within the four USGS listed sub-basins (Upper Santa Cruz HUC 15050301, Lower Santa Cruz HUC 15050303, Brawley Wash HUC 15050304, and Rillito HUC 15050302). However, the ILF Program may serve other Arizona basins, sub-basins, watersheds and sub-watersheds as deemed appropriate by the Corps. Once the new ILF Program is established, individual mitigation projects will be identified within the appropriate sub-basin or watershed that will be located and prioritized based on proposed land development projects that may impact Waters of the United States (Waters), the state of aquatic resources with respect to the level of degradation, and the potential for restoration success.
The final ILF Program Instrument will serve as the umbrella under which specific mitigation projects within each service area will be proposed and established. A specific mitigation plan will be developed for each mitigation project and will be signed by the RFCD, the Corps and the IRT.

The RFCD has acquired title to a significant amount of property within Pima County under the Floodprone Land Acquisition Program (FLAP) over the past three decades. FLAP was initiated in 1984 and was designed to acquire, through voluntary sale by owner, developed and undeveloped properties that have experienced flood damage or are at risk of flooding due to their locations in or along watercourses within the basin. Acquisition efforts over the past three decades have resulted in the RFCD acquiring title to more than 14,000 acres of property under FLAP, much of which is undeveloped, forming large tracts of open space throughout regional watersheds and sub-watersheds.

In addition, Pima County, including the Natural Resources, Parks and Recreation Department (NRPR) and the Office of Sustainability and Conservation (OSC) also has a long history of acquiring and managing natural open space starting with the Tucson Mountain Park established in 1929. In 1998, the Pima County Board of Supervisors (Board) approved the award winning Sonoran Desert Conservation Plan (SDCP). In 2001, the Board updated the Pima County Comprehensive Land Use Plan, integrating the land-use policies and principles of conservation developed in the SDCP, including the Conservation Lands System (CLS). The CLS identifies lands necessary to achieve SDCP biological goals, while delineating areas suitable for development. The CLS covers approximately 2 million acres in Eastern Pima County. Since then, Pima County has acquired more than 50,000 acres in fee title along with 130,000 acres of leased land associated with large working ranches. Pima County now manages approximately 275,000 acres of open space and riparian habitat.

Significant natural resources are associated with land acquired under FLAP and the CLS. The thousands of acres managed by the County provides for species diversity, biological productivity, and ecological connectivity. The FLAP and CLS lands provide multiple benefits to people and the environment by

protecting the natural functions of the floodplain that prevent erosion, protecting water quality, attenuate flood flows, increasing groundwater recharge, and providing wildlife with shelter and forage and movement corridors necessary to maintain their populations.

Aquatic resources in southern Arizona are threatened by a variety of sources including flood management activities, linear transportation projects, utility expansion, alternative energy projects, mining operations, agricultural and urban development, increasing use of groundwater, non-native species invasion, and climate change. Projects implemented under an ILF Program will lessen overall impacts within the state's river basins by restoring floodplain function and reducing fragmentation of riparian habitat presenting an opportunity for restoration. A brief description of a selection of available mitigation properties is presented below in Section 4.

Based on their approximate locations to major and minor washes within Pima County, many of these properties contain Waters and potential or actual high riparian values, thus creating ideal opportunities for preservation and restoration activities. Pima County's Waters are dispersed among many different sub-watersheds which places them in close proximity to areas where future development may impact Waters. Additionally, more land continues to be acquired under the FLAP and CLS as monies become available on an annual basis. It is important to recognize that although these parcels were acquired under the FLAP and CLS, the parcels are not formally encumbered for any specified purpose and may be re-sold or re-designated by the Board (acting as the Flood Control District Board of Directors) as deemed necessary or advantageous to the District and Pima County at any time. Capture of these select lands under the ILF Program for preservation in perpetuity and/or restoration is a critical element in our ILF approach giving us a vast array of land to choose from that is in close proximity to areas of actual impact and that meet all of the ILF Program's criteria.

The RFCD will engage additional conservation entities with significant local resource management and restoration experience, including entities within Pima County, in order to attain the goal of extending the number of mitigation sites that can be successfully managed on several watersheds and sub-watersheds within the Santa Cruz River Basin.

IV. PROPOSED SERVICE AREA – 33 CFR 332.8(d)(2)(iii)

The ILF Program is intended to primarily service the USGS HUC 150503 (Lower Colorado River Region, Middle Gila Sub-Region, and Santa Cruz River Basin). Eight digit HUCs, which under the recently-expanded USGS classification system are titled sub-basins (formerly cataloging units), which will be serviced under the ILF and would include the: a) Upper Santa Cruz River (15050301); b) Lower Santa Cruz River (15050303); c) Brawley Wash (15050304); and d) Rillito River (15050302).

Proposed service areas for individual ILF projects will be identified in site-specific mitigation plans. Priority will be given to the development of compensatory mitigation projects located within the same sub-basin where impacts occur. It is expected that a number of opportunities can be identified for mitigation sites within each of the identified sub-basins given the thousands of acres of land owned by RFCD and Pima County. RFCD, partnering with NRPR and OCS and other local natural resources management entities for ILF project development, implementation and management will ensure that sufficient attention is given toward each selected and approved mitigation site.

Example clusters of properties owned by RFCD or Pima County, which are among those throughout the sub-basins of the Santa Cruz River Basin (Figure 1) and which present some opportunities for the creation of mitigation sites, are illustrated in Figures 2 and 5. A brief description of each land cluster identified and numbered in the figures is presented below:

A. Upper Santa Cruz River Sub-Basin (HUC 15050301)

1. Sopori Ranch Mitigation Area (Sopori Wash upper watershed east to I-19)

   - Potential Mitigation Area = 4,672 acres
   - RFCD and Pima County Property within Mitigation Area = 2,686 acres

   The Sopori Ranch Mitigation Area is located along Sopori Wash, a tributary of the Santa Cruz River originating west of I-19. Sopori Wash contains riparian mesquite bosque, riparian forests containing cottonwood, Gooding willow, ash, hackberry, and provides for connectivity to the Santa Cruz River just south of the proposed Canoa Ranch Mitigation Area. Portions of the riparian forest have been cleared for pasture and other agriculture. The potential threat of development exists along Sopori Wash due to the proximity of Arivaca Road.

   These parcels provide direct connectivity south and east to the Tumacacori Highland portion of the Coronado National Forest.

2. Canoa Ranch Mitigation Area (Esperanza Wash south to Arivaca Road)

   - Potential Mitigation Area = 6,400 acres
   - RFCD and Pima County Property within Mitigation Area = 4,850 acres

   The Canoa Ranch Mitigation Area is located in southern Pima County along both sides of the Santa Cruz River adjacent to and south of the developing urban/suburban area of Green Valley. The mitigation area consists of 6,400 acres of river channel, floodplain terrace, active and abandoned agricultural fields, an historic ranch site, riparian strand and native grassland vegetation, and mesquite bosque.

   Groundwater pumping, reduction of surface water flows, livestock grazing, agricultural activities, and invasive plant species are primarily responsible for ecosystem degradation in the Canoa Ranch area. The large open space acreage and associated riparian vegetation provides habitat for numerous wildlife species.

   The Canoa Ranch Mitigation Area provides connectivity and wildlife linkages between the Santa Cruz River and adjacent “Sky Islands.” To the east is the Santa Rita Experimental Range and the Santa Rita Mountains portion of the Coronado National Forest and, to the west, the Sierrita Mountains and areas west of I-19 such as Pima County’s Marley Ranch Open Space Bond acquisition. Wildlife movement corridors provide linkages between large protected habitat areas and are integral to maintaining biodiversity.

3. Cañada del Oro (CDO) Wash/Santa Cruz River Confluence Mitigation Area (Orange Grove Road North to Walker Road)

   - Potential Mitigation area = 152 acres
   - RFCD and Pima County Property within Mitigation Area = 118 acres

   Cañada del Oro (CDO) Wash/Santa Cruz Confluence Mitigation Area is located on the Santa Cruz River between Orange Grove Road and Walker Road adjacent to and just west of I-10 within the Tucson metropolitan area. The riparian vegetation, bank stability, and hydrology of the Santa Cruz River and lower CDO Wash have been substantially altered by sand and gravel mining, agriculture, groundwater pumping, bank protection and channel straightening, off-road vehicle use, overgrazing, and urban encroachment into the floodplain. Effluent discharges to the river downstream of Pima County's Agua Nueva Water Reclamation Facility at Roger Road have created dense stands of riparian vegetation dominated by cottonwood, willow, and non-native tamarisk. Non-native invasive plants and animals are present in this area.

4. Upper Cañada del Oro Wash/Catalina Mitigation Area (Catalina State Park boundary north to Edwin Road)

   - Potential Mitigation Area = 661 Acres
   - RFCD and Pima County Property within Mitigation Area = 274 acres

   The Upper Cañada del Oro (CDO)/Catalina Mitigation Area is located along the upper reach of the CDO Wash in the Village of Catalina north of the Town of Oro Valley. Located close to the urban fringe, land use within this mitigation area is a mix of low density residential and high density residential subdivisions, a resort surrounded by a large amount of natural open space, and Pima County-owned Catalina Regional Park, and open space managed for natural resources protection. The upper CDO supports mesoriparian vegetation and associated wildlife species including key populations of Bell's Vireo, Abert's Towhee, and Rufous Winged Sparrow. Many other riparian bird species maintain important populations along this reach of the CDO. Plant diversity along the upper CDO is high with significant populations of Desert willow and Catclaw acacia. Several locations containing large riparian trees contribute to the biodiversity of the mitigation area including Cottonwood, ash, willow, sycamore, Canyon hackberry, and Black walnut.

   This mitigation area provides connectivity to surrounding areas of the Catalina Mountains portion of the Coronado National Forest, Catalina State Park, and the Sutherland Wash. Groundwater pumping, agricultural activities, habitat encroachment associated with residential development, diversion of surface flow, overgrazing, and off-road vehicles have impacted the riparian community in this area.

5. Cañada del Oro Wash at Oasis Mitigation Area (Hardy Road north to Lambert Lane)

   - Potential Mitigation Area = 543 acres
   - RFCD and Pima County Property within Mitigation Area = 180 acres

   The Oasis Mitigation Area is located between Hardy Road and Lambert Lane within the floodplain and floodplain terrace of the Cañada del Oro Wash (CDO). This reach of the CDO is located within a suburban area of mixed large lots and subdivisions. Channelization of the river has occurred both upstream and downstream of the Oasis Mitigation Area. Groundwater pumping, off-road vehicle use, wildcat dumping, and encroachment via development have impacted riparian habitat. The area is dominated by riparian stand vegetation community, scattered mesquite bosque, and Ironwood-Blue palo verde community.

   This mitigation area provides connectivity from the Tortolita alluvial fan to the Tortolita Mountains and the Tortolita Mountain Park, via the Honey Bee Wash and the Big Wash, and to the Catalina State Park/Santa Catalina Mountains portion of the Coronado National Forest via the upper CDO.

B. Lower Santa Cruz River Sub-Basin (HUC 15050303)

1. Lower Santa Cruz River (LSCR) Mitigation Area (North Trico Road southeast to upstream of Trico Marana Road)

   - Potential Mitigation Area = 1,206 Acres
   - RFCD and Pima County Property within Mitigation Area = 418 Acres

   The Lower Santa Cruz River Mitigation Area is located on the Santa Cruz River between North Trico Road and North Luckett Road within the Town of Marana. The riparian vegetation, bank stability, and hydrology of the Santa Cruz River have been substantially altered by sand and gravel mining, agriculture, groundwater pumping, bank protection and channel straightening, off-road vehicle use, overgrazing, and urban encroachment into the floodplain. Effluent discharges to the river downstream of Pima County's Tres Rios Water Reclamation Plant at Ina Road and the Agua Nueva Water Reclamation Facility at Roger Road have created dense strands of riparian vegetation dominated by cottonwood, willow, and non-native tamarisk. The area is surrounded mainly by agriculture and rural development. Non-native invasive plants and animals occur in this area.

   This mitigation area is immediately adjacent to City of Tucson Water lands to the west and further west, through State and private lands, to the Ironwood Forest National Monument.

C. Brawley Wash Sub-Basin (HUC 15050304)

1. Black Wash/Snyder Hill Mitigation Area (Intersection of West Park Road and Aiirline Road northwest to Sandario Road)

- Potential Mitigation area = 3,142 Acres
- RFCD and Pima County Property within Mitigation Area = 1,496 acres

The Black Wash/Snyder Hill Mitigation Area is located in the Black Wash tributary of the Brawley Wash surrounding Pima County's Avra Valley Wastewater Treatment Facility on Snyder Hill Road. This mitigation area is dominated by mesquite bosque, riparian strand vegetation, and supports and Ironwood-Palo Verde community on the upland edges.

Large lot residential and subdivision development, road cutting resulting in the alteration of surface drainage patterns, agricultural use, off-road vehicles, and grazing have adversely impacted riparian habitat within this mitigation area.

This mitigation area provides connectivity and wildlife linkages westward through the Brawley Wash south to the Altar Valley and north to the Avra Valley, and northeastward through the City of Tucson, state and federal lands to Tucson Mountain Park. To the north, through state lands, there is connectivity to the protected Bureau of Reclamation Wildlife Mitigation Corridor, Tucson Mountain Park and Saguaro National Park West.

2. Manville Road Mitigation Area (West Rudasill Road south to West Sweetwater Drive alignment)

   - Potential Mitigation Area = 1,740 acres
   - RFCD and Pima County property within Mitigation Area = 648 acres

   Manville Road Mitigation Area is located in the Brawley Wash floodplain between West Rudasill Road and West Sweetwater Drive alignment. This reach of the Brawley Wash supports a mesquite bosque, xeroriparian habitat, Sonoran scrub and Ironwood-Palo Verde community. Agriculture activity, grazing, wood cutting, road construction and off-road vehicle use has resulted in an alteration of surface drainage patterns impacting riparian habitat.

   This mitigation area provides connectivity and wildlife movement corridors from the southern aspect through the Tucson Water's and federal lands eastward to protected natural, undisturbed open space areas of Saguaro National Park West and Tucson Mountain Park and southwestward through Tucson Water's lands to the Ironwood Forest National Monument.

D. Rillito River Sub-Basin (HUC 15050302)

1. Pantano Wash/Rincon Creek Confluence Mitigation Area (Houghton Road east to Old Spanish Trail)

   - Potential Mitigation Area = 1,034 acres
   - RFCD and Pima County Property within Mitigation Area = 486 acres

   The Pantano Wash/Rincon Creek Mitigation Area is located at the confluence of the Rincon

Creek and Pantano Wash and extends between Houghton Road and Old Spanish Trail. The mitigation area is on the urban fringe and land use is a mix of large lot residential, high density subdivisions, a planned future master planned development, and gravel mining. This mitigation area contains riparian strand vegetation with scattered pockets of mesoriparian vegetation, including a small area of cottonwood, willow, and elderberry.

The riparian vegetation, bank stability, and hydrology of the Pantano Wash have been substantially altered by sand and gravel mining, agriculture, groundwater pumping, off-road vehicle use, overgrazing, and encroachment into the floodplain. Riparian vegetation associated with Rincon Creek is generally in better condition than the Pantano Wash, but has also been impacted by residential encroachment, road construction, off-road vehicles, livestock grazing, and agricultural use in the floodplain.

This mitigation area provides wildlife movement corridors and linkages between protected natural undisturbed open space within the Rincon Mountains portion of the Coronado National Forest, Saguaro National Park East, Colossal Cave Mountain Park and the Agua Verde Wash, and Cienega Creek Natural Preserve.

2. Tanque Verde Creek/Agua Caliente Wash Confluence Mitigation Area (Tanque Verde Loop Road to Woodland Road & East Fort Lowell Road to confluence)

   - Potential Mitigation Area = 1,290 Acres
   - RFCD and Pima County Property within Mitigation Area = 306 acres

   The Tanque Verde Creek/Agua Caliente Wash Confluence Mitigation Area is located within a scientifically peer-reviewed designated Important Bird Area along the Tanque Verde Creek Woodland Road upstream to Tanque Verde Loop Road and along the Agua Caliente Wash from the confluence with Tanque Verde Creek upstream to East Fort Lowell Road. Land use in the mitigation area is a combination of scattered commercial business, equestrian centers, large lot development and residential subdivisions.

   This mitigation area supports significant mesoriparian habitat and a mature mesquite bosque. Riparian forest vegetation in this mitigation area contains cottonwood, willow, ash, sycamore, hackberry, Mexican elderberry, walnut, and Western soapberry trees. The typical understory is a dense shrub community of hackberry, acacia, elderberry, wolfberry, and graythorn. Groundcover is a diverse association of native grasses and forbs. The multi-layered structure of the habitat supports a large diversity of wildlife.

   Groundwater pumping, bank protection and channel straightening, off-road vehicle use, agricultural use, overgrazing, and urban encroachment into the floodplain has impacted the habitat. Invasive plant species are becoming an increasing threat to native plants.

   This mitigation area provides wildlife linkages between the Rincon Mountains portion of the Coronado National Forest, Saguaro National Park East, and the Catalina Mountains portion of the Coronado National Forest.

E. Other Mitigation Sites and Opportunities

Although the clusters of properties described above and illustrated on the attached figures indicate some of the opportunities for development of mitigation sites and have been selected based on characteristics that may benefit from mitigation. The actual inclusion of any specific sites in the ILF Program will be based on a number of factors including where impacts to aquatic resources are occurring. There is the potential to expand the list of mitigation sites to include RFCD properties located in other areas of Pima County including, but limited to, the San Pedro HUC.

Each mitigation site will have an individual site-specific mitigation plan prepared by RFCD for review and approval from the Corps and the IRT. Mitigation plans for each site will be prepared in accordance with the requirements of the Mitigation Rule at 33 CFR 332.4(c)(1)(iii) and will include:

- Objectives: This section of the plan will introduce the resource that will be provided, the method of compensation, and the method in which the resource functions for the proposed compensatory mitigation project and will address the aquatic resource needs of the watershed.

- Site Selection: This will consist of a description of the factors that were examined in order to select the particular mitigation site.

- Site Protection Instrument: This will consist of the legal arrangements that ensure the protection of the mitigation site in perpetuity. As described previously, it is envisioned that RFCD will own in fee the property on which most mitigation sites are proposed, so site protection will primarily consist of executing appropriate deed restrictions and/or conservation easements.

- Baseline Information: This will consist of a detailed description of the ecological characteristics of the proposed compensatory mitigation site including basic hydrologic and riparian information as well as preliminary delineation of Waters.

- Determination of Credits: Credit determination will be presented in accordance with negotiated credit requirements and a credit release schedule referenced to site performance standards.

- Mitigation Work Plan: This will consist of detailed written work descriptions for the proposed compensatory mitigation project along with the proposed schedule of activities.

- Maintenance and Monitoring Plan: A description of the maintenance activities and monitoring parameters and schedules will be outlined in this section for initiation after initial construction is completed.

- Performance Standards: This section will articulate ecologically-based standards that will be used to determine whether the compensatory mitigation is achieving its objectives.

- Long-Term Management Plan: This will address how the compensatory mitigation project will be managed after identified performance standards have been achieved to ensure sustainability of the preserved or restored resource.

- Adaptive Management Plan: This section will present guidance for when and how mitigation plans will be revised to address circumstances which may negatively impact the sustainability or success of the compensatory mitigation project.

- Financial Assurances: This section will provide a description of the financial assurances that will be provided to ensure that the project will be successfully completed in accordance with performance standards.

V. GENERAL NEED FOR AND TECHNICAL FEASIBILITY OF ILF PROGRAM – 33 CFR 332.8(d)(2)(iv)

The need for the initiation of the new RFCD ILF Program has been underscored by recent changes in the Mitigation Rules. Requirements of the new Mitigation Rule include financial assurances, and the ability to hold sufficient cash resources on hand to purchase and own appropriate parcels of land outright. RFCD is in a unique position to establish an ILF Program due to large land holdings by RFCD and Pima County along with associated water rights. The RFCD has expertise in ecosystem restoration and is statutorily able to contract with local natural resource management entities, including NRPR and OSC within Pima County, private consulting firms specializing in ecology and restoration which will complement RFCD's resources and knowledge to develop and implement a locally managed ILF Program within the Santa Cruz River Basin encompassing a land area of approximately 8,190 square miles.

Pima County first began preserving and managing open space in 1929 with the acquisition of land that now is Tucson Mountain Park. After the 1983 Flood, the RFCD recognized the need to preserve upstream watersheds, riparian vegetation and riverine function to control runoff and reduce flooding and erosion in the Tucson Basin. Since that time, RFCD and Pima County have effectively coordinated on stewardship, management and protection of riparian habitat throughout the upper watersheds of Pima County's major rivers and creeks. RFCD and Pima County staff including wildlife biologists, range managers, ecologists, and hydrologists have managed and restored areas by:

- Monitoring water resources conditions including surface water flows, shallow groundwater areas, and water quality of surface and groundwater.
- Conducting vegetation surveys, establishing monitoring plots and transects and other monitoring techniques for a range of environments in the Sonoran Desert from riparian habitat, desert scrub, desert grassland, and Madrean woodlands,
- Developing wildlife survey techniques for avian, mammal, amphibian and reptile species along with wildlife habitat identification, monitoring and enhancement techniques and strategies.
- Developing land stewardship and management plans to protect key resources that allow for the regeneration of riparian vegetation.

Several Pima County properties and protected areas such as Davidson Canyon and Cienega Creek contain outstanding wildlife habitat values and are managed specifically to protect ecological values. The Cienega Creek Natural Preserve (Preserve) was acquired by the RFCD in the early 1980s and was established as a preserve in 1986 marking RFCD's first major riverine management project that included riparian habitat preservation along a perennial stream. Partnering with Pima County on land management practices such as controlling vehicular access and cattle grazing have resulted in improved habitat values. Native fish species, Gila topminnow and Gila Chub, naturally colonized the Preserve in 2003 demonstrating favorable aquatic habitat conditions. The American Fisheries Society recognized the Preserve and Pima County's habitat management strategies in 2006 with an Award of Excellence.

Upstream of the Preserve, the RFCD acquired 360 acres of Empirita Ranch in 1991 to protect the natural functions of the watershed. Public ownership of the ranch expanded in 2001 with Pima County's acquisition of an additional 2,700 acres. The Empirita Ranch property has become an important element in the management and protection of the Preserve. Fencing sensitive areas, controlling livestock, development of small check dams to mitigate erosion, and employing sustainable range management grazing practices contribute to increasing health of the upstream watershed and the Preserve.

The West Branch of the Santa Cruz River (West Branch) is, by contrast, an urban refuge for species of plants and wildlife now rare within the city limits. Parts of the West Branch properties were acquired as mitigation for bank protection and must remain in a natural state. The West Branch is the focus of various efforts by the RFCD to stem erosion and maintain native biodiversity in cooperation with scientists and various community organizations.

As development occurs within the region, the natural environment including Waters within the Santa Cruz River watershed will be impacted. Construction of private sector housing and commercial development, and attendant public sector capital improvement projects (CIP) will be required to service the increasing population. Pima County developed the SDCP as a means to guide development activities away from the most sensitive areas of our natural undisturbed desert environment. However, an ILF Program approach delivers a comprehensive strategy to provide for compensatory mitigation under the Clean Water Act Section 404 Program for unavoidable disturbance to Waters.

Prior to development of sound environmental planning policies, such as the national award winning SDCP, large areas of riparian habitat and floodplain functions of our riverine systems had been degraded by land development activities. As described previously, over the past three decades the RFCD has acquired large tracts of floodprone land under FLAP in various watersheds around the region. Some of these FLAP lands have been degraded due to past development activities and intact habitat is currently managed as natural open space. The ILF Program will provide a mechanism to provide for permanent preservation along with regular monitoring of a select cross section of those acquired lands which have not yet been developed. Additionally, the ILF Program will provide an opportunity to restore environmentally sensitive lands that have been degraded by past development activities.

The ILF Program will be a comprehensive coordinated program that will synergistically enhance the goals of the SDCP by restoring biotic connectivity between designated Important Riparian Areas (IRAs) and upland habitats. Failure to establish an ILF Program for the Santa Cruz River Basin would likely result in a patchwork of disconnected permittee-responsible compensatory mitigation projects that could meet the technical requirements of the Compensatory Mitigation Rule, but may not provide or maintain habitat connectivity and wildlife linkages. The Mitigation Rule cites these concerns as reasons why ILF and Mitigation banks are preferred options when compared to permittee-responsible mitigation.

The ILF Program presents a significant opportunity for acquisition of riparian lands adjacent to lands already owned by the RFCD and Pima County to expand and improve the types of habitat to be conserved, the reach of connectivity and/or that could be used as buffer lands as envisioned under 33 CFR 332.3(i).

The RFCD and Pima County have acquired lands located throughout multiple sub-basins and watersheds of the Santa Cruz River HUC. This will allow for creation of an ILF Program where several clusters or "pods" of available land can be identified as potential mitigation sites close to where development is expected to occur. This program of focused preservation and mitigation planning will allow for the selection of mitigation sites within watersheds that are closest to the site of actual impacts to Waters and will allow the conservation of the habitat types most similar to those to be impacted by development. Mitigation site selection will also be based upon the need for protection, the level of degradation, and actual habitat and riparian values as well as the likelihood of restoration success.

In addition to the open space and riparian lands owned by RFCD and Pima County, Pima County's NRPR has operated a native plant nursery since the 1990s. The nursery provides native plants for environmental restoration and enhancement and landscaping of public projects. This operation includes regional collection of native seeds and plant propagation. Propagation techniques such as tall pots produce deep-rooted native plants that are sustainable with little to no irrigation, and are able to adapt to drought and changing climate conditions.

The RFCD works closely with other departments within the Pima County system including Pima County's Development Services Department which manages land development activities through state mandated comprehensive land use planning and re-zoning processes, NRPR and OSC which provide ecological planning and land management services.

The RFCD, OSC, and NRPR work together to protect Pima County's natural resources through stewardship, planning, and enforcement of regulations. These three departments are the primary entities responsible for implementing the goals of the SDCP and the Multi Species Conservation Plan (MSCP), which addresses compliance with the Endangered Species Act to minimize and mitigate incidental takes on federally listed species, which is the basis for Pima County's Section 10 Permit under the Endangered Species Act.

The OSC's Conservation Science Division supports the biological goal of the SDCP to ensure the long-term survival of the full spectrum of indigenous plants and animals. Focus areas are landscape conservation and endangered and threatened species protection. Key to species conservation is the

MSCP. An essential element of the MSCP is ecological monitoring to determine if Pima County's conservation measures are proving effective at meeting the U.S. Fish and Wildlife Service (USFWS) requirements. Pima County has developed a monitoring program to look at the "health" of the environment from a number of different perspectives including species monitoring to detect changes in the status and/or trends; habitat monitoring of environmental features that contribute to biodiversity; and threat assessment monitoring to be used for adaptive management of possible underlying causes for potential decline of species and/or change in habitat components.

The NRPR is responsible for administration of the Pima County SDCP's CLS for over 275,000 acres that include 14 working ranches, and Pima County natural resources parks like Tucson Mountain Park and Agua Caliente Park. Programmatically, the Natural Resources Division conducts routine site monitoring of the Open Space lands, surveys of specific vegetative and wildlife, habitat protection and enhancement projects, property and landscape level resource planning, inter-agency resource management coordination, ranch land management, and invasive species control efforts.

Consideration and coordination of the SDCP activities conducted by RFCD, OSC, and NRPR with the ILF Program will result in an integrated program with connectivity and development of sufficient buffers to enhance the preservation and restoration of aquatic resource functions.

VI. PROPOSED OWNERSHIP ARRANGEMENTS AND LONG-TERM MANAGEMENT STRATEGY – 33 CFR 332.8 (d)(2)(v)

1. Proposed Ownership

   As described previously, RFCD and Pima County own significant land assets that have been acquired over the years through the FLAP and the CLS. Much of these lands are located within upper reaches of individual watersheds of the Santa Cruz River Basin where effective mitigation may occur for projects that result in unavoidable impacts to Waters further downstream in the watersheds. Given the features of the properties that guide the land acquisition process, the lands under RFCD and Pima County ownership, and future acquisitions are optimal for preservation and restoration of functioning aquatic resources. We anticipate that this suite of lands, as described in Section 4, will form the predominant land bank from which mitigation sites will be selected.

   Rights to utilize other public lands not encumbered under any other government preservation program may be established if those are deemed ideal for meeting the aquatic resource conservation goals of the ILF Program. Ultimately, each individual mitigation site selected under the ILF Program would be fully encumbered conforming to the Mitigation Rule (33 CFR 332.7). Encumbrances may consist of a perpetual conservation easement, deed restriction, or other similar legal restriction to ensure the site is reserved for permanent preservation under the ILF Program.

2. Long-Term Management Strategy

   The RFCD will assume full responsibility for long-term management and protection of the mitigation properties selected under the ILF Program to ensure long-term viability as functional aquatic resources. Although each individual mitigation project will be designed and developed to limit the amount of long-term maintenance and monitoring that is

required once performance standards have been achieved, it is recognized that each mitigation site will require some degree of monitoring and continued long-term care. A long-term Adaptive Management Plan will be developed for each site, which will include a description of the expected management needs along with an estimate of the annual costs associated with executing the long-term plan.

Adequate financial resources and a durable long-term financing strategy are essential components for the ILF Program sustainability. RFCD was created in 1978 under the authority of the Arizona Revised Statues (ARS), Title 48, Section 3603, and is a special taxing district of the state of Arizona. The RFCD and Pima County have the financial and technical strength to ensure that sufficient financial and technical resources are mobilized and devoted to the ILF Program for long-term site protection and management.

RFCD has significant experience in both short and long-term land and project management. RFCD is a participant in Pima County's SDCP, developer and implementer of a number of environmental restoration projects (a few of which are highlighted in this Prospectus), and land owner of more than 14,000 acres. RFCD has developed strategies for long-term management of these lands and gained practical experience of land stewardship that will guide the management strategy for ILF Mitigation sites. Additionally, proper long-term management funding strategies will likely include the development of special reserve accounts for ILF mitigation sites, which will be filled through an apportioned amount obtained through the sale of credits for that mitigation site.

VII. QUALIFICATIONS of SPONSORS – 33 CFR 332.8(d)(2)(vi)

1. Regional Flood Control District

   As a special taxing District of the state of Arizona authorized under Title 48 of the ARS, RFCD is a highly qualified agency responsible for all aspects of flood control and riparian management in Pima County. Our activities and the 60 member staff are broadly divided into regulatory, planning, and public works functions spread among five divisions. RFCD staff collectively has expertise in ecology, natural resources conservation, habitat and stream restoration, conservation biology, ecological monitoring, wildlife management, botany, invasive species and vector control, groundwater and surface water, geomorphology and soils, project concept and scope development, contract and project management, environmental engineering, irrigation design and maintenance, illustration and mapping, GIS mapping and analysis, water and land rights, and environmental compliance.

   The Water Resources Division, which contains nine staff members, is responsible for developing and implementing all aspects of riparian protection, management, and regulation within Pima County, designing, implementing, monitoring and managing riparian restoration projects sponsored by the District, stewardship of FLAP lands, and implementing the Automated Level Evaluation in Real Time (ALERT) meteorological monitoring system within Pima County. Riparian habitat regulations are contained within Chapter 16.30 of the Pima County Code entitled, *Watercourse and Riparian Habitat Protection and Mitigation Requirements*, an ordinance regulating disturbance of mapped riparian habitat including

IRAs adopted by the RFCD Board of Directors. Water Resource Division essentially acts as the District's riparian and natural resource management entity and has been responsible for implementation of various environmental restoration & enhancement projects in Pima County.

Staff within each of these Divisions, plus the Director's Office, have both the education and the experience critical to developing and implementing the ILF Program - from land management to regulatory compliance (as both a regulator and a regulated entity under Section 404), hydrology, ecology and environmental science. Many have advanced degrees and professional certifications in their fields of expertise.

The ILF Program will be managed by the Director's Office of the District which will have direct day-to-day control over development and implementation of the Program. RFCD's Director will be the primary contact and be responsible for the ILF Program. This level of commitment will ensure prioritized allocation of all appropriate District resources, as required, to properly implement the ILF Program in accordance with the 2008 Mitigation Rule. Additionally, financial, property management, legal, and procurement resource experts within select Pima County departments are available to the District for implementation of this ILF Program, via existing shared services agreements with the District, and will be engaged as required to assist in the implementation of the ILF Program. As stated earlier, complementary resources from local non-profit natural resource management entities will also be contracted by the District as partners to assist in the operation and maintenance of mitigation projects as necessary and appropriate.

Although this effort will be a first for RFCD in developing and implementing an ILF Program under Section 404 of the Clean Water Act, the District has been nationally recognized as a leader in characterizing and protecting, as well as managing and restoring riparian resources throughout Southern Arizona.

2. <u>Characterizing and Protecting Habitat</u>

Pima County's first riparian habitat protection regulations were adopted by the Pima County Board in 1994 under the Ordinance as Article X of the Pima County Code: "Watercourse and Riparian Habitat Protection and Mitigation Requirements." Riparian classification definition and Riparian Classification Maps were developed which define "regulated riparian habitat" as stipulated in Chapter 16.30 of the Floodplain and Erosion Hazard Management Ordinance. The Ordinance is structured to protect regulated riparian habitat from development and requires mitigation for unavoidable disturbances to habitat that exceed 1/3 acre. Regulated riparian habitat is divided into the following classifications; Hydroriparian-, Mesoriparian, Xeroriparian, and IRSs. Xeroriparian habitat is further divided for regulatory purposes into Class A, B, C, and D, based on total vegetative volume. IRAs incorporate the riparian elements of Pima County's SDCP's CLS and provide a framework for linkages between habitats and landscape connections. The Riparian Classification Maps are based on plant community structure and composition, vegetation density, the availability of water, and hydrologic connectivity. In addition to creating the only specific and comprehensive classification system for the various types of riparian habitat found in Eastern Pima County, District staff worked with diverse stakeholders including developers,

consultants and residents to develop appropriate mitigation strategies for unavoidable disturbances of regulated riparian habitat. Since detailed tracking began in 1998 after inception of the local riparian regulatory requirements, approximately 310 Riparian Habitat Mitigation Plans (RHMPs) for single lots and 92 RHMPs for developments ranging in size from one-half acre to hundreds of acres have been reviewed, negotiated and permitted by the District under this program.

Over the years, Pima County's riparian regulatory program has evolved as several technical policies and procedures, based on the extensive experience gained during program execution, have been developed to further guide the detailed implementation of the program. Due to the large size of these documents, only the cover sheet and table of contents from one of the most recent guidance documents is presented as an attachment (Attachment 6) to this Prospectus. The full version of the document can be found at: ***http://rfcd.pima.gov/wrd/riparian/pdfs/onsite_mitigation_guidelines.pdf.***

3. Managing and Restoring Habitat

In addition to the implementation of the riparian characterization and regulatory program, the District has embarked upon several programs over the past three decades to preserve and restore pristine and damaged riparian systems. These programs consist of the FLAP, the Watercourse and Riparian Habitat Protection and Mitigation Requirements, and participation on the SDCP planning team.

FLAP, as discussed previously, is a unique program that has been used by the District over the past three decades to acquire approximately 14,000 acres of floodprone and riparian habitat land within multiple sub-basins, watersheds and sub-watersheds in Pima County. FLAP lands contain an inventory of perennial and intermittent streams, shallow groundwater areas, springs and riparian ecosystems. A significant criterion for evaluating land to be acquired under FLAP includes the existing riparian value of the parcel and the connectivity of the parcel to other protected public lands.

The District's riparian management and restoration program has completed a number of preservation activities and implementation of riparian mitigation projects within pristine or damaged riparian habitat locations at a number of sites around Pima County. A few examples of projects that have been completed by District staff are as follows:

- Kino Environmental Restoration Project (KERP): This project was completed in 2001 as a partnership between the District, the Corps, and Pima County and was designed to create 50 acres of native ecosystems and wildlife habitat within the Ajo Flood Control Detention Basin. The restoration project design consisted of grading the detention basin to create four and one-half acres of marshland, 15 acres of riparian habitat, six acres of upland and 10 acres of grassland all fed by harvested stormwater (or reclaimed water, if needed) which is retained in a 7-acre, 50 foot deep lake created in the basin. The District has been heavily involved in the management, monitoring and maintenance of the facility over the 14 years and the site has been highly successful in achieving environmental objectives for the project including: 1)the creation of several native ecosystems that represent Arizona's southwest riparian environment; 2) the

establishment of five distinct environments—Arizona Uplands, Open Water, Riparian Communities, Wetlands, and Mesquite Bosque within the basin; and,3) the restoration of wetlands that are ecologically resilient and self-sustaining.

- Cienega Creek Natural Preserve: Over 4,000 acres along a 12-mile long reach of Cienega Creek were acquired by RFCD to preserve one of the region's few remaining perennial streams. Establishment of the Preserve in 1986 marked the first major flood control effort that was driven by riparian habitat and natural resources preservation. In response to the elimination of grazing and off-road vehicle activity, the density of cottonwoods, willows, and other trees and shrubs along the stream have increased dramatically. The re-establishment of high quality riparian habitat and stream function resulted in improved surface water quality. Due to the high quality surface water, Cienega Creek has been designated an "Outstanding Water of Arizona."

- Cortaro Mesquite Bosque: Cortaro Mesquite Bosque is an 80-acre habitat restoration project located in the overbank terrace of the main channel of the Santa Cruz River adjacent to Continental Ranch in the Town of Marana. The project was completed in 2008 and was designed to increase biological diversity and plant community structure of the Santa Cruz River floodplain providing wildlife habitat, particularly a forage and nesting area for birds. The planting scheme consists of islands of vegetation zones or plant communities separated by areas of native grasses. Islands are comprised of five types of plant communities: Cottonwood-willow, riparian mesquite, riparian Grassland-willow, xeroriparian mesquite bosque, and Upland grassland and shrub scrub habitat. Nearly seve years since completion, the vegetation is thriving and the project is meeting restoration goals for the site.

- Swan Wetlands: The District, in cooperation with the Corps' Planning Division, developed the Swan Wetlands Ecosystem Restoration Project along the south bank of the Rillito River between 2006 and 2008. The restoration project encompasses sixty acres divided into three specific areas. The project plan primarily consisted of removal of non-native species, land re-contouring to enhance capture of stormwater runoff and the planting of native vegetation. Additionally, the cement lining was removed from a main constructed drainage channel and this channel was re-contoured to create a more sinuous alignment, thus allowing for more absorption of runoff into the soil to enhance the native vegetation community. A mix of plant species, from Mesquite species to Palo Verde, as well as hydroseeding with native seed mix was used for the majority of the sites. Reclaimed water was provided for irrigation in order to establish the plantings. Nearly seven years since completion, planted vegetation is thriving and the project is meeting restoration goals for the site.

The variety of work experience and skills demonstrated by the District, with their highly qualified, experienced and certified staff, indicate their ability to successfully sponsor an ILF Program.

VIII. COMPENSATION PLANNING FRAMEWORK AND DESCRIPTION OF PROGRAM ACCOUNT – 33 CFR 332.8(d)(2)(viii)

1. Compensation Planning Framework

Although a detailed Compensation Planning Framework (CPF) will be established in the ILF Instrument, a limited framework for one of the example sites (Canoa Ranch illustrated as Site 2 on Figure 2) is proffered in this section to conform to the requirements as stated in the Mitigation Rule.

(a) Upper Santa Cruz Sub-Basin Service Area: A Watershed-Based Rationale

As referenced previously, all mitigation will be done within the same basin where the disturbance occurs, and within the same sub-basin where feasible. Per USACE 332.3c: *"…the watershed approach should be based on inventories of historic and existing aquatic resources, including identification of degraded aquatic resources, and identification of immediate and long-term aquatic resource needs within watersheds that can be met through permittee-responsible mitigation projects, mitigation banks, or in-lieu fee programs. Planning efforts should identify and prioritize aquatic resource restoration, establishment, and enhancement activities, and preservation of existing aquatic resources that are important for maintaining or improving ecological functions of the watershed. The identification and prioritization of resource needs should be as specific as possible, to enhance the usefulness of the approach in determining compensatory mitigation requirements."*

(b) Threats and In-lieu Fee Program Mitigation Potential for the Upper Santa Cruz Service Area

The aquatic resources of the Upper Santa Cruz River sub-basin in and around Pima County are threatened by numerous factors that include loss of surface water, groundwater decline, agricultural and urban encroachment, non-native species invasion, and climate change.

Regional managers are working to reduce or eliminate causes and effects of surface water loss, groundwater decline, and encroachment issues, but, to date, little has been done about climate change effects. As reported in Global Climate Change Impacts in the United States (2009), *"Human-induced climate change appears to be well underway in the Southwest. Recent warming is among the most rapid in the nation, significantly more than the global average in some areas."* Projections for climate change in the Southwest include continued increases in average temperatures, which has already increased approximately 1.5 degrees Fahrenheit (°F) in the Southwest since the baseline period of 1960 to 1979. By the end of this century, the annual average temperature in the Southwest could reach as much as 10°F higher than in the baseline period. The report goes on to state, *"Future landscape impacts are likely to be substantial, threatening biodiversity, protected areas, and ranching and agricultural land. These changes are often driven by multiple factors, including changes in temperature and drought patterns, wildfire, invasive species, and pests."*

Rainfall patterns will be affected with an increased likelihood of drought due to both

natural weather cycles and human-induced climate change. Anticipated drought impacts in Southern Arizona include long periods of drought with short periods of heavy, intense rainfall and fewer winter storm systems. Plants that require regular rainfall will be the most stressed. Warmer winter temperatures and increased areas denuded of native vegetation created by human activity and climate change will allow non-native plants such as buffelgrass to spread.

Implementation of ILF Program protection has the ability to offset some of these threats through actions that preserve or enhance and manage remaining riparian resources areas.

(c) An Analysis of Historic Aquatic Resource Loss in the Upper Santa Cruz Service Area

The landscape within this region of the Santa Cruz River has changed dramatically since the early 20th century. The Upper Santa Cruz River main stem has a history of being a river oasis in the arid southwest, with long winding reaches of reliable year-round flow from several springs around Tubac and Tucson, adjacent to downstream marshy cienega areas, all surrounded by a lush riparian corridor with cottonwoods and a wide mesquite bosque supported by shallow groundwater (Mauz, 2011). Over the past 100-plus years, groundwater pumping, agricultural activities, mining, urban encroachment, channelization and climatic change have been primarily responsible for the ecosystem degradation in the Upper Santa Cruz Sub-basin Service Area in and around Pima County.

Based on stream gauge daily discharge records, the loss of year-round base flow began around 1912. By 1940, surface flow in the formally wet Tubac and Tucson portions of the Upper Santa Cruz River was limited to rainy seasons. The river now flows only in response to storm runoff. Areas of shallow groundwater only exist around Tubac, Arizona, and downstream of the regional wastewater treatment plant(s).

Not only has the amount and location of perennial flow in the Santa Cruz River changed, but the seasonality and magnitude of flows also have shifted as a result of climate change in this region. Although the majority of flow events occur during the summer season, the magnitude and number of flows that occur in the fall and winter were higher before 1930 and since 1960. Also, annual peak discharges are increasing, as six of the seven largest floods on the Santa Cruz River at Tucson occurred after 1960 (Woods et al., 1999).

(d) An Analysis of Current Aquatic Resource Conditions in the Upper Santa Cruz Sub-basin Service Area

Due to declines in groundwater, loss of surface water, channelization, arroyo formation, and climate change effects, aquatic resources along many parts of the Upper Santa Cruz River Sub-basin are desiccated and contain declining plant communities. Perennial flow areas are now limited to effluent release downstream of sewage treatment plants at Nogales and Tucson. Non-native invasive weed encroachment is threatening the ecosystem function of remaining riparian resources.

Habitat classification is frequently based on plant communities because plant species

are definitive of their biomes, since they are rooted in place, and generally adapted to the site-specific environment. Plants are also the most obvious and easily recognizable element of the biological community. Individual site vegetation and other aquatic resource assessments have been undertaken for various areas within the Upper Santa Cruz Sub-Basin Service Area by RFCD, Tucson Audubon Society, Sky Island Alliance, Sonoran Institute, and others. Assessments done by RFCD include vegetation transect surveys at Paseo de las Igelsias, Phase One, near the confluence of the Santa Cruz River and Julian Wash, Big Wash near the confluence with the Cañada del Oro Wash, and at the Oasis Mitigation Area along the middle Cañada del Oro Wash; photo monitoring at Canoa Ranch, at the confluence of the Santa Cruz River with Madera Canyon Wash, and along the upper Cañada del Oro Wash; and groundwater level monitoring at the Oasis Mitigation Area and the upper Cañada del Oro Wash.

Several regional vegetation classifications have been done for the Upper Santa Cruz Sub-Basin, not limited to the Brown and Lowe biotic communities classifications (1994), the SWReGAP Digital Land Cover Data at http://earth.gis.usu.edu/swgap/, and Pima County's habitat mapping and classification used for development of the SDCP and implementation of the Ordinance (Pima County Code, Title 16), Section 16.54, Watercourse and Riparian Habitat Protection and Mitigation Requirements. This mapping used multi-spectral satellite imagery (LANDSAT) to interpret riparian habitat value and created classifications based on plant community structure and composition, vegetation density, and availability of water, cross referenced with field data inventories, as described in Table IV.

Table IV. Sonoran Desert Plant Communities

Classification	Plant Community	Description
Hydro and Mesoriparian	Open Water	Streams, springs, ponds, lakes: provides habitat for aquatic species and resting/forage for water fowl
	Wetland	Cattail-sedge: aquatic, wetland species, moist soil and habitat for food, shelter, and nesting sites, high biodiversity
	Cottonwood-Willow Community	Deciduous Gallery Forest: most threatened forest type in North America, one of the most important native habitats, dependent on shallow groundwater, high biodiversity
	Seasonal Cienega	Riparian grasses, sedges, "edge" habitat bordering bosque and gallery forests: provides forage, shelter, important for wildlife
	Mesoriparian Mesquite Bosque	Mixed forest of mesquite, hackberry, acacia: second most threatened forest type in North America, valuable for wildlife forage and nesting habitat
Xeroriparian	Xerorriparian Mesquite Bosque	Similar plant community to Mesoriparian mesquite bosque: lower total vegetation volume than Mesoriparian bosque habitat, occurs along ephemeral streams, Includes Ironwood-Palo Verde community,
	Riparian Scrub	Saltbush-wolfberry-graythorn community, also Ironwood: historically common along rivers, important to wildlife.
	Riparian Grassland	Sacaton, tobosa grass communities: Seasonal cienegas, floodplain fringe, important for wildlife
Uplands	Upland Sonoran Desert Scrub	Palo Verde-Bursage community
	Desert Grassland	Desert grasses, cacti

The habitat classification map for Pima County may be viewed at: http://rfcd.pima.gov/. For regulatory and simplification purposes, the Ordinance and associated maps identify three classifications of riparian habitat: Important Riparian Areas (IRA), Hydroriparian/Mesoriparian (Class "H"), and Xeroriparian Class "A" through "D", where A is has dense vegetation (>0.85 m3/m2), and Xeroriparian D is less dense (≤0.50 m3/m2), lower structure vegetation found along the floodplain fringe. The sandy bottom channel and associated obligate and facultative

wetland species, where present, are classified as hydroriparian/mesoriparian. This map shows that along the main stem of the Upper Santa Cruz River, most areas currently transition directly from hydroriparian/mesoriparian into undesignated upland plant/habitat community with no adjacent xeroriparian habitat as one would expect in a more natural riverine condition. The main channel currently has xeroriparian habitat along the margins in only a few limited reaches, mainly at major or undeveloped tributary confluences and downstream of wastewater treatment effluent discharges. Reaches that preserve buffers of xeroriparian plant communities include areas of Madera Canyon Wash and Box Canyon Wash in the Santa Rita Mountains of the Coronado National Forest, the Hughes, Airport, Julian, Arroyo Chico, Rillito, and Cañada del Oro washes, and river reaches downstream of the Roger and Ina Road Wastewater Treatment plants effluent release points.

Numerous undeveloped upper tributaries to the Upper Santa Cruz River Watershed Sub-basin preserve high quality xeroriparian habitats, including Sopori Wash, Fagan and Lee Moore washes, and the upper reaches of the Cañada del Oro Wash system in Pima County, and areas upstream of Amado in Santa Cruz County (note: tributaries located in alternate sub-basins are not listed herein).

(e) Aquatic Resource Goals and Objectives – General Amounts, Types and Locations

Goals and objectives include protection of current resources and the elements that support them, restoring functioning riparian ecosystems for support of native wildlife under current and future conditions, and an adaptive management approach to monitoring and maintenance actions.

Mitigation areas within the Upper Santa Cruz Sub-basin include Sopori Ranch, Canoa Ranch, Upper Cañada del Oro Wash in Catalina, Cañada del Oro Wash at Oasis, and Cañada del Oro Wash /Santa Cruz River confluence. These specific locations are described separately in the RFCD Prospectus *(Section 4).* Within each of these mitigation areas, the general amounts, types and locations of aquatic resources the program will seek to provide will be site-specific and developed using the following goals and guidance:

i. Protect and maintain existing high functioning riparian habitat and other aquatic resources.
ii. Where appropriate, improve riparian function using sustainability design techniques, including restoration of hydrologic connections, spreading and attenuating flood flows, rainwater harvesting, mulching, temporary establishment irrigation, and others.
iii. Focus potential re-vegetation efforts on types of native species appropriate for current and expected future conditions that will create more diverse habitat and structure, stabilize erosion-prone areas, and displace non-native invasive species.
iv. Decrease threats, possibly including, but not limited to, continued groundwater decline, destructive human and livestock trespass, and invasive non-native species.
v. Monitor site conditions to determine impacts and adjust maintenance and management strategies as needed to increase benefits.

Through applications of this guidance, it will be possible to preserve and enhance natural floodplain function and associated native wildlife habitat at each mitigation area.

(f) Prioritization Strategy for Selecting and Implementing Compensatory Mitigation Activities

The specific goals and guidance listed previously will be utilized, as appropriate, for each mitigation site or project based on site-specific needs determined by a baseline site assessment performed by RFCD. Baseline site assessments will include a basic overview of hydrologic resources, geomorphic conditions, existing vegetation classification, anthropogenic setting, onsite property condition, seasonal vegetation and wildlife species summary (primary focus on invasive species), and threat assessments. Based on site conditions, the amount of area suitable for preservation and/or active mitigation project improvements shall be identified.

(g) Explanation of How the Preservation Objectives Satisfy 332.3(h) Preservation Criteria

Preservation may provide compensatory mitigation when all the following criteria are met:

i. The resources to be preserved provide important physical, chemical, or biological functions for the watershed;
ii. The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available;
iii. Preservation is determined by the district engineer to be appropriate and practicable;
iv. The resources are under threat of destruction or adverse modifications; and
v. The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to appropriate resource agency or land trust).
vi. Where preservation is used to provide compensatory mitigation, to the extent appropriate and practicable, the preservation shall be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities, except where preservation has been identified as a high priority using a watershed approach, as authorized by the USACE District Engineer.

(h) Public and Private Stakeholder Involvement

RFCD will work closely with appropriate and committed public and private stakeholders on plan development and implementation including, where appropriate, coordination with federal, state, tribal and local aquatic resource management and regulatory authorities. RFCD will coordinate on plan development and implementation. RFCD may also partner with other willing public and private stakeholder individuals and groups, especially those who have experience in the service area including, but not limited to, the Sonoran Institute, Friends of the Santa Cruz River, and Sky Island Alliance.

(i) Long-Term Protection and Management

RFCD will manage all ILF Program mitigation sites in a manner consistent with the ILF Program goals as stipulated in Section V herein and the long-term protection and management items as follows:

i. Protect Water Resources: Flood control structures or other active floodplain management activities are not permitted, unless related to public safety and approved by RFCD and USACE. Drainage through the mitigation properties will not be altered, disturbed, or obstructed in any way inconsistent with maintenance of water harvesting needs and preservation of natural floodplain function. All approved construction, maintenance, or other activities that cause disturbance are subject to all applicable codes and ordinances, including riparian habitat protection and mitigation requirements per Pima County Code Title 16, Chapter 16.30.

ii. Vegetation Management: Any supplemental planting, pruning, or vegetation thinning will only be done with the intended outcome to preserve, enhance, and/or protect the riparian resource function and habitat quality. The introduction of non-native plant or wildlife species shall be prohibited. As a component of a monitoring and adaptive management program, non-native plants will be managed to reduce threats to species diversity and public safety.

iii. Public and Other Uses: Public access and passive recreation that does not negatively affect the natural floodplain function is allowable on the mitigation property. RFCD approved educational and scientific research will be permitted as long as the activity is in compliance with ILF Program goals or implied intent; research project presentations and publications require the approval of RFCD. In mitigation site locations negatively affected by past or future public use, illegal dumping, agricultural trespass, or similar negative anthropogenic disturbance, exclusion fencing and/or signage will be constructed. No motorized vehicle use in the floodplain will be permitted on the mitigation property except as required for emergency, maintenance, or other necessary uses approved by RFCD. No overnight camping activities will be permitted.

iv. Disturbance in Pre-Existing Easements: Where applicable, any construction, maintenance, or other activities that cause disturbance within existing platted easements are subject to all applicable codes and ordinances, including riparian habitat protection and mitigation requirements per Pima County Code Title 16, Chapter 16.30. Mitigation plans and costs will be the responsibility of the entity responsible for the disturbance. Easement holders will be notified of these requirements. Obsolete easements will be retired.

v. Fire: Mitigation property will be managed to reduce the risk of fire to adjacent private property and human life. Limited proscribed fire may be used as a management tool for vegetative waste and exotic invasive species. No non-permitted open fires shall be allowed. A perimeter fire break and fire lane entry points for emergency vehicles may be created and maintained if deemed necessary by the local fire district in order to avoid fire damage to the riparian resources and any surrounding properties. Removal of riparian habitat related to fire prevention will comply with all applicable codes and ordinances, including riparian habitat

protection and mitigation requirements per Pima County Code Title 16, Chapter 16.30.

vi. General Site Monitoring Plan: Unless site conditions warrant otherwise, as determined by RFCD, general site inspections shall be done semi-annually for the five years after the completion of primary restoration efforts, annually until year 10, then biannually thereafter. General site inspection shall include photo monitoring, plus assessment of unauthorized entry, comprehensive trail and/or fence conditions, trash, general vegetation conditions, documentation of major disturbances (e.g., fire, flood, grazing, human encampments, etc.), notable weed observations, and all wildlife observations. Results shall be recorded on a standard General Site Inspection Form. Based on the general site assessment, further restoration/remediation work will be performed including invasive species management, fence repair, trash disposal, and re-vegetation, and public access may be revoked temporarily or permanently. One offsite assessment will also be performed shortly following a major known disturbance to the site. If major changes to the site are determined to have occurred after remediation work has been accomplished, the general site inspection schedule will restart at the initial semi-annual frequency.

vii. Maintenance Plan: RFCD will conduct or contract maintenance and other activities to facilitate achieving the preservation objectives. Routine maintenance may include invasive species management, as needed, to reduce threats to species diversity and public safety. Upon notice or observation of a maintenance need, corrective action will be undertaken and documented within 90 days or as soon as RFCD resources and workloads permit. Maintenance activities may be recorded on the General Site Inspection Form or on a separate maintenance form, as deemed appropriate by RFCD.

viii. Vegetation Monitoring Plan: Vegetation monitoring protocol may vary depending on degree and phasing of any vegetation enhancement mitigation as deemed appropriate by RFCD. A detailed site-wide vegetation survey in areas with active mitigation or restoration improvements shall be done pre-project to establish a baseline for measuring the success of restoration work. Photo monitoring points will be established. After planting or seeding activities are finished, plant inventories and site assessments will be done, as appropriate, to document project establishment and species succession, and determining best management of invasive species.

ix. Bird Monitoring Plan: Established and standardized bird monitoring protocol system may be used to monitor these sites. The timing and frequency of these bird monitoring surveys would be site-specific and established on the judgment of RFCD. With a core group of trained staff members in bird survey techniques and a standardized system of protocols and data sheets developed in cooperation with the Arizona Game and Fish Department's Heritage Data Management System (HDMS), Pima County biologists responsible for Pima County's MSCP are especially well equipped to monitor the restoration efforts for impacts on wildlife habitat through bird surveys.

x. Record Keeping: RFCD will maintain organized, site-specific records of site information, including any initial/baseline assessments, mitigation plans and/or

activities, General Site Inspection Forms, photo monitoring, and Vegetation Monitoring Forms and results, maintenance notes, and any other applicable site-related information.

(j) Evaluation, Reporting, and Program Management

The scope of the proposed ILF Program is focused on preserving and/or enhancing aquatic resources, including natural floodplain function, for current and expected future conditions using best management practices, site appropriate techniques and adaptive management strategies. The performance standards for mitigation activities will be considered met if RFCD maintains organized, site-specific records of all site information documenting initial conditions and progress to date of any project as specified in the ILF Implementation Instrument. Events that are outside of the control of RFCD, such as wildfire, flooding, erosion, prolonged drought, pestilence, climate change, groundwater elevation changes, etc., or other watershed management decisions beyond the control of RFCD, shall not require extraordinary management activities other than appropriate documentation and implementation of adaptive management in concurrence with the ILF Program goals and objectives specified herein.

(k) Additional Information

RFCD will supply other information for effective compensation planning as deemed necessary by the USACE District Engineer.

i. Description of Program Account: The RFCD will establish a special ILF Program account and individual mitigation project site sub-accounts through the Pima County Finance Department. All funds will be held in the program account which will be established at a financial institution that is a member of the Federal Deposit Insurance Corporation. Sub-account funds will be managed by the RFCD via the Pima County Treasurer's Office. The terms and conditions contained within the ILF Instrument and approved mitigation plans will govern fund expenditures that will be dedicated to the design, implementation and management of each specific ILF mitigation project as well as program administration.

RFCD will maintain detailed accounting records in an electronic database of each and every ILF transaction identifying the credits sold and monies accepted for each specific project.

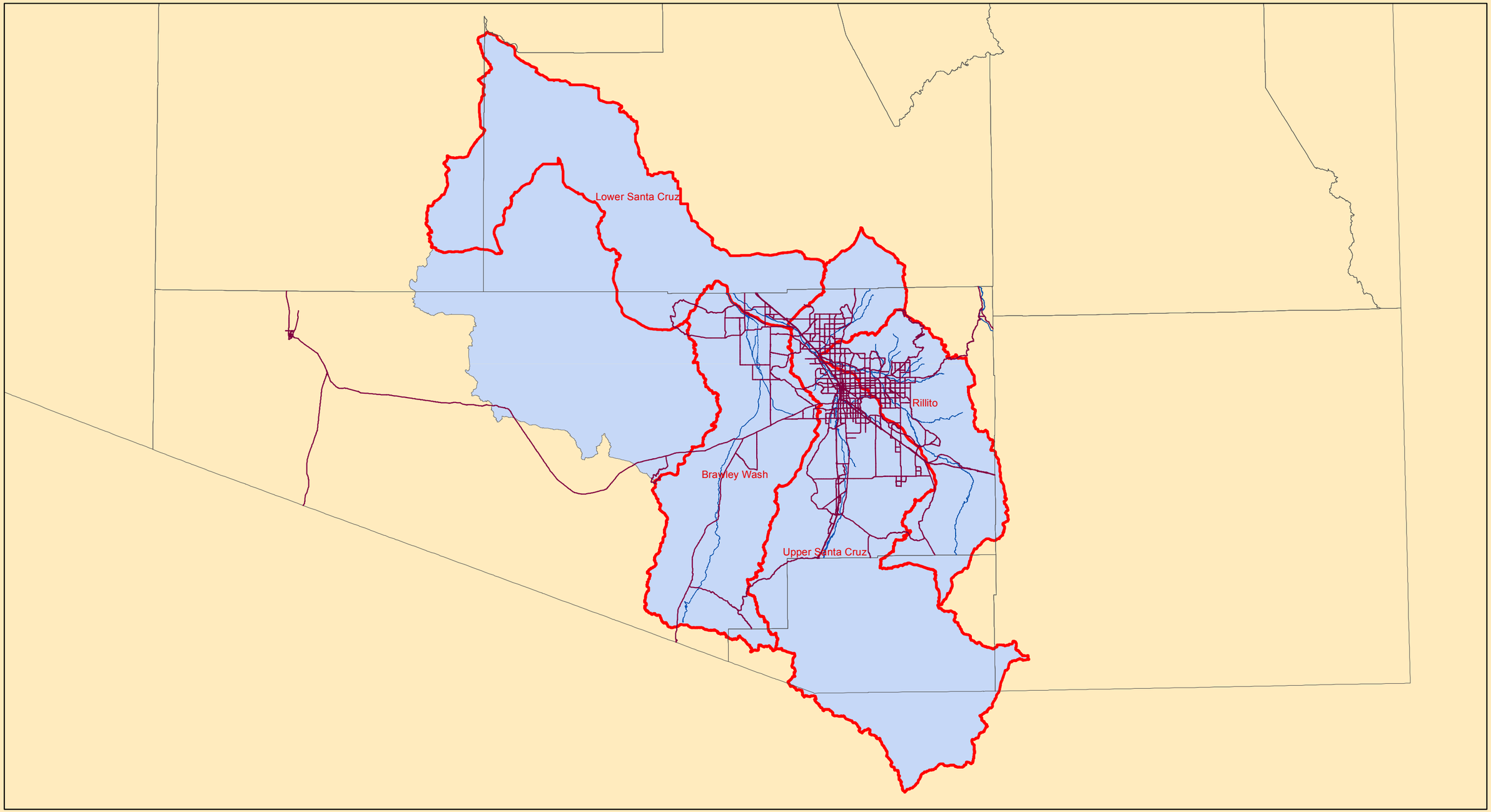
In accordance with the Mitigation Rule, RFCD will submit to the District Engineer for distribution to the IRT as appropriate an annual ledger report including the following information:

- All income received, disbursements, and interest earned by the ILF Program account;
- A listing of all Corps permits for which ILF Program funds were accepted including the permit numbers, the service area in which the authorized impacts are located, the amount of authorized impacts, the amount of required compensatory mitigation, the amount paid to the ILF Program, and the date the funds were

received from the permittee;

- A description of the ILF Program expenditures from the account including any costs associated with land acquisition, planning, construction, monitoring, maintenance, adaptive management and program administration; and
- The balance of any advance credits and release credits at the end of the report period for each designated service area.

In addition to this ILF Program accounting information, a summary of mitigation activities performed during the designated reporting period will be provided for comparison to the mitigation plan and approved monitoring requirements in order to determine the level of success of the ongoing program and to identify any developing problems that require remedial action. It is anticipated that this monitoring report shall include photo documentation, as well as a detailed comparative analysis with respect to the performance plan and standards, and include a description of any proposed modifications should standards not be adequately met. Additionally, to the extent required by the District Engineer, a financial assurance status report will also be submitted on an annual basis.



Pima County Regional Flood Control District
97 E Congress - 3rd Floor
Tucson, Arizona 85701-1207
(520) 243-1800, FAX: (520)243-1821
http://www.rfcd.pima.gov

Santa Cruz Basin and Major Subbasins

Figure 1

Major Streets
Major Washes
County Boundary
Subbasins
Santa Cruz Basin

N
W E
S

1 inch = 100,565 feet

0 25,500 51,000 102,000 153,000 204,000 Feet

Date: 11/20/2012

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1 Sopori Ranch

2 Canoa Ranch

3 CDO / Santa Cruz Confluence

4 Upper CDO at Catalina

5 CDO at Oasis

Upper Santa Cruz

Upper Santa Cruz

Figure 2

Major Streets
Subbasins
Potential Areas
Major Washes
County Boundary
Pima County Owned Parcels

N
W E
S

1 inch = 43,119 feet

0 11,000 22,000 44,000 66,000 88,000 Feet

Date: 11/20/2012

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Lower Santa Cruz

6 Lower Santa Cruz

6

1

Lower Santa Cruz

Figure 3

Major Streets
Subbasins
Potential Areas
Major Washes
County Boundary
Pima County Owned Parcels

N
W E
S

1 inch = 9,260 feet

0 2,350 4,700 9,400 14,100 18,800 Feet

Date: 11/20/2012

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7 Black Wash / Snyder Hill

8 Manville Road

Brawley Wash

8

7

Brawley

Figure 4

Potential Areas
Major Streets
Subbasins
Major Washes
County Boundary
Pima County Owned Parcels

N
W E
S

1 inch = 16,221 feet

0 4,100 8,200 16,400 24,600 32,800 Feet

Date: 11/20/2012

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9 Pantano / Rincon Confluence

10 Tanque Verde / Agua Caliente Confluence

10

9

Rillito

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Rillito

Figure 5

Major Streets
Subbasins
Potential Areas
Major Washes
County Boundary
Pima County Owned Parcels

N
W E
S

1 inch = 19,727 feet

0 5,000 10,000 20,000 30,000 40,000 Feet

Date: 11/20/2012

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