

WEST Valley Flood Control Structures Analysis

Flood Control

**Existing Facilities
Landscape Aesthetics &
Multi-Use Opportunities
Assessment**

**Contract: FCD 1999-CO51
Assignment #2**

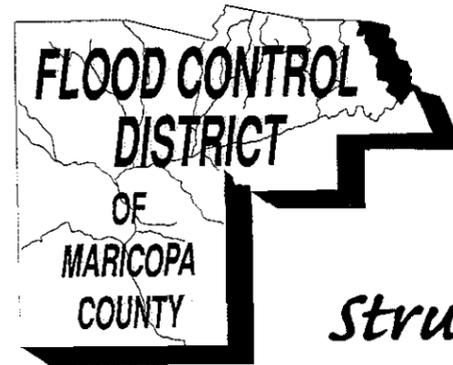
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Prepared for:



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Flood Control *Structures Analysis*

Executive Summary

Existing Flood Control Facilities
Landscape Aesthetics and Multiple-Use Opportunities Assessment

Prepared for:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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February 5, 2001

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Introduction

The planning and design of flood control facilities as places for people is a key issue and challenge facing the Flood Control District of Maricopa County. Increasingly, local communities are looking to the District to build more year-round public value and benefits into its flood control facilities. Public demand for flood control facilities that create aesthetic value and integrate recreation with open space opportunities has increased significantly in recent years along with the rapid growth of urban development in Maricopa County.

Growing public concern for preserving the visual beauty of the urban, rural and natural settings in Maricopa County prompted the Board of Directors of the Flood Control District to adopt an Aesthetic Treatment and Landscaping Policy in 1992. This policy provides general guidance and direction for the integration of landscape aesthetic features and recreation multi-use opportunities in all phases of planning, design, construction and operation of flood control facilities by the District. The policy applies to the design of new structures and to existing structures that do not include aesthetic features.

Providing flood protection facilities that preserve natural desert open space, enhance local community image, and provide opportunities for desert greenbelts and new parklands makes sense for the District. It provides increased public benefits, promotes increased public support for District programs, and enhances/expands multi-agency partnering opportunities which can lead to reduced District operating expenses.

The District currently operates and maintains facilities, properties or easements for approximately 70 flood control structures located throughout the County.¹ These structures include a wide variety of channels, levees, basins, dams and flood retarding structures. A majority of these structures were constructed prior to establishment of the Board-approved 1992 Aesthetic Treatment and Landscaping Policy. Typically these structures are heavily engineered. In most cases they were designed and constructed for the single purpose of providing flood protection in an efficient and cost-effective manner. Designed for infrequent storm events, such as the 100 year flood, they are dry most of the time in the arid Southwest Desert. Fenced off from public access, these facilities usually remain idle and unused.

Many of these facilities are characteristically large-scale armored structures with uniform side slopes, geometric configurations and uniform alignments that project a strong industrial appearance. They often lack sufficient open space setbacks and many of the aesthetic features that are alluded to in the 1992 Aesthetic Treatment and Landscaping Policy, which can provide for effective visual buffering and transitioning with the surrounding natural or community landscape. The visual character of such flood control structures often creates a strong contrast with and diminishes the aesthetic value of areas in which they are located. Adjacent landowners and communities have often reacted by putting up walls and orienting their developments away from these facilities. Relegated to the back alleyways of the urban areas of the County, these facilities often require increased maintenance for trash and graffiti removal.

Responding to growing urbanization, increased scarcity of open space, and rising land costs in Maricopa County, community leaders and local citizens are inquiring about the possibility of utilizing existing flood control facilities to help meet the public needs for local, community and regional open space. Reflecting a growing recognition and desire on the part of community leaders to capitalize on the potential of flood control facilities to provide open space benefits, the County Board of Supervisors recently selected several existing District facilities, (Agua Fria River, East Maricopa Floodway and the McMicken Dam Corridor) to serve as possible major components of the newly proposed Maricopa County Regional Trail System. This new visionary concept is designed to establish a regional open space system in Maricopa County that will link the regional parks and local communities surrounding the metropolitan area.

Purpose and Objectives

The purpose of this analysis is to provide a preliminary assessment of opportunities for retrofitting existing facilities to integrate landscape aesthetic features and enhance recreation open space opportunities. The objectives of this assessment are to:

1. Assess the consistency of existing facilities with the District's 1992 Aesthetic Treatment and Landscaping Policy;
2. Assess the potential of existing facilities to provide regional, community and local open space amenities;
3. Identify possible treatment measures to correct or reduce inconsistencies with the District's 1992 Aesthetic Treatment and Landscaping Policy and enhance the open space potential of existing facilities;
4. Provide preliminary cost estimates for the identified possible treatment measures;
5. Link researched alternate funding sources developed for the West Valley Recreation Corridor study to projects for retrofitting facilities.

1. Source: Tom Renckly, Structures Management Branch Manager, FCDMC, 12/2000

Project Scope

The scope of this analysis is to evaluate the extent to which landscape aesthetic and recreation open space features have been integrated into ten existing District structures in the West Valley of the Phoenix Basin of Maricopa County, and to identify retrofit opportunities which may be appropriate to undertake as a part of existing or future project plans and designs. The ten structures, which are identified on the West Valley Structures Location Map on page 9, include the following:

Structure Map Number ²	Structure Name ²
4	Buckeye Flood Retarding Structures 1,2,3 (1975)
5	McMicken Dam and Outlet Channel (1954)
6	White Tanks FRS 3 (1954)
7	White Tanks FRS 4 (1954)
8	Perryville Bank Stabilization (1984)
9	McMicken Outlet Wash (1990)
12	Dysart Drain (1996)
14	Colter Channel
17	Agua Fria Channelization (1988)
18	Holly Acres Levee & Bank Stabilization

Study Overview

This analysis is the first of several assessments that are part of an ongoing evaluation of the integration of landscape aesthetics and recreation multi-use opportunities that will be undertaken for most of the District's existing structures and properties. Following completion of these assessments, an evaluation of the relative costs and benefits associated with the retrofit treatment opportunities identified for each structure will be performed. This evaluation will serve as a basis for the identification of projects with a high potential for improvement and possible selection for further and more detailed study.

The conceptual designs and retrofit treatment opportunities presented in this report for each structure are preliminary and potential only. They are based upon the information gathered and analyzed in this study and consultations with District staff. The concepts are presented here to provide an indication of potential enhancement treatments and to provide guidance and direction for subsequent planning and analysis. The concepts presented take into account District flood control functional and technical engineering requirements, property ownership status, public safety, future District plans and other on-going studies involving these structures. Further assessment of these aspects, along with environmental impact analysis, evaluation of stakeholder and public input, integration of O&M requirements, consideration of District liability, District land use rights and existing District Agreements, and comparison and evaluation of alternatives will be undertaken as a part of the more detailed studies that may be undertaken for the above referenced structures identified as having a high potential and opportunity for improvement.

The expenditure of public funds by the Flood Control District for landscape aesthetic and multi-use treatments is subject to the authority and limitations of A.R.S. §48-3601 et seq., and the budgetary limitations specified by the District. Use of District funds for Aesthetic and multi-use treatments is limited to features that are incidental to, or are part of, the flood control structure. The Conceptual Designs presented herein may include project elements or items designed to serve exclusively purposes other than flood control. For these reasons, the District may not be able to carry out all of the recommendations presented in this report. These elements are included to illustrate potential open space opportunities associated with District structures and to attract partnerships with other stakeholders in the community who may be interested in their implementation.

Coordination with Other Studies

Many of the structures evaluated in this report are the subject of, or will be potentially affected by, a number of other ongoing planning studies. This report makes every effort to take into account the open space concepts and the effects of these plans on the future form and function of the structures that are examined in this report. Other plans that were considered as a part of this analysis include:

- FCDMC Lands 2000 Program
- FCDMC Structures Assessment Program
- FCDMC Area Drainage and Water Course Master Planning
- Proposed Maricopa County Regional Trail System
- City of Surprise Ground Water Recharge Project
- Army Corps of Engineers Agua Fria River Wildlife Rehab Project
- Buckeye Irrigation District El Rio Phase I Concept Plan
- Other City, County and State Recreation, Trails, and Open Space Plans

Approach and Methodology

The following is a brief outline of the major steps that were carried out to meet the scope of this project:

1. Define Project Area for Each Structure
2. Establish Site Evaluation Criteria
3. Collect Data
4. Summarize Data Collection and Assessments of Policy Conformance
5. Identify Retrofit Treatment Opportunities
6. Estimate Costs for Retrofit Treatment Opportunities

The following sections provide additional information about the approach and methodology that was employed on the project.

2. Source: The map titled Maricopa County Flood Control District Structures, dated January 2000, obtained from the FCDMC GIS Group.

Project Area Definition

District property lines were used to define the extent of area that was analyzed for policy conformance for each structure in this report. A Site Map was prepared for each structure utilizing Landiscor color aerial photography acquired for this project. Property lines and the outline of facilities associated with each structure were delineated on the Site Maps based upon information supplied by the Flood Control District GIS Unit and Lands Division. The Site Maps for each structure were reviewed by FCD staff prior to commencement of data collection activities. The scale of the Site Maps included in this varies based on the size and extent of each structure.

Site Evaluation Criteria

Site evaluation criteria for landscape aesthetics and multi-use policy conformance were established for this project based upon an interpretation of the District's Board of Directors approved 1992 Policy for the Aesthetic Treatment and Landscaping of Flood Control Projects and through consultation with District Landscape Planner Dennis Holcomb. Additional criteria were established to assess the potential significance of opportunities for landscape aesthetic and open space retrofit treatments. The site evaluation criteria, which are listed below, were used as a checklist during field assessments of each structure.

Criteria for Conformance to 1992 Policy for Aesthetic Treatment and Landscaping

- 1 The alignment of the structure meanders to vary from a straight line.
- 2 The profile or height of the structure varies to help break up the outline.
- 3 The side slopes of the structure vary to resemble natural terrain.
- 4 The structure's earthwork blends into the surrounding natural terrain.
- 5 On-site screening with trees and shrubs are used to obscure structure.
- 6 Off-site screening with plantings or earthwork buffers are used.
- 7 There is veneering or plating of the structure with indigenous rock.
- 8 Disturbed areas are graded and replanted to match surrounding area.
- 9 Plantings are used to provide erosion control + protect visual qualities.
- 10 Plantings are used that will not cause an impedance to design function.
- 11 The structure's sides are furrowed to enhance the growth of vegetation.
- 12 The structure and maintenance roads are kept free of weeds + debris.

Additional Criteria for Existing Aesthetic Features

- 13 There are riparian or river corridor features to preserve.
- 14 There are landscape or natural features to preserve.
- 15 There are wildlife habitat areas to preserve.
- 16 There are undisturbed open space elements to preserve.
- 17 There are scenic corridors to preserve.
- 18 There are panoramic views from the structure.
- 19 There is a meandering low-flow feature modeled on riparian washes.
- 20 The structure or area has revegetated.
- 21 The existing plantings match the community character.
- 22 The structure's size and scale are proportional to its surroundings.
- 23 The attendant flood control facilities structures blend into surroundings.
- 24 The adjacent properties positively impact the site.
- 25 There is existing on-site irrigation.
- 26 There are water recharge and stormwater retention areas.
- 27 The structure does not have negative on-site visual problems.
- 28 There are no overhead electrical lines and utility towers.
- 29 There are not multiple maintenance roads within the site.
- 30 There are no intersecting arterial streets.
- 31 There are no noise impacts that need buffering.
- 32 Additional landscape features are needed.
- 33 There are opportunities for landscape enhancements.

Criteria for Existing Multi-Use Features

- 34 There are existing natural features beneficial for a greenway corridor.
- 35 There are existing multi-use features.
- 36 The area is currently accessible for multi-use.
- 37 Multi-use features could be added without impeding design function.
- 38 Multi-use features could be added without compromising public safety.
- 39 There is space to meander the maintenance road(s).
- 40 There are no physical constraints to accessing the site.
- 41 There are no constraints to multi-use due to site size.
- 42 There are no constraints to public multi-use due to structural hazards.
- 43 There are no constraints to multi-use due to existing slopes.
- 44 There are no constraints to multi-use construction due to earth mounds.

Criteria For Future Multi-Use Features

- 45 There are possible connections to open space.
- 46 There is a possible connection to the Maricopa County Trail System.
- 47 There are possible connections to the local trail system.
- 48 There are possible connections to residential neighborhoods.
- 49 There are possible connections to recreation areas.
- 50 There are possible connections to multi-modal facilities.
- 51 There are possible connections to local commercial areas.
- 52 There are opportunities for special use commercial areas.
- 53 Site property could be sold to allow for special use commercial areas.
- 54 Adjacent land could be acquired to provide for enhancements/buffering.
- 55 Adjacent land has natural features beneficial for a greenway corridor.
- 56 Adjacent land needs design guidelines for future development.
- 57 There are opportunities for large scale regional park facilities.
- 58 There are opportunities for small scale local park facilities.
- 59 There are opportunities for riparian wash areas.
- 60 There are opportunities for recharge basins/ponding areas.
- 61 There are opportunities for multi-use trails.
- 62 There are opportunities for separated-use trails.

Data Collection

The data collection phase for this project included a review of information pertaining to each structure; a review of other plans and project proposals related to each structure; a site analysis for each structure; digital photographs for each structure; and the development of a query data base in ArcView format for storage of the information from the site analyses and photographs.

Information pertaining to purpose, function, location, physical characteristics and history of the structures was obtained from "Data On Structures," an unpublished internal Flood Control District document that was partially updated in 1985 and 1996. A summary of the information obtained from this document is included in the narrative sections of this report for each of the structures.

The review of other plans and project proposals focused on the identification of any open space development concepts or proposals reflected in these plans, along with possible future changes in the form and function of the existing structure.

The site analysis was carried out using the site evaluation criteria, described in the preceding section, as a checklist. The following conformance rating system was used during the field assessment phase to indicate the extent to which each structure conformed to the site evaluation criteria:

Numerical
Conformance

Rating	Description
1	Non-Conforming or Non-Existing Element
2	Slightly Conforming or Slightly Existing Element
3	Moderately Conforming or Moderately Existing Element
4	Predominantly Conforming or Predominantly Existing Element
5	Fully Conforming or Fully Existing Element

As a part of the site analysis, each structure and its related property was subdivided into zones based upon similarities in the physical and visual characteristics of the project area and the surrounding landscape. The site analysis is summarized in the narrative section for each structure. Additionally, a Site Analysis Map has been included in the report for each of the structures. The Site Analysis Maps include the District structure names and numbers, zones identified in the site analysis, adjacent land uses, major streets, drainage flows, canals, municipal boundaries, utility lines, and negative site impacts.

For each photograph taken of the structures and their related property, photo name and number has been provided in the database, as well as GPS information on the longitude, latitude and clock direction of the point from which the photo was taken.

The database was developed specifically to enable a query of any combination of data collected in the site analysis for use in this assessment or other ongoing studies such as the Lands 2000 Program or the Dam Safety Assessment Program.

Summaries of Data Collection and Policy Conformance

The following information is summarized in the report for each of the facilities:

1. Facility Location and Description
2. Potential Significance to Provide Regional, Community or Local Open Space Amenities
3. Aesthetic Policy Conformance
4. Surrounding Site Character
5. Site Impressions
6. Opportunities and Constraints for Retrofit Treatments
7. Landscape Aesthetic and Multi-Use Treatment Recommendations
8. Hydrologic Engineering Synopsis of Facility

Landscape Aesthetic and Multi-Use Treatment Recommendations

The following types of Retrofit treatment opportunities are identified by zones for each of the structures:

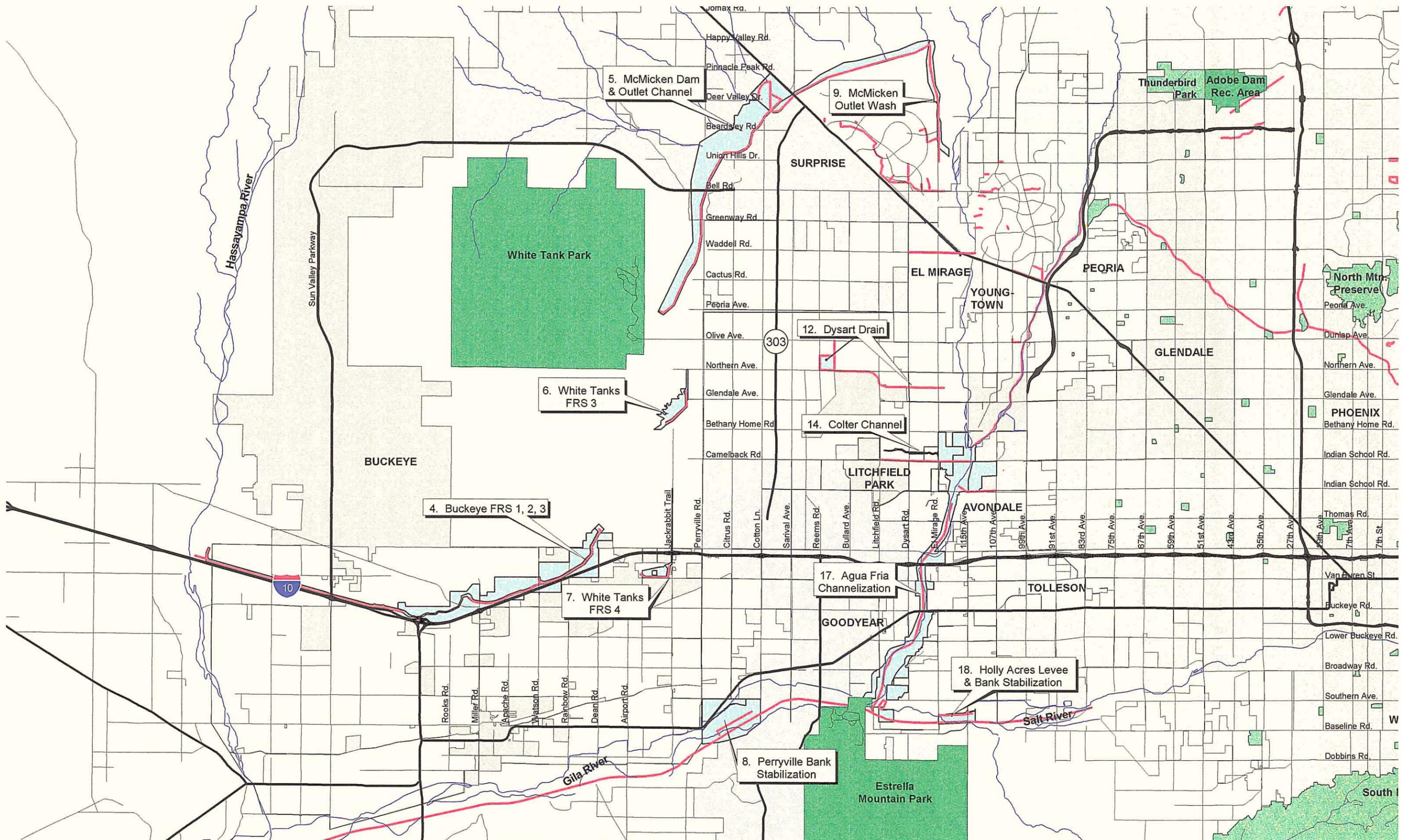
1. Aesthetic Treatment Retrofit Opportunities
2. Landscaping Treatment Retrofit Opportunities
3. Multi-Use Treatment Retrofit Opportunities
4. Land Acquisition Opportunities for Landscape Aesthetics and Multi-use

Cross Sections and Perspectives sketches are provided to communicate the treatment opportunities, and an overall Concept plan is provided to identify the location of treatment opportunities provided in the report for each structure.

The concepts included in the report were reviewed by District staff to identify their appropriateness and any fatal flaws.

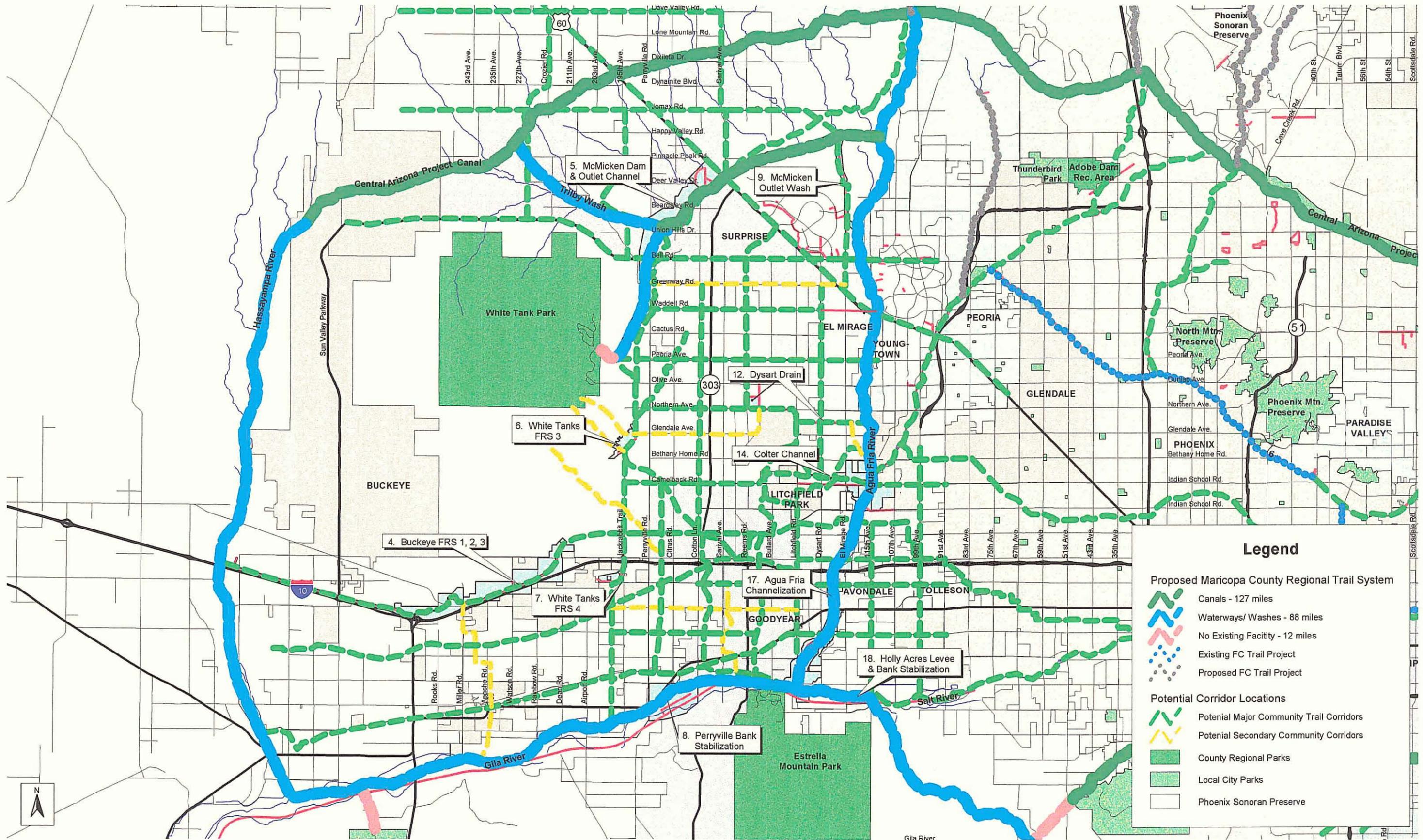
Cost Estimates for Treatment Opportunities

An estimate of implementation costs is provided for the retrofit treatment opportunities identified by zone for each structure. These estimates are based on the level of information provided in the arc view database for the project, and reflect typical unit costs for public works projects of similar nature and magnitude.



West Valley Structures

Location Map



Potential West Valley Trail Corridors

Location Map

Agua Fria Channelization

Facility Location and Description

The Agua Fria River, one of the largest watercourses in Maricopa County, is a prominent natural feature of the West Valley. It extends a distance of over thirty miles from Lake Pleasant in the north to the confluence with the Gila River in the south.

The Agua Fria River was channelized by four Reach Projects constructed of compacted earth with soil cement structure, built between 1982 and 1989. The Agua Fria River Channelization carries water from Arizona Canal Diversion Channel, Skunk Creek, Adobe and New River Dam and empties into the Gila River. The river channel also carries local runoff water.

The boundary of Flood Control District property for Agua Fria Channelization begins at the alignment of Bethany Home Road and extends south to the rivers' confluence with the Gila River. The Agua Fria channel courses south-southwest from 115th Avenue to the alignment of Litchfield Road at 139th west.

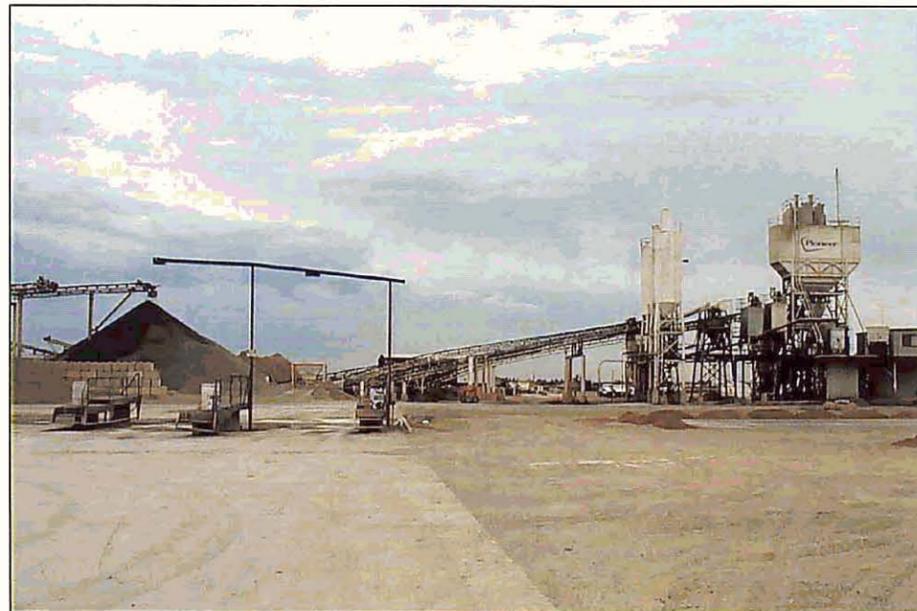
Potential Significance to Provide Regional, Community or Local Open Space Amenities

The Agua Fria river channel is one of the major north-south Maricopa County trail system connections between the Central Arizona Project Canal and the Gila and Salt Rivers. This major connection, identified as the West Valley Recreation Corridor, provides trail links for the West Valley cities of Peoria, El Mirage, Youngtown, Glendale, Phoenix, Litchfield Park, Goodyear, and Avondale.

Several ongoing projects adjacent to the Agua Fria River coincide with this assessment study for potential landscape aesthetic improvements and multi-use opportunities. The Agua Fria Water Course Master Plan and the Agua Fria Restoration Project evaluate the overall flood control issues in conjunction with potential site improvements for grading, landscaping, and multi-uses. The Buckeye Irrigation District, which adjoins the southern portion of the Agua Fria channel, is reviewing proposals for trail improvements along canals that connect to the river channel, offering trail connections to the east and west.

The Regional Off-Street System (ROSS) Plan is a proposed network of corridors for pedestrians and bicyclists along existing easements and rights-of-way by canal banks, utility line easements, and flood control corridors. The El Rio Vision project boundary at the confluence of the Gila and Agua Fria Rivers proposes the restoration of riparian environments, preservation of the agricultural heritage landscapes and other linkages to the surrounding communities, and enhancement of flood control elements.

The Roosevelt Irrigation District Canal and the adjacent Flood Control properties of Dysart Drain and Colter Channel provide opportunities west to potential future connections at McMicken Dam, White Tanks FRS #3, and White Tanks FRS #4. Opportunities to introduce multi-modal facilities also exist at key points along the Agua Fria channel that connect with the network of local city trails.



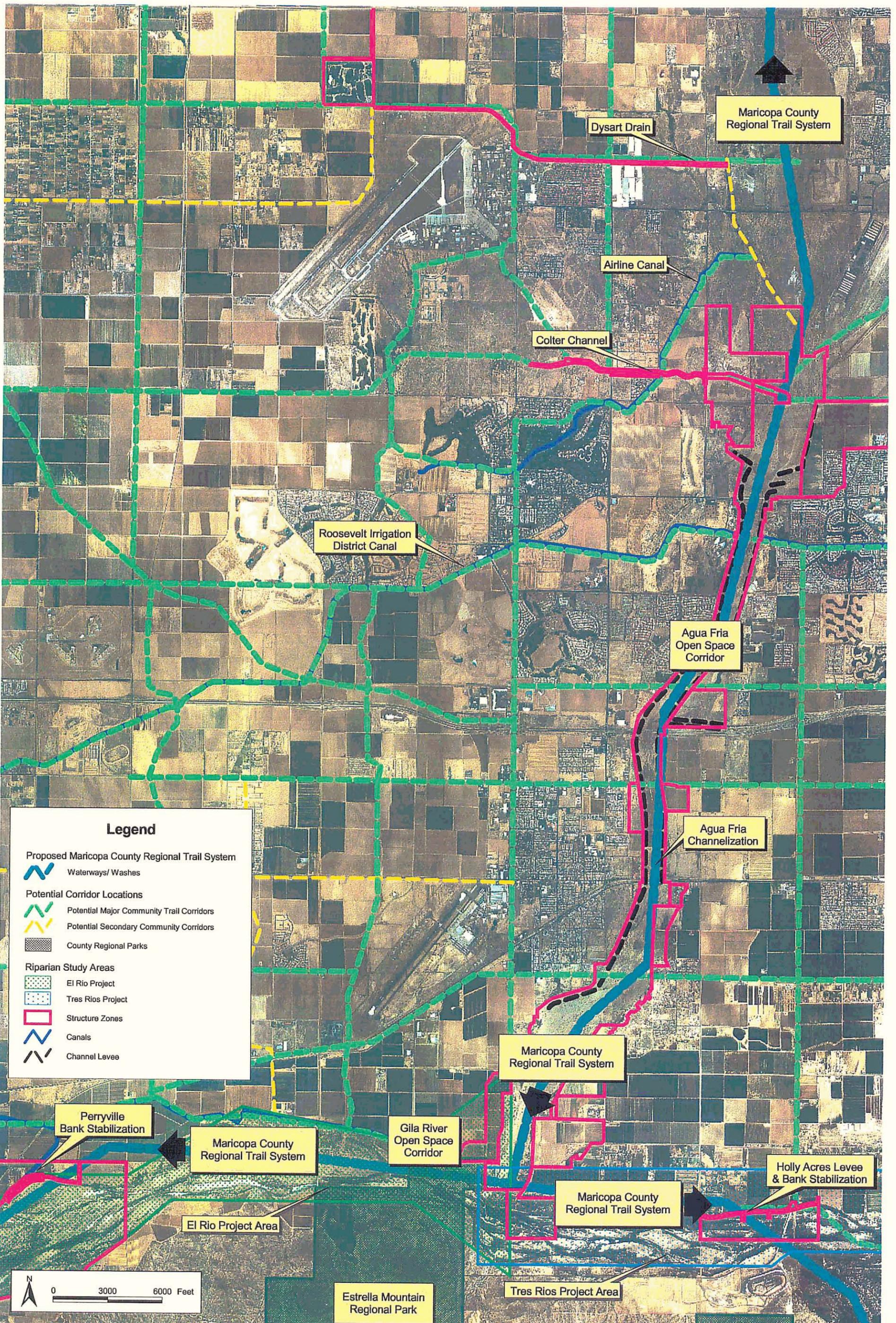
Sand and Gravel Mining Operations



Agua Fria Levee

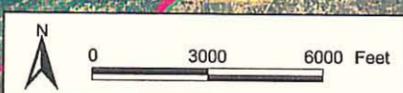


Agricultural Fields



Legend

- Proposed Maricopa County Regional Trail System
 - Waterways/ Washes
- Potential Corridor Locations
 - Potential Major Community Trail Corridors
 - Potential Secondary Community Corridors
- County Regional Parks
- Riparian Study Areas
 - El Rio Project
 - Tres Rios Project
- Structure Zones
- Canals
- Channel Levee



Agua Fria Channelization

Potential Corridor Connections Map

11

Aesthetic Treatment and Landscaping Policy Conformance

The Agua Fria site is separated into structure zones with different flood control elements and different aesthetic qualities. Please refer to the Site Maps on page 14 and 15 for the structure zones, zone descriptions, city boundaries, and arterial streets. Please also refer to the Site Evaluation Criteria and relevant comments on pages 24 to 34.

Zone One - Sand and Gravel Operations

The sand and gravel mining operations are located between El Mirage Road and the Agua Fria River, and run from the Bethany Home Road alignment to one-half mile south of Camelback Road.

The sand and gravel operation conforms to policy for the following reasons:

- The area varies in alignment, profile, and slope.

The sand and gravel area does not conform for the following reasons:

- The earthwork does not blend into the surrounding natural terrain.
- There are no screening techniques to make the site more compatible with the environment such as placement of earth or rock mounds, use of trees and shrubs, or veneering.
- Disturbed areas are not graded and replanted to match the surrounding area.
- No plantings are used to provide erosion control or to protect visual qualities.
- The area is not furrowed to enhance the growth of vegetation.
- The area is not kept free of weeds and debris.



Riparian Area by Gila River

Zone Two - Agricultural Areas

There are seven separate agricultural areas adjacent to the Agua Fria channel, primarily located south of the interstate highway.

The agricultural area conforms to aesthetic policy for the following reasons:

- These agricultural areas do not vary in alignment, profile, or slope because they are agricultural fields.
- These areas blend into the surrounding agricultural terrain.
- The disturbed areas are graded and replanted to match the surrounding areas.
- The agricultural areas provide erosion control and protect visual qualities.
- The area is mostly free of weeds and debris.

The agricultural area does not conform to policy for the following reasons:

- There are no screening techniques to make the site and structure more compatible with the environment, such as placement of earth mounds, use of trees and shrubs, or veneering.

Zone Three - River Channel and Levee Structure

The river channel and levee structure zone begins in the north at the confluence of the New River near the Bethany Home Road alignment and extends to the south where the Agua Fria River meets with the Gila River. The river channel courses southwest from the 115th Street alignment to Litchfield Road.

The river channel conforms to aesthetic policy for the following reasons:

- The channel varies in alignment, profile, and slope.
- The channel's earthwork blends with the surrounding natural terrain.
- The existing plants provide erosion control and protect visual qualities.



Residential Neighborhoods Adjacent to Levee

- The existing plants do not cause an impedance to the designed function.

The river channel and levee structure does not conform to aesthetic policy for the following reasons:

- The levee structures do not vary in alignment, profile, or slope.
- There is no planting or earthwork used to blend the levee structures.
- Disturbed areas are not graded or replanted to match the surrounding area.
- There are no screening techniques to make the levee more compatible with the environment such as the placement of earth mounds, the use of trees and shrubs, or veneering.
- Some areas of the river channel have weeds and debris.

Zone Four - Riparian Area

The riparian area is located at the confluence of the Agua Fria and Gila Rivers.

This area conforms to aesthetic policy for the following reasons:

- The riparian area varies in alignment, height, and slope.
- The earthwork blends into the surrounding natural terrain.
- The existing plants provide erosion control, protect visual qualities and do not cause an impedance to the designed function.
- The riparian area exists in a natural and mostly unaltered condition.
- Natural biological and riparian processes are allowed to take place.

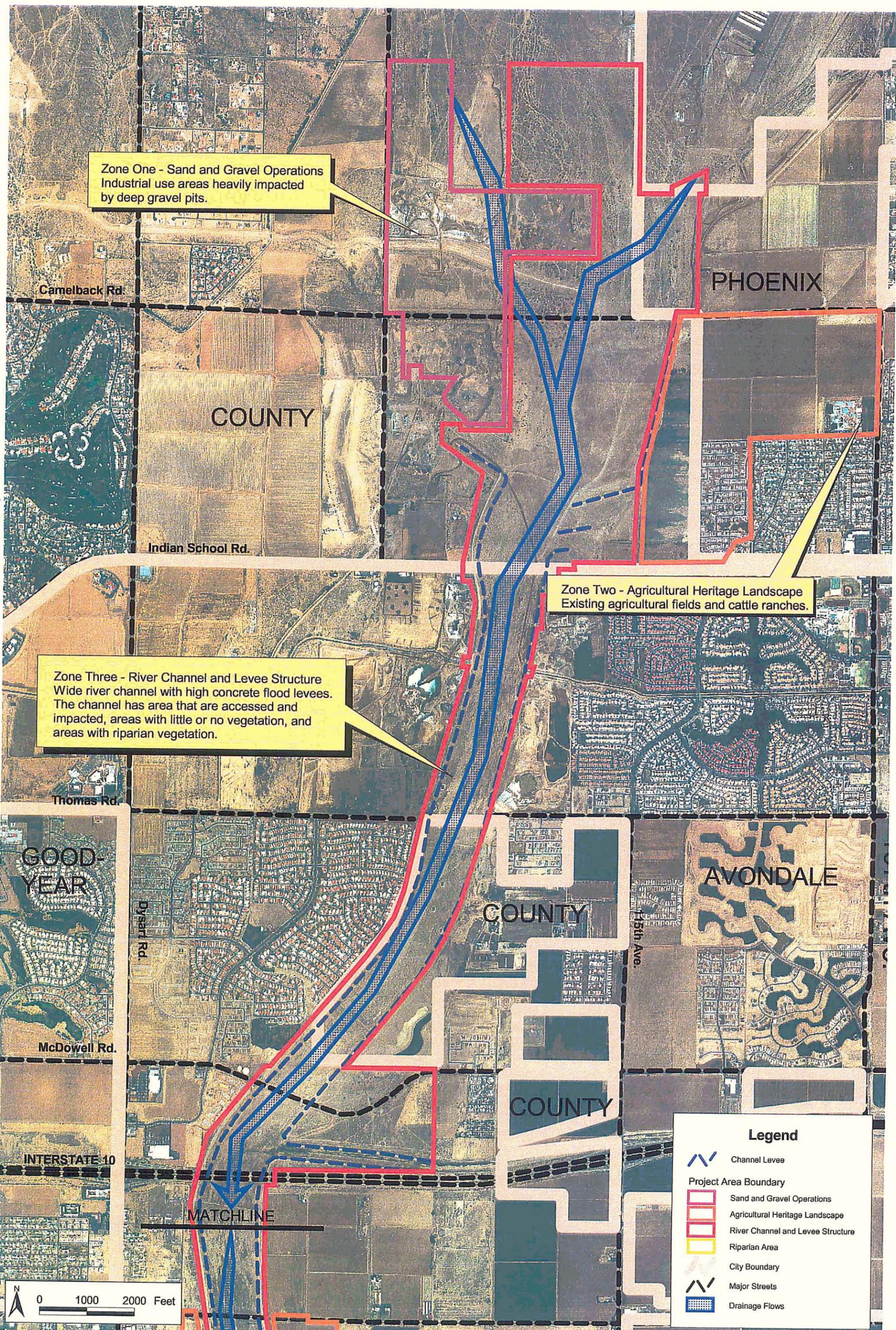


Electrical Tower Base in River Channel

Zone One - Sand and Gravel Operations
Industrial use areas heavily impacted
by deep gravel pits.

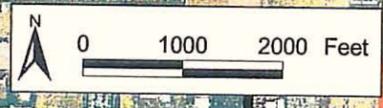
Zone Two - Agricultural Heritage Landscape
Existing agricultural fields and cattle ranches.

Zone Three - River Channel and Levee Structure
Wide river channel with high concrete flood levees.
The channel has areas that are accessed and
impacted, areas with little or no vegetation, and
areas with riparian vegetation.



Legend

- Channel Levee
- Project Area Boundary
- Sand and Gravel Operations
- Agricultural Heritage Landscape
- River Channel and Levee Structure
- Riparian Area
- City Boundary
- Major Streets
- Drainage Flows



Agua Fria Channelization Site Map

MATCHLINE

Van Buren St.

Yuma Rd.

Lower Buckeye Rd.

GOODYEAR

AVONDALE

AVONDALE

COUNTY

COUNTY

Zone Three - River Channel and Levee Structure
Wide river channel with high concrete flood levees. The channel has area that are accessed and impacted, areas with little or no vegetation, and areas with riparian vegetation.

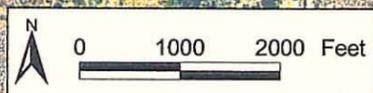
Zone Two - Agricultural Heritage Landscape
Existing agricultural fields.

Zone Two - Agricultural Heritage Landscape
Existing agricultural fields.

Zone Four - Riparian Area
The confluence of the Agua Fria and Gila Rivers. The area is a lush riparian environment with wildlife habitats.

Legend

-  Channel Levee
-  Project Area Boundary
-  Sand and Gravel Operations
-  Agricultural Heritage Landscape
-  River Channel and Levee Structure
-  Riparian Area
-  City Boundary
-  Major Streets
-  Drainage Flows



Surrounding Site Character

The surrounding site character for Agua Fria Channelization is identified on the Site Analysis - Existing Features/Surrounding Land Use map. Please refer to page 17.

Zone One - Sand and Gravel Operations

The surrounding site character by the sand and gravel mining operations includes open space, the river channel, other sand and gravel mining operations, and industrial areas with construction waste dumps.

Zone Two - Agricultural Areas

The agricultural areas are primarily crop and cattle grazing fields surrounded by medium-density and rural residential neighborhoods and other agricultural areas.

Zone Three - River Channel and Levee Structures

The surrounding site character by the river channel and levee structure is a mix of agricultural, residential, commercial, industrial, institutional, and natural open space. The agricultural uses are located in several areas along the river channel, but are mostly concentrated between Lower Buckeye Road and the Gila River. The industrial uses are sand and gravel mining operations, construction material storage and dumping, and the Glendale Municipal Airport by Glendale and 107th Avenue.

The residential areas are medium-density and rural neighborhoods located between the industrial areas in the north and the agricultural areas in the south. Avondale's city center, located one mile west of the river channel, is a mix of commercial areas, residential neighborhoods, and school sites. There are also many open space areas and fallow farm fields along the river channel. In addition, the Gila River and Estrella Mountains natural open space areas are located south of the Agua Fria river channel.

Zone Four - Riparian Area

The riparian area is located at the confluence of the Agua Fria and Gila Rivers. This area is surrounded primarily by the open space areas of Gila River riparian habitat, the Estrella Mountains, and agricultural areas to the north.

Site Impressions

Zone One - Sand and Gravel Operations

The sand and gravel mining operations are immense in scale and have a negative impact on the visual quality of the area. The mining operations have numerous pits with sheer sides, excavated areas that are sixty feet or more deep, towering industrial buildings and machinery, and mounds of sorted materials. There are also large expanses of disturbed land, and several heavily-used truck roads crossing the river channel. These sites are within one-half mile of residential areas, adjacent to Camelback and El Mirage Roads, but incorporate no berming or landscaping to screen the sites from view.

Zone Two - Agricultural Areas

The large and expansive agricultural areas create a contiguous landscape treatment of numerous crop and cattle grazing fields with grasses and trees, which presents a visually pleasing green open space. However, the one detracting element is the perimeter, where the agricultural land meets the street or desert edge, forcing an abrupt landscape transition.

Zone Three - River Channel and Levee Structure

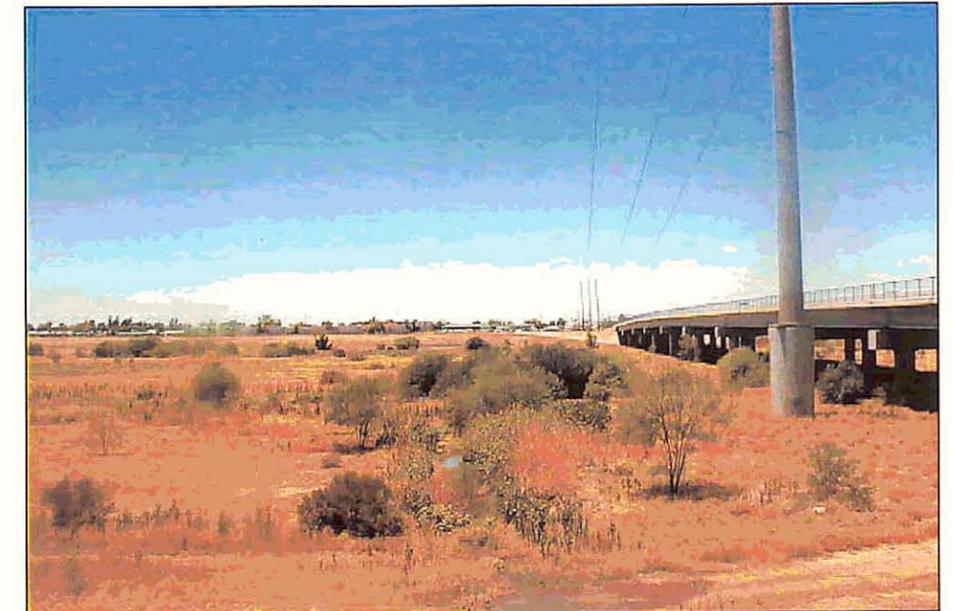
The river channel is very wide and sparsely vegetated, except in the few areas where agricultural run-off has created some small riparian zones. Many areas have been accessed and negatively impacted by vehicles and the dumping that has occurred. The channel levees are very large structures, over 30 feet high, that extend most of the length of the channel. A majority of the river channel has overhead electrical towers and lines that detract. The bases are 30 feet high and 50 to 80 feet wide.

Zone Four - Riparian Area

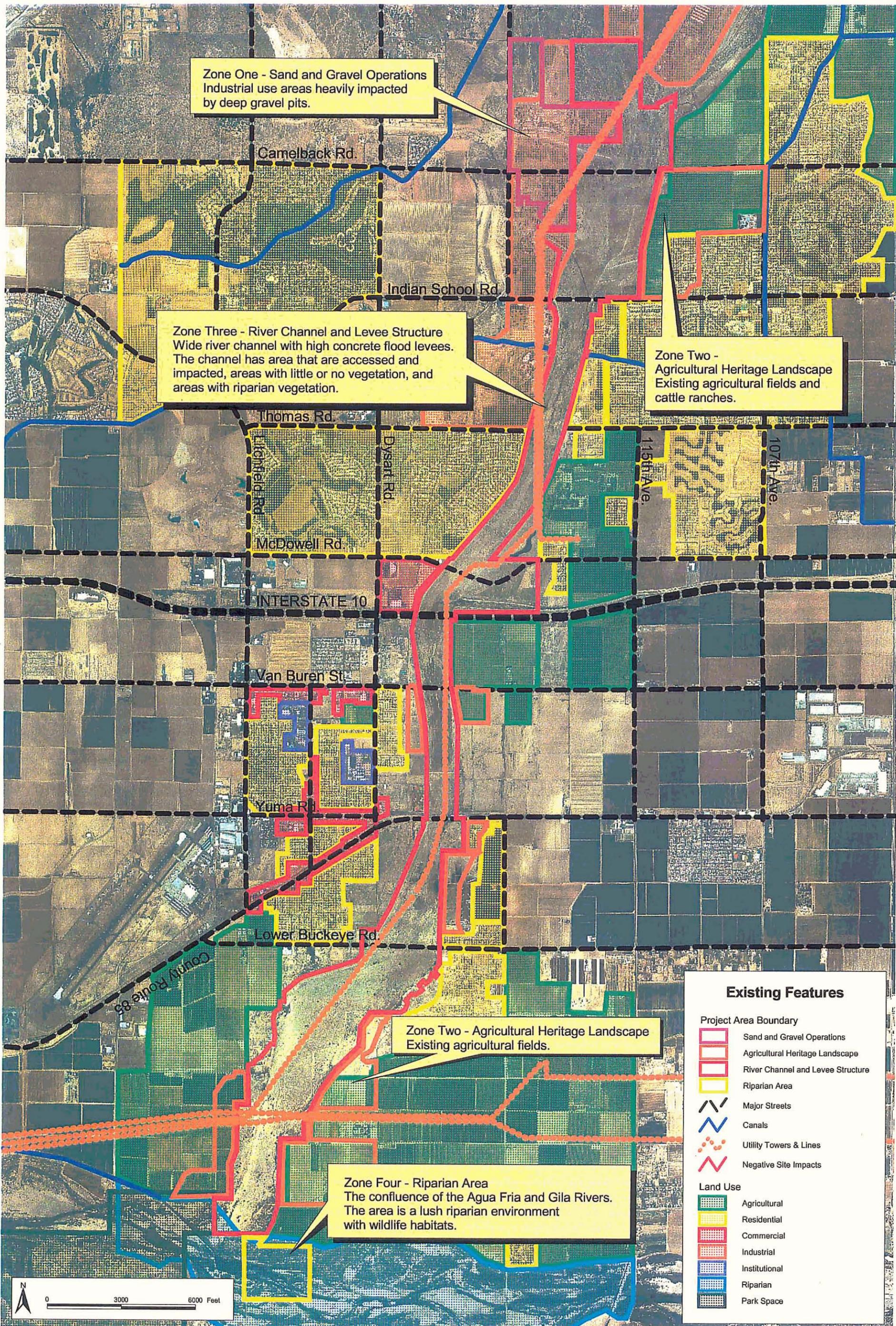
The riparian area is the least impacted portion of the Agua Fria with flowing water, lush vegetation, and a variety of wildlife.



Typical View of the Channel's Sparse Vegetation



Established Riparian Area from Agricultural Run-Off



Zone One - Sand and Gravel Operations
 Industrial use areas heavily impacted by deep gravel pits.

Zone Three - River Channel and Levee Structure
 Wide river channel with high concrete flood levees. The channel has areas that are accessed and impacted, areas with little or no vegetation, and areas with riparian vegetation.

Zone Two - Agricultural Heritage Landscape
 Existing agricultural fields and cattle ranches.

Zone Two - Agricultural Heritage Landscape
 Existing agricultural fields.

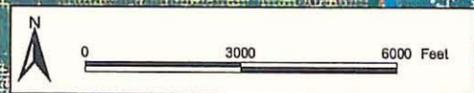
Zone Four - Riparian Area
 The confluence of the Agua Fria and Gila Rivers. The area is a lush riparian environment with wildlife habitats.

Existing Features

- Project Area Boundary
- Sand and Gravel Operations
- Agricultural Heritage Landscape
- River Channel and Levee Structure
- Riparian Area
- Major Streets
- Canals
- Utility Towers & Lines
- Negative Site Impacts

Land Use

- Agricultural
- Residential
- Commercial
- Industrial
- Institutional
- Riparian
- Park Space



Opportunities and Constraints for Retrofit Treatments

Zone One - Sand and Gravel Operations

There are a few retrofit opportunities for the sand and gravel areas, which typically have long-term leases on the property. An immediate opportunity is to offer some public interpretive areas at key locations to view the mining and machinery operations. Another opportunity is to use some screening techniques along the perimeter of the sites to ameliorate the views of the mining pits.

The major constraint to retrofitting is the immense scale of impact on the site from mining operations. Future uses for this site could be recreational, such as park space with water recharge or retention basins, off-road vehicle parks, or a transformation of the quarry into a golf course.

Zone Two - Agricultural Areas

The agricultural areas are valuable because they provide open green spaces and visual relief for areas of increased residential development. These agricultural areas present multiple opportunities, either to preserve these heritage landscapes or to provide potential sites for regional sport parks or special use commercial areas. These special use areas could be designed to take advantage of the improved river channel views and link together with paved levees that connect with adjoining city trail and pathway systems.

Zone Three - River Channel and Levee Structure

The major opportunity for the river channel is its designation as a significant north-south recreation corridor and its potential for connections with the planned trails in the west valley area. This corridor is surrounded by existing and proposed development, offering an opportunity to contribute to future public open space with recreational planning for the parcels outside of the river channel.

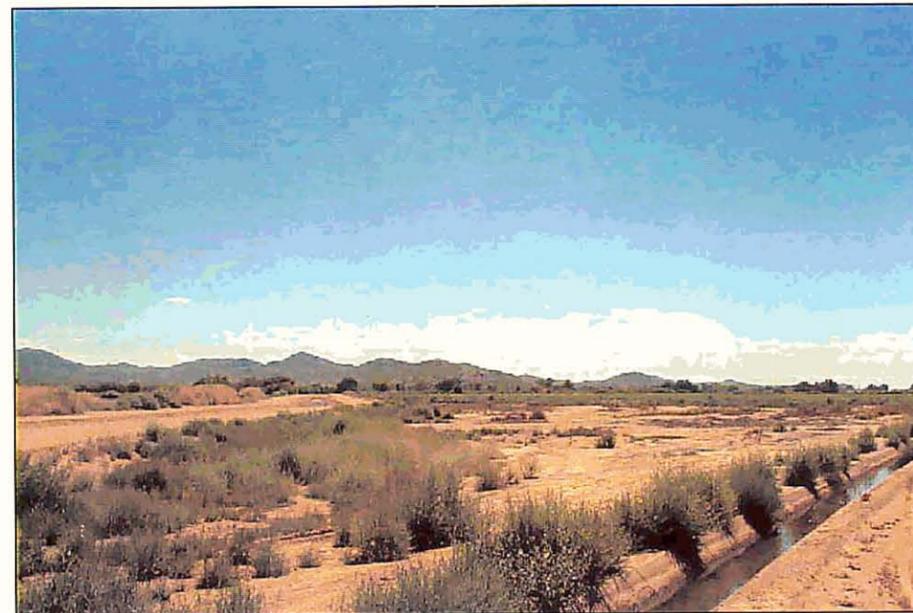
There are many constraints, hazards, and design challenges for the Agua Fria channel, ranging from its size to the quantity of retrofit enhancements needed to restore the site. One constraint is the overall size of the river channel, averaging about 1000 feet wide, making channel retrofit earthwork proposals very large-scale operations. The levee structures with a height of over 30 feet, and the electrical towers with their large concrete bases and overhead lines, are a visual and design constraint. Numerous street crossings over the channel also restrict continuous access along the top of the levee. In addition, the heavily used truck crossing in the channel near Indian School Road is a major site hazard.

Zone Four - Riparian Area

The riparian area offers opportunities to develop environmental interpretive centers and wildlife viewing areas. The constraint in this area is to limit the impacts on the natural environment.



Sand and Gravel Mining Operations Pit



Agricultural Heritage Landscape – Southwest View to the Estrella Mountains



Agua Fria Levee & Channel – South View to the Estrella Mountains

Landscape Aesthetic and Multi-Use Treatment Recommendations

The cross-sections on the following pages are illustrations of potential retrofit concepts discussed within the text. The cross-sections also relate to the overall Agua Fria Concept Plan on page 22.

The potential retrofit treatment for the sand and gravel mining operation areas is to ameliorate the impacted views with a screen landscape perimeter.

Zone One - Sand and Gravel Operations

Aesthetic Treatment Retrofit Opportunities

Earthwork - Berms for screening

Landscaping Treatment Retrofit Opportunities

Tree Planting
Revegetation
Irrigation

Multi-Use Treatment Retrofit Recommendations

None identified.

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatment

None identified.

Zone Two - Agricultural Areas

The agricultural areas behind the levee and above the river channel have the potential to be special use commercial areas connected with the levee boardwalk system. These land parcels can be developed with uses that best serve the surrounding community, such as restaurants, regional sport complexes, resort accommodations, and public golf courses.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Berms for screening

Landscaping Treatment Opportunities

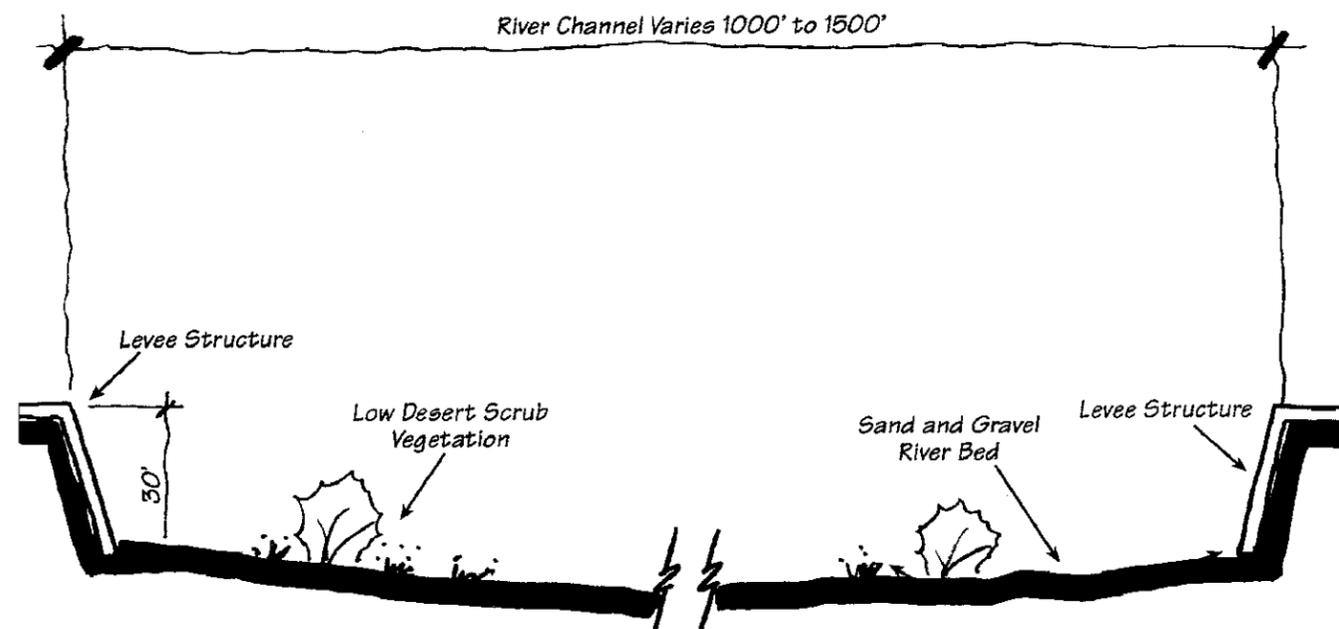
Tree Planting
Revegetation
Irrigation

Multi-Use Treatment Retrofit Recommendations

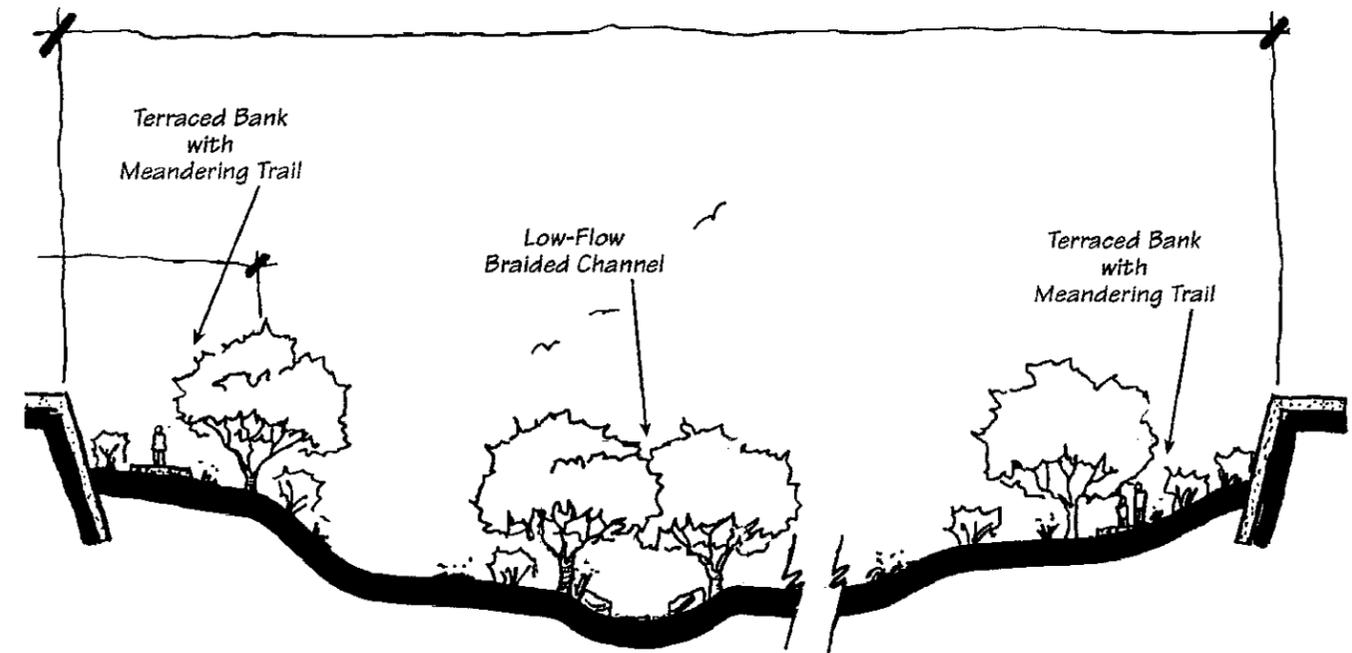
Recreation Area - regional facilities
Gateway Features - At trail connection points
Trailhead Facilities

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatment

None identified.



Agua Fria Section A - Existing Conditions



Agua Fria Section A - Retrofit Improvements

Zone Three - River Channel and Levee Structures

The Agua Fria would best function as a regional greenway/linear park due to its size and proximity to neighborhoods. It can provide an essential recreation and transportation corridor to connect to key trail nodes and multi-modal facilities. A variety of separated multi-use trails can be planned for the river channel as well as a trail or boardwalk along the top of the levees.

To fully utilize the Agua Fria channel, earthwork is needed to establish a terraced channel with low, moderate, and high-flow levels. The low-flow level can recreate the braided desert wash model and can provide essential riparian habitat, while the moderate-flow level can provide separated trail uses. Areas that have high-flow levels can contain parks and open space areas. Installing rock drop structures or weirs across the river channel will retain water flows and help establish riparian zones. Recreating the stabilized soil and rock edges modeled from natural washes will maintain water flows in the meandering channels.

Aesthetic Treatment Retrofit Opportunities

- Earthwork - Modify alignment, profile, and side slopes of channel
- Earthwork - Create low-flow channel with riprap
- Earthwork - Create recharge basin and ponding areas for channel
- Rock Drop Structure - By ponding areas
- Urban Art - On levee structure

Landscaping Treatment Retrofit Opportunities

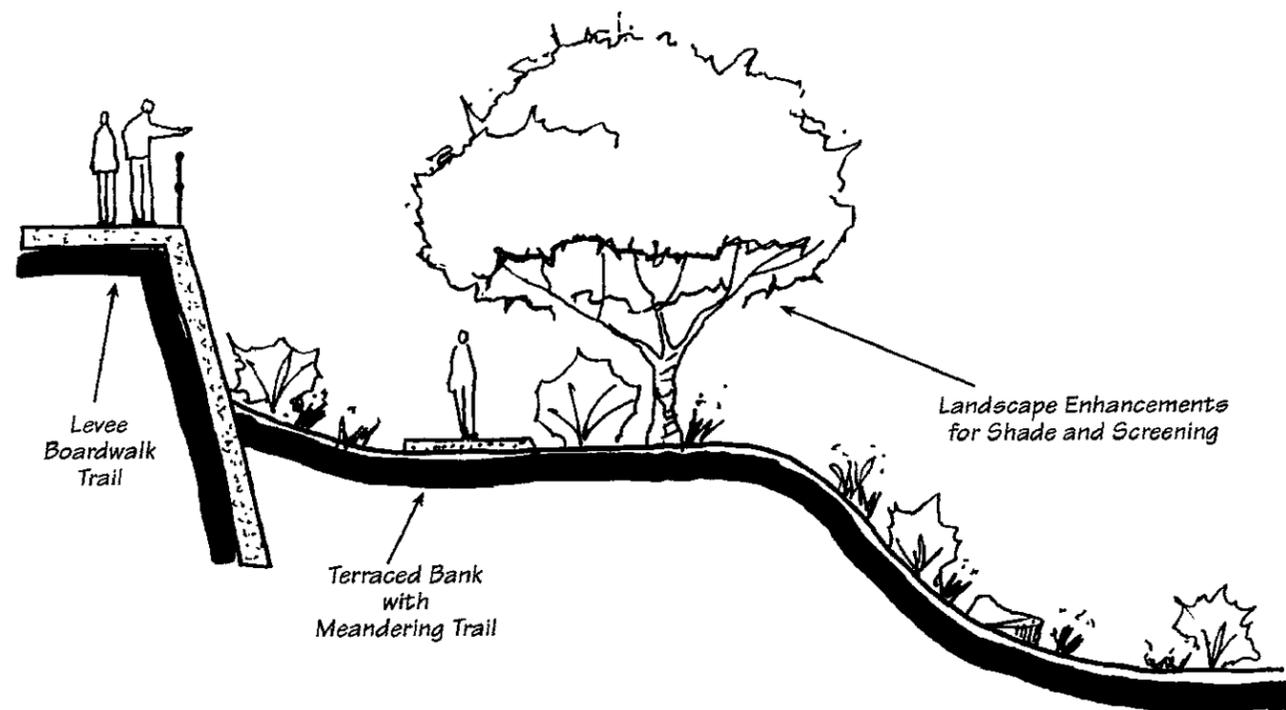
- Tree Planting for channel and levee
- Revegetation - Seeding disturbed areas of channel
- Irrigation for channel

Multi-Use Treatment Retrofit Opportunities

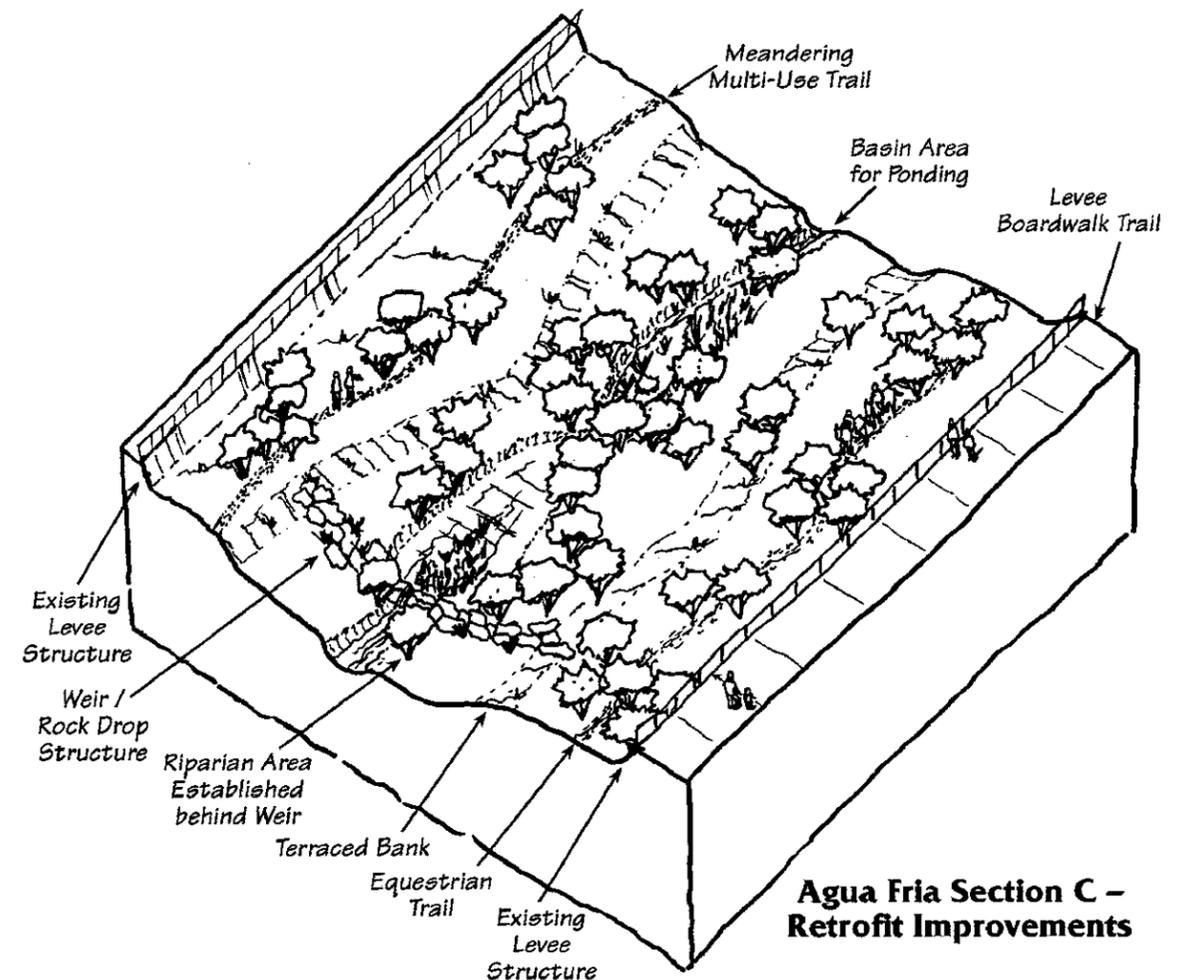
- Paved Path for levee
- Safety Railing - Along levee structure
- Soft-Surface Trail for channel
- Trail Improvements - Meander existing maintenance channel road
- Wildlife Viewing Facility for channel
- Gateway Features - At trail connection points

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatment

None identified.



Agua Fria Section A - Retrofit Improvements for Terraced Bank



Agua Fria Section C - Retrofit Improvements

Zone Four - Riparian Area

The riparian area is a functioning ecosystem and natural environment and should be restored and protected where needed. The essential goal for this area is to preserve the existing wildlife habitat. Recreational enhancements should be low-impact, such as environmental education/interpretive nature centers and low-impact trails with wildlife viewing facilities. The riparian area at the confluence of the Agua Fria and Gila River has been identified as part of the El Rio Vision Project area and offers an excellent opportunity to coordinate with this water-course's master plan project.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

None identified.

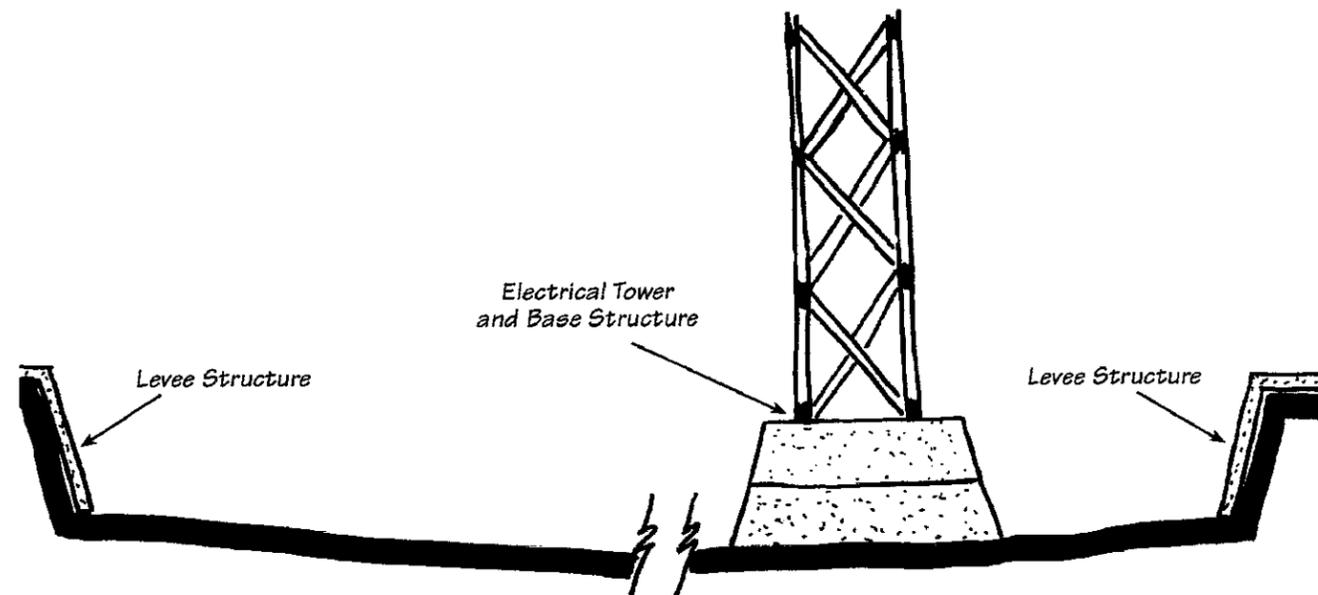
Multi-Use Treatment Retrofit Opportunities

- Soft-Surface Trail
- Wildlife Viewing Facility
- Trailhead Facility
- Gateway Features - At trail connection points

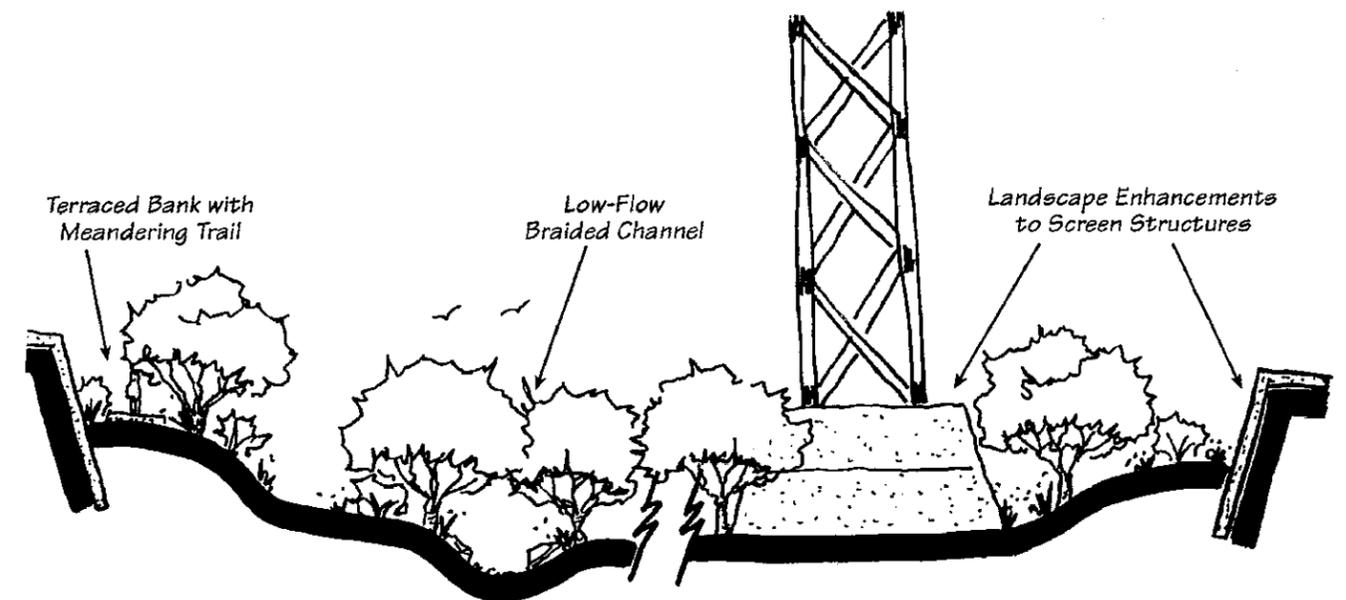
Land Acquisition Opportunities for

Landscape Aesthetic and Multi-Use Treatment

None identified.

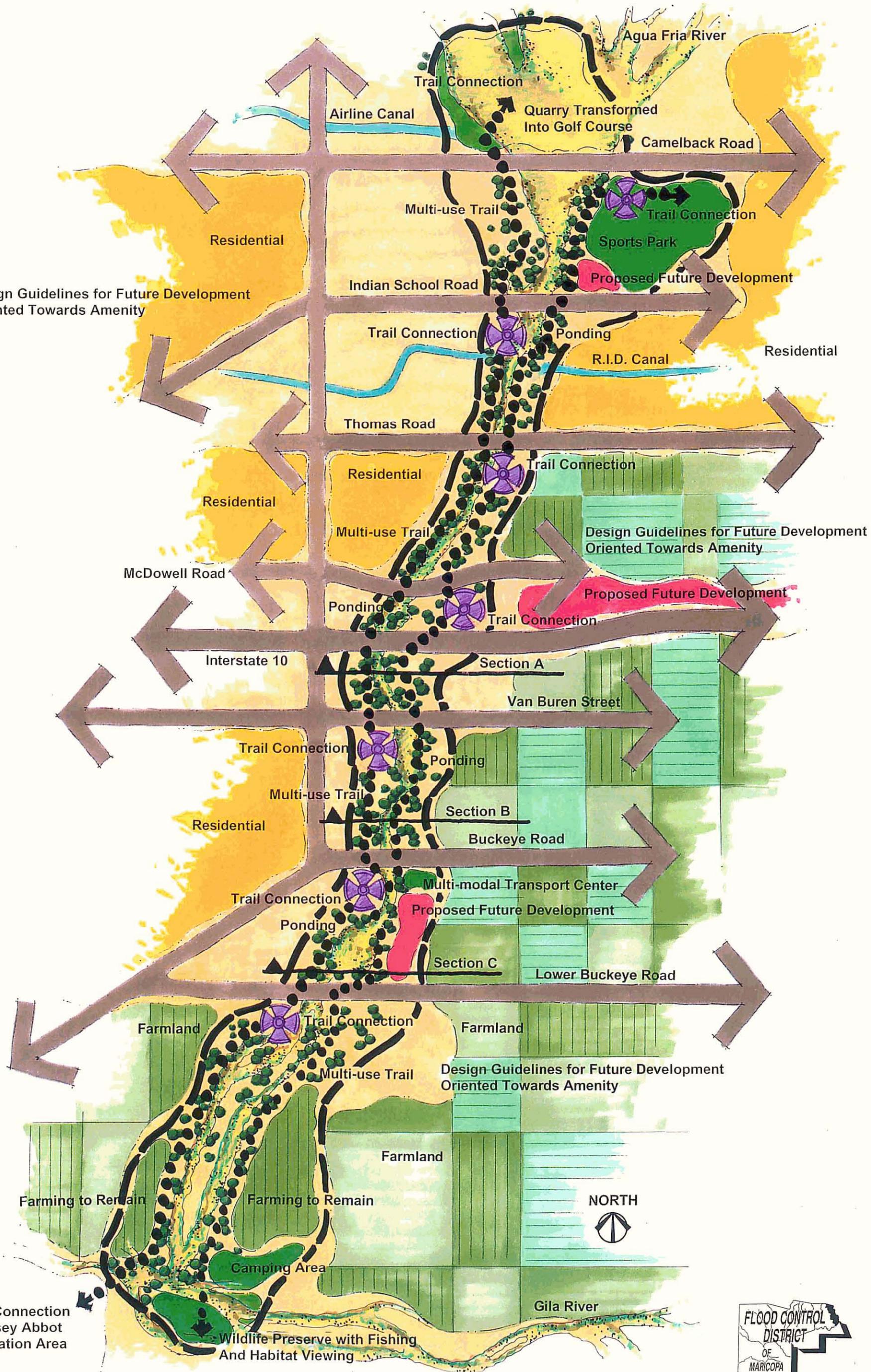


Agua Fria Section B – Existing Conditions



Agua Fria Section B – Retrofit Improvements

Design Guidelines for Future Development
Oriented Towards Amenity



Trail Connection to Casey Abbot Recreation Area

AGUA FRIA CONCEPT

0 .5 1
GRAPHIC SCALE IN MILES



Carter-Burgess

OCTOBER 2000



Hydrologic Engineering Synopsis of Structure

(Source: Data On Structures, an unpublished Flood Control District Document)

Project Title: Agua Fria River Reaches 1, 2, 3, 4
Reach 1...1986, Reach 2...1982
Reach 3...1988, Reach 4...1989

Watershed and Relationship to Other Structures:

Location: Reach 1...1/2 mile north of Indian School to Thomas Road
Reach 2...Thomas Road to I-10
Reach 3...I-10 to Buckeye Road
Reach 4...Buckeye Road to Broadway Road

Authorization: Flood Control Act of 1965, Public Law 89-298

Federal Sponsor: Reach 4, Army Corps of Engineers

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: The Agua Fria River Channelization carries water from ACDC, Skunk Creek, Adobe and New River Dam and empties into the Gila River. It also carries local runoff water.

Project Features:

Type of structure	Compacted earthfill
Total length of all 4 Reaches	6.0 miles
Length of Reach 1	1.5 miles
Length of Reach 2	1.8 miles
Length of Reach 3	1.5 miles
Length of Reach 4	1.2 miles
Invert Width	900 to 400 feet
Depth	Average 15 feet
Sideslopes	1 to 1
Channel Capacity	142,000 cfs
Type of Structure	Compacted earth with soil cement
O&M Service Roads	12' wide both sides
Utility Crossings Reach 1	1) Mt. Bell underground Telecable 2) APS overhead electric lines
Utility Crossings Reach 2	1) APS overhead electric lines
Utility Crossings Reach 3	1) Southern Pacific underground pipeline 2) Mt. Bell underground Telecable
Utility Crossings Reach 4	1) APS overhead electric lines
Bridge Crossings Reach 1	Indian School Road
Bridge Crossings Reach 2	1) I-10 2) Thomas Road 3) McDowell Road
Bridge Crossings Reach 3	Buckeye Road
Bridge Crossings Reach 4	N/A
Dip Crossings Reach 4	Lower Buckeye Road

Site Evaluation Criteria

# SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 17. Agua Fria		
Zone 1 - Sand and Gravel Operations		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1		The alignment of the structure meanders to vary from a straight line.
2		The profile or height of the structure varies to modify the outline.
3		The side slopes of the structure are varied to simulate the natural terrain.
4		The structure is designed to blend into the contour of the natural terrain.
5		On-site screening with trees and shrubs are used to blend the structure.
6		Off-site screening with plantings or earthwork buffers are used.
7		There is veneering or plating of the structure with indigenous rock.
8		Disturbed areas are graded and replanted to match surrounding area.
9		Plantings are used to provide erosion control and protect visual qualities.
10		Plantings are used that will not cause an impedance to design function.
11		The structure's sides are furrowed to enhance the growth of vegetation.
12		The structure and maintenance roads are kept free of weeds and debris.
	1 to 5	2 There is no structure alignment, this is a sand and gravel mining operation area. 2 The height or profile in this zone vary, this is a sand and gravel mining operation area. 2 The sides slopes in this zone vary, this is a sand and gravel mining operation area. 1 The earthwork does not blend into the surrounding natural terrain. 1 There is no on-site screening with trees and shrubs to obscure the mining area. 1 There is no off-site screening with plantings or earthwork buffers are used. 1 There is no veneering with indigenous rock. 1 Disturbed areas are not graded or replanted. 1 There are no plantings used to provide erosion control and protect visual qualities. 1 There are no additional plantings. 1 This zone's sides are not furrowed. 1 This zone has weeds, debris, and illegal dumping along Camelback Rd. west of Aqua Fria.
Conformance Average		1.25
Existing Aesthetic Features		
13		There are riparian or river corridor features to preserve.
14		There are landscape or natural features to preserve.
15		There are wildlife habitat areas to preserve.
16		There are undisturbed open space elements to preserve.
17		There are scenic corridors to preserve.
18		There are panoramic views from the structure.
19		There is a meandering low-flow feature modeled on riparian washes.
20		The structure or area has revegetated.
21		The existing plantings match the community character.
22		The structure's size and scale are proportional to its surroundings.
23		The attendant flood control facilities structures blend into surroundings.
24		The adjacent properties positively impact the site.
25		There is existing on-site irrigation.
26		There are water recharge and stormwater retention areas.
27		The structure does not have negative on-site visual problems.
28		There are no overhead electrical lines and utility towers.
29		There are not multiple maintenance roads within the site.
30		There are no intersecting arterial streets.
31		There are no noise impacts that need buffering.
32		Additional landscape features are needed.
33		There are opportunities for landscape enhancements.
	1 to 5	2 The sand and gravel zone has several riparian and river corridor features to preserve. 2 There are some landscape or natural features to preserve. 2 There are some wildlife habitat areas to preserve. 2 There are several open space areas to preserve. 1 There are no scenic corridors to preserve. 3 There are distant views west to the White Tank Mountains. 1 There are no meandering low-flow features. 1 This area has not revegetated. 1 There are some existing plantings that match the desert character. 1 This zone's size and scale are not in proportion, there are deep pits and mounds. 1 There are no attendant flood control facilities. 2 Some negative property -mining + industrial. Some positive -river channel + open space. 1 There is no existing on-site irrigation. 1 There are no water recharge or retention areas. 1 The impact of the mining pits can be buffered with street-side planting screen. 1 There are several overhead electrical lines and utility towers. 1 There are several heavily-used mining truck roads within this zone. 1 This zone is intersected by Camelback Road. 1 There is vehicular noise from the existing mining operations and Camelback Road. 4 Additional landscaping is needed to screen the mining pit areas. 4 There is space along the street edges for landscape and earthwork screening.
Existing Aesthetic Features Average		1.62
Conformance and Aesthetic Features Average		1.43

Site Evaluation Criteria

# SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations
<hr/>		
Structure - 17. Agua Fria Zone 1 - Sand and Gravel Operations	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
<hr/>		
<i>Existing Multi-Use Features</i>		
34 There are existing natural features beneficial for a greenway corridor.	2	The sand and gravel zone has some natural features beneficial for a greenway corridor.
35 There are existing multi-use features.	1	There are no existing multi-use features.
36 The area is currently accessible for multi-use.	2	Most of the zone is currently not accessible for multi-use.
37 Multi-use features could be added without impeding design function.	3	Multi-use features could not be added to most this zone without impeding design function.
38 Multi-use features could be added without compromising public safety.	3	Multi-use features could not be added to most of this zone without compromising safety.
39 There is space to meander the maintenance road(s).	1	There is space to meander the maintenance road.
40 There are no physical constraints to accessing the site.	1	There are physical constraints to accessing the site due to the mining pits.
41 There are no constraints to multi-use due to site size.	3	There are no constraints to multi-use due to site size.
42 There are no constraints to public multi-use due to structural hazards.	1	There are constraints due to structural hazards of the mining pit areas.
43 There are no constraints to multi-use due to existing slopes.	1	There are constraints due to existing slopes of the mining pit areas.
44 There are no constraints to multi-use construction due to earth mounds.	1	There are constraints due to the existing earthwork or rip-rap mounds.
Existing Multi-Use Features Average		1.73
<hr/>		
<i>Future Multi-Use Features</i>		
45 There are possible connections to open space.	5	The Agua Fria is designated as the West Valley Recreation Corridor.
46 There is a possible connection to the Maricopa County Trail System.	5	The Agua Fria is a designated County Trail link from the CAP Canal to the Gila River.
47 There are possible connections to the local trail system.	5	There are numerous planned trail connections to the Agua Fria from adjoining cities.
48 There are possible connections to residential neighborhoods.	3	There are existing and planned residential areas near this zone.
49 There are possible connections to recreation areas.	4	No existing rec. areas, but a planned park east of the Agua Fria on Camelback Rd.
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development may provide facilities.
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52 There are opportunities for special use commercial areas.	3	Special use commercial areas can be on unused parcels on Camelback and El Mirage Rds.
53 Site property could be sold to allow for special use commercial areas.	3	This property could be sold to allow for special use commercial areas.
54 Adjacent land could be acquired to provide for enhancements/buffering.	1	Adjacent land is not needed for enhancements/ buffering.
55 Adjacent land has natural features beneficial for a greenway corridor.	1	The adjacent land does not have positive natural features.
56 Adjacent land needs design guidelines for future development.	4	Design guidelines for development could create positive links with a retrofitted site.
57 There are opportunities for large-scale regional park facilities.	4	There are opportunities for large-scale regional park facilities.
58 There are opportunities for small-scale local park facilities.	4	There are some opportunities for small-scale local park facilities.
59 There are opportunities for riparian wash areas.	3	There are some opportunities for riparian wash areas.
60 There are opportunities for recharge basins or ponding areas.	3	There are some opportunities for recharge basins.
61 There are opportunities for multi-use trails.	3	There are some opportunities for multi-use trails.
62 There are opportunities for separated-use trails.	3	There are some opportunities for separated-use trails.
Future Multi-Use Features Average		3.33
Existing and Future Multi-Use Average		2.53
Conformance, Aesthetic Features + Multi-Use Average		3.27

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 17. Agua Fria Zone 2 - Agricultural Heritage Landscape		1 to 5	1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element 4 Predominantly Conforming Element 5 Fully Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1	The alignment of the structure meanders to vary from a straight line.	2	The alignment in this zone does not vary, this is an agricultural area.
2	The profile or height of the structure varies to modify the outline.	2	The height or profile in this zone does not vary, this is an agricultural area.
3	The side slopes of the structure are varied to simulate the natural terrain.	2	The sides slopes in this zone do not vary, this is an agricultural area.
4	The structure is designed to blend into the contour of the natural terrain.	4	The earthwork blends into the natural terrain, this is an agricultural area
5	On-site screening with trees and shrubs are used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6	Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating with indigenous rock.
8	Disturbed areas are graded and replanted to match surrounding area.	3	Disturbed area are graded and replanted, but the perimeter edges are not blended.
9	Plantings are used to provide erosion control and protect visual qualities.	2	This is an agricultural area.
10	Plantings are used that will not cause an impedence to design function.	2	This is an agricultural area.
11	The structure's sides are furrowed to enhance the growth of vegetation.	3	The structure's sides are not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	4	This zone is mostly free of weeds and debris.
Conformance Average		2.25	
Existing Aesthetic Features			
13	There are riparian or river corridor features to preserve.	1	There are no riparian/ river corridor features to preserve.
14	There are landscape or natural features to preserve.	4	There are the existing agricultural fields and tree-lines to preserve.
15	There are wildlife habitat areas to preserve.	1	There are no wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	1	There are no undisturbed open space elements to preserve.
17	There are scenic corridors to preserve.	4	The scenic corridors west to the White Tank Mtns +corridors south to the Estrella Mtns.
18	There are panoramic views from the structure.	5	There are distant views to the White Tank Mtns. and closer views to the Estrella Mtns.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There are no meandering low-flow features.
20	The structure or area has revegetated.	3	This is an agricultural area.
21	The existing plantings match the community character.	4	The existing agriculture fields and tree-lines match the community character.
22	The structure's size and scale are proportional to its surroundings.	3	This is an agricultural area.
23	The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	4	Mostly positive properties - open space, agric., residential. Some negative -residential.
25	There is existing on-site irrigation.	5	There is existing on-site flood irrigation from agriculture canals.
26	There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27	The structure does not have negative on-site visual problems.	4	There are few negative on-site visual problems.
28	There are no overhead electrical lines and utility towers.	4	There are some adjacent overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the site.	3	There are several access roads in the agricultural area.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	2	There is some noise from the adjacent arterial streets and Interstate 10.
32	Additional landscape features are needed.	4	Additional landscaping is needed for unplanted areas and to screen negative views.
33	There are opportunities for landscape enhancements.	4	Landscape enhancements can be added to areas by residential neighborhoods.
Existing Aesthetic Features Average		3.05	
Conformance and Aesthetic Features Average		2.65	

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 17. Agua Fria		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element
Zone 2 - Agricultural Heritage Landscape			2 Slightly Conforming Element 5 Fully Conforming Element
			3 Moderately Conforming Element
<hr/>			
Existing Multi-Use Features			
34	There are existing natural features beneficial for a greenway corridor.	4	The existing farm fields are beneficial for a agricultural greenway corridor.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The area is currently accessible for multi-use.	3	The area currently is accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Multi-use features could be added without compromising safety.
39	There is space to meander the maintenance road(s).	1	This is an agricultural area, a meandering maintenance road is not efficient.
40	There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use due to site size.	5	There are no constraints to multi-use due to site size.
42	There are no constraints to public multi-use due to structural hazards.	5	There are no constraints due to structural hazards.
43	There are no constraints to multi-use due to existing slopes.	5	There are no constraints due to existing slopes.
44	There are no constraints to multi-use construction due to earth mounds.	5	There are no constraints due to earthwork or rip-rap mounds.
Existing Multi-Use Features Average		4.00	
<hr/>			
Future Multi-Use Features			
45	There are possible connections to open space.	5	This is the West Valley Recreation Corridor and Estrella Mtn Park is adjacent to this zone.
46	There is a possible connection to the Maricopa County Trail System.	5	The Agua Fria is a designated County Trail link from the CAP Canal to the Gila River.
47	There are possible connections to the local trail system.	5	There are numerous planned trail connections to the Agua Fria from adjoining cities.
48	There are possible connections to residential neighborhoods.	4	There are existing and planned residential areas near these agricultural areas.
49	There are possible connections to recreation areas.	4	There are several nearby park areas and a planned park by 107th Ave. and Camelback Rd.
50	There are possible connections to multi-modal facilities.	3	No existing multi-modal, agricultural parcels by arterials are suitable for facilities.
51	There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52	There are opportunities for special use commercial areas.	3	Special use commercial areas could be located on suitable agricultural parcels.
53	Site property could be sold to allow for special use commercial areas.	3	Some of this property could be sold to allow for special use commercial areas.
54	Adjacent land could be acquired to provide for enhancements/ buffering.	1	Adjacent land is not needed for enhancements or buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	4	The adjacent land has positive features that could be part of agricultural greenway.
56	Adjacent land needs design guidelines for future development.	4	Design guidelines for development could create positive links with a retrofitted site.
57	There are opportunities for large-scale regional park facilities.	4	There are opportunities for large-scale regional park facilities.
58	There are opportunities for small-scale local park facilities.	4	There are opportunities for small-scale local park facilities.
59	There are opportunities for riparian wash areas.	3	There are some opportunities for riparian wash areas.
60	There are opportunities for recharge basins or ponding areas.	3	There are some opportunities for recharge basins.
61	There are opportunities for multi-use trails.	3	There are some opportunities for multi-use trails.
62	There are opportunities for separated-use trails.	3	There are some opportunities for separated-use trails.
Future Multi-Use Features Average		3.56	
Existing and Future Multi-Use Average		3.78	
Conformance, Aesthetic Features + Multi-Use Average		3.21	

Site Evaluation Criteria

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
<hr/>								
<i>Structure - 17. Agua Fria Zone 3 - River Channel and Levee Structure</i>	<i>1 to 5</i>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">1 Non-Conforming Element</td> <td style="width: 50%; border: none;">4 Predominantly Conforming Element</td> </tr> <tr> <td style="border: none;">2 Slightly Conforming Element</td> <td style="border: none;">5 Fully Conforming Element</td> </tr> <tr> <td style="border: none;">3 Moderately Conforming Element</td> <td style="border: none;"></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element							
2 Slightly Conforming Element	5 Fully Conforming Element							
3 Moderately Conforming Element								
<hr/>								
<i>Existing Multi-Use Features</i>								
34 There are existing natural features beneficial for a greenway corridor.	3	This zone has some riparian features beneficial for a greenway corridor.						
35 There are existing multi-use features.	2	This zone has no existing multi-use, but is accessed and used by off-road vehicles.						
36 The area is currently accessible for multi-use.	3	Portions of this zone currently are accessible for multi-use.						
37 Multi-use features could be added without impeding design function.	4	Multi-use features can be added without impeding design function.						
38 Multi-use features could be added without compromising public safety.	3	Multi-use features can be added after addressing safety concerns of water flows.						
39 There is space to meander the maintenance road(s).	3	There is space to meander the maintenance road.						
40 There are no physical constraints to accessing the site.	2	There are constraints to continuous access on the levee due to no clearance by bridges.						
41 There are no constraints to multi-use due to site size.	5	There are no constraints to multi-use due to site size.						
42 There are no constraints to public multi-use due to structural hazards.	2	There are constraints due to structural hazards because of the levee's height.						
43 There are no constraints to multi-use due to existing slopes.	2	There are constraints due to existing slopes, the levee has a 2 to 1 side slope.						
44 There are no constraints to multi-use construction due to earth mounds.	2	There are some constraints due to earthwork or rip-rap mounds.						
<hr/> <i>Existing Multi-Use Features Average</i>		<hr/> <i>2.82</i> <hr/>						
<i>Future Multi-Use Features</i>								
45 There are possible connections to open space.	5	This is the West Valley Recreation Corridor + Estrella Mtn Park is adjacent to this zone.						
46 There is a possible connection to the Maricopa County Trail System.	5	The Agua Fria is a designated County Trail link from the CAP Canal to the Gila River.						
47 There are possible connections to the local trail system.	5	There are numerous planned trail connections to the Agua Fria from adjoining cities.						
48 There are possible connections to residential neighborhoods.	4	There are existing and planned residential areas adjacent to the river channel.						
49 There are possible connections to recreation areas.	3	There are several nearby park areas + a planned park by 107th Ave. and Camelback Rd.						
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development by town center may provide facilities.						
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.						
52 There are opportunities for special use commercial areas.	1	There are no opportunities for special use commercial areas in the river channel.						
53 Site property could be sold to allow for special use commercial areas.	4	Some non-essential property can be sold for special use commercial areas.						
54 Adjacent land could be acquired to provide for enhancements/ buffering.	3	Adjacent land can be acquired for special use enhancements and to widen the greenway.						
55 Adjacent land has natural features beneficial for a greenway corridor.	4	The adjacent land has positive features that can be part of agricultural greenway.						
56 Adjacent land needs design guidelines for future development.	4	Design guidelines for development could create positive links with a retrofitted site.						
57 There are opportunities for large-scale regional park facilities.	1	There are no opportunities for large scale regional park facilities.						
58 There are opportunities for small-scale local park facilities.	4	There are some opportunities for small scale local park facilities.						
59 There are opportunities for riparian wash areas.	5	There are many opportunities for riparian wash areas.						
60 There are opportunities for recharge basins or ponding areas.	5	There are many opportunities for recharge basins within the river channel.						
61 There are opportunities for multi-use trails.	5	There are many opportunities for multi-use trails within the channel and on the levee.						
62 There are opportunities for separated-use trails.	5	There are many opportunities for separated-use trails within the channel and on the levee.						
<hr/> <i>Future Multi-Use Features Average</i>		<hr/> <i>3.83</i> <hr/>						
<i>Existing and Future Multi-Use Average</i>		<i>3.33</i>						
<i>Conformance, Aesthetic Features + Multi-Use Average</i>		<i>2.83</i>						

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 17. Agua Fria Zone 4 - Riparian Area		
	<i>1 to 5</i>	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1	5	The alignment of the structure meanders to vary from a straight line.
2	5	The profile or height of the structure varies to modify the outline.
3	5	The side slopes of the structure are varied to simulate the natural terrain.
4	5	The structure is designed to blend into the contour of the natural terrain.
5	4	On-site screening with trees and shrubs are used to blend the structure.
6	4	Off-site screening with plantings or earthwork buffers are used.
7	4	There is veneering or plating of the structure with indigenous rock.
8	3	Disturbed areas are graded and replanted to match surrounding area.
9	4	Plantings are used to provide erosion control and protect visual qualities.
10	4	Plantings are used that will not cause an impedance to design function.
11	1	The structure's sides are furrowed to enhance the growth of vegetation.
12	3	The structure and maintenance roads are kept free of weeds and debris.
Conformance Average		3.92
Existing Aesthetic Features		
13	5	There are riparian or river corridor features to preserve.
14	5	There are landscape or natural features to preserve.
15	5	There are wildlife habitat areas to preserve.
16	4	There are undisturbed open space elements to preserve.
17	5	There are scenic corridors to preserve.
18	4	There are panoramic views from the structure.
19	5	There is a meandering low-flow feature modeled on riparian washes.
20	4	The structure or area has revegetated.
21	5	The existing plantings match the community character.
22	5	The structure's size and scale are proportional to its surroundings.
23	1	The attendant flood control facilities structures blend into surroundings.
24	4	The adjacent properties positively impact the site.
25	1	There is existing on-site irrigation.
26	5	There are water recharge and stormwater retention areas.
27	3	The structure does not have negative on-site visual problems.
28	5	There are no overhead electrical lines and utility towers.
29	5	There are not multiple maintenance roads within the site.
30	5	There are no intersecting arterial streets.
31	5	There are no noise impacts that need buffering.
32	4	Additional landscape features are needed.
33	4	There are opportunities for landscape enhancements.
Existing Aesthetic Features Average		4.24
Conformance and Aesthetic Features Average		4.08

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
<hr/>		
Structure - 17. Agua Fria Zone 4 - Riparian Area	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
<hr/>		
<i>Existing Multi-Use Features</i>		
34 There are existing natural features beneficial for a greenway corridor.	5	This zone is a large riparian area and has features beneficial for a greenway corridor.
35 There are existing multi-use features.	2	There are some existing multi-use trails through the bank vegetation area.
36 The area is currently accessible for multi-use.	4	This area is currently accessible for multi-use.
37 Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.
38 Multi-use features could be added without compromising public safety.	4	Multi-use features could be added safely after addressing water flow issues.
39 There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance road due to existing riparian plantings.
40 There are no physical constraints to accessing the site.	2	The physical constraint is the grade difference of the channel edge and river bottom.
41 There are no constraints to multi-use due to site size.	3	This zone has limited space for multi-use due to the existing riparian plantings.
42 There are no constraints to public multi-use due to structural hazards.	4	There are no constraints due to structural hazards.
43 There are no constraints to multi-use due to existing slopes.	2	There are some constraints due to the existing slopes of the river channel edges.
44 There are no constraints to multi-use construction due to earth mounds.	3	There are some constraints due to existing earthwork mounds and rip-rap.
Existing Multi-Use Features Average		3.09
<hr/>		
<i>Future Multi-Use Features</i>		
45 There are possible connections to open space.	5	This is the West Valley Recreation Corridor and Estrella Mtn Park is adjacent to this zone.
46 There is a possible connection to the Maricopa County Trail System.	5	The Agua Fria is a designated County Trail link from the CAP Canal to the Gila River.
47 There are possible connections to the local trail system.	5	There are numerous planned trail connections to the Agua Fria from adjoining cities.
48 There are possible connections to residential neighborhoods.	4	There are existing rural and planned neighborhoods northeast of this site.
49 There are possible connections to recreation areas.	5	Estrella Mountain Park and Casey Abbot Recreation Area are 1 mile west.
50 There are possible connections to multi-modal facilities.	3	There are no existing multi-modal facilities.
51 There are possible connections to local commercial areas.	3	There are no existing commercial areas, this area should remain as a riparian.
52 There are opportunities for special use commercial areas.	2	There are no opportunities for special use commercial areas.
53 Site property could be sold to allow for special use commercial areas.	1	No additional property that could be sold without affecting the riparian area.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	4	Adjacent land can be acquired for enhancements and to widen the greenway.
55 Adjacent land has natural features beneficial for a greenway corridor.	5	The Gila River has positive natural features beneficial for a greenway corridor.
56 Adjacent land needs design guidelines for future development.	4	Design guidelines for development could create positive links with a retrofitted site.
57 There are opportunities for large-scale regional park facilities.	1	There are no opportunities for large-scale regional park facilities.
58 There are opportunities for small-scale local park facilities.	4	Small-scale habitat viewing facilities can be located at key riparian areas.
59 There are opportunities for riparian wash areas.	5	This zone is a riparian area.
60 There are opportunities for recharge basins or ponding areas.	5	This zone has existing water recharge areas.
61 There are opportunities for multi-use trails.	4	There are some opportunities for multi-use trails.
62 There are opportunities for separated-use trails.	3	There is limited space for separated-use trails due to the dense riparian vegetation.
Future Multi-Use Features Average		3.78
Existing and Future Multi-Use Average		3.43
Conformance, Aesthetic Features + Multi-Use Average		3.76

Buckeye FRS 1, 2, 3

Facility Location and Description

The Buckeye Floodwater Retarding Structures 1, 2, 3 are located in the far West Valley, just north of Interstate 10 and south to southwest of the White Tank Mountains. The three earthen dam structures and the connecting floodways extend for a distance of over 14 miles from Dean Road at 219th west to the Hassayampa River.

Buckeye FRS #1, built in 1974, is a compacted earthfill dam 7.14 miles long and 31.5 feet high. This structure collects runoff from 74 square miles of the western slopes of the White Tank Mountains, conveying the runoff and the waters collected from structures #2 and #3 into the Hassayampa River.

Buckeye FRS #2, built in 1975, is a compacted earthfill dam 2.3 miles long and 26 feet high. This structure collects runoff from the western slopes of the White Tank Mountains and from Buckeye #3. The water is conveyed to an outlet and then along a floodway to Buckeye FRS #1.

Buckeye FRS #3, built in 1975, is a compacted earthfill dam 3 miles long and 34 feet high. This structure collects runoff water from the western slopes of the White Tank Mountains, conveys it to an outlet and discharges it into the reservoir of structure #2.

Potential Significance to Provide Regional, Community or Local Open Space Amenities

The Buckeye structures have excellent potential to create a significantly large open space and greenway corridor for the west valley. This facility is near the White Tank Mountains, an area with numerous riparian washes which function as valuable wildlife corridors. Please refer to the Buckeye Potential Corridor Locations Map on page 33.

The Buckeye facilities provides an essential potential recreational open space corridor connection to the Maricopa County Regional Trail System between the Agua Fria and Hassayampa Rivers. Another recreational corridor opportunity is two miles east of Buckeye FRS #3, where a potential north-south corridor connects McMicken Dam, White Tanks #3, and White Tanks #4 to the Gila River, another designated Maricopa County Regional Trail. In addition, corridor connections are possible north and south along the Sun Valley Parkway which intersects Buckeye FRS #1.

The size of the Flood Control District property and easements at Buckeye, its location adjacent to a major freeway corridor, and the surrounding undeveloped lands provide an opportunity to plan and design for a future greenway corridor.

Aesthetic Treatment and Landscaping Policy Conformance

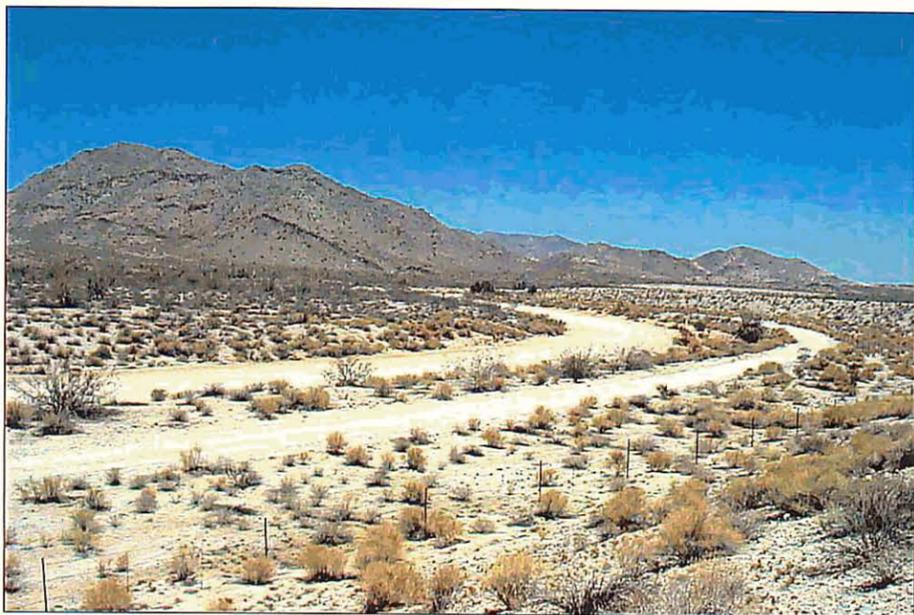
The Buckeye site is separated into structure zones with different flood control elements or distinctive aesthetic qualities. Please refer to the Site Maps on pages 35 and 36 for the structure zones, zone descriptions, city boundaries, and arterial streets. Please also refer to the Site Evaluation Criteria and relevant comments on pages 43 to 50.

Zone One - Upland Open Space Area

The upland open space area has two zones directly north of the three floodwater retarding structures. The upland open space area is mostly undisturbed land, a natural environment with desert upland vegetation and riparian washes.

The upland open space area conforms to policy for the following reasons:

- This area varies in alignment, profile and slope.
- This area blends into the surrounding natural terrain.
- There is screening provided by the existing plants and landforms, and veneering from the indigenous rock.
- The existing plants provide erosion control, protect visual qualities and do not cause an impedence to design function.



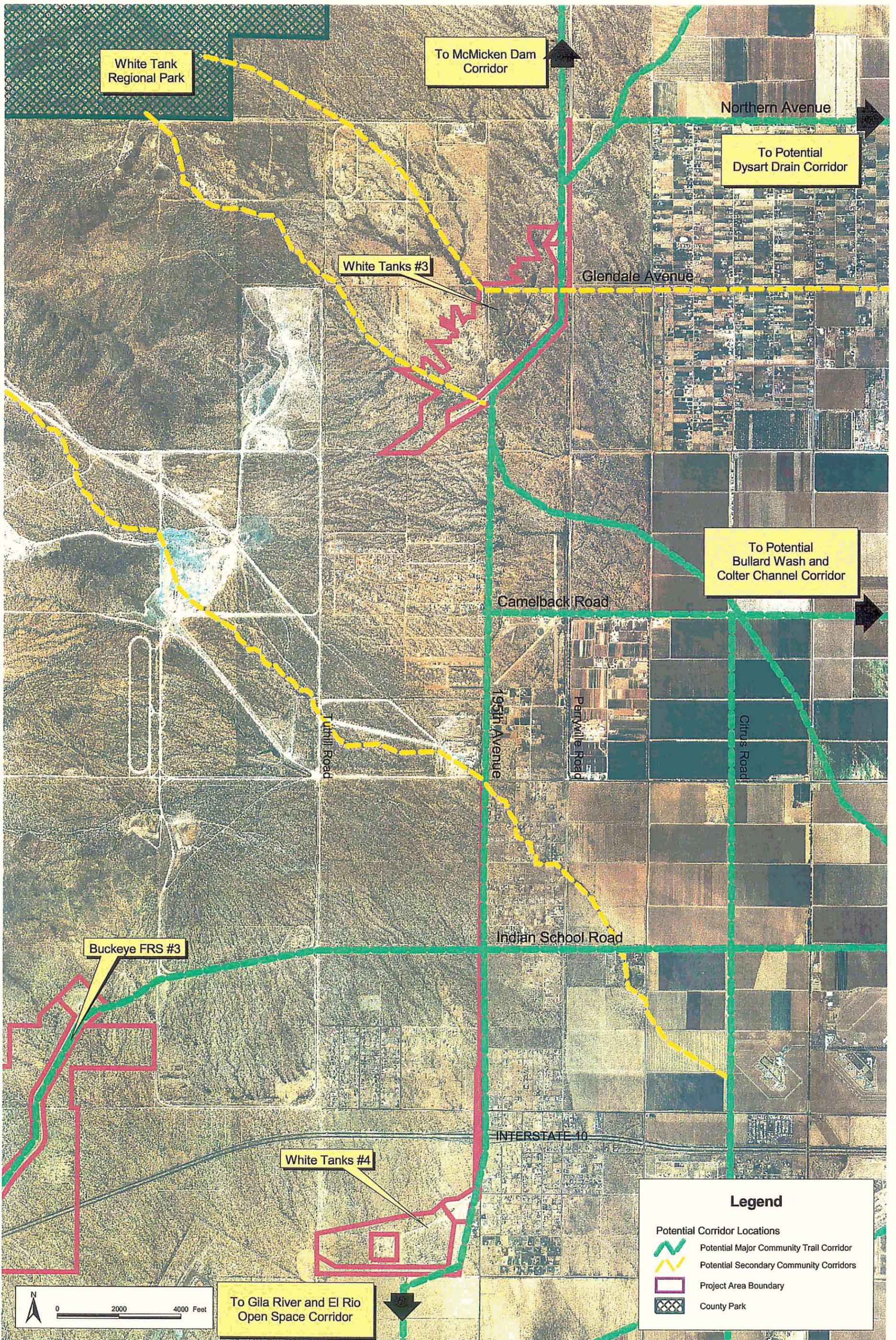
Buckeye FRS 3 – Dam & Channel Structure – Northwest View



Upland Open Space Area – North View



Buckeye FRS 1 – Northeast View from Freeway



Buckeye and White Tanks 3 & 4

Potential Corridor Connections Map

Zone One - Upland Open Space Area, cont.

The upland open space area does not conform for the following reasons:

- There are some disturbed areas that are not graded or replanted.
- The disturbed areas have some weeds and debris.

Zone Two - Dam and Channel Structures

The dam and channel structures extend a distance of fourteen miles and are located south of zone one, the upland open space area, and north of Interstate 10 parallel to the freeway.

The dam and channel structures conform to policy for the following reasons:

- The structure's alignment is mostly straight, but there are several gradual bends.
- The structures are mostly free of weeds and debris.

The dam and channel structures do not conform for the following reasons:

- The profile or height of the structure is constant and does not vary.
- The side slopes are a uniform 3 to 1 slope and do vary.
- The structure earthwork does not blend into the surrounding terrain.
- There are no screening techniques to make the structures more compatible with the environment such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with indigenous rock.
- No plantings are used to provide erosion control and protect visual qualities.
- The disturbed areas have not been replanted to match the surrounding flora.
- The structures are not furrowed to enhance the growth of vegetation.

Zone Three - Foothills Area

The foothills area is directly north of the floodway that connects structures #2



Buckeye FRS 3 Structure – Northwest View

and #3 and extends between Miller Road to just west of State Route 85.

The foothills area conforms to aesthetic policy for the following reasons:

- This area varies in alignment, profile, and slope.
- This area blends into the surrounding natural terrain.
- There is screening provided by the existing plants and landforms, and veneering from the indigenous rock.
- The existing plants provide erosion control, protect visual qualities and do not cause an impedance to design function.

The foothills area does not conform to policy for the following reasons:

- There are several disturbed areas that are not graded or replanted.

Zone Four - Lowland Open Space Area

The lowland open space area is south of structures #2 and #3. This area consists of open land with primarily low-desert vegetation and some trees, and is adjacent to the freeway.

The lowland open space area conforms to policy for the following reasons:

- This area varies in alignment, profile, and slope.
- This area blends into the surrounding natural terrain.
- There is screening provided by the existing plants and landforms, and veneering from the indigenous rock.
- The existing plants provide erosion control, protect visual qualities and do not cause an impedance to design function.

The lowland open space area does not conform for the following reasons:

- There are several disturbed areas that are not graded or replanted.



Buckeye FRS 1 – Northeast View to Foothills

Surrounding Site Character

The surrounding site character for Buckeye FRS 1, 2, 3 is identified on the Site Analysis - Existing Features/Surrounding Land Use map. Please refer to page 38.

The majority of the structure is within the unincorporated county, and the remainder is within or near the town of Buckeye. The surrounding land uses are primarily open space, with large tracts of agricultural uses south of Interstate 10 and along the major east-west canals, the Roosevelt Irrigation District Canal and Buckeye Canal. There are several scattered rural residential neighborhoods and some institutional uses.

Zone Two - Dam and Channel Structures

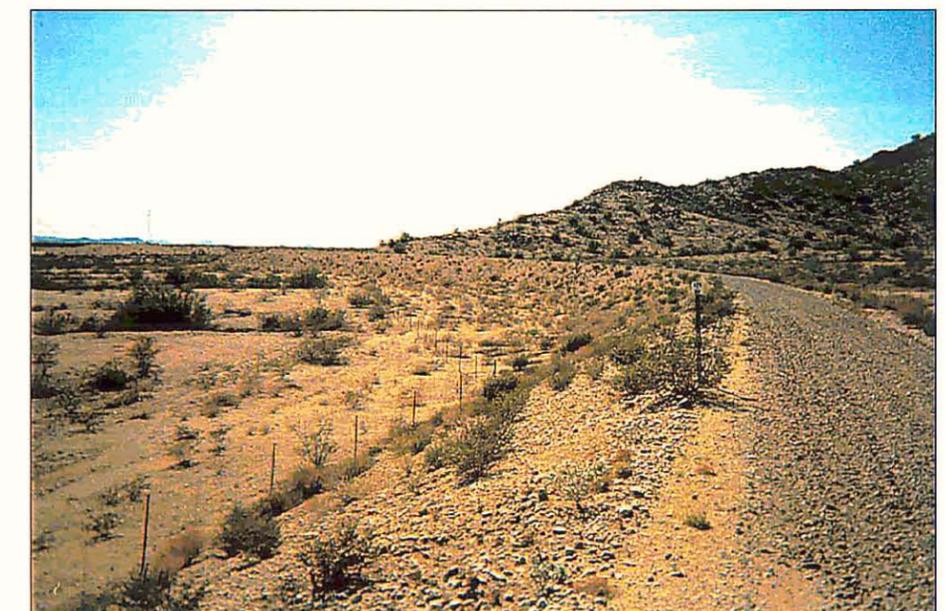
The surrounding site character by the Upland Open Space Area is primarily undisturbed open space with upland desert vegetation. There are also some rural residential neighborhoods and agricultural land uses.

Zone Two - Dam and Channel Structures

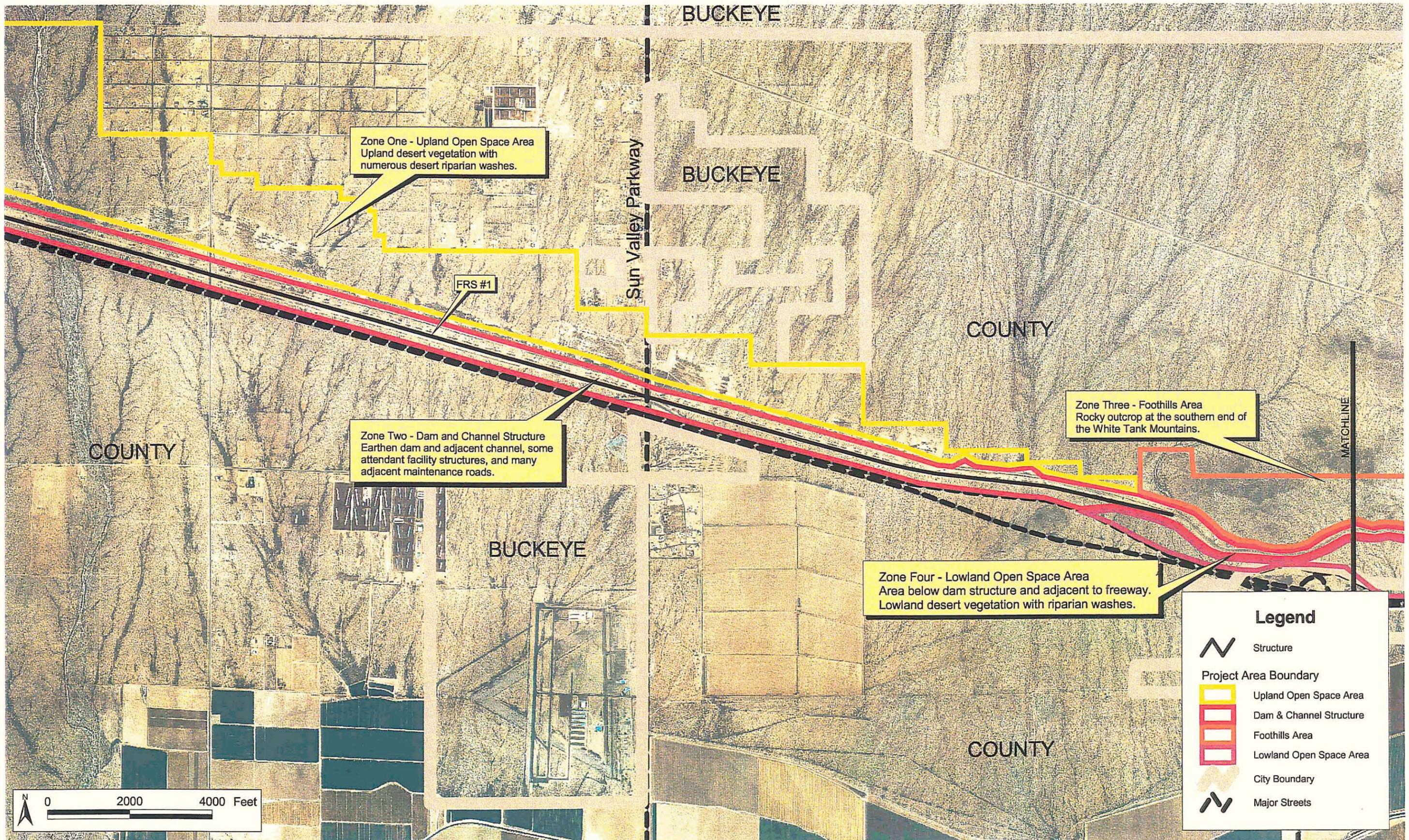
The surrounding site character by the Dam and Channel Structures is primarily desert open space intersected by Interstate 10.

Zone Three - Foothills Area

The surrounding site character by the Foothills Area is primarily undisturbed open space with upland desert vegetation on rolling foothills by the White Tank Mountains. The institutional use is the Buckeye Military Reservation, located along the Miller Road alignment.



Buckeye FRS 1 – Southwest View



Zone One - Upland Open Space Area
Upland desert vegetation with numerous desert riparian washes.

FRS #1

Zone Two - Dam and Channel Structure
Earthen dam and adjacent channel, some attendant facility structures, and many adjacent maintenance roads.

Zone Three - Foothills Area
Rocky outcrop at the southern end of the White Tank Mountains.

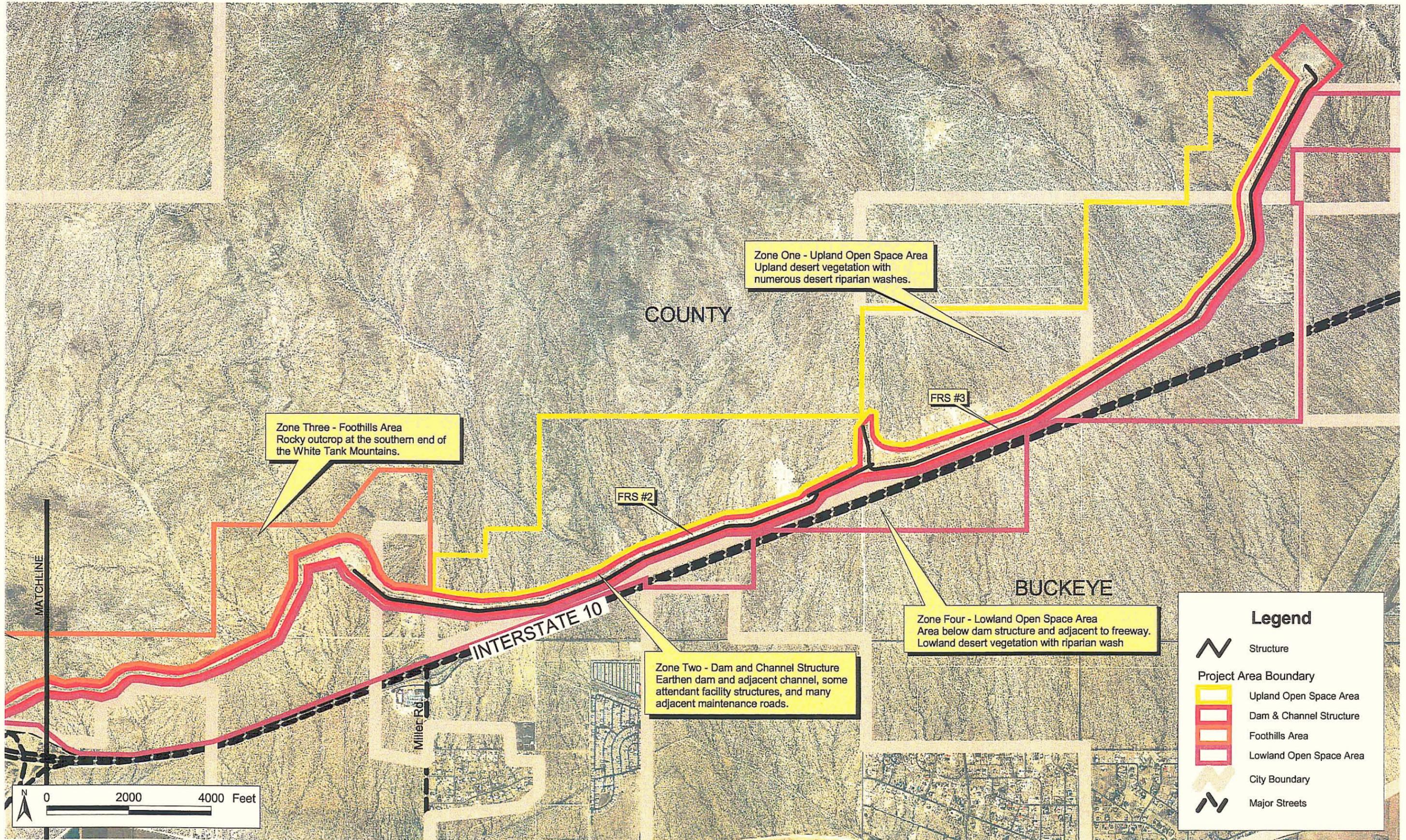
Zone Four - Lowland Open Space Area
Area below dam structure and adjacent to freeway. Lowland desert vegetation with riparian washes.

Legend

-  Structure
- Project Area Boundary**
-  Upland Open Space Area
-  Dam & Channel Structure
-  Foothills Area
-  Lowland Open Space Area
-  City Boundary
-  Major Streets

Buckeye FRS 1, 2, 3

Site Map



Zone One - Upland Open Space Area
Upland desert vegetation with numerous desert riparian washes.

Zone Three - Foothills Area
Rocky outcrop at the southern end of the White Tank Mountains.

FRS #3

FRS #2

Zone Four - Lowland Open Space Area
Area below dam structure and adjacent to freeway. Lowland desert vegetation with riparian wash

Zone Two - Dam and Channel Structure
Earthen dam and adjacent channel, some attendant facility structures, and many adjacent maintenance roads.

Legend

-  Structure
- Project Area Boundary**
-  Upland Open Space Area
-  Dam & Channel Structure
-  Foothills Area
-  Lowland Open Space Area
-  City Boundary
-  Major Streets

Buckeye FRS 1, 2, 3

Site Map

Zone Four - Lowland Open Space Area

The surrounding site character by the Lowland Open Space Area is primarily desert open space intersected by Interstate 10. The majority of land use south of the freeway is agricultural. The Luke AFB auxiliary airfield site is south of the freeway and located at Airport Road.

The Buckeye FRS structures and adjacent areas are identified as recreational open space by the Maricopa County Planning Department. Future land use for the Interstate corridor includes plans for rural land uses, large tracts with industrial uses, community retail centers, and surrounding small lot and medium density residential developments.

Site Impressions

The predominant impressions of the Buckeye site are its remoteness, the views of the White Tank Mountains, and the wide-open vistas.

Zone One - Upland Open Space Area

The upland open space area is a natural environment with desert vegetation and numerous riparian washes. This area has rolling hills that gently slope up to the White Tank Mountains.

Zone Two - Dam and Channel Structures

The dam and channel structures contrast with the surrounding landscape in the following ways: the form and line, the lack of screening with earthwork or planting buffers, and the contrasting color and texture. The lack of rock veneer-



Impoundment area – FRS #3 – east view

ing or plating of the dam structures contrasts with the surrounding landform colors, which make the structure visible from a long distance. This contrast is especially noticeable along structure #3 because the dam is contiguous with the freeway.

Zone Three - Foothills Area

The foothills area is a natural environment with large rocky landforms, desert vegetation, and riparian washes. These foothills are a prominent land feature south of the White Tank Mountains and are a gateway to the west valley.

Zone Four - Lowland Open Space Area

The lowland open space area is a natural environment with desert vegetation and some riparian washes. This area has less vegetation and is not as visually significant as the upland open space area.

Opportunities and Constraints for Retrofit Treatments

The one major constraint to retrofit enhancements for the Buckeye site is the remoteness of the area and the lack of development, but as urban growth continues along the major metropolitan transportation corridors the area will develop.

Zone One - Upland Open Space Area

The primary opportunity for the upland open space area is that this zone is mostly undisturbed. This offers an excellent opportunity to retain these areas as they exist by creating a desert greenway corridor. Retaining these areas will aid in

preserving the existing wildlife corridors in this zone and their links to the White Tank Mountains.

The constraints to retrofitting the upland open space are the existing natural desert environment and wildlife corridors which should not be disturbed. In addition, the eastern portion of this zone is close to the White Tank Mountains and has sloped terrain that is less conducive to any major retrofit enhancements.

Zone Two - Dam and Channel Structures

The primary opportunity for the dam and channel structures is their significant potential as a trail link between the Maricopa County Regional Trail System and other Flood Control connections.

The constraints for retrofit are the overall length of this facility, 14 miles, and the large number of enhancements needed to ameliorate the visual impact of the structures. There are limitations to placing overburden and landscape planting directly on the dam to preserve its structural integrity. In addition, most of the dam structures are contiguous to the freeway, which is a negative visual and auditory impact and not an ideal setting for a multi-use trail connection.

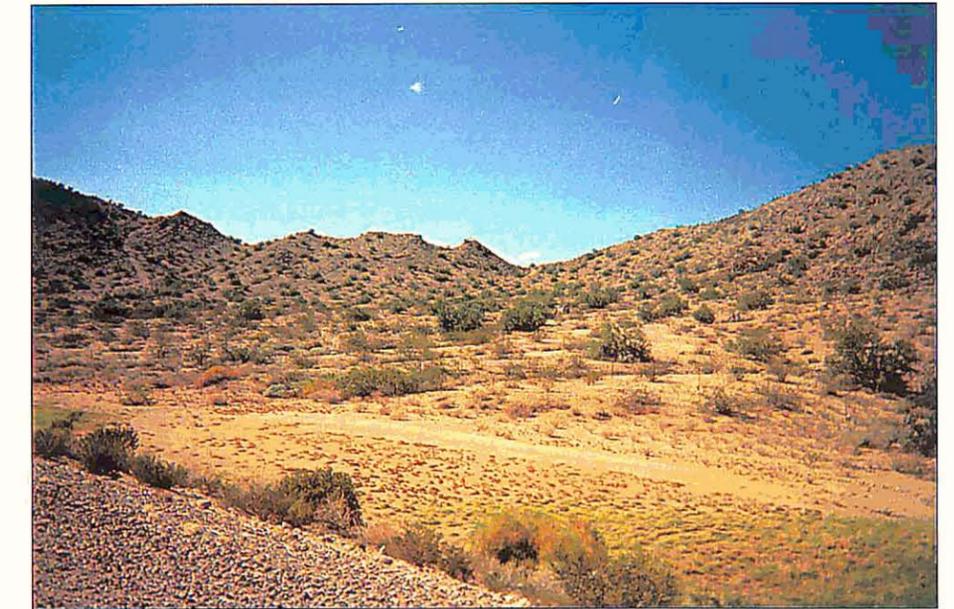
Zone Three - Foothills Area

The opportunity for the Foothills Area is its uniqueness as a landmark that could be further enhanced to be a gateway feature to the west valley.

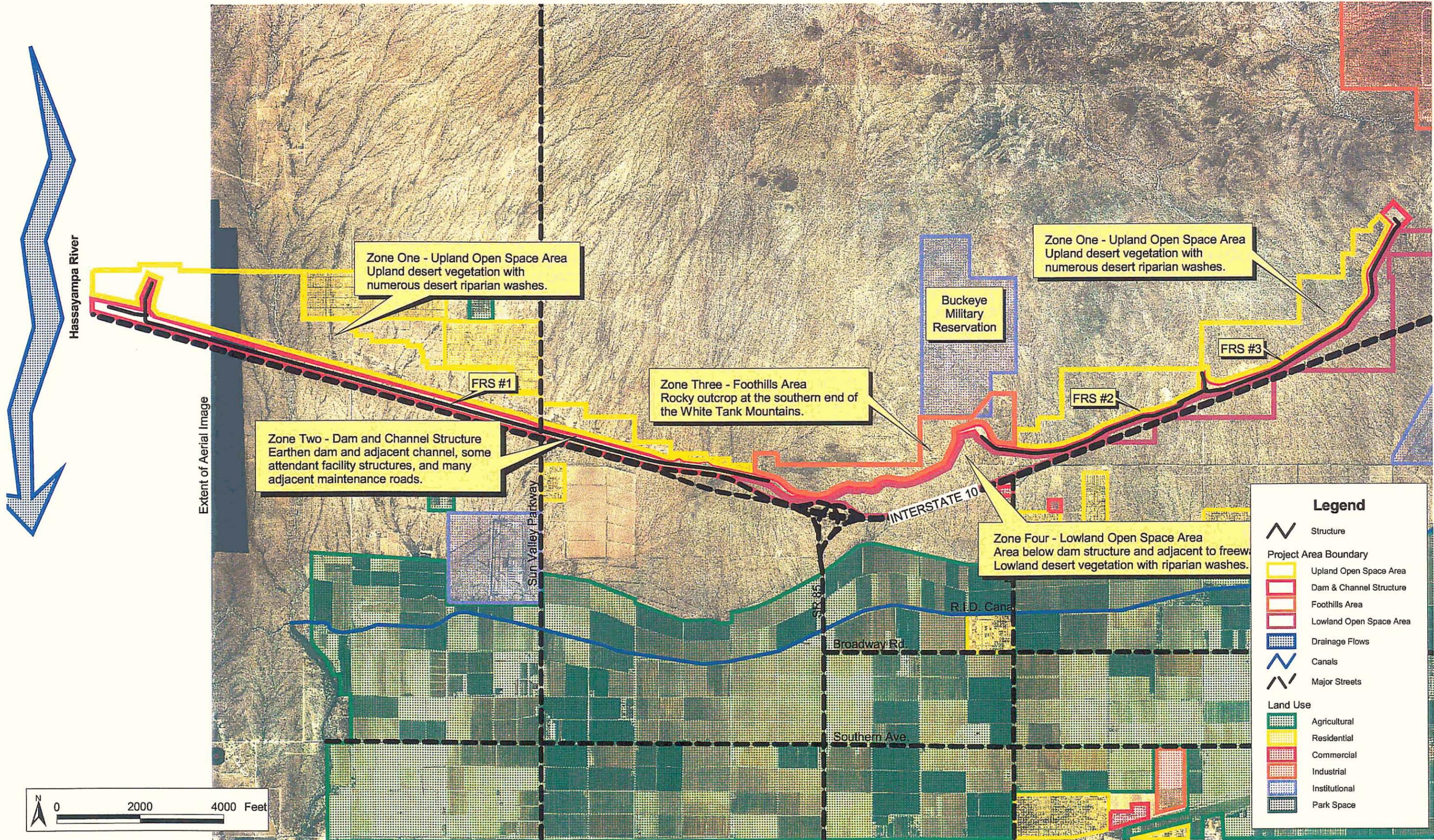
The constraint for the Foothills Area is the existing topography which is a limitation to potential retrofit enhancements.



Buckeye FRS #2 at Miller Road – north view



Northwest view to Foothills area



Zone One - Upland Open Space Area
Upland desert vegetation with numerous desert riparian washes.

Zone One - Upland Open Space Area
Upland desert vegetation with numerous desert riparian washes.

Zone Three - Foothills Area
Rocky outcrop at the southern end of the White Tank Mountains.

Zone Two - Dam and Channel Structure
Earthen dam and adjacent channel, some attendant facility structures, and many adjacent maintenance roads.

Zone Four - Lowland Open Space Area
Area below dam structure and adjacent to freeway
Lowland desert vegetation with riparian washes.

Legend

- Structure
- Project Area Boundary
- Upland Open Space Area
- Dam & Channel Structure
- Foothills Area
- Lowland Open Space Area
- Drainage Flows
- Canals
- Major Streets

Land Use

- Agricultural
- Residential
- Commercial
- Industrial
- Institutional
- Park Space

Buckeye FRS 1, 2, 3

Site Analysis - Existing Features and Surrounding Land Uses

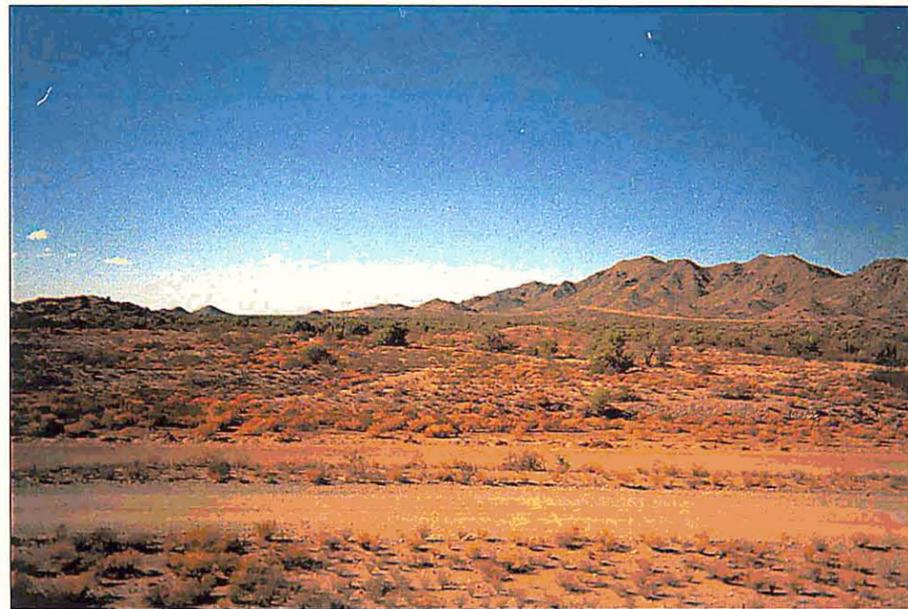
Zone Four - Lowland Open Space Area

The primary opportunity for the lowland open space area is this zone is mostly undisturbed and offers an opportunity to retain these areas as they exist. The constraints to retrofit enhancements for this area are the diminished amount of existing vegetation compared to the upland area, and its proximity to the freeway, which is a negative visual and auditory impact.

The existing Buckeye structures are over 25 years old and are designed for protection of agricultural lands. With future urban development in the area, modifications to the structure may be required for changing downstream land uses. As discussed in the introduction, the Flood Control District will be assessing the structural integrity of each of their dam structures and will be considering alternatives methods for any required improvements.

Buckeye FRS#1, Buckeye FRS #2 and Buckeye FRS #3 will be evaluated under the District's Structures Assessment Program. Phase I assessments of these structures are scheduled to be conducted in fiscal year 2001 and 2002. Geotechnical investigations and site specific repairs were performed on Buckeye FRS#1 in the summer of 2000.

One potential alternative may be to remove the dam structures and replace them with a channel and five-foot controlling berm. This could lessen the chance for catastrophic flooding more inherent with a possible structural failure of the dam. This also offers the opportunity to redesign the channel as a functioning flood control landform. In addition, because of its location, there may be opportunities to form partnerships with ADOT and the State Lands Department to redesign the flood control structure and to free excess land.



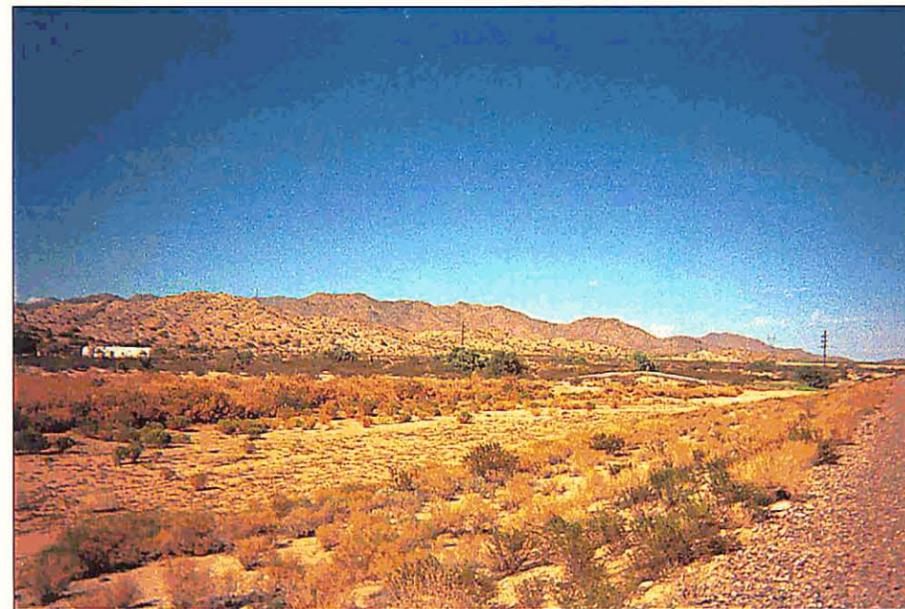
Northeast view to the White Tank Mountains

Landscape Aesthetic and Multi-Use Retrofit Treatment Recommendations

The optimal retrofit treatment for the Buckeye FRS area is the potential to create a valuable regional greenway corridor for the west valley. The contributing elements to this treatment recommendation are the existing character of open vistas to natural and agricultural landscapes, and the facilities key link between regional and community recreational corridors. Due to the ongoing Flood Control structure assessment program, the District's ownership of Buckeye property should not be altered until a comprehensive land use and drainage master plan is formulated. The land use plan should include preservation of open space and existing natural features to incorporate into a greenway corridor.

In addition, the recommended retrofit treatments for Buckeye incorporate linkages to other nearby recreational corridors by locating connection points along the facility. The connection at the west end of the Buckeye facility at the Hassayampa River provides a link to the Maricopa County Regional Trail System. The connections at Sun Valley Parkway and Miller Road provide a link north to Buckeye and the White Tanks Mountains, and south to the Roosevelt Irrigation Canal, Buckeye Canal, and the Gila River Open Space Corridor. Pedestrian bridges are recommended to complete these connections across Interstate 10, and are suitable to be designed as enhanced gateway entry statements. The connection at the east end of Buckeye facility by White Tanks 4 provides a link to the major McMicken-Gila River Corridors.

The cross sections the following page are illustrations of potential retrofit recommendations that are discussed within the text. The cross sections also relate to the overall Buckeye Concept Plan on page 41.



Channel area by FRS #1 – Sun Valley Parkway

Zone One - Upland Open Space Area

One potential retrofit is the construction of a few soft-surface and low-impact trails that could link with back country trails up to the White Tank Mountains.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

Revegetation - Seeding for disturbed areas

Multi-Use Treatment Retrofit Recommendations

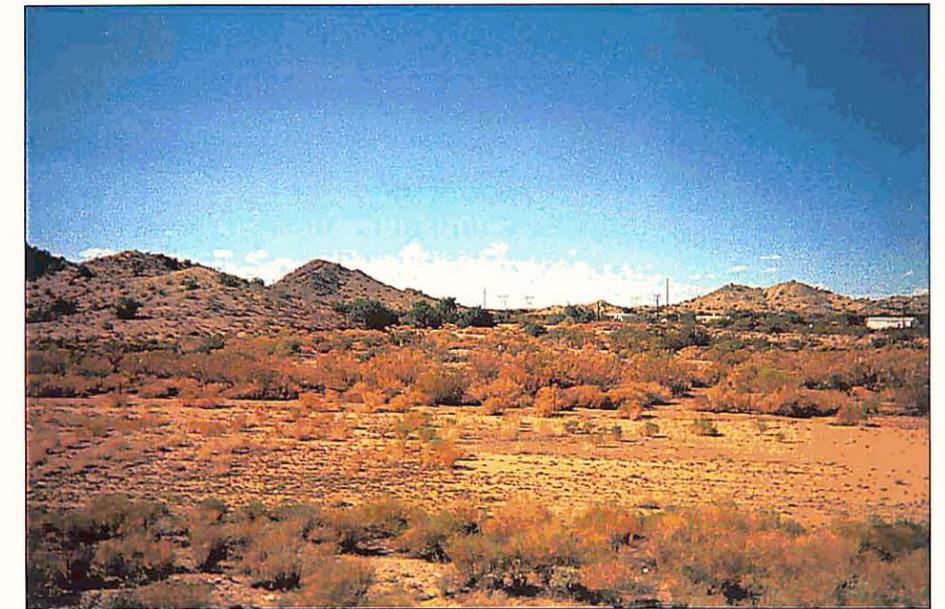
Soft Surface Trail

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatment

None identified.

Zone Two - Dam and Channel Structures

There are several retrofit enhancements that can bring the structures into conformance with the aesthetic treatment and landscape policy. The first retrofit is earthwork to construct overburden areas along the dam, maintaining the structural integrity and providing an area for landscape planting. Another retrofit is earthwork to modify the channel with the construction of a meandering low flow channel feature modeled on riparian washes, with recharge basins and ponding areas behind rock drop structures.



Zone 3, Foothills area – Rural residential area

To fully utilize the Agua Fria channel, massive re-grading is required to establish low, moderate, and high-flow channels. The low-flow level can recreate the braided desert wash model and provide essential riparian habitat, while the moderate-flow level can provide separated trail uses. Areas that have high-flow levels can contain parks and open space areas. Installing rock drop structures or weirs across the river channel will retain water flows and help establish riparian zones. Recreating the stabilized soil and rock edges modeled from natural washes will maintain water flows in the meandering channels.

Aesthetic Treatment Retrofit Opportunities

- Earthwork - Construct overburden areas on dam
- Earthwork - Construct low-flow channel feature
- Earthwork - Construct recharge basins/ponding areas
- Rock Drop Structures - By ponding areas

Landscaping Treatment Retrofit Opportunities

- Tree Planting
- Revegetation - Seeding disturbed areas
- Irrigation

Multi-Use Treatment Retrofit Opportunities

- Soft-Surface Trail
- Trail Retention - Minor changes for existing maintenance road on floodway dike
- Gateway Features - At trail connection points
- Trailhead Facilities

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatment

None identified.

Zone Three - Foothills Area

Landscaping Treatment Retrofit Opportunities

- Landscape Planting
- Revegetation
- Irrigation

Aesthetic Treatment Retrofit Opportunities

- Earthwork - Construct overburden areas on floodway dike
- Earthwork - Construct low-flow channel feature

Multi-Use Treatment Retrofit Opportunities

- Trail Retention - Minor changes for existing maintenance road on floodway dike

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatment

None identified.

Zone Four - Lowland Open Space Area

Landscaping Treatment Retrofit Opportunities

None identified.

Aesthetic Treatment Retrofit Opportunities

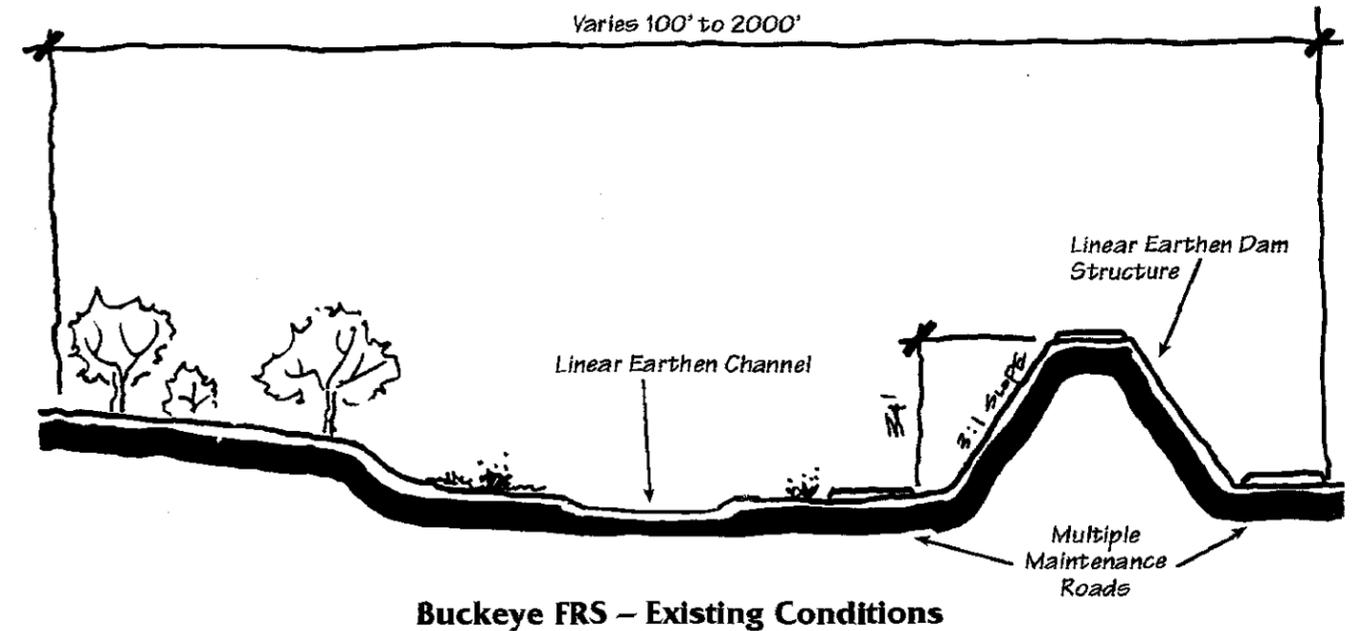
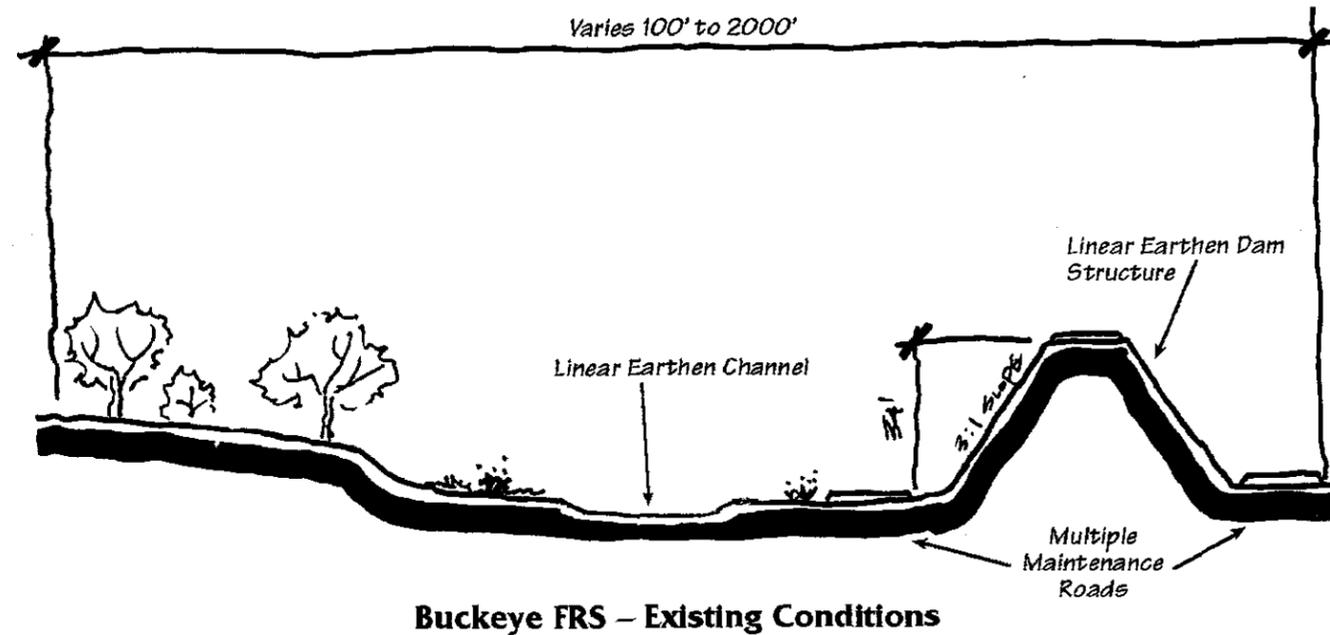
None identified.

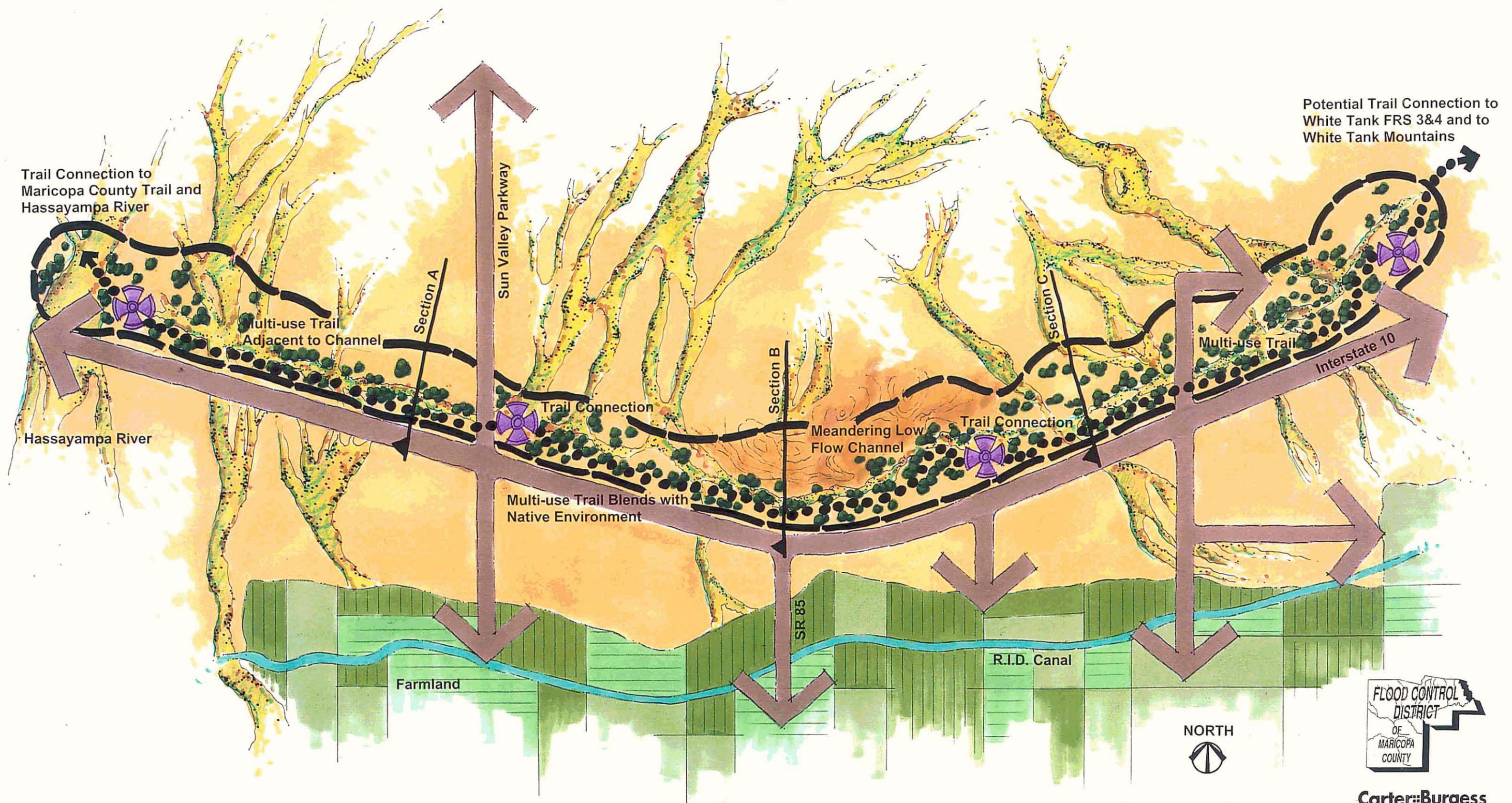
Multi-Use Treatment Retrofit Opportunities

- Soft-Surface Trail

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatment

None identified.





BUCKEYE FLOOD RETENTION CONCEPT

0 1 2
GRAPHIC SCALE IN MILES



Carter::Burgess

OCTOBER 2000

Hydrologic Engineering Synopsis of Structure

(Source: Data On Structures, an unpublished Flood Control District Document)

Project Title: Buckeye FRS #1 – Date of Final Acceptance: 1974

Watershed and Relationship to Other Structures: Western slope of White Tank Mountains. This structure sits downstream of Buckeye FRS #2 and #3 and lies just north of Interstate 10.

Location: Access from Palo Verde Road off-ramps. Buckeye FRS #1 is north of I-10.

Authorization: Watershed Protection and Flood Prevention Act, Public Law 566

Federal Sponsor: Soil Conservation Service

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: This structure collects runoff from 74 square miles of the western slopes of the White Tank Mountains. This runoff, plus the 60' waters collected from Buckeye FRS #2 and #3, is conveyed through a pipe and open floodway into the Hassayampa River. Runoff water from structures #2 and #3 is trained into this structure by Floodway #2 and a diversion dike.

Project Features:

Type of structure	.....	Compacted earthfill
Top of structure elevation	.....	1,089.50
Length of structure	.....	7.14 miles
Maximum height	.....	31.5
Top crest width	.....	14 feet
Spillway crest elevation	.....	1,079.8
Spillway capacity	.....
Drainage area	.....	74 square miles
Storage capacity	.....	8,195 acre feet
Maximum water surface elev.	.....	1,080.7 - 1,088.5
Freeboard	.....
Peak inflow	.....
Peak outflow	.....
Drawdown	.....	10 days
Principal outlet discharge	.....	413 cfs
Principal outlet structure	.....	60" RCP into 870' long channel with 20' bottom
Earth Dike #2	.....	1,510 feet long with 12' width and 12' high

Hydrologic Engineering

Project Title: Buckeye FRS #2 – Date of Final Acceptance: March 28, 1975

Watershed and Relationship to Other Structures: Western slope of White Tank Mountains.

Location: This structure is located 8 miles northeast of Buckeye, Arizona, and lies along the northern ROW line of I-10. Take I-10 to Miller Road off-ramp. Proceed north 1/2 mile to dam.

Authorization: Watershed Protection and Flood Prevention Act, Public Law 566

Federal Sponsor: Soil Conservation Service

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: This structure collects runoff from western slopes of the White Tanks Mountains and from Buckeye #3. The water is conveyed to the principal outlet and then along a floodway to Buckeye FRS #1.

Project Features:

Type of structure	.....	Compacted earthfill
Top of structure elevation	.....	1,117.00
Length of structure	.....	2.3 miles
Maximum height	.....	26 feet
Top crest width	.....	14 feet
Spillway crest elevation	.....	1,111.20
Spillway capacity	.....
Drainage area	.....	5.7 square miles
Storage capacity	.....	1,920 acre feet
Maximum water surface elev.	.....	1,116.98
Freeboard	.....
Peak inflow	.....
Peak outflow	.....
Drawdown	.....	10 days
Principal outlet discharge	.....	96 cfs
Principal outlet structure	.....	12,517 feet long
Floodway #2	.....	12,517 feet long
Floodway #2 Dike	.....	11,777 feet long

Hydrologic Engineering

Project Title: Buckeye FRS #3 – Date of Final Acceptance: March 1975

Watershed and Relationship to Other Structures: Runoff from the southern slope of the White Tanks Mountains. This is the eastern structure of a group of 3 structures stretching 16 miles along the north side of Interstate 10.

Location: The structure is located 7 miles northeast of Buckeye, Arizona, and lies along the northern ROW line of Interstate 10. Access to this structure can be achieved from McDowell Road, approximately 2 miles west of Jack-rabbit Trail, or from Watson Road, approximately 1 mile north of Yuma Road.

Authorization: Watershed Protection and Flood Prevention Act, Public Law 566

Federal Sponsor: Soil Conservation Service

Local Sponsor: Flood Control District of Maricopa County

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: This structure collects runoff water from the western slopes of the White Tanks Mountains and conveys it to be 30" principal outlet and discharges it into the reservoir of structure #2.

Project Features:

Type of structure	.....	Compacted earthfill
Top of structure elevation	.....	1,170.0
Length of structure	.....	3 miles
Maximum height	.....	34 feet
Top crest width	.....	14 feet
Spillway crest elevation	.....	1,163.2
Spillway capacity	.....	4,660 cfs
Drainage area	.....	9.3 square miles
Storage capacity	.....	2,098 acre feet
Maximum water surface elevation	.....	1,169.8
Freeboard	.....
Peak inflow	.....	21,065 cfs
Peak outflow	.....	15,440 cfs
Drawdown	.....	10 days
Principal outlet discharge	.....	106 cfs
Principal outlet structure	.....	30" RCP x 144' plus
	.....	400' outfall pipe plus
	.....	1,089 LF open channel

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
<i>Structure - 4. Buckeye FRS 1, 2, 3 Zone 1 - Upland Open Space Area</i>		<i>1 to 5</i>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element								
2 Slightly Conforming Element	5 Fully Conforming Element								
3 Moderately Conforming Element									
<hr/>									
<i>Conformance to 1992 Policy for Aesthetic Treatment and Landscaping</i>									
1	The alignment of the structure meanders to vary from a straight line.	5	The alignment in this zone varies, this area is mostly undisturbed open space.						
2	The profile or height of the structure varies to modify the outline.	5	The height or profile in this zone varies, this area is mostly undisturbed open space.						
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The sides slopes in this zone varies, this area is mostly undisturbed open space.						
4	The structure is designed to blend into the contour of the natural terrain.	5	This area blends into the natural terrain, this is mostly undisturbed open space.						
5	On-site screening with trees and shrubs are used to blend the structure.	5	There is on-site screening from the existing plants.						
6	Off-site screening with plantings or earthwork buffers are used.	5	There is off-site screening from the existing plants and landforms.						
7	There is veneering or plating of the structure with indigenous rock.	5	There is veneering with existing indigenous rock.						
8	Disturbed areas are graded and replanted to match surrounding area.	2	There are some disturbed areas that are not graded or replanted.						
9	Plantings are used to provide erosion control and protect visual qualities.	5	The existing plants provide erosion control and protect visual qualities.						
10	Plantings are used that will not cause an impedance to design function.	5	The existing plants do not cause an impedance to design function.						
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.						
12	The structure and maintenance roads are kept free of weeds and debris.	4	The zone is mostly free of weeds and debris, but the disturbed areas have some.						
<hr/> <i>Conformance Average</i>		<hr/> <i>4.33</i>							
<hr/>									
<i>Existing Aesthetic Features</i>									
13	There are riparian or river corridor features to preserve.	5	The upland desert area has numerous small to large riparian washes to preserve.						
14	There are landscape or natural features to preserve.	5	There is upland desert vegetation and riparian plants to preserve.						
15	There are wildlife habitat areas to preserve.	4	There are many wildlife habitats at the riparian areas to preserve.						
16	There are undisturbed open space elements to preserve.	5	There are many undisturbed open space elements to preserve.						
17	There are scenic corridors to preserve.	5	The scenic corridor northeast and north to the White Tank Mountains should be preserved.						
18	There are panoramic views from the structure.	5	There are views northeast and north to the White Tank Mountains.						
19	There is a meandering low-flow feature modeled on riparian washes.	5	There are many meandering low-flow features.						
20	The structure or area has revegetated.	4	The upland desert area is mostly undisturbed open space.						
21	The existing plantings match the community character.	5	The existing plantings match the upland desert and riparian community character.						
22	The structure's size and scale are proportional to its surroundings.	5	This area's size and scale are proportional to its surroundings.						
23	The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.						
24	The adjacent properties positively impact the site.	4	Mostly positive properties -open space + rural. Some negative -rural + utility properties.						
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.						
26	There are water recharge and stormwater retention areas.	3	There are some water recharge and stormwater retention areas.						
27	The structure does not have negative on-site visual problems.	3	There are several accessed and negatively impacted areas used as illegal shoot ranges.						
28	There are no overhead electrical lines and utility towers.	3	There are some overhead electrical lines, utility towers and one substation.						
29	There are not multiple maintenance roads within the site.	4	There are not multiple maintenance roads, but there are some access roads.						
30	There are no intersecting arterial streets.	3	This zone is intersected by Sun Valley Parkway.						
31	There are no noise impacts that need buffering.	3	There is some noise from Sun Valley Parkway.						
32	Additional landscape features are needed.	5	Additional landscaping is needed to screen the basin and dam structures.						
33	There are opportunities for landscape enhancements.	5	There is space to add landscape enhancements and to amend the impacted areas.						
<hr/> <i>Existing Aesthetic Features Average</i>		<hr/> <i>3.95</i>							
<hr/> <i>Conformance and Aesthetic Features Average</i>		<hr/> <i>4.14</i>							

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
<hr/>			
	Structure - 4. Buckeye FRS 1, 2, 3	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element
	Zone 1 - Upland Open Space Area		2 Slightly Conforming Element 5 Fully Conforming Element
			3 Moderately Conforming Element
<hr/>			
<i>Existing Multi-Use Features</i>			
34	There are existing natural features beneficial for a greenway corridor.	5	There are undisturbed land and riparian washes that are beneficial for a greenway.
35	There are existing multi-use features.	4	The upland desert area currently has some off-road vehicular use.
36	The area is currently accessible for multi-use.	2	The area is partially accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	5	Multi-use features could be added without compromising safety.
39	There is space to meander the maintenance road(s).	5	There is space to meander the maintenance road.
40	There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use due to site size.	5	There are no constraints to multi-use due to site size.
42	There are no constraints to public multi-use due to structural hazards.	5	There are no constraints due to structural hazards.
43	There are no constraints to multi-use due to existing slopes.	4	There are a few constraints due to existing slopes.
44	There are no constraints to multi-use construction due to earth mounds.	5	There are no constraints due to earthwork or rip-rap mounds.
<hr/> <i>Existing Multi-Use Features Average</i>		<hr/> 4.55	
<i>Future Multi-Use Features</i>			
45	There are possible connections to open space.	5	The White Tank Mtns are to the north and there is undeveloped land around this area.
46	There is a possible connection to the Maricopa County Trail System.	5	This is not part of the County Trail System, but it is close to the Hassayampa River.
47	There are possible connections to the local trail system.	5	Not part of local trail system, but could link the Hassayampa River to trails in the east.
48	There are possible connections to residential neighborhoods.	4	There are rural residential areas one-half mile north of the upland desert area.
49	There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation areas.
50	There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development may provide facilities.
51	There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52	There are opportunities for special use commercial areas.	3	Commercial areas related to the greenway designation.
53	Site property could be sold to allow for special use commercial areas.	3	Site property could be sold after the drainage area and dam has been redesigned.
54	Adjacent land could be acquired to provide for enhancements/ buffering.	5	There is open space around this zone that could provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The adjacent land has undisturbed riparian washes, and the White Tank Mtns are nearby.
56	Adjacent land needs design guidelines for future development.	5	Design guidelines could preserve natural features and create positive links with this site.
57	There are opportunities for large-scale regional park facilities.	2	There is space for a regional park, but the natural features should be preserved.
58	There are opportunities for small-scale local park facilities.	4	There is space for small-scale local park facilities.
59	There are opportunities for riparian wash areas.	1	There are existing riparian washes.
60	There are opportunities for recharge basins or ponding areas.	4	There is space for recharge basins.
61	There are opportunities for multi-use trails.	5	There is space for multi-use trails.
62	There are opportunities for separated-use trails.	5	There is space for separated-use trails.
<hr/> <i>Future Multi-Use Features Average</i>		<hr/> 3.89	
<i>Existing and Future Multi-Use Average</i>		4.22	
<i>Conformance, Aesthetic Features + Multi-Use Average</i>		4.18	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance	Supportive Comments Based on Field Observations
Structure - 4. Buckeye FRS 1, 2, 3 Zone 2 - Earthen Dam and Channel Structure		1 to 5 1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1		3 The alignment of the 3 dams is uniformly straight, but there are several gradual bends.
2		1 The height or profile of the dam structures is constant and does not vary.
3		1 The sides slopes are a uniform 3 to 1 slope and do not vary.
4		1 The earthwork is not blended into the surrounding terrain.
5		1 There is no on-site screening with trees and shrubs.
6		1 There is no off-site screening with plantings or earthwork buffers.
7		1 There is no veneering or plating with indigenous rock.
8		1 Disturbed areas are not graded or replanted.
9		1 There are no plantings to provide erosion control and protect visual qualities.
10		1 There are no aesthetic treatment plantings.
11		1 The structure's sides are not furrowed to enhance the growth of vegetation.
12		3 The structure is mostly free of weeds and debris.
Conformance Average		1.33
Existing Aesthetic Features		
13		1 There are no riparian features to preserve.
14		1 There are no landscape features to preserve.
15		1 There are no wildlife areas to preserve.
16		1 There is no open space elements to preserve.
17		1 The structure blocks the views from the south to the White Tank Mountains.
18		4 The dam offers panoramic views north to the White Tank Mountains.
19		1 There is no meandering low-flow feature.
20		3 The sides of the dam have partially revegetated.
21		3 The existing plants on the structure are desert scrub.
22		1 The dam's size and scale is medium to large and is not proportional to its surroundings.
23		1 The attendant flood control facilities structures do not blend into surroundings.
24		2 Some positive -open space + rural. More neg. parallel Interstate, rural + utility properties.
25		1 There is no existing on-site irrigation.
26		4 There are several stormwater retention areas.
27		2 The dam structure is large and mostly devoid of vegetation.
28		3 There are some overhead electrical lines, utility towers and one substation.
29		1 There is a road on top of the dam and along each side of the structure.
30		3 There are no intersecting major arterial streets.
31		2 There is noise from Interstate 10.
32		5 Additional landscaping is needed to amend impacted areas and screen the dam structure.
33		5 The open space south of the structure provides space for landscape enhancements.
Existing Aesthetic Features Average		2.19
Conformance and Aesthetic Features Average		1.76

Site Evaluation Criteria

# Site Evaluation Questions	Conformance	Supportive Comments Based on Field Observations
<hr/>		
Structure - 4. Buckeye FRS 1, 2, 3 Zone 2 - Earthen Dam and Channel Structure	1 to 5	1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element 4 Predominantly Conforming Element 5 Fully Conforming Element
<hr/>		
<i>Existing Multi-Use Features</i>		
34 There are existing natural features beneficial for a greenway corridor.	1	The earthen dam and channel have no natural features beneficial for a greenway corridor.
35 There are existing multi-use features.	4	There are no existing multi-use features.
36 The area is currently accessible for multi-use.	1	The area currently is not accessible for multi-use.
37 Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.
38 Multi-use features could be added without compromising public safety.	4	Multi-use features could be added after addressing channel flow safety concerns.
39 There is space to meander the maintenance road(s).	1	No space to meander the road on the dam, there is space to meander adjacent roads.
40 There are no physical constraints to accessing the site.	1	There are no physical constraints to accessing the site.
41 There are no constraints to multi-use due to site size.	3	The structure and parallel maintenance roads limit the type of multi-use.
42 There are no constraints to public multi-use due to structural hazards.	2	There are no constraints due to structural hazards.
43 There are no constraints to multi-use due to existing slopes.	1	The side slope of the dam is a safety concern.
44 There are no constraints to multi-use construction due to earth mounds.	5	There are no earthwork or rip-rap mounds.
Existing Multi-Use Features Average		2.45
<hr/>		
<i>Future Multi-Use Features</i>		
45 There are possible connections to open space.	5	The White Tank Mtns are to the north and there is undeveloped land around this area.
46 There is a possible connection to the Maricopa County Trail System.	5	This is not part of the County Trail System, but it is close to the Hassayampa River.
47 There are possible connections to the local trail system.	4	Not part of local trail system, but could link the Hassayampa River to trails in the east.
48 There are possible connections to residential neighborhoods.	4	There are rural residential areas one-half mile north of this area.
49 There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation areas.
50 There are possible connections to multi-modal facilities.	3	No existing facilities, but future development may provide multi-modal facilities.
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52 There are opportunities for special use commercial areas.	1	This zone is not large enough for specially planned commercial areas.
53 Site property could be sold to allow for special use commercial areas.	1	Site property could be sold after the dam and drainage area has been redesigned.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	1	There is open space around this zone that could provide for enhancements/ buffering.
55 Adjacent land has natural features beneficial for a greenway corridor.	1	The adjacent land has undisturbed riparian washes, and the White Tank Mtns are nearby.
56 Adjacent land needs design guidelines for future development.	5	Design guidelines could preserve natural features and create positive links with this site.
57 There are opportunities for large-scale regional park facilities.	1	There is no space for regional park facilities.
58 There are opportunities for small-scale local park facilities.	1	There is no space for local park facilities.
59 There are opportunities for riparian wash areas.	1	There is no space for riparian areas.
60 There are opportunities for recharge basins or ponding areas.	1	There is no space for recharge basins.
61 There are opportunities for multi-use trails.	5	The existing maintenance roads could be used as multi-use trails.
62 There are opportunities for separated-use trails.	5	The multiple maintenance roads could provide separated use trails.
Future Multi-Use Features Average		2.78
Existing and Future Multi-Use Average		2.62
Conformance, Aesthetic Features + Multi-Use Average		2.19

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 4. Buckeye FRS 1, 2, 3 Zone 3 - Foothills Area		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1	The alignment of the structure meanders to vary from a straight line.	5	The alignment of the foothills area varies, this area is mostly undisturbed open space.
2	The profile or height of the structure varies to modify the outline.	5	The height or profile in this zone varies, this area is mostly undisturbed open space.
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The sides slopes in this zone varies, this area is mostly undisturbed open space.
4	The structure is designed to blend into the contour of the natural terrain.	4	The earthwork blends into the natural terrain, this is mostly undisturbed open space.
5	On-site screening with trees and shrubs are used to blend the structure.	5	This zone has on-site screening from the existing plants.
6	Off-site screening with plantings or earthwork buffers are used.	5	This zone has off-site screening from the existing plants and landforms.
7	There is veneering or plating of the structure with indigenous rock.	5	This zone has landforms with indigenous rock.
8	Disturbed areas are graded and replanted to match surrounding area.	3	This zone has several disturbed areas that are not graded or replanted.
9	Plantings are used to provide erosion control and protect visual qualities.	5	The existing plants provide erosion control and protect visual qualities.
10	Plantings are used that will not cause an impedance to design function.	5	The existing plants do not cause an impedance to design function.
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The zone is mostly free of debris.
Conformance Average		4.33	
Existing Aesthetic Features			
13	There are riparian or river corridor features to preserve.	5	The foothills area has numerous riparian washes to preserve.
14	There are landscape or natural features to preserve.	5	This zone has upland desert vegetation and rock landforms to preserve.
15	There are wildlife habitat areas to preserve.	4	This zone has wildlife habitats at the riparian areas to preserve.
16	There are undisturbed open space elements to preserve.	5	The undisturbed open space areas in this zone should be preserved.
17	There are scenic corridors to preserve.	4	The scenic corridor northeast and north to the White Tank Mountains should be preserved.
18	There are panoramic views from the structure.	5	This zone offers views to the White Tank Mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	4	There are existing low-flow features that meander.
20	The structure or area has revegetated.	3	This is mostly undisturbed open space.
21	The existing plantings match the community character.	4	The existing trees match the desert upland and riparian community character.
22	The structure's size and scale are proportional to its surroundings.	4	This zone's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	5	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	Mostly positive properties -open space + rural. Some negative -rural + utility properties.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge and stormwater retention areas.	3	There are some existing water recharge areas.
27	The structure does not have negative on-site visual problems.	2	There are several accessed + negatively impacted areas used as illegal shoot ranges.
28	There are no overhead electrical lines and utility towers.	3	There are some overhead electrical lines, utility towers and one substation.
29	There are not multiple maintenance roads within the site.	2	There are several roads within the site to access utility lines.
30	There are no intersecting arterial streets.	3	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	2	There are negative noise impacts from Interstate 10.
32	Additional landscape features are needed.	5	Additional landscaping is needed to screen the basin and dam structures.
33	There are opportunities for landscape enhancements.	5	There is space to add landscape enhancements and to amend the impacted areas.
Existing Aesthetic Features Average		3.67	
Conformance and Aesthetic Features Average		4.00	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
<hr/>		
Structure - 4. Buckeye FRS 1, 2, 3 Zone 3 - Foothills Area	1 to 5	1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element 4 Predominantly Conforming Element 5 Fully Conforming Element
<hr/>		
<i>Existing Multi-Use Features</i>		
34 There are existing natural features beneficial for a greenway corridor.	4	This area has riparian washes and desert open spaces beneficial for a greenway.
35 There are existing multi-use features.	2	The foothills area currently has some off-road vehicular use.
36 The area is currently accessible for multi-use.	3	This area is currently accessible for multi-use.
37 Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.
38 Multi-use features could be added without compromising public safety.	4	Multi-use features could be added without compromising safety.
39 There is space to meander the maintenance road(s).	3	There is space to meander the maintenance road.
40 There are no physical constraints to accessing the site.	2	There are some physical constraints to accessing the site due to existing landforms.
41 There are no constraints to multi-use due to site size.	5	There are no constraints to multi-use due to site size.
42 There are no constraints to public multi-use due to structural hazards.	4	There are no constraints due to structural hazards.
43 There are no constraints to multi-use due to existing slopes.	2	There are some constraints due to existing slopes.
44 There are no constraints to multi-use construction due to earth mounds.	3	There are some constraints due to earthwork or rip-rap mounds.
<hr/>		
<i>Existing Multi-Use Features Average</i>		<i>3.27</i>
<hr/>		
<i>Future Multi-Use Features</i>		
45 There are possible connections to open space.	5	The White Tank Mtns are to the north and there is undeveloped land around this area.
46 There is a possible connection to the Maricopa County Trail System.	5	This is not part of the County Trail System, but it is close to the Hassayampa River.
47 There are possible connections to the local trail system.	5	Not part of local trail system, but could link the Hassayampa River to trails in the east.
48 There are possible connections to residential neighborhoods.	4	There are rural residential areas one-half mile north of this area.
49 There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation areas.
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development may provide facilities.
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52 There are opportunities for special use commercial areas.	3	Commercial areas related to this area's greenway designation.
53 Site property could be sold to allow for special use commercial areas.	3	Site property could be sold after the dam and drainage area have been redesigned.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	5	There is open space around this zone that could provide for enhancements/ buffering.
55 Adjacent land has natural features beneficial for a greenway corridor.	5	The adjacent land has undisturbed riparian washes, and the White Tank Mtns are nearby.
56 Adjacent land needs design guidelines for future development.	5	Design guidelines could preserve natural features and create positive links with this site.
57 There are opportunities for large-scale regional park facilities.	2	There is space for regional park facilities. but natural features should be preserved.
58 There are opportunities for small-scale local park facilities.	4	There is space for local park facilities.
59 There are opportunities for riparian wash areas.	3	There are existing riparian wash areas.
60 There are opportunities for recharge basins or ponding areas.	3	There is limited space for recharge basins due to existing landforms.
61 There are opportunities for multi-use trails.	5	There is space for multi-use trails.
62 There are opportunities for separated-use trails.	5	There is space for separated-use trails.
<hr/>		
<i>Future Multi-Use Features Average</i>		<i>3.94</i>
<hr/>		
<i>Existing and Future Multi-Use Average</i>		<i>3.61</i>
<hr/>		
<i>Conformance, Aesthetic Features + Multi-Use Average</i>		<i>3.80</i>

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
<hr/> Structure - 4. Buckeye FRS 1, 2, 3 Zone 4 - Lowland Open Space Area		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
<hr/> Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	4	The alignment in this zone varies, this area is mostly undisturbed open space.
2 The profile or height of the structure varies to modify the outline.	4	The height or profile in this zone varies, this area is mostly undisturbed open space.
3 The side slopes of the structure are varied to simulate the natural terrain.	4	The sides slopes in this zone varies, this area is mostly undisturbed open space.
4 The structure is designed to blend into the contour of the natural terrain.	3	The earthwork blends into the natural terrain, this is mostly undisturbed open space.
5 On-site screening with trees and shrubs are used to blend the structure.	4	There is some on-site screening with trees and shrubs.
6 Off-site screening with plantings or earthwork buffers are used.	4	The lowland desert area has off-site screening from the existing plants and landforms.
7 There is veneering or plating of the structure with indigenous rock.	4	This zone has veneering with existing indigenous rock.
8 Disturbed areas are graded and replanted to match surrounding area.	2	There are some disturbed areas that are not graded or replanted.
9 Plantings are used to provide erosion control and protect visual qualities.	4	The existing plants provide erosion control and protect visual qualities.
10 Plantings are used that will not cause an impedance to design function.	4	The existing plants do not cause an impedance to design function.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	3	The structure is moderately free of weeds and debris.
<hr/> Conformance Average		3.42
<hr/> Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	3	The lowland desert area has some minor riparian washes to preserve.
14 There are landscape or natural features to preserve.	5	There are existing desert trees and low-desert shrubs to preserve.
15 There are wildlife habitat areas to preserve.	3	There are some wildlife habitat areas to preserve.
16 There are undisturbed open space elements to preserve.	4	There are several undisturbed open space areas to preserve.
17 There are scenic corridors to preserve.	4	The scenic corridor northwest to the White Tank Mountains should be preserved.
18 There are panoramic views from the structure.	5	This zone offers views north to the White Tank Mountains.
19 There is a meandering low-flow feature modeled on riparian washes.	3	There are some meandering low-flow features.
20 The structure or area has revegetated.	2	The area has partially revegetated.
21 The existing plantings match the community character.	5	The existing plantings match the low-desert community character.
22 The structure's size and scale are proportional to its surroundings.	5	The area's size and scale are proportional to its surroundings.
23 The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24 The adjacent properties positively impact the site.	3	Some positive properties -open space, agric., rural. Some negative -fwy + commercial.
25 There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26 There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27 The structure does not have negative on-site visual problems.	3	There are several accessed and negatively impacted areas.
28 There are no overhead electrical lines and utility towers.	3	There are some overhead electrical lines and utility towers.
29 There are not multiple maintenance roads within the site.	3	There are not multiple maintenance roads, but there are some access roads.
30 There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31 There are no noise impacts that need buffering.	2	There are vehicle noise impacts from Interstate 10.
32 Additional landscape features are needed.	5	Additional landscape features are needed to screen the dam structure.
33 There are opportunities for landscape enhancements.	5	This zone has enough space for landscape and earthwork enhancements.
<hr/> Existing Aesthetic Features Average		3.38
<hr/> Conformance and Aesthetic Features Average		3.40

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
<i>Structure - 4. Buckeye FRS 1, 2, 3</i>		<i>1 to 5</i>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element								
2 Slightly Conforming Element	5 Fully Conforming Element								
3 Moderately Conforming Element									
<i>Zone 4 - Lowland Open Space Area</i>									
<hr/>									
<i>Existing Multi-Use Features</i>									
34	There are existing natural features beneficial for a greenway corridor.	4	This zone has undisturbed land and riparian washes that are beneficial for a greenway.						
35	There are existing multi-use features.	4	This lowland desert area currently has some off-road vehicular use.						
36	The area is currently accessible for multi-use.	2	This area is partially accessible for multi-use.						
37	Multi-use features could be added without impeding design function.	5	Multi-use features could be added without impeding design function.						
38	Multi-use features could be added without compromising public safety.	4	Multi-use features could be added after addressing safety issues of the freeway.						
39	There is space to meander the maintenance road(s).	3	There is some space to meander the maintenance road.						
40	There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.						
41	There are no constraints to multi-use due to site size.	3	There are some constraints to multi-use the site is narrow in some areas.						
42	There are no constraints to public multi-use due to structural hazards.	5	There are no constraints due to structural hazards.						
43	There are no constraints to multi-use due to existing slopes.	4	There are a few constraints due to existing slopes.						
44	There are no constraints to multi-use construction due to earth mounds.	5	There are no constraints due to earthwork or rip-rap mounds..						
<hr/> <i>Existing Multi-Use Features Average</i>		<hr/> <i>4.00</i>							
<hr/>									
<i>Future Multi-Use Features</i>									
45	There are possible connections to open space.	5	The White Tank Mtns are to the north and there is undeveloped land around this area.						
46	There is a possible connection to the Maricopa County Trail System.	4	This is not part of the County Trail System, but it is close to the Hassayampa River.						
47	There are possible connections to the local trail system.	5	Not part of local trail system, but could link the Hassayampa River to trails in the east.						
48	There are possible connections to residential neighborhoods.	4	There is a rural residential neighborhood one-half mile north and east of Sun Valley Prkwy.						
49	There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation areas.						
50	There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development may provide facilities.						
51	There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.						
52	There are opportunities for special use commercial areas.	3	Specially planned commercial areas/ trailheads could be located at freeway nodes.						
53	Site property could be sold to allow for special use commercial areas.	2	Site property could be sold after the drainage area and dam has been redesigned.						
54	Adjacent land could be acquired to provide for enhancements/ buffering.	1	The adjacent land to the lowland desert area is primarily Interstate 10.						
55	Adjacent land has natural features beneficial for a greenway corridor.	1	The adjacent land to this zone is primarily Interstate 10.						
56	Adjacent land needs design guidelines for future development.	5	Design guidelines could preserve natural features and create positive links with this site.						
57	There are opportunities for large-scale regional park facilities.	2	There is space for a regional park, but may not be suitable near the freeway.						
58	There are opportunities for small-scale local park facilities.	2	There is space for a local park, but may not be suitable near the freeway.						
59	There are opportunities for riparian wash areas.	2	There are existing riparian wash areas.						
60	There are opportunities for recharge basins or ponding areas.	3	There is space for recharge basins.						
61	There are opportunities for multi-use trails.	4	There is space for multi-use trails.						
62	There are opportunities for separated-use trails.	4	There is space for separated-use trails.						
<hr/> <i>Future Multi-Use Features Average</i>		<hr/> <i>3.11</i>							
<hr/> <i>Existing and Future Multi-Use Average</i>		<hr/> <i>3.56</i>							
<hr/> <i>Conformance, Aesthetic Features + Multi-Use Average</i>		<hr/> <i>3.48</i>							

Colter Channel

Facility Location and Description

Colter Channel is located in the center of the West Valley in the unincorporated county, but within the city of Phoenix and Glendale's annexation boundaries. The channel is close to the cities of Litchfield Park and Avondale, near Luke Air Force Base and adjacent to the Agua Fria River.

Colter Channel is located one-quarter mile north of Camelback Road and begins just east of Litchfield Road and extends for a distance of three miles. The channel directs flood waters to the major west valley water course, the Agua Fria River. The Colter structure is a earthen channel with a uniform width of approximately 150 feet with a low-profile and uniform trapezoidal cross section and side slope.

Potential Significance to Provide Regional, Community or Local Open Space Amenities

Colter Channel offers a trail link opportunity to connect the Maricopa County Regional Trail System with local city trail networks. Please refer to the Potential Corridor Locations Map on page 52. The channel is adjacent to the Agua Fria River, a designated trail corridor of the Maricopa County Regional Trail System and an essential part of the West Valley Recreation Corridor. This key location provides an excellent potential east-west corridor for Colter Channel from the Agua Fria River, through existing and planned residential neighborhoods, and extending west to White Tank #3 and the proposed McMicken Dam Corridor.

The surrounding potential corridor locations are identified on the Colter Channel & Dysart Drain Potential Corridor Location Map on the preceding page. These utilize existing canals, railroad rights-of-way, street corridors, desert washes, and potential future flood control project alignments. One of these corridors is Bullard Wash, a City of Goodyear proposed designated greenway that extends south to the Gila River. Bullard Wash is located one mile west and is a desirable open space corridor. Other canals and remnant washes cross Colter Channel and offer potential links to residential neighborhoods: Airline Canal connects southwest toward the Wigwam neighborhoods and a desert wash that provides a connection northwest to Luke Air Force Base neighborhoods.

Aesthetic Treatment and Landscaping Policy Conformance

Colter Channel is separated into structure zones with different flood control elements or distinctive aesthetic qualities. Please refer to the Site Map on page 53 for the structure zones, zone descriptions, city boundaries, and arterial streets. Please also refer to the Site Evaluation Criteria ratings and relevant comments on pages 59 to 62.

Zone One - Earthen Channel

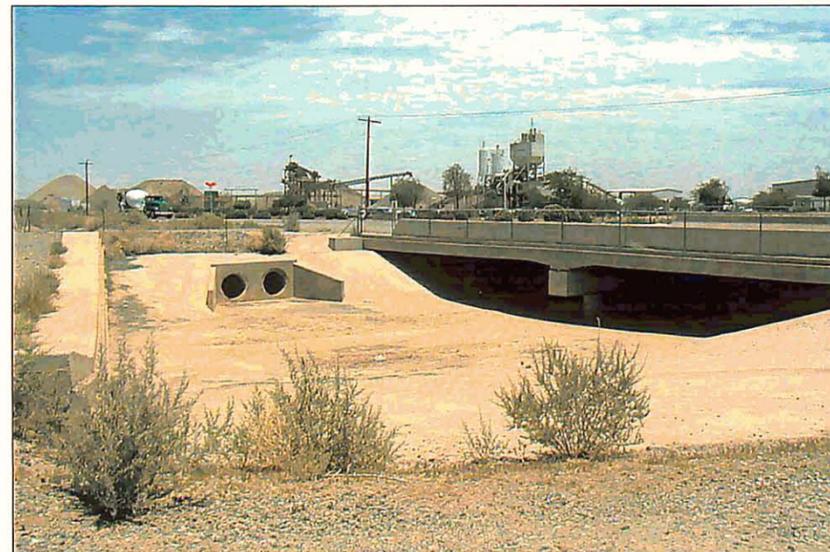
The earthen channel begins at Northern Avenue and extends three-quarters of a mile to the dam structure and basin.

The earthen channel conforms to aesthetic policy for the following reasons:

- The disturbed areas are regraded.
- The channel blends into the contour of the natural terrain.



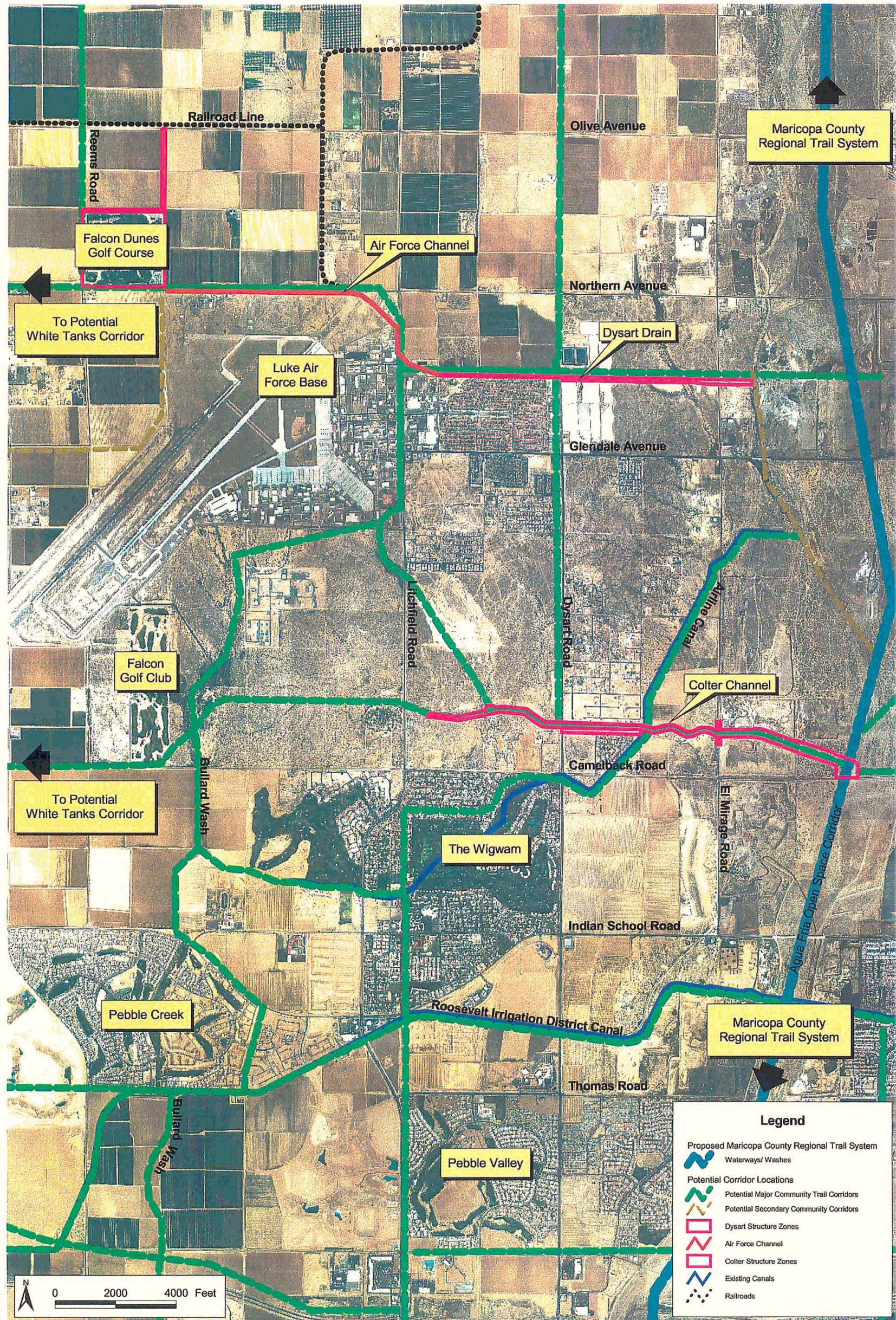
Earthen Channel – East View



Concrete Drop Structure by El Mirage Road Crossing, View of Sand & Gravel Area

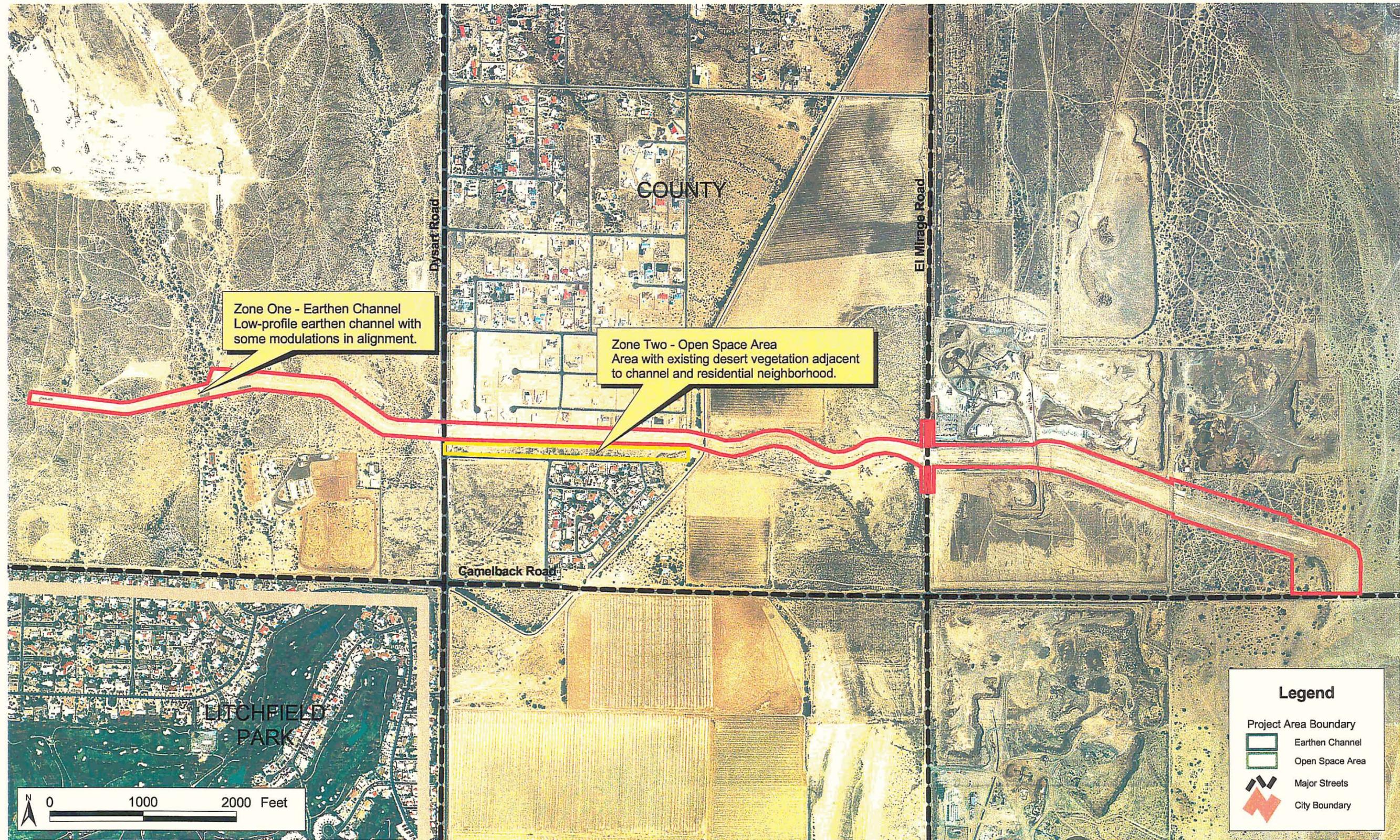


West End, Beginning of Earthen Channel – East View



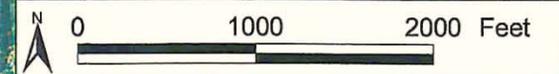
Colter Channel and Dysart Drain

Potential Corridor Locations Map



Zone One - Earthen Channel
Low-profile earthen channel with
some modulations in alignment.

Zone Two - Open Space Area
Area with existing desert vegetation adjacent
to channel and residential neighborhood.



Legend

- Project Area Boundary
- Earthen Channel
- Open Space Area
- Major Streets
- City Boundary

Zone One - Earthen Channel, cont.

The earthen channel does not conform to policy for the following reasons:

- The channel does not vary in alignment, profile or slope.
- There are no screening techniques to make the structures more compatible with the environment, such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.
- The disturbed areas have not been replanted to match the surrounding area.
- No plantings are used to provide erosion control and protect visual qualities.

Zone Two – Open Space Area

The open space area is located south of the earthen channel and extends between Dysart Road and the Airline Canal.

The open space area conforms to aesthetic policy for the following reasons:

- The open space is designed to blend into the contour of the natural terrain.
- There is on-site screening from the existing plants.
- The existing plantings provide erosion control and protect visual qualities.

The open space area does not conform to policy for the following reasons:

- The open space area does not vary in alignment, profile or slope.
- There are no screening techniques to make the basin more compatible with the environment, such as the placement of earthwork buffers or the use of trees and shrubs.
- The disturbed areas have not been replanted to match the surrounding area.

Surrounding Site Character

The surrounding site character for Colter Channel is identified on the Site Analysis - Existing Features/Surrounding Site Character map; please refer to page 55. The surrounding land uses are open space, agricultural, residential, industrial and institutional. Colter Channel is crossed by two arterial streets, Dysart and El Mirage Roads.

Zone One – Earthen Channel

The surrounding site character by the earthen channel consists of open space areas with desert scrub vegetation and riparian washes. However, many areas have been accessed and negatively impacted by vehicular use. The agricultural uses are crop fields that extend north and south along Airline Canal. This canal is a positive visual element because it is a water feature and because of the established row of trees along the western edge. The surrounding residential neighborhoods are medium to low density and have positive visual qualities. The industrial use by Colter Channel and between El Mirage Road and the Agua Fria River is a sand and gravel mining operation, which has a very negative visual and auditory impact. The mining operations have numerous pits with sheer sides, excavated areas that are sixty feet or more deep, towering industrial buildings and machinery, and mounds of sorted materials. The institutional uses are the satellite properties and buildings for Luke Air Force Base.

Zone Two – Open Space Area

The open space area is adjacent to several medium-density residential neighborhoods and a parcel of open land that has positive visual qualities.

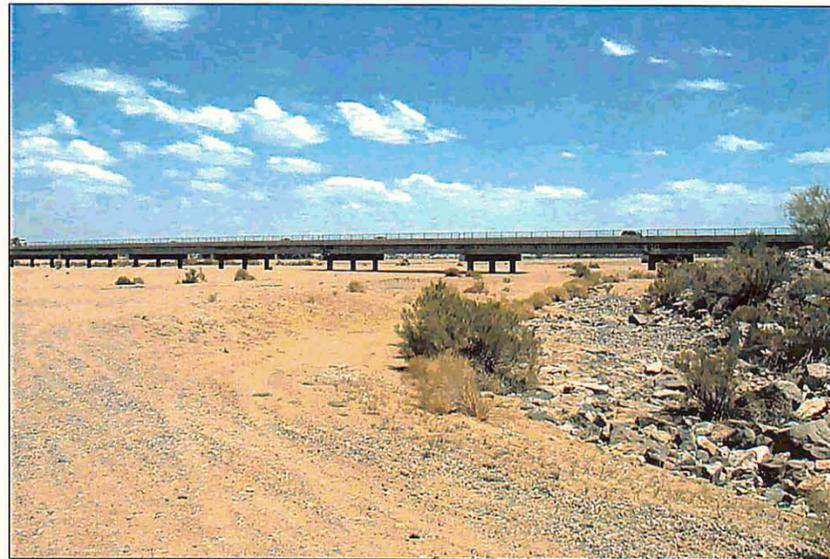
Site Impressions

Zone One – Earthen Channel

Colter Channel is an earthen flood control structure, approximately one hundred feet wide and six feet deep, with a uniform height and slope and several gradual meanders in alignment. The overall low-profile design of the channel allows the structure to blend into the surrounding terrain; however, the lack of vegetation does not provide any screening or buffering for the facility. There are concrete drop structures where the channel passes underneath the street crossings at Dysart and El Mirage Roads. The surrounding open spaces have low-desert scrub vegetation and riparian plants along the desert wash areas. The sand and gravel mining operations also impact this facility with an overhead conveyor belt and a frequently used truck road that crosses the channel.

Zone Two – Open Space Area

The open space area adjacent to Colter Channel is southeast of the channel and Dysart Road. It consists mostly of undisturbed open land with some existing desert shrubs and trees. This is a positive visual area with a row of homes facing this open space.



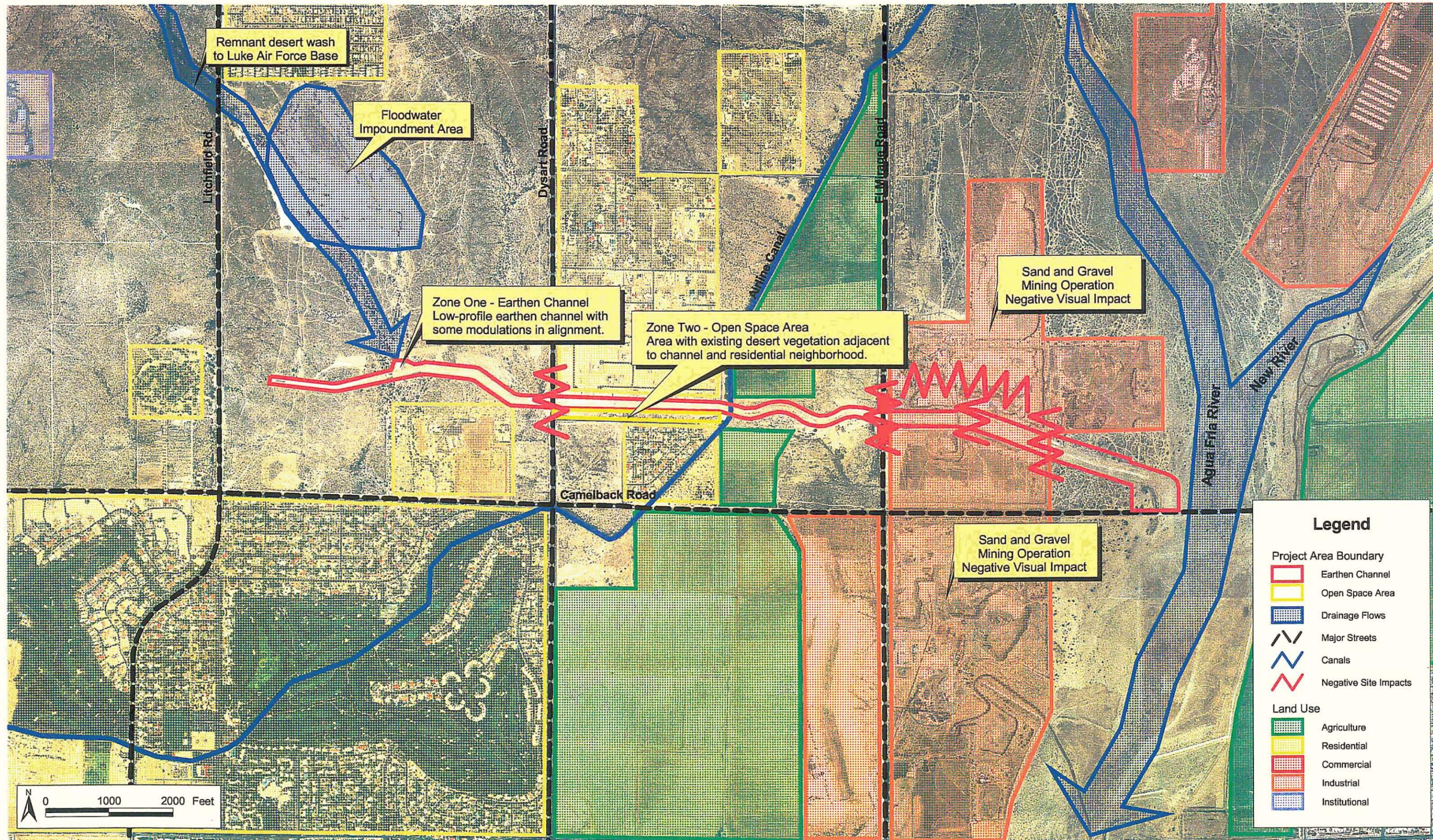
Colter Channel's Confluence with the Agua Fria River



Sand and Gravel Conveyor Belt Crossing Over Colter Channel



Airline Canal with Tree Line, Crossing Colter Channel



Colter Channel

Site Analysis - Existing Features and Surrounding Land Use

Opportunities and Constraints for Retrofit Treatments

The primary retrofit treatment opportunity for Colter Channel is its potential for creating a greenway/linear park connection to the Maricopa County Regional Trail System and to other local trail networks. Future adjacent development has realized this opportunity and are incorporating enhancement plans for the western portions of Colter Channel.

The primary retrofit treatment constraint is addressing the issues of the surrounding industrial sand and gravel mining operations.

Zone One – Earthen Channel

The retrofit treatment opportunity for the earthen channel is its existing size and low-profile form, which provides achievable enhancements to create a terraced and meandering low-flow channel with varied side slopes. The surrounding undeveloped land also presents an opportunity to create recreational open spaces along the channel.

The most significant retrofit treatment constraints for the earthen channel are the existing sand and gravel operations, which are a hazard and a negative visual and auditory impact. In order to successfully implement retrofit treatment for the channel, the existing truck access road and overhead conveyor belt should be relocated. This industrial use will remain at this location for many years because sand and gravel mines usually have long-term contractual leases on District land. More comprehensive land-use planning is needed for industrial and mining uses in order to retain local trail connections, and to improve truck route locations, safety fencing, and especially visual screening of impacted land.

Zone Two – Open Space Area

The retrofit treatment opportunity for the open space area is the additional space this land provides for enhancements, which provide more options and variety for the meandering earthen channel. In addition, this area could be dedicated to provide space for local park facilities, a recreational feature needed for the adjacent residential neighborhoods.

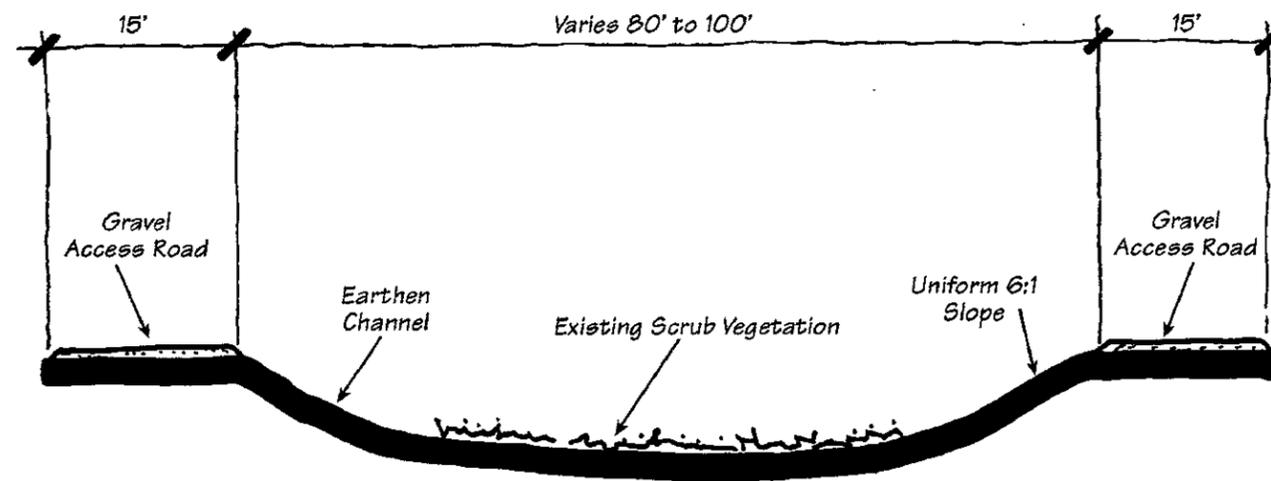
The retrofit treatment constraint is to not disturb the existing desert trees and vegetation in the open space area.

Landscape Aesthetic and Multi-Use Retrofit Treatment Recommendations

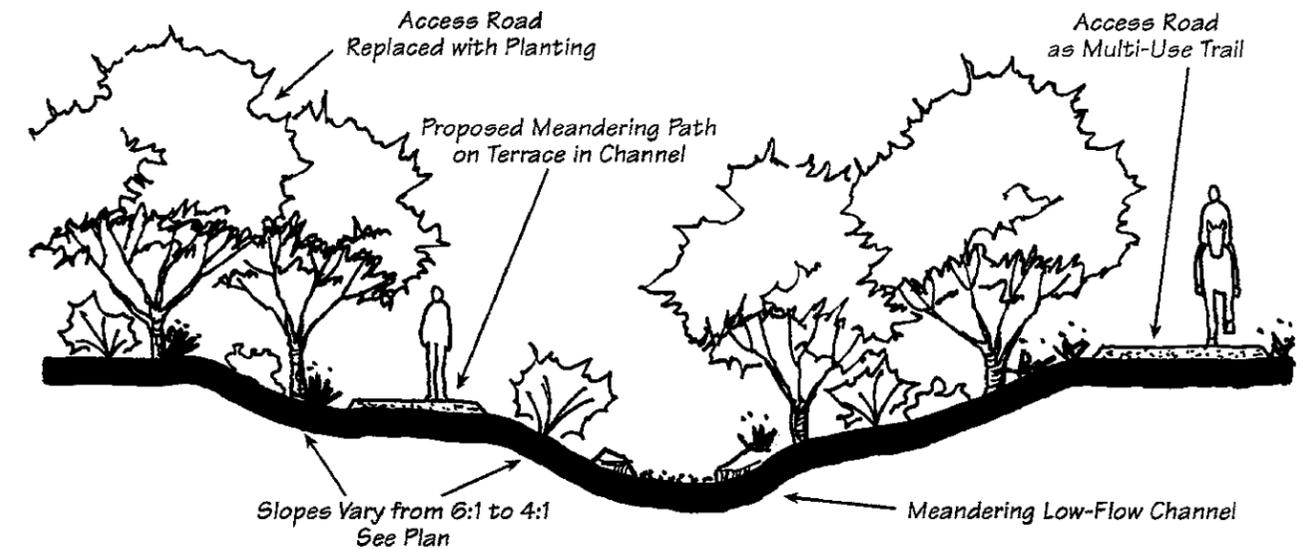
The cross-sections on this and the following page are illustrations of potential retrofit treatment recommendations discussed within the text. The cross-sections also relate to the overall Colter Channel Concept plan on page 58.

Zone One – Earthen Channel

The retrofit treatment recommendation for Colter Channel proposes the development of a linear park or greenway to provide a multi-use trail connection. The overall channel retrofit treatment includes the construction of a terraced and meandering low-flow feature and the installation of a soft surface trail above the five year flow-line. The entire channel, including the low-flow feature and trail areas, can be enhanced with desert vegetation. Distinctive tree planting along the edges would also help define it as an open space feature. The existing form of the channel provides an opportunity to construct additional side slope variations and to introduce small basin and wetland areas. One of the existing maintenance roads can remain as crushed rock surface or can be paved as required by user needs.



Colter Channel Section – Existing Conditions



Colter Channel Section – Proposed Retrofit Improvements

Gateway features could be located at the major connection points at the Airline Canal and the remnant desert wash to Luke Air Force Base neighborhoods. Trailhead facilities are appropriate near the confluence of the channel and the Agua Fria. The sand and gravel operation can be phased out as the area develops, then converted into park space, riparian areas near the Aqua Fria, a golf course, or an off-highway vehicle site.

Aesthetic Treatment Retrofit Opportunities

- Earthwork - Modify alignment, profile, and side slopes
- Earthwork - Construct low-flow channel
- Earthwork - Create recharge basin and ponding areas
- Rock Drop Structure - By ponding areas

Landscaping Treatment Retrofit Opportunities

- Tree Planting
- Revegetation
- Irrigation

Multi-Use Treatment Retrofit Opportunities

- Soft-Surface Trail
- Gateway Features - At trail connection points

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two – Open Space Area

The open space area can be incorporated as part of the overall aesthetic and landscaping treatment retrofit area for Colter Channel. This area is suitable for a potential local park space that would serve the surrounding neighborhoods and provide a destination node along the greenway/linear park.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

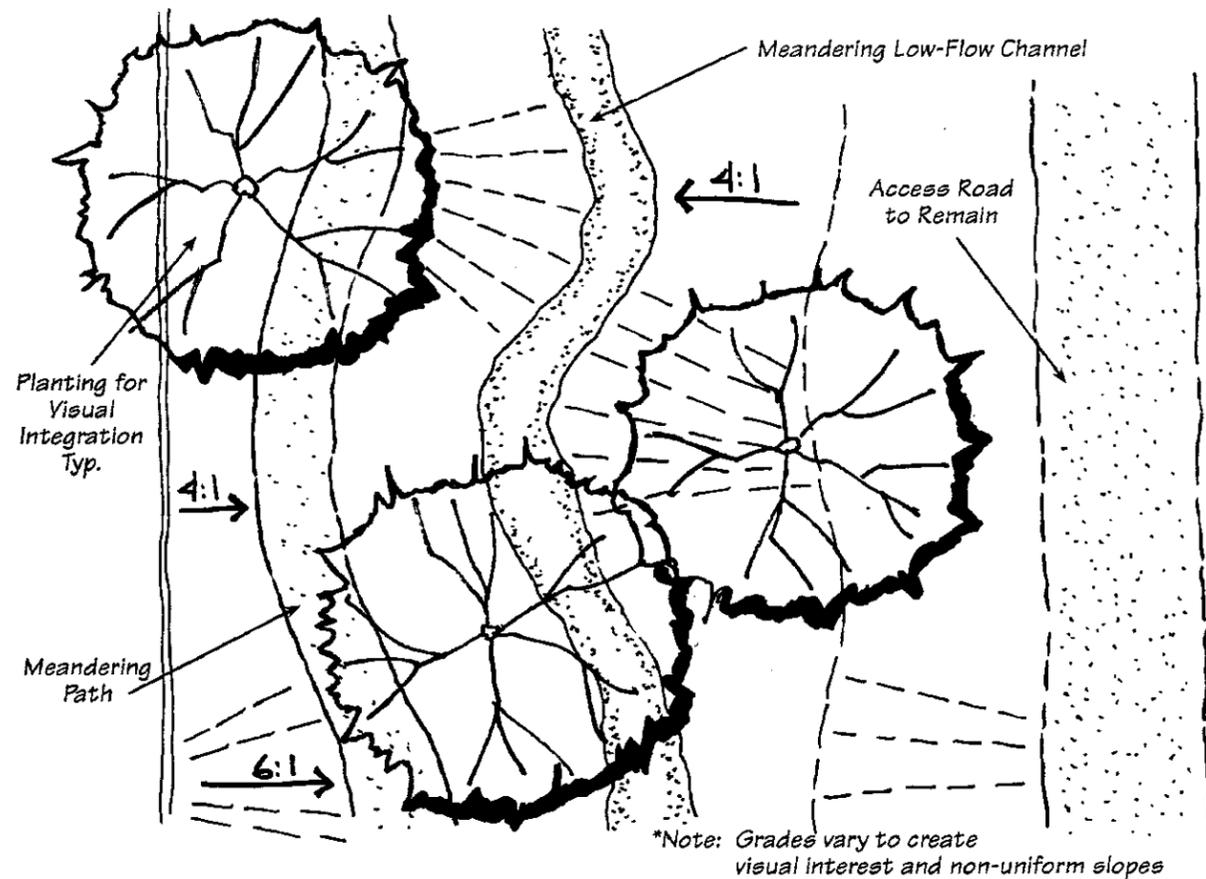
- Tree Planting
- Revegetation
- Irrigation

Multi-Use Treatment Retrofit Opportunities

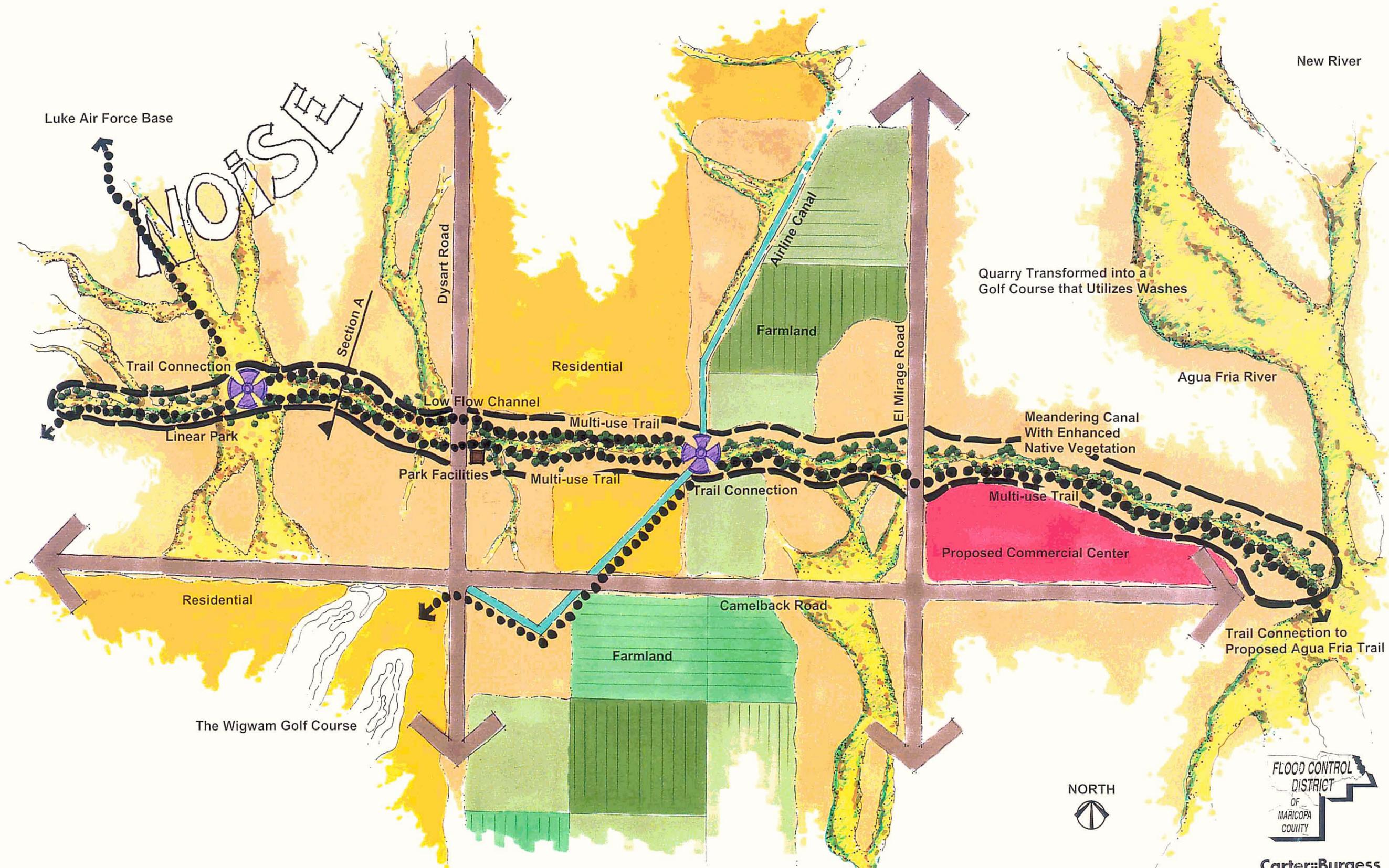
Recreation Area - Local park facilities

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

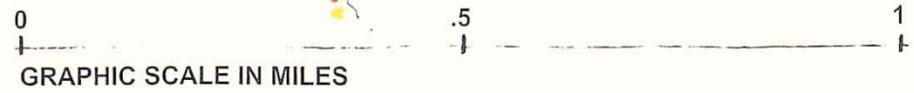
None identified.



Colter Channel Plan – Proposed Retrofit Improvements



COLTER CHANNEL CONCEPT



Carter::Burgess
OCTOBER 2000

Site Evaluation Criteria

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
<i>Structure - 14. Colter Channel</i>								
<i>Zone 1 - Earthen Channel</i>								
	<i>1 to 5</i>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">1 Non-Conforming Element</td> <td style="width: 50%; border: none;">4 Predominantly Conforming Element</td> </tr> <tr> <td style="border: none;">2 Slightly Conforming Element</td> <td style="border: none;">5 Fully Conforming Element</td> </tr> <tr> <td style="border: none;">3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element							
2 Slightly Conforming Element	5 Fully Conforming Element							
3 Moderately Conforming Element								
<hr/>								
<i>Existing Multi-Use Features</i>								
34 There are existing natural features beneficial for a greenway corridor.	1	The earthen channel area has no natural features beneficial for a greenway corridor.						
35 There are existing multi-use features.	1	There are no existing multi-use features.						
36 The area is currently accessible for multi-use.	1	This area currently is not accessible for multi-use.						
37 Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.						
38 Multi-use features could be added without compromising public safety.	3	Multi-use features could be added after addressing channel flow safety concerns.						
39 There is space to meander the maintenance road(s).	3	There is some space to meander the maintenance road.						
40 There are no physical constraints to accessing the site.	4	There are no physical constraints to accessing the site.						
41 There are no constraints to multi-use due to site size.	2	There are constraints due to site size, the channel zone is narrow.						
42 There are no constraints to public multi-use due to structural hazards.	4	There are no constraints due to structural hazards.						
43 There are no constraints to multi-use due to existing slopes.	4	There are few constraints due to existing channel slopes.						
44 There are no constraints to multi-use construction due to earth mounds.	5	There are no earthwork or rip-rap mounds.						
<hr/> <i>Existing Multi-Use Features Average</i>		<i>2.91</i>						
<hr/>								
<i>Future Multi-Use Features</i>								
45 There are possible connections to open space.	5	There is undeveloped land by this zone and the channel ends by the Agua Fria River.						
46 There is a possible connection to the Maricopa County Trail System.	4	This is not part of the County Trail System, but the Agua Fria is a north-south trail link.						
47 There are possible connections to the local trail system.	5	Not part of the local trail system, but could be a link west to the White Tanks structures.						
48 There are possible connections to residential neighborhoods.	5	There are neighborhoods adjacent to the channel and planned residential areas.						
49 There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation areas.						
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal facilities, but future development may provide facilities.						
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.						
52 There are opportunities for special use commercial areas.	1	The earthen channel area has no space to accommodate special uses.						
53 Site property could be sold to allow for special use commercial areas.	1	There is no additional property that could be sold.						
54 Adjacent land could be acquired to provide for enhancements/ buffering.	4	There is open land by the channel that could provide more enhancements + buffering.						
55 Adjacent land has natural features beneficial for a greenway corridor.	3	There are remnant riparian washes on adjacent land.						
56 Adjacent land needs design guidelines for future development.	4	Design guidelines for development could create positive links with a retrofitted site.						
57 There are opportunities for large-scale regional park facilities.	1	There is no space to accommodate regional park facilities.						
58 There are opportunities for small-scale local park facilities.	1	There is no space to accommodate local park facilities.						
59 There are opportunities for riparian wash areas.	4	Riparian wash areas could be established by creating a meandering low-flow channel.						
60 There are opportunities for recharge basins or ponding areas.	3	The open space area could accommodate small recharge basins.						
61 There are opportunities for multi-use trails.	4	The existing maintenance roads along the channel could be used as multi-use trails.						
62 There are opportunities for separated-use trails.	4	The multiple maintenance roads along the channel could provide separated use trails.						
<hr/> <i>Future Multi-Use Features Average</i>		<i>3.22</i>						
<hr/> <i>Existing and Future Multi-Use Average</i>		<i>3.07</i>						
<hr/> <i>Conformance, Aesthetic Features + Multi-Use Average</i>		<i>2.41</i>						

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 14. Colter Channel		1 to 5	1 Non-Conforming Element
Zone 2 - Open Space Area			2 Slightly Conforming Element
			3 Moderately Conforming Element
<hr/>			
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1	The alignment of the structure meanders to vary from a straight line.	1	The alignment of the open space area does not meander.
2	The profile or height of the structure varies to modify the outline.	2	The height or profile of the open space area partially vary.
3	The side slopes of the structure are varied to simulate the natural terrain.	2	The side slopes of the open space area partially vary.
4	The structure is designed to blend into the contour of the natural terrain.	5	The earthwork blends into the surrounding natural terrain.
5	On-site screening with trees and shrubs are used to blend the structure.	4	This zone has on-site screening from the existing plants.
6	Off-site screening with plantings or earthwork buffers are used.	1	This zone has off-site screening from plantings or earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	3	This zone has some veneering with existing indigenous rock.
8	Disturbed areas are graded and replanted to match surrounding area.	3	The disturbed areas have been graded, but not replanted.
9	Plantings are used to provide erosion control and protect visual qualities.	3	The existing plants provide erosion control and protect visual qualities.
10	Plantings are used that will not cause an impedance to design function.	4	The existing plants do not cause an impedance to design function.
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The open space area is not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	3	The open space area is free of debris and weeds.
Conformance Average		2.67	
<hr/>			
Existing Aesthetic Features			
13	There are riparian or river corridor features to preserve.	1	The open space area has no riparian features to preserve.
14	There are landscape or natural features to preserve.	3	There are some existing desert trees and shrubs to preserve.
15	There are wildlife habitat areas to preserve.	1	This zone has no wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	3	This zone has some undisturbed open space area to preserve.
17	There are scenic corridors to preserve.	1	This zone has no scenic corridors to preserve.
18	There are panoramic views from the structure.	3	The open space area offers distant views west to the White Tank Mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There are no meandering low-flow features.
20	The structure or area has revegetated.	3	The open space area has partially revegetated.
21	The existing plantings match the community character.	3	The existing trees match the desert character. Residences have mixed plant character.
22	The structure's size and scale are proportional to its surroundings.	5	This area's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	4	There are adjacent positive properties -open space and residential.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27	The structure does not have negative on-site visual problems.	3	The open space area needs additional plantings.
28	There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the site.	5	There are not multiple maintenance roads within the site.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	3	There are some noise impacts that need buffering.
32	Additional landscape features are needed.	5	Additional landscaping is needed to provide shading and screening.
33	There are opportunities for landscape enhancements.	5	This area can be incorporated into a re-designed channel w/ landscape enhancements.
Existing Aesthetic Features Average		2.95	
Conformance and Aesthetic Features Average		2.81	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
<hr/>								
<i>Structure - 14. Colter Channel</i> <i>Zone 2 - Open Space Area</i>	<i>1 to 5</i>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element							
2 Slightly Conforming Element	5 Fully Conforming Element							
3 Moderately Conforming Element								
<hr/>								
<i>Existing Multi-Use Features</i>								
34 There are existing natural features beneficial for a greenway corridor.	4	This open space area has existing desert trees beneficial for a greenway corridor.						
35 There are existing multi-use features.	1	There are no existing multi-use features.						
36 The area is currently accessible for multi-use.	4	This area is currently accessible for multi-use.						
37 Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.						
38 Multi-use features could be added without compromising public safety.	4	Multi-use features could be added without compromising safety.						
39 There is space to meander the maintenance road(s).	4	There is some space to meander a maintenance road.						
40 There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.						
41 There are no constraints to multi-use due to site size.	5	There are some constraints to multi-use because the site is narrow.						
42 There are no constraints to public multi-use due to structural hazards.	5	There are no constraints due to structural hazards.						
43 There are no constraints to multi-use due to existing slopes.	5	There are no constraints due to existing slopes.						
44 There are no constraints to multi-use construction due to earth mounds.	5	There are no constraints due to earthwork or rip-rap mounds.						
<hr/> <i>Existing Multi-Use Features Average</i>		<i>4.18</i>						
<hr/>								
<i>Future Multi-Use Features</i>								
45 There are possible connections to open space.	5	The Agua Fria is at the end of the channel. There is undeveloped land around this zone.						
46 There is a possible connection to the Maricopa County Trail System.	4	This is not part of the County Trail System, but the Agua Fria is a north-south trail link.						
47 There are possible connections to the local trail system.	5	Not part of the local trail system, but could be a link west to the White Tanks structures.						
48 There are possible connections to residential neighborhoods.	5	There are neighborhoods adjacent to the channel, and planned residential areas.						
49 There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation areas.						
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal facilities, but future development may provide facilities.						
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.						
52 There are opportunities for special use commercial areas.	3	There is space to accommodate small-scale special use commercial areas.						
53 Site property could be sold to allow for special use commercial areas.	1	No additional property can be sold, this area can be part of a meandering channel area.						
54 Adjacent land could be acquired to provide for enhancements/ buffering.	4	There is open land by this area that can provide additional enhancements/ buffering.						
55 Adjacent land has natural features beneficial for a greenway corridor.	1	The adjacent land has no natural features for a greenway.						
56 Adjacent land needs design guidelines for future development.	4	Design guidelines for development could create positive links with a retrofitted site.						
57 There are opportunities for large-scale regional park facilities.	1	There is no space to accommodate regional park facilities.						
58 There are opportunities for small-scale local park facilities.	4	The open space area could accommodate local park facilities.						
59 There are opportunities for riparian wash areas.	4	Riparian wash areas could be established by creating a meandering low-flow channel.						
60 There are opportunities for recharge basins or ponding areas.	3	The open space area could accommodate small recharge basins.						
61 There are opportunities for multi-use trails.	4	Multi-use trails could be established through the open space area + along the channel.						
62 There are opportunities for separated-use trails.	4	Separated-use trails could be placed in this area and along each side the channel.						
<hr/> <i>Future Multi-Use Features Average</i>		<i>3.39</i>						
<hr/> <i>Existing and Future Multi-Use Average</i>		<i>3.79</i>						
<hr/> <i>Conformance, Aesthetic Features + Multi-Use Average</i>		<i>3.30</i>						

Dysart Drain

Facility Location and Description

Dysart Drain is located in the central West Valley, adjacent to Luke Air Force Base and the Agua Fria River. This facility is within the annexation boundary of the city of Glendale, near the cities of El Mirage and Litchfield Park.

Dysart Drain is a channel and basin flood control structure located near Northern Avenue and extending east from Reems Road to the Agua Fria River. Several low-profile concrete channels direct water flows to Falcon Dunes Golf Course, which functions as a basin detention area. Linked to the basin area is a two-mile concrete channel that runs contiguous to Northern Avenue and the north perimeter of Luke AF Base before turning south along Litchfield Road. This deep-profile channel, built to drain runoff from Luke AF Base, is entirely on Base property. One-half mile south of Northern Avenue the deep-profile concrete channel turns east and continues for 2 1/4 miles to the Agua Fria River.

Potential Significance to Provide Regional, Community or Local Open Space Amenities

Dysart Drain offers an excellent opportunity to connect the County Trail System and local city trail networks. Please refer to the Dysart Drain Potential Corridor Location Map on page 64.

Dysart Drain is adjacent to the Agua Fria River, a designated link in the Maricopa County Regional Trail System and an essential part of the West Valley Recreation Corridor Trail System. Dysart Drain also provides a good east-west trail connection to the Agua Fria River from adjacent established and planned residential neighborhoods.

The potential corridor locations utilize existing canals, railroad rights-of-way, street-side corridors, desert washes and proposed future flood control project alignments. Establishing trail corridors along Northern Avenue would connect Dysart Drain channel with Falcon Dunes Golf Course, and along Dysart Road connecting south to Colter Channel and north to the city of Surprise. A trail along remnant desert washes can connect residential neighborhoods near Luke Air Force Base to Colter Channel. Just south of Luke Air Force Base is Bullard Wash, a City of Goodyear proposed designated greenway that extends south to the Gila River. Dysart Drain and Colter Channel could be connected to the

Bullard Wash Desert Greenway; this would establish a complete loop system between the Agua Fria River, Dysart Drain, Bullard Wash, and Colter Channel.

Many of the West Valley flood control structures are under review and evaluation as part of the Flood Control District's Loop 303 Corridor/White Tanks Area Drainage Master Plan (ADMP). Dysart Drain, a component of this overall plan, is significantly sited at the junction of two proposed medium to large local collector channels. One channel extends south from Bell Road along Reems Road, and the other extends east from White Tanks FRS #3 parallel to Northern Avenue. In addition, the ADMP proposes a collector channel from McMicken Dam to White Tank FRS #3. The Reems Road and Northern Avenue proposed flood control structures provide an opportunity to introduce multi-use retrofit treatments, providing connections to local trails and especially to the Maricopa County Regional Trail System by way of McMicken Dam.



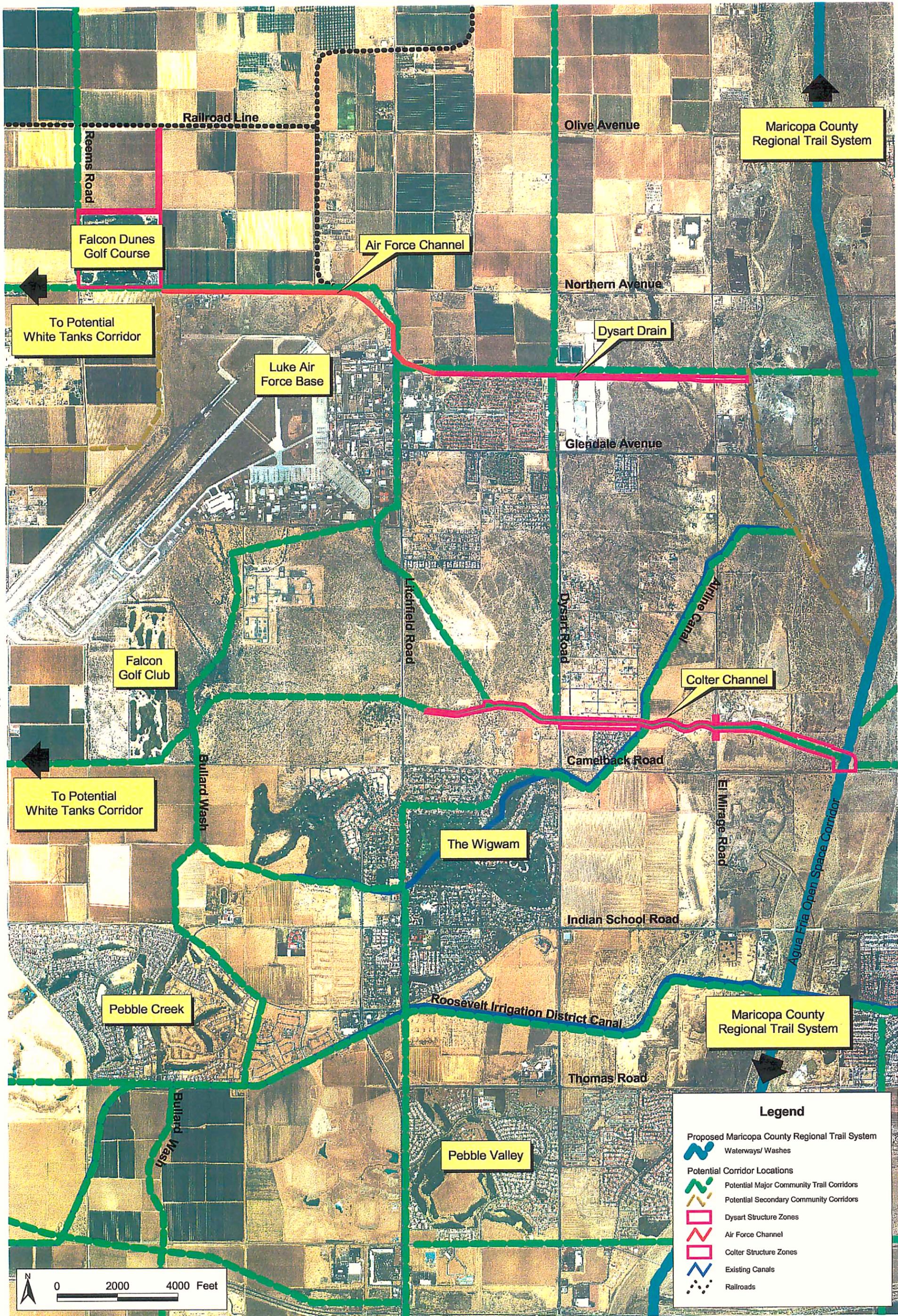
Low Profile Channel South of Olive Road



Concrete and Rock Channel in Golf Course



Channel by Industrial Area – East View



64

Maricopa County
Regional Trail System

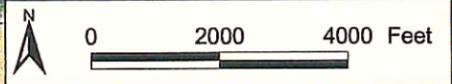
To Potential
White Tanks Corridor

To Potential
White Tanks Corridor

Maricopa County
Regional Trail System

Legend

- Proposed Maricopa County Regional Trail System
- Waterways/ Washes
- Potential Corridor Locations
- Potential Major Community Trail Corridors
- Potential Secondary Community Corridors
- Dysart Structure Zones
- Air Force Channel
- Colter Structure Zones
- Existing Canals
- Railroads



Dysart Drain and Colter Channel

Potential Corridor Locations Map

Aesthetic Treatment and Landscaping Policy Conformance

Dysart Drain is separated into three structure zones with different flood control elements or distinctive aesthetic character. Please refer to the Site Map on page 66 for the structure zones, zone descriptions, city boundaries, and arterial streets. Please also refer to the Site Evaluation Criteria ratings and relevant comments on pages 72 to 77.

Zone One – Low-Profile Concrete-Lined Channel

One section of concrete-lined channel begins at Olive Avenue one-half mile east of Reems Road, and the other section begins at Reems Road.

The channel conforms to aesthetic policy for the following reason:

- The channel is not designed to blend into the contour of the natural terrain.

The concrete channel does not conform to policy for the following reasons:

- The channel does not meander in profile or slope, and is mostly straight.
- There are no screening techniques to make the structures more compatible with the environment, such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.
- The disturbed areas have not been replanted to match the surrounding area.
- No plantings are used to provide erosion control and protect visual qualities.

Zone Two – Golf Course Basin Area

The golf course basin area is located northeast of the intersection of Reems Road and Northern Avenue.

The basin area conforms to aesthetic policy for the following reasons:

- The basin area varies in alignment, profile and slope.
- The basin is designed to blend into the contour of the natural terrain.
- There is on-site screening from the existing plants.
- The existing plantings provide erosion control and protect visual qualities.
- There are no screening techniques to make the basin more compatible with the environment, such as the placement of earthwork buffers or the use of trees and shrubs.

The basin area does not conform to aesthetic policy for the following reasons:

- The disturbed areas have not been replanted to match the surrounding area.

Zone Three – Deep-Profile Concrete-Lined Channel

The deep-profile concrete channel begins one-quarter mile east of Litchfield Road and one-half mile south of Northern Avenue.

The concrete channel does not conform to policy for the following reasons:

- The channel does not meander in alignment, profile or slope.
- The channel is not designed to blend into the contour of the natural terrain.
- There are no screening techniques to make the structures more compatible with the environment such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.
- The disturbed areas have not been replanted to match the surrounding area.
- No plantings are used to provide erosion control and protect visual qualities.

Surrounding Site Character

The surrounding site character for Dysart Drain is identified on the Site Analysis Map; please refer to page 67.

Zone One – Low-Profile Concrete-Lined Channel

The surrounding site character is positive, an open vista of green agricultural lands and the adjacent lush golf course.

Zone Two – Golf Course Basin Area

The surrounding site character by the Golf Course Basin Area is mixed with agricultural open space and the adjacent air field. The character of Luke Air Force Base is very stark and institutional. It lacks positive buffering elements and has a negative auditory impact on the surrounding area. There are large concrete runways, and numerous military buildings with perimeter walls and fencing. However, the Air Force control tower functions as a positive visual landmark for the West Valley.

Zone Three – Deep-Profile Concrete Channel

The adjacent residential areas are medium-density Air Force Base neighborhoods. East of Dysart Road and on both sides of the channel are the industrial sites of LP Gas and salt mining ponds. The remaining portions of land are open space areas with desert scrub and riparian vegetation.

According to Maricopa County Planning, proposed land use designations for this area include retaining the agricultural uses around the golf course and introducing industrial uses to the base fly-over zones. Planned residential uses for the surrounding land include rural, medium density, and high density housing areas.



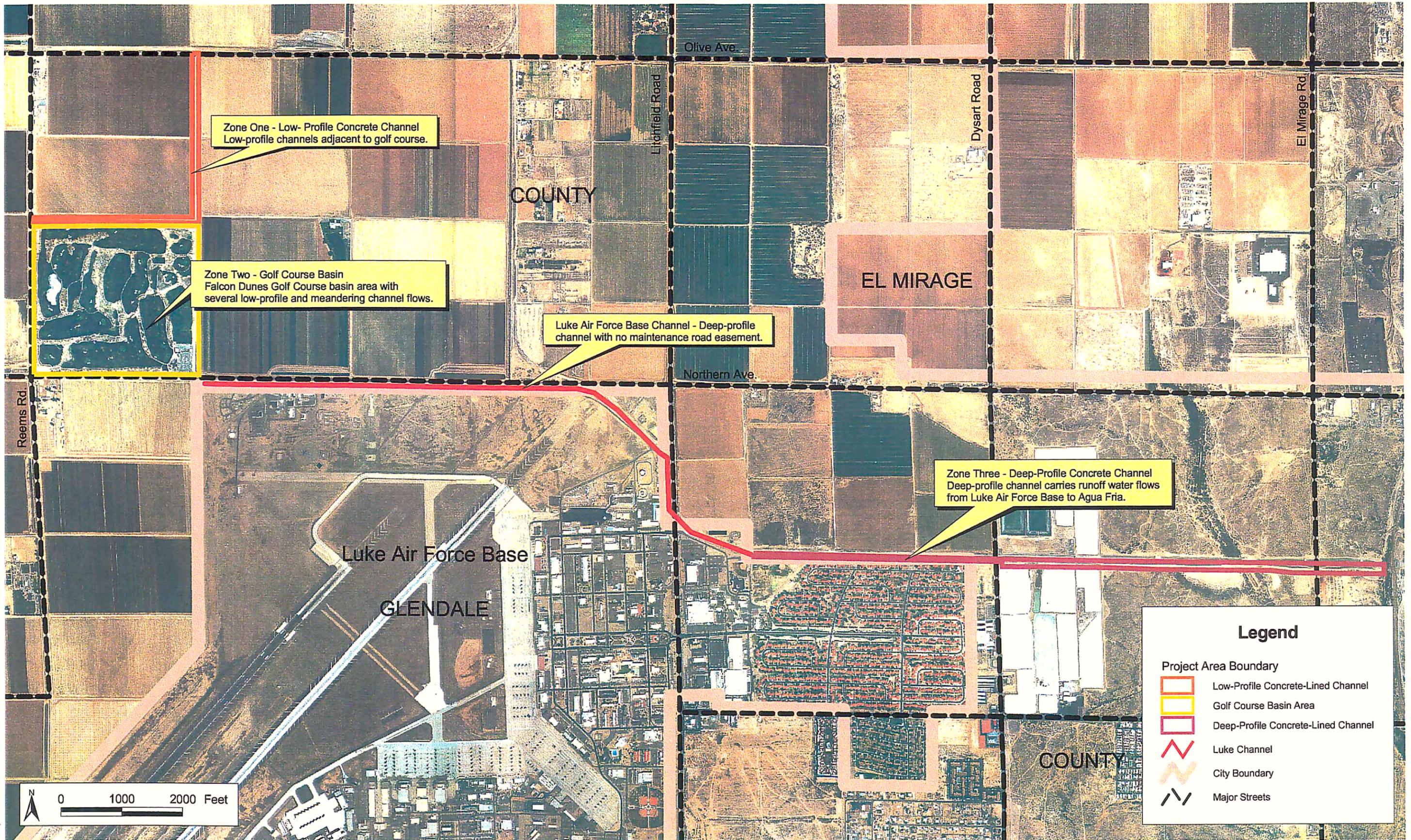
Channel by Residential Area – East View



Street Edge of Falcon Dunes Golf Course



Stilling Basin by Agua Fria at end of channel



Zone One - Low-Profile Concrete Channel
Low-profile channels adjacent to golf course.

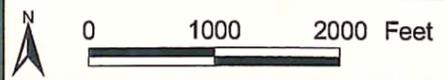
Zone Two - Golf Course Basin
Falcon Dunes Golf Course basin area with
several low-profile and meandering channel flows.

Luke Air Force Base Channel - Deep-profile
channel with no maintenance road easement.

Zone Three - Deep-Profile Concrete Channel
Deep-profile channel carries runoff water flows
from Luke Air Force Base to Agua Fria.

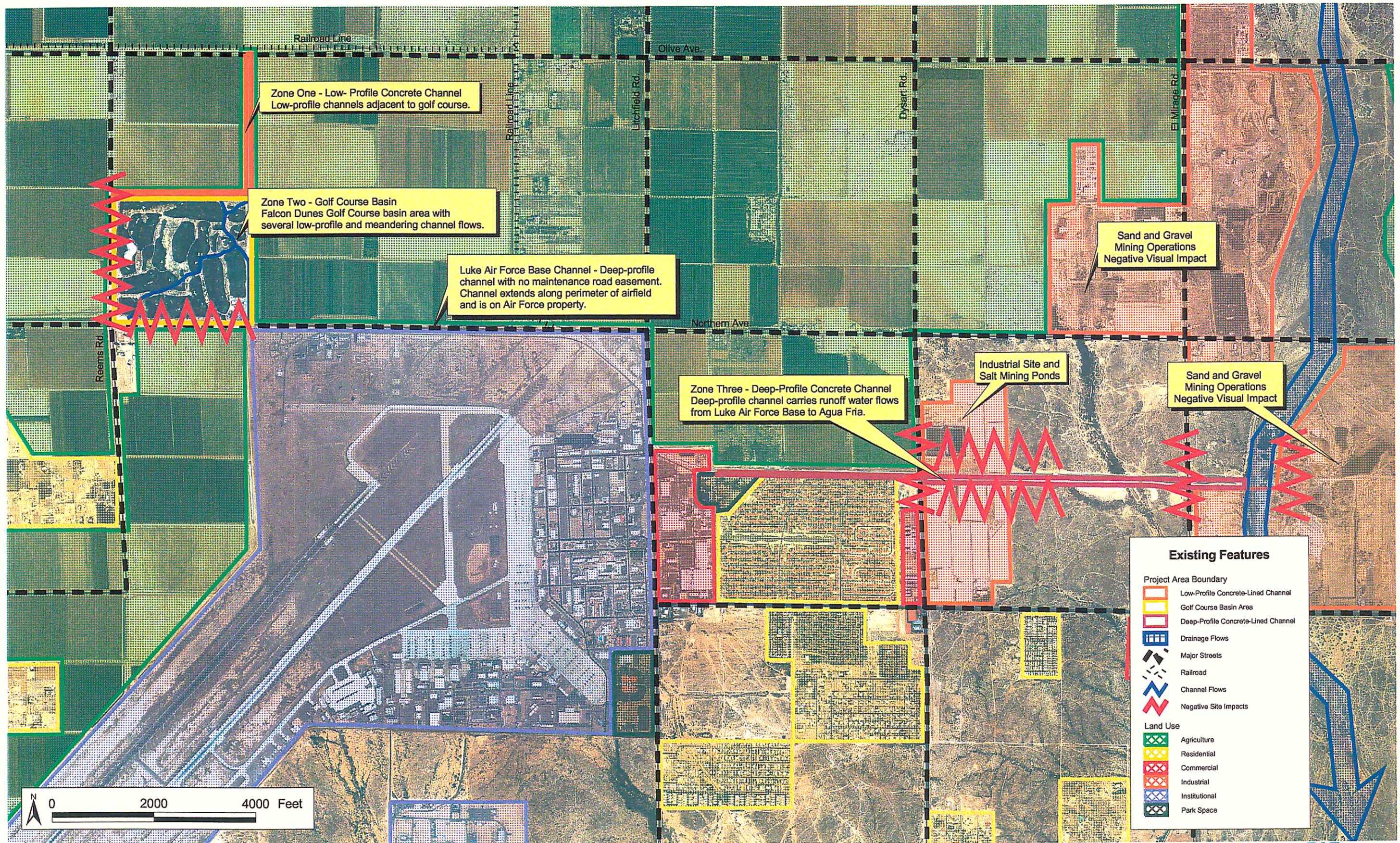
Legend

-  Project Area Boundary
-  Low-Profile Concrete-Lined Channel
-  Golf Course Basin Area
-  Deep-Profile Concrete-Lined Channel
-  Luke Channel
-  City Boundary
-  Major Streets



Dysart Drain

Site Map



Site Impressions

Zone One – Low-Profile Concrete Channel

The low-profile concrete channel is a barren area, lacking any vegetation or amenities of visual interest.

Zone Two – Golf Course Basin Area

The golf course basin fully integrates aesthetic design with flood control function as a constructed environment of hills, lakes, channels, and landscaped green spaces. It is an oasis in the desert. The drainage channels blend into the course and offer wetland/grassland areas populated with birds. The only aesthetic hindrance is that the green space landscaping is concentrated on the interior of the course, leaving the edges without a planting buffer.

Zone Three – Deep-Profile Concrete Channel

The deep-profile concrete channel is also a barren place void of visual interest, with the exception of the occasional agricultural run-off flows creating small pockets of vegetation in the channel bottom. The residential area is visually pleasing with mature shade trees, but surrounding walls block views and access. The industrial areas with retaining ponds and the gravel mining operations are not visually pleasant or safe places. The agricultural run-off into the stilling basin has created a riparian zone at the end of the channel with a variety of vegetation and wildlife.

Opportunities and Constraints for Retrofit Treatments

The major opportunity for retrofit treatments for Dysart Drain is the facility's location adjacent to the Agua Fria River, a significant natural feature and a vital component of the Maricopa County Regional Trail System and the West Valley Recreation Corridor. In addition, The Maricopa Association of Governments has chosen Dysart Drain as a representative project for the Regional Off-Street System Plan.

The major retrofit constraint for Dysart Drain is issue of introducing public access by the channel along Luke Air Force Base. The channel area lacks the adjacent maintenance road access or any space for such facilities, as well as the significant issue of placing public corridor treatment within an area the Air Force considered dangerous due to aircraft take-offs and landings.

Zone One – Low-Profile Concrete-Lined Channel

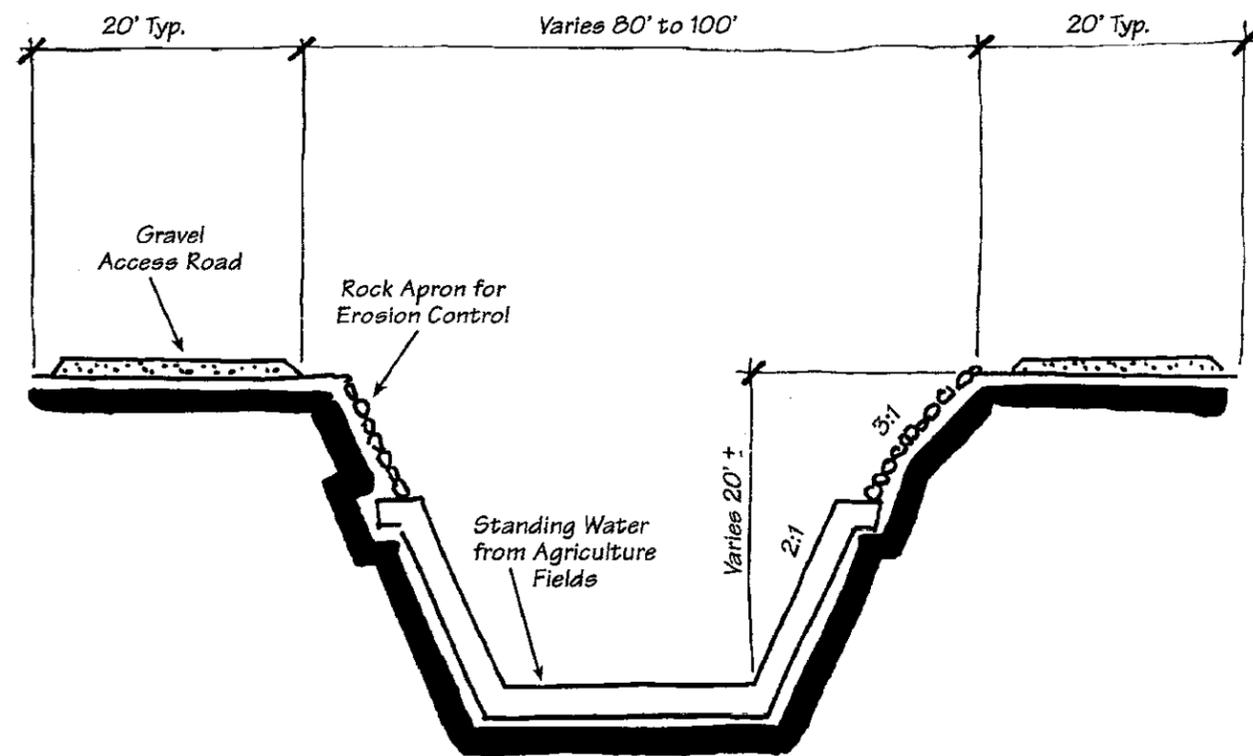
The retrofit treatment opportunity for the low-profile concrete channel is the potential to create a secondary community corridor with an agricultural heritage theme.

Zone Two – Golf Course Basin Area

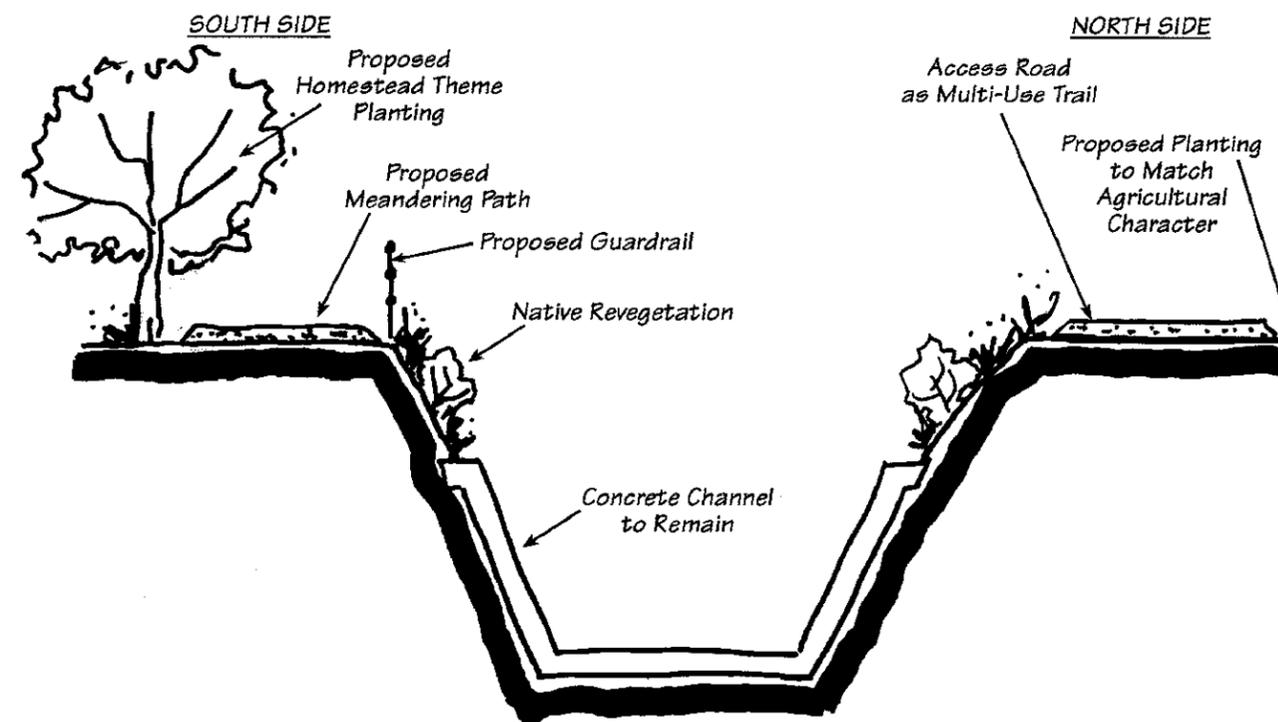
The primary opportunity for Dysart Drain is its location and capacity to provide a vital east-west trail connection. The good design example of the golf course, with its melding of aesthetics and function, should be applied to the remainder of the Dysart Drain.

Zone Three – Deep-Profile Concrete-Lined Channel

The most significant challenges to landscape and multi-use retrofit proposals for Dysart Drain are the depth of the main channel, the surrounding industrial facilities, and the lack of an available connection along Luke Air Force Base. The deep channel directs rapid and potentially dangerous water flows, which would require safety mitigation. For greater safety and visual buffer, the industrial sites need to be secured and screened. The channel adjacent to Luke Air Force Base is not Flood Control District property and is currently secured by the base. Because the LAFB channel does not have an adjacent access road, an alternative connection could be planned along the opposite side of the street. The development of public recreation and open space facilities in this area will require full conformance from the U.S. Air Force prior to District endorsement of such concepts.



Dysart Drain Section – Existing Conditions



Dysart Drain (Section A – Proposed Retrofit Improvements along Agricultural Area)

Landscape Aesthetic and Multi-Use Treatment Recommendations

The cross sections on this and the following page are illustrations of potential retrofit recommendations discussed within the text. The cross-sections also relate to the overall Dysart Drain Concept Plan on page 71.

The conceptual design for Dysart Drain incorporates aesthetic enhancements to integrate the existing structure with its surroundings, and introduces a multi-use trail to connect neighborhoods with a potential west valley trail system.

Zone One – Low-Profile Concrete Channel

The low-profile concrete channel by the golf course can be enhanced by added plantings along both sides to buffer the channel, and provide shade along the multi-use trail proposed for the existing access road.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

Tree Planting
Irrigation

Multi-Use Treatment Retrofit Opportunities

Soft Surface Trail
Trail Retention - Minor changes for existing maintenance road

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Two – Golf Course Basin Area

The golf course landscaping can be blended out to the road with planting enhancements, which can also provide shade for the potential trail corridors along Northern Avenue and Reems Road.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Berms for screening

Landscaping Treatment Retrofit Opportunities

Tree Planting
Irrigation

Multi-Use Treatment Retrofit Opportunities

Soft Surface Trail

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

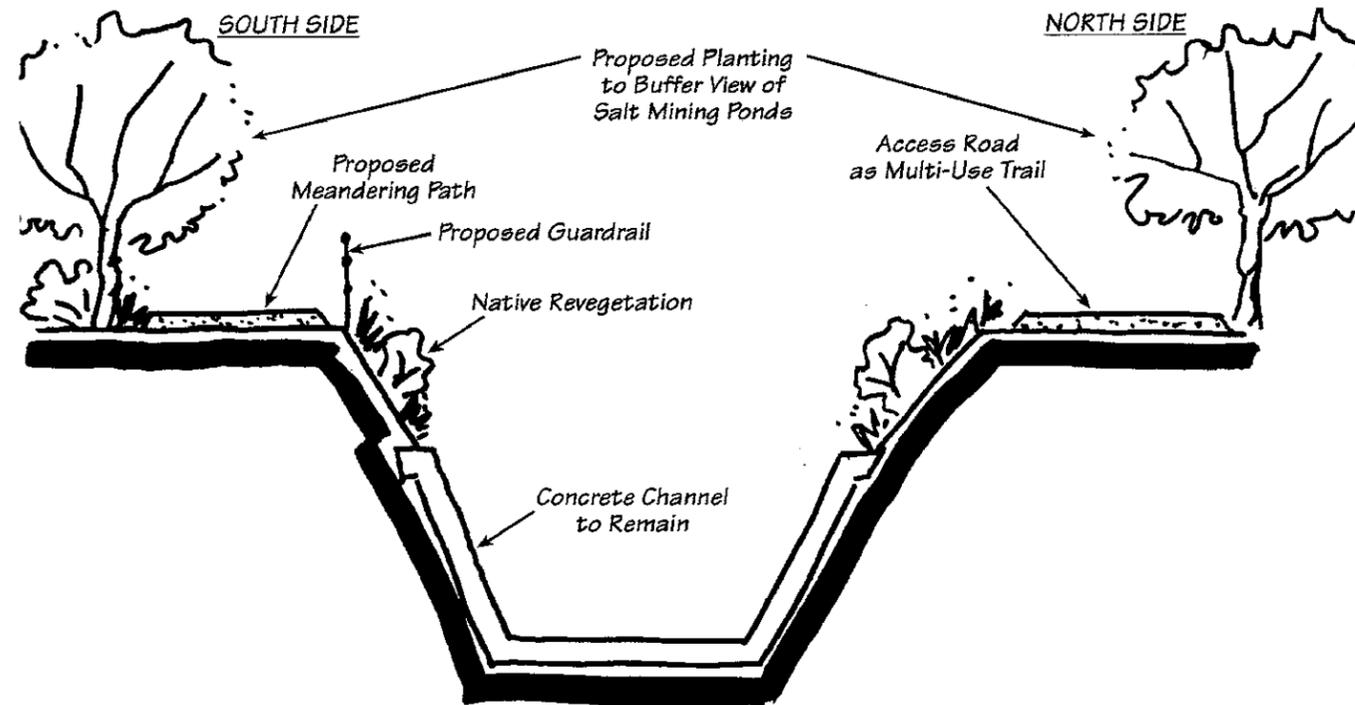
None identified.

Zone Three – Deep-Profile Concrete Channel

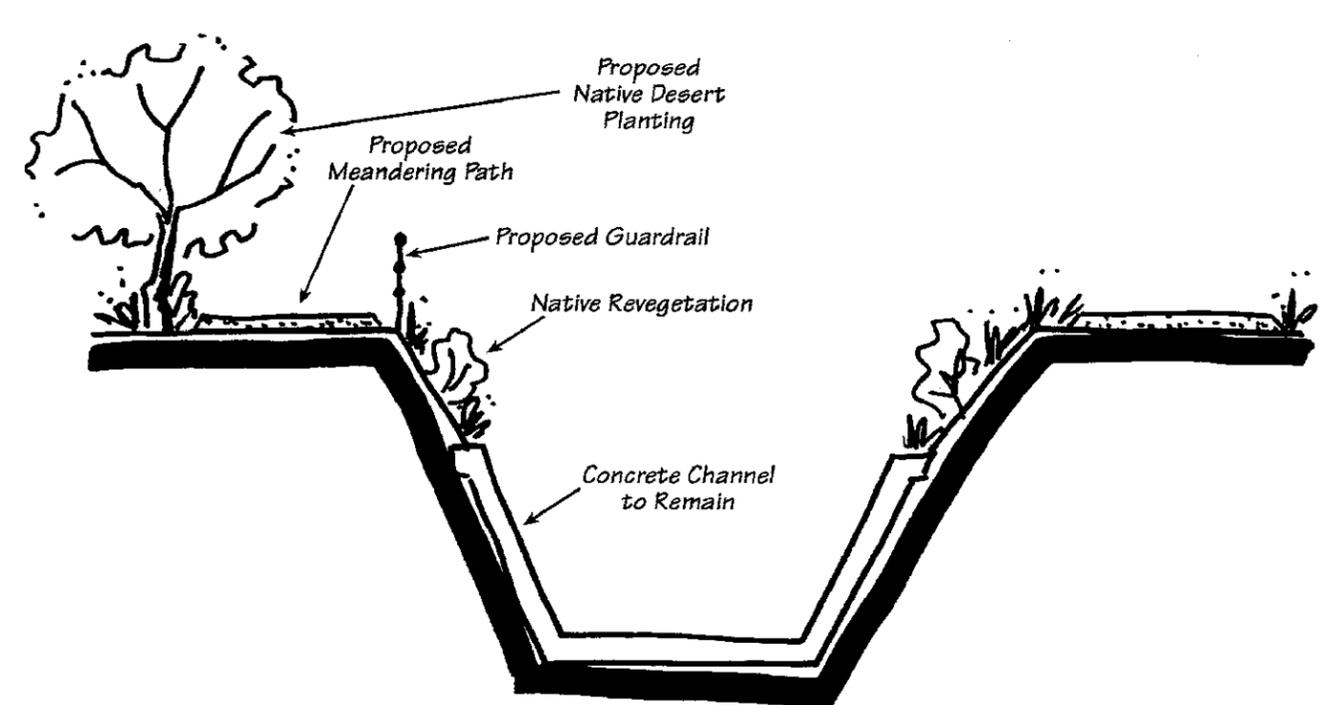
Landscape enhancements along the deep-profile channel can use different planting palettes and styles to match the surrounding character or to screen undesirable views. "Wind rows" of trees are proposed near the agricultural areas, dense planting screens are proposed near the industrial areas, and native desert plantings are proposed near existing open space. The embankment area above the channel can be planted to provide an aesthetic bank stabilization treatment, with a guardrail to mitigate the safety concerns.

Aesthetic Treatment Retrofit Opportunities

None identified.



Dysart Drain (Section B – Proposed Retrofit Improvements along Industrial Area)



Dysart Drain (Section C – Proposed Retrofit Improvements along Low Desert Area)

Landscaping Treatment Retrofit Opportunities

Tree Planting
Irrigation

Multi-Use Treatment Retrofit Opportunities

Soft Surface Trail
Trail Retention - Minor changes for existing maintenance road

Land Acquisition Opportunities for

Landscape Aesthetics and Multi-Use Treatments
Land Acquisition - To enlarge area for retrofit enhancements

Future retrofit improvements for Dysart Drain are projected as long-term because the structure has been recently installed. The cost to completely remove the deep-profile channel and replace with a greenway channel would be significant due to the land purchases, grade modifications, and planting enhancements required. Because the site is so narrow, moderate alteration of Dysart Drain by retaining the concrete channel and grading the banks wider would require additional land purchase.

Hydrologic Engineering Synopsis of Structure

(Source: Data On Structures, an unpublished Flood Control District Document)

Project Title: Dysart Road – Agua Fria Drain – Date of Final Acceptance: 1996

Watershed and Relationship to Other Structures: This structure was built to drain runoff from Luke AF Base.

Location: Located between Dysart Road and the Agua Fria River approximately 1/2 mile north of Glendale Avenue. Access is available at Dysart Road and El Mirage Road.

Authorization:

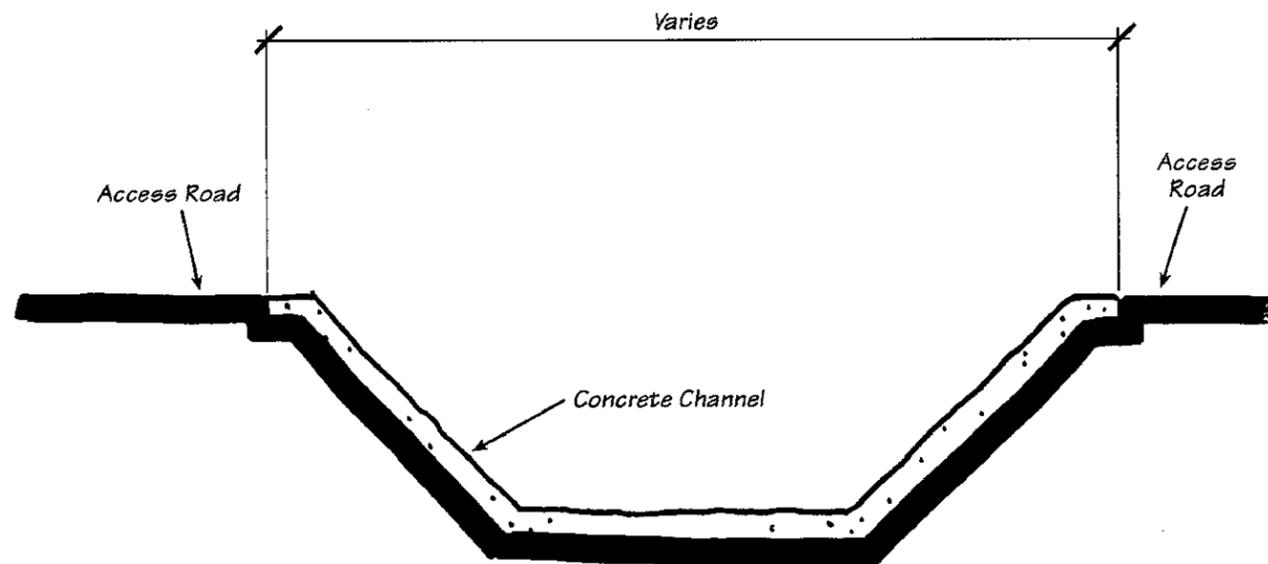
Federal Sponsor: Corps of Engineers

Local Sponsor:

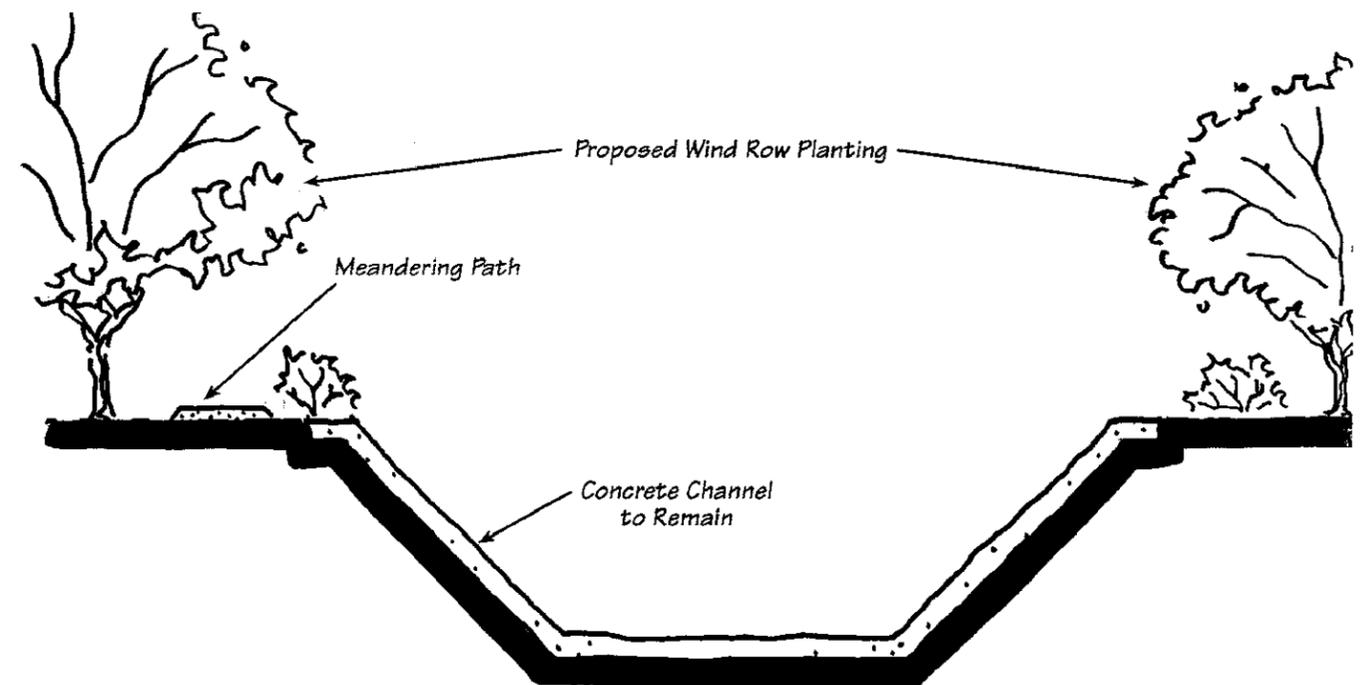
Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: It drains storm runoff from the Luke Air Force Base area and channels the water into the Agua Fria River.

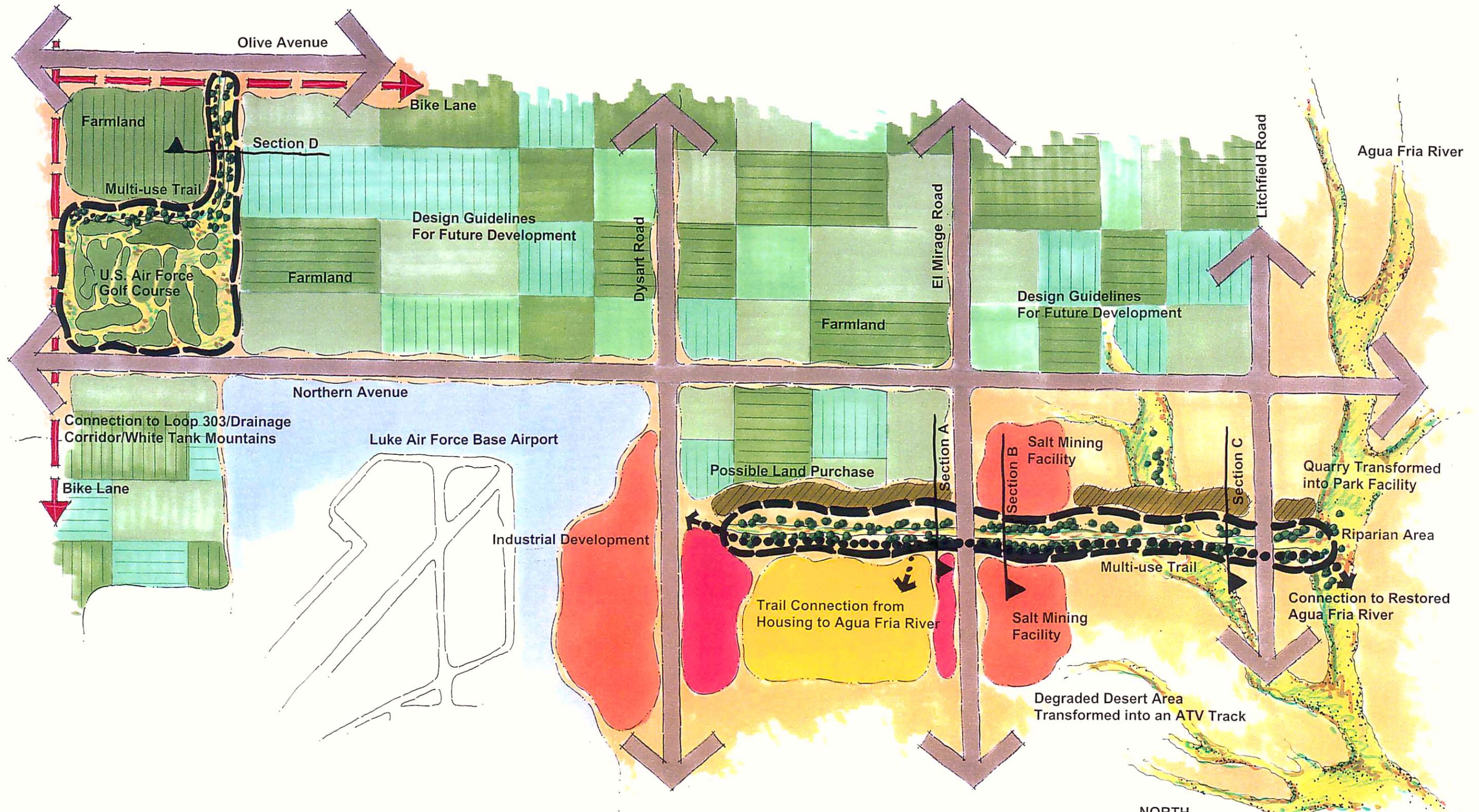
Project Features: Farm bridge approximately 1.4 mile east of Dysart Road. Access ramp 200' east of Farm Bridge. Concrete lined channel with a 10' bottom and approximately 1 1/4 miles long. Three separate 24' steel pipe crossings. Stilling basin at the outlet to the Agua Fria River.



Dysart Drain (Section D – Existing Conditions)



Dysart Drain (Section D – Proposed Retrofit Improvements)



DYSART DRAIN CONCEPT



Carter::Burgess
OCTOBER 2000

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 12. Dysart Drain		1 to 5	1 Non-Conforming Element
Zone 1 - Low-Profile Concrete-Lined Channel			4 Predominantly Conforming Element
			2 Slightly Conforming Element
			3 Moderately Conforming Element
			5 Fully Conforming Element
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Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1	The alignment of the structure meanders to vary from a straight line.	1	The alignment of the channel does not meander, the alignment is straight.
2	The profile or height of the structure varies to modify the outline.	1	The height or profile of the channel does not vary, the height is constant.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The sides slopes do not vary, the channel sides are a uniform 4 to 1 slope.
4	The structure is designed to blend into the contour of the natural terrain.	3	The earthwork blends into the surrounding natural terrain, which is relatively flat.
5	On-site screening with trees and shrubs are used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6	Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	1	The structure is concrete and there is no veneering with indigenous rock.
8	Disturbed areas are graded and replanted to match surrounding area.	2	Disturbed areas are graded but not replanted.
9	Plantings are used to provide erosion control and protect visual qualities.	1	There are no plantings are used to provide erosion control and protect visual qualities.
10	Plantings are used that will not cause an impedance to design function.	1	There are no aesthetic treatment plantings.
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The channel's sides are not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	3	This zone is moderately clean, but the area adjacent to the maint. roads has weeds.
Conformance Average		1.42	
<hr/>			
Existing Aesthetic Features			
13	There are riparian or river corridor features to preserve.	1	There are no riparian/ river corridor features to preserve.
14	There are landscape or natural features to preserve.	1	There are no landscape or natural features to preserve.
15	There are wildlife habitat areas to preserve.	1	There are no wildlife habitat areas to preserve.
16	There are undisturbed open space elements to preserve.	1	There are no open space elements to preserve.
17	There are scenic corridors to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure.	2	The channel offers distant views west to the White Tank Mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature.
20	The structure or area has revegetated.	1	The structure or area has not revegetated.
21	The existing plantings match the community character.	1	There are no existing plantings.
22	The structure's size and scale are proportional to its surroundings.	4	The channel scale is low-profile and is proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	1	There are no attendant facilities structures.
24	The adjacent properties positively impact the site.	4	The adjacent properties are positive, agricultural and a recreational golf course.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27	The structure does not have negative on-site visual problems.	1	The channel area is devoid of vegetation.
28	There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the site.	2	There is a maintenance road along each side of the channel.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	2	There is noise from the nearby air force base.
32	Additional landscape features are needed.	5	Landscaping is needed to provide a visual screen and shade.
33	There are opportunities for landscape enhancements.	5	Landscape could be added along each side of the channel.
Existing Aesthetic Features Average		2.19	
Conformance and Aesthetic Features Average		1.80	

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 12. Dysart Drain		1 to 5	
Zone 1 - Low-Profile Concrete-Lined Channel			1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
<hr/>			
Existing Multi-Use Features			
34	There are existing natural features beneficial for a greenway corridor.	1	The channel has no natural features.
35	There are existing multi-use features.	1	There are no multi-use features.
36	The area is currently accessible for multi-use.	1	This area currently is not accessible for multi-use.
37	Multi-use features could be added without impeding design function.	3	Multi-use features can be added along the sides without impeding the design function.
38	Multi-use features could be added without compromising public safety.	3	Features can be added after addressing the safety concerns of water flows.
39	There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance road, the channel area is narrow.
40	There are no physical constraints to accessing the site.	2	There are constraints to access, the connecting channel is fenced and on base property.
41	There are no constraints to multi-use due to site size.	2	There are constraints due to site size, the channel area is narrow.
42	There are no constraints to public multi-use due to structural hazards.	4	There are no constraints due to structural hazards.
43	There are no constraints to multi-use due to existing slopes.	4	There are no constraints due to existing slopes.
44	There are no constraints to multi-use construction due to earth mounds.	4	There are no earthwork or rip-rap mounds.
Existing Multi-Use Features Average		2.36	
<hr/>			
Future Multi-Use Features			
45	There are possible connections to open space.	5	There is undeveloped land by this zone and the channel ends by the Agua Fria River.
46	There is a possible connection to the Maricopa County Trail System.	4	This is not part of the County Trail System, but the Agua Fria is a north-south trail link.
47	There are possible connections to the local trail system.	5	Not part of the local trail system, but could be a link west to the White Tanks structures.
48	There are possible connections to residential neighborhoods.	4	There are no existing neighborhoods, but there are planned residential areas.
49	There are possible connections to recreation areas.	5	There is an adjacent golf course and there may be more rec. areas with future development.
50	There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development may provide some facilities.
51	There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52	There are opportunities for special use commercial areas.	1	There is no space to accommodate special uses.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional property that could be sold.
54	Adjacent land could be acquired to provide for enhancements/ buffering.	4	There is open land by the channel that can provide additional enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	4	Adjacent golf course - portion of greenway. Farm land - agricultural preservation area.
56	Adjacent land needs design guidelines for future development.	3	Guidelines for future development would create positive connections with a retrofitted site.
57	There are opportunities for large-scale regional park facilities.	1	There is no space to accommodate regional park facilities.
58	There are opportunities for small-scale local park facilities.	1	There is no space to accommodate local park facilities.
59	There are opportunities for riparian wash areas.	4	Riparian wash areas can be established by creating a meandering low-flow channel.
60	There are opportunities for recharge basins or ponding areas.	1	There is no space for recharge basins.
61	There are opportunities for multi-use trails.	4	Multi-use trails can be established along the channel.
62	There are opportunities for separated-use trails.	4	Separated-use trails can be established along each side of the channel.
Future Multi-Use Features Average		3.17	
Existing and Future Multi-Use Average		2.77	
Conformance, Aesthetic Features + Multi-Use Average		2.28	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 12. Dysart Drain		
Zone 2 - Golf Course Basin/ Channel		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	5	The alignment of the basin varies, the golf course has a meandering channel and basin.
2 The profile or height of the structure varies to modify the outline.	4	The height/ profile of the structure varies, the golf course has rolling hills and channels.
3 The side slopes of the structure are varied to simulate the natural terrain.	4	The sides slopes varies, the golf course has undulating hills and resembles natural terrain.
4 The structure is designed to blend into the contour of the natural terrain.	2	This zone's earthwork is rolling hills, which does not blend into the surrounding terrain.
5 On-site screening with trees and shrubs are used to blend the structure.	5	This zone has on-site screening from the existing plants.
6 Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7 There is veneering or plating of the structure with indigenous rock.	3	There is some veneering (concreted rip-rap) in the channels.
8 Disturbed areas are graded and replanted to match surrounding area.	4	The disturbed areas are graded and replanted, but do not match surrounding flat area.
9 Plantings are used to provide erosion control and protect visual qualities.	5	The existing plants provide erosion control and protect visual qualities.
10 Plantings are used that will not cause an impedance to design function.	5	The existing plants do not cause an impedance to design function.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	3	This zone is free of weeds and debris, but there is some along the edges of the site.
Conformance Average		3.50
Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	1	There are no riparian/ river corridor features to preserve.
14 There are landscape or natural features to preserve.	5	There are landscape enhancements, rolling hills, and channels to preserve.
15 There are wildlife habitat areas to preserve.	3	There are some wildlife habitats along the channel greenways.
16 There are undisturbed open space elements to preserve.	1	There are no undisturbed open space elements to preserve.
17 There are scenic corridors to preserve.	3	This zone provides a scenic corridor to preserve.
18 There are panoramic views from the structure.	3	The golf course offers distant views west to the White Tank Mountains.
19 There is a meandering low-flow feature modeled on riparian washes.	3	There is an meandering channel greenway, but it not like a riparian washes.
20 The structure or area has revegetated.	4	This area has been revegetated.
21 The existing plantings match the community character.	2	The existing grass and desert vegetation do not match the agricultural character.
22 The structure's size and scale are proportional to its surroundings.	3	The structure's size and scale are moderately out of proportion to its surroundings.
23 The attendant flood control facilities structures blend into surroundings.	1	There is one structure at the southwest corner and Northern Ave that it is not screened.
24 The adjacent properties positively impact the site.	4	Mostly positive properties - agricultural and institutional (Air Force Base).
25 There is existing on-site irrigation.	5	There is existing on-site irrigation.
26 There are water recharge and stormwater retention areas.	4	There are water recharge and stormwater retention areas.
27 The structure does not have negative on-site visual problems.	3	This zone has few visual problems, except for the barren perimeter area.
28 There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29 There are not multiple maintenance roads within the site.	3	There are golf cart paths within the site.
30 There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31 There are no noise impacts that need buffering.	2	There is some noise from Reems Road, Northern Avenue and the Air Force Base.
32 Additional landscape features are needed.	5	Additional landscaping is needed for the perimeter area of the golf course.
33 There are opportunities for landscape enhancements.	5	There is ample space in the perimeter area for landscape enhancements.
Existing Aesthetic Features Average		3.33
Conformance and Aesthetic Features Average		3.42

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
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Structure - 12. Dysart Drain Zone 2 - Golf Course Basin/ Channel	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
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<i>Existing Multi-Use Features</i>		
34 There are existing natural features beneficial for a greenway corridor.	5	There are landscape and channels beneficial for a visual greenway corridor.
35 There are existing multi-use features.	4	There are existing multi-use features, it is a golf course.
36 The area is currently accessible for multi-use.	3	This zone currently is accessible for multi-use, but is limited to paying golfers.
37 Multi-use features could be added without impeding design function.	5	Multi-use features can be added without impeding design function to the perimeter.
38 Multi-use features could be added without compromising public safety.	5	Multi-use features can be added safely to the perimeter of the golf course.
39 There is space to meander the maintenance road(s).	1	There are meandering golf cart paths within the site.
40 There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.
41 There are no constraints to multi-use due to site size.	3	There are constraints to multi-use because the perimeter is the only public access area.
42 There are no constraints to public multi-use due to structural hazards.	5	There are no constraints due to structural hazards.
43 There are no constraints to multi-use due to existing slopes.	5	There are no constraints due to existing slopes.
44 There are no constraints to multi-use construction due to earth mounds.	5	There are no constraints due to earthwork mounds or rip-rap.
<hr/> Existing Multi-Use Features Average		4.18
<hr/>		
<i>Future Multi-Use Features</i>		
45 There are possible connections to open space.	5	There is undeveloped land by this zone and the channel ends by the Agua Fria River.
46 There is a possible connection to the Maricopa County Trail System.	4	This is not part of the County Trail System, but the Agua Fria is a north-south trail link.
47 There are possible connections to the local trail system.	5	Not part of the local trail system, but could be a link west to the White Tanks structures.
48 There are possible connections to residential neighborhoods.	3	There are no existing neighborhoods, but there are planned residential areas.
49 There are possible connections to recreation areas.	3	There are no other recreational areas, but there may be some with future development.
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development may provide facilities.
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52 There are opportunities for special use commercial areas.	1	There is no space to accommodate special use commercial areas.
53 Site property could be sold to allow for special use commercial areas.	1	There is no additional property that could be sold.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	4	There is open land around this zone that could provide more enhancements and buffering.
55 Adjacent land has natural features beneficial for a greenway corridor.	4	There are adjacent farm land areas that could be an agricultural preservation area.
56 Adjacent land needs design guidelines for future development.	3	Guidelines for future development would create positive connections w/ a retrofitted site.
57 There are opportunities for large-scale regional park facilities.	1	There is no space to accommodate regional park facilities.
58 There are opportunities for small-scale local park facilities.	1	There is no space to accommodate local park facilities.
59 There are opportunities for riparian wash areas.	4	The existing channels could be enhanced with a low-flow channel with plantings.
60 There are opportunities for recharge basins or ponding areas.	3	There are existing small recharge basins that could be enlarged or modified.
61 There are opportunities for multi-use trails.	4	Multi-use trails could be established in the perimeter area.
62 There are opportunities for separated-use trails.	4	Separated-use trails could be established in the perimeter area.
<hr/> Future Multi-Use Features Average		3.11
<hr/> Existing and Future Multi-Use Average		3.65
<hr/> Conformance, Aesthetic Features + Multi-Use Average		3.53

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 12. Dysart Drain		
Zone 3 - Deep Profile Concrete-Lined Channel		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	1	The alignment of the channel does not meander, the alignment is straight.
2 The profile or height of the structure varies to modify the outline.	1	The height or profile of the channel does not vary, the height is constant.
3 The side slopes of the structure are varied to simulate the natural terrain.	1	The sides slopes do not vary, the channel sides are a uniform 4 to 1 slope.
4 The structure is designed to blend into the contour of the natural terrain.	3	The earthwork blends into the surrounding natural terrain, which is relatively flat.
5 On-site screening with trees and shrubs are used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6 Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7 There is veneering or plating of the structure with indigenous rock.	1	The structure is concrete and there is some veneering above the channel.
8 Disturbed areas are graded and replanted to match surrounding area.	2	Disturbed areas are graded but not replanted.
9 Plantings are used to provide erosion control and protect visual qualities.	1	There are no plantings are used to provide erosion control + protect visual qualities.
10 Plantings are used that will not cause an impedence to design function.	1	There are no aesthetic treatment plantings.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The channel's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	3	This zone is moderately clean, but the area adjacent to the maint. roads has weeds.
Conformance Average		1.42
Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	1	There are no riparian/ river corridor features to preserve.
14 There are landscape or natural features to preserve.	1	There are no landscape or natural features to preserve.
15 There are wildlife habitat areas to preserve.	1	There are no wildlife habitat areas to preserve.
16 There are undisturbed open space elements to preserve.	1	There are no open space elements to preserve.
17 There are scenic corridors to preserve.	1	There are no scenic corridors to preserve.
18 There are panoramic views from the structure.	2	The channel offers distant views west to the White Tank Mountains.
19 There is a meandering low-flow feature modeled on riparian washes.	1	There is no low-flow meandering feature.
20 The structure or area has revegetated.	1	The structure or area has not revegetated.
21 The existing plantings match the community character.	1	There are no existing plantings.
22 The structure's size and scale are proportional to its surroundings.	1	The channel scale is not proportional to its surroundings, it is a deep-profile structure.
23 The attendant flood control facilities structures blend into surroundings.	1	There are no attendant facilities structures.
24 The adjacent properties positively impact the site.	2	Some properties are positive-open space, agric, residential. Some neg. commercial prop
25 There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26 There are water recharge and stormwater retention areas.	1	There are no retention/ recharge areas.
27 The structure does not have negative on-site visual problems.	1	The channel is has a deep-profile and the area is devoid of vegetation.
28 There are no overhead electrical lines and utility towers.	2	There are some small overhead electrical lines.
29 There are not multiple maintenance roads within the site.	2	There is a maintenance road along each side of the channel.
30 There are no intersecting arterial streets.	2	The channel is intersected by Dysart and El Mirage Roads.
31 There are no noise impacts that need buffering.	2	There is noise from the nearby air force base.
32 Additional landscape features are needed.	5	Landscaping is needed to provide visual screening and shade.
33 There are opportunities for landscape enhancements.	5	Landscaping can be added along each side of the channel.
Existing Aesthetic Features Average		1.67
Conformance and Aesthetic Features Average		1.54

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 12. Dysart Drain		
Zone 3 - Deep Profile Concrete-Lined Channel		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Existing Multi-Use Features		
34 There are existing natural features beneficial for a greenway corridor.	1	The channel has no natural features.
35 There are existing multi-use features.	1	There are no existing multi-use features.
36 The area is currently accessible for multi-use.	1	This area is currently not accessible for multi-use.
37 Multi-use features could be added without impeding design function.	3	Multi-use features can be added along the sides without impeding the design function.
38 Multi-use features could be added without compromising public safety.	3	After addressing the safety concerns of the deep-profile channel and water flows.
39 There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance road, the channel area is narrow.
40 There are no physical constraints to accessing the site.	1	There are constraints to access, the connecting channel is fenced + on base property.
41 There are no constraints to multi-use due to site size.	2	There are constraints due to site size, the channel area is narrow.
42 There are no constraints to public multi-use due to structural hazards.	2	There are constraints due to structural hazards because the channel is deep-profile.
43 There are no constraints to multi-use due to existing slopes.	1	There are constraints because the existing side slopes of the channel are steep.
44 There are no constraints to multi-use construction due to earth mounds.	4	There are no earthwork or rip-rap mounds.
Existing Multi-Use Features Average		1.82
Future Multi-Use Features		
45 There are possible connections to open space.	5	There is undeveloped land by this zone and the channel ends by the Agua Fria River.
46 There is a possible connection to the Maricopa County Trail System.	4	This is not part of the County Trail System, but the Agua Fria is a north-south trail link.
47 There are possible connections to the local trail system.	5	Not part of the local trail system, but could be a link west to the White Tanks structures.
48 There are possible connections to residential neighborhoods.	5	There is an existing neighborhood, and there are planned residential areas.
49 There are possible connections to recreation areas.	5	There is existing park by the base housing and future development may provide more.
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development may provide some facilities.
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52 There are opportunities for special use commercial areas.	1	There is no space to accommodate special uses.
53 Site property could be sold to allow for special use commercial areas.	1	There is no additional property that could be sold.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	4	There is adjacent open land that could provide additional enhancements/ buffering.
55 Adjacent land has natural features beneficial for a greenway corridor.	4	There are adjacent riparian washes + agricultural areas that can be part of a greenway.
56 Adjacent land needs design guidelines for future development.	3	Design guidelines for development would create positive links with a retrofitted site.
57 There are opportunities for large-scale regional park facilities.	1	There is no space to accommodate regional park facilities.
58 There are opportunities for small-scale local park facilities.	1	There is no space to accommodate local park facilities.
59 There are opportunities for riparian wash areas.	4	Riparian wash areas can be established by creating a meandering low-flow channel.
60 There are opportunities for recharge basins or ponding areas.	1	There are no opportunities for recharge basins, the zone is too small.
61 There are opportunities for multi-use trails.	4	Multi-use trails could be established along the channel.
62 There are opportunities for separated-use trails.	4	Separated-use trails could be established along each side the channel.
Future Multi-Use Features Average		3.22
Existing and Future Multi-Use Average		2.52
Conformance, Aesthetic Features + Multi-Use Average		2.03

Holly Acres Levee & Bank Stabilization

Facility Location and Description

Holly Acres Levee and Bank Stabilization is located about one-half mile south of Southern Avenue, extending from El Mirage Road to just east of 115th Avenue. Holly Acres is adjacent to the Gila River, northeast of the confluence of the Salt and Gila Rivers and two miles east of the confluence of the Agua Fria and Gila Rivers..

The Holly Acres facility is comprised of levees, groins, riprap and gabions that will prevent further erosion of the riverbank and the resultant loss of land and improvements. The immediate benefit of this facility is to protect the Holly Acres subdivision.

Potential Significance to Provide Regional, Community or Local Open Space Amenities

Holly Acres offers an opportunity to connect the Maricopa County Regional Trail System and local city trail networks. Please refer to the Holly Acres Potential Corridor Location Map on page 79.

The Agua Fria is a designated West Valley Recreation Corridor that runs north to south from the Central Arizona Project Canal to the Gila River. The Gila River is a designated portion of the Maricopa County Regional Trail System, connecting east to west from the Western Canal to the Hassayampa River.

Holly Acres is located near the Tres Rios project, the Agua Fria, and the El Rio Vision project. This location offers an excellent opportunity to coordinate with other watercourse master planning projects. The Tres Rios is a Corps of Engineers project sponsored by the City of Phoenix to restore the riparian habitat of the area by the confluences of the Salt, Agua Fria and Gila Rivers. The Agua Fria is the major river course within the West Valley Recreation Corridor Master Plan, which is identifying potential riparian enhancements and recreational open space opportunities. The El Rio Vision master plan goals are to maintain and restore the river corridor functions as a riparian habitat, add multi-use facilities and functions, maintain or enhance flood control elements, utilize public/private partnerships, and create links to surrounding communities.

Aesthetic Treatment and Landscaping Policy Conformance

Holly Acres Levee and Bank Stabilization is separated into structure zones with different flood control elements or distinctive aesthetic qualities. Please refer to the Site Map on page 80 for the structure zones, zone descriptions, city boundaries, and arterial street. Please refer to the Site Evaluation Criteria ratings and relevant comments on pages 87 to 90.

Zone One - Levee Structure

The levee structure conforms to aesthetic policy for the following reasons:

- The structure varies in alignment, profile, and slope.
- The bank structures earthwork blends with the surrounding natural terrain.
- The structure is veneered with river rock.
- The structure is free of weeds and debris.



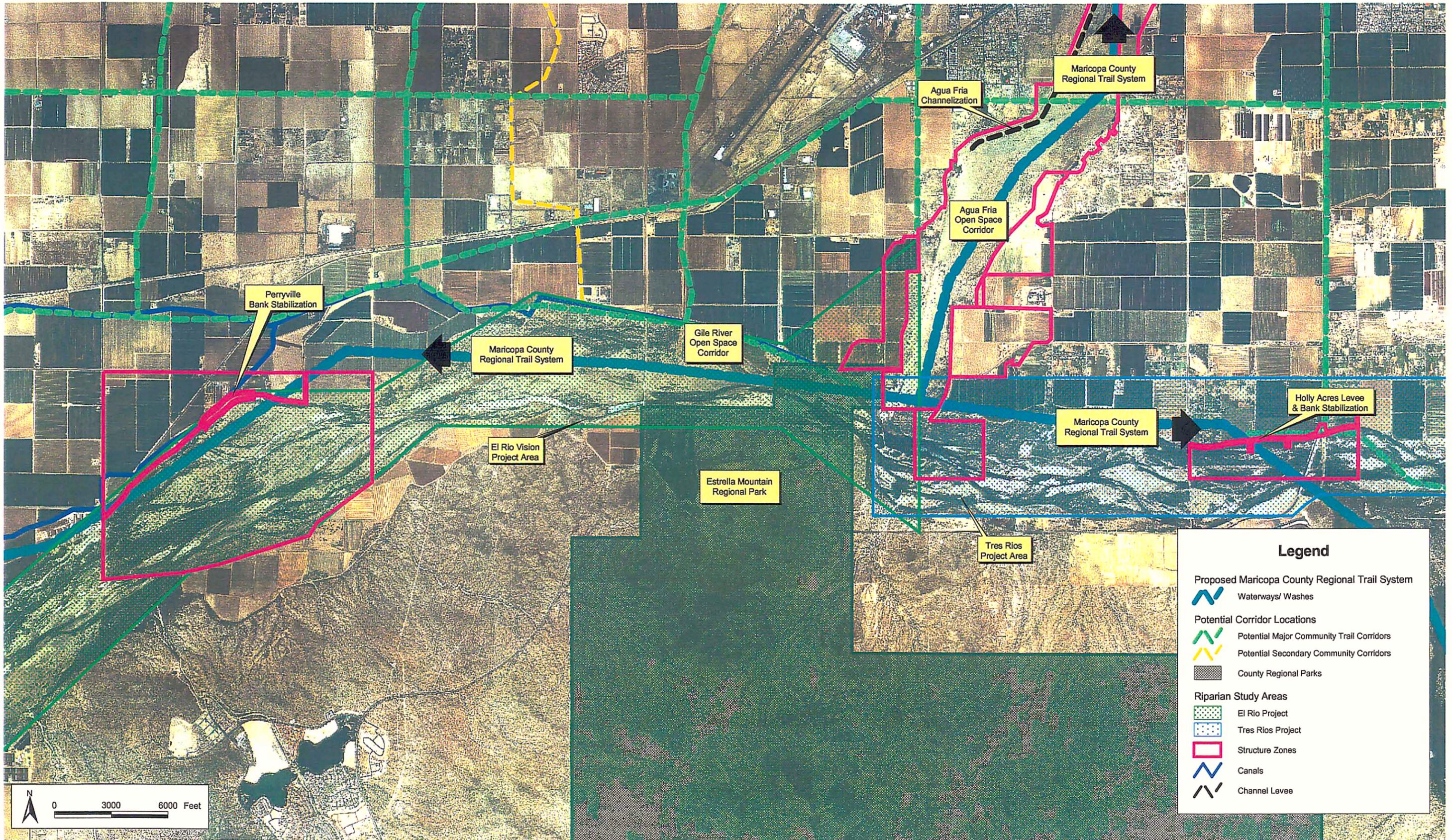
Levee Structure, River Rock Veneering



Gila River Riparian Area – East View

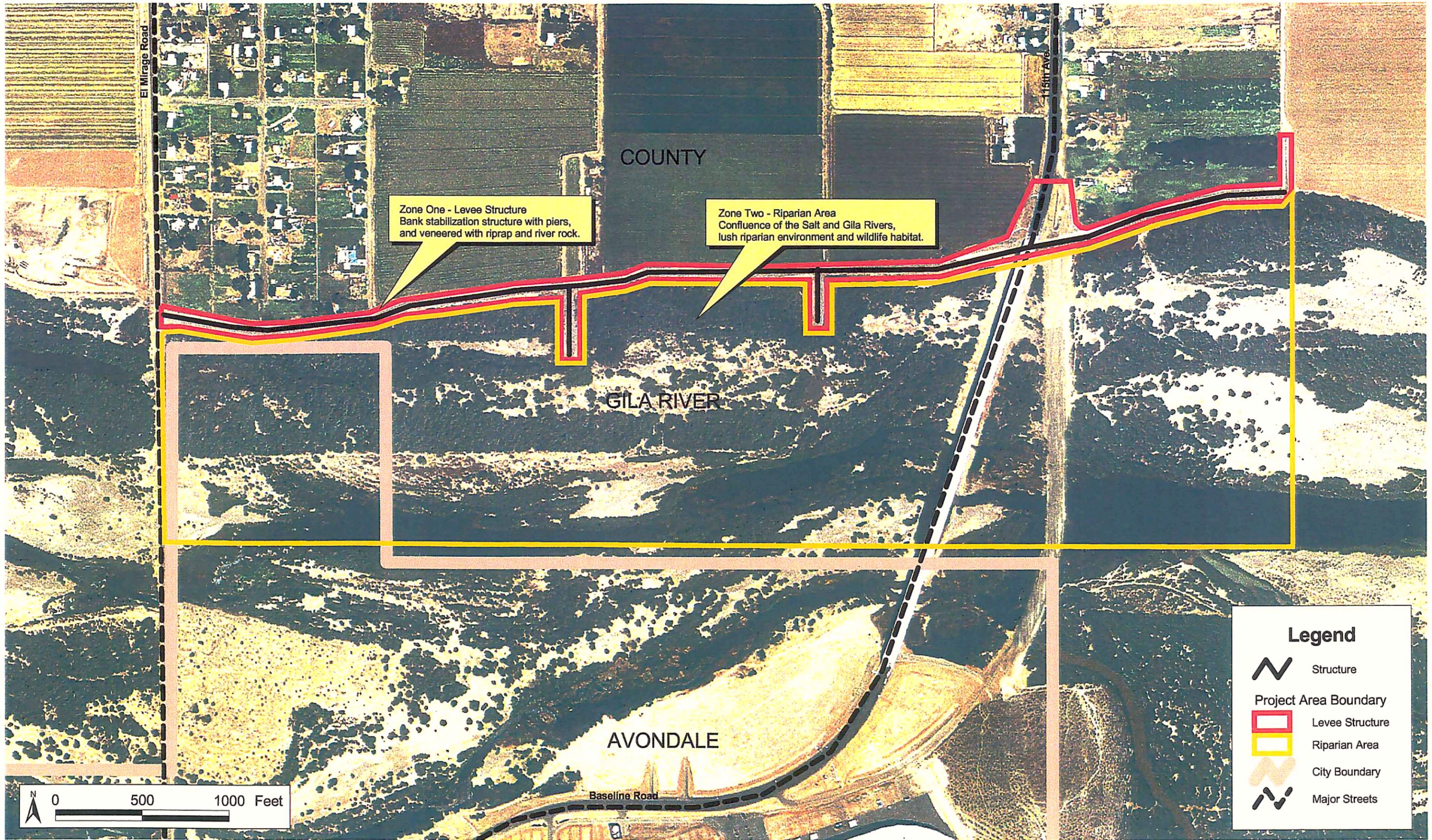


Levee Structure – North Side



Holly Acres Levee & Bank Stabilization

Potential Corridor Connections Map



Holly Acres Levee & Bank Stabilization

Site Map

The levee structure does not conform to policy for the following reasons:

- No planting or earthwork is used to blend the bank structure.
- Disturbed areas are not graded or replanted to match the surrounding area.
- There are no screening techniques to make the structure more compatible with the environment, such as the placement of earth mounds or the use of trees and shrubs.
- No plantings are used to provide erosion control and protect visual qualities.

Zone Three - Riparian Area

The riparian area is the Gila River, located south of the bank structure.

The riparian area conforms to aesthetic policy for the following reasons:

- The riparian area varies in alignment, height, and slope.
- The earthwork blends into the surrounding natural terrain.
- The existing plants provide erosion control, protect visual qualities and do not cause an impediment to the designed function.
- The riparian area exists in a natural and mostly unaltered condition.
- Natural biological and riparian processes are allowed to take place.

Surrounding Site Character

The surrounding site character for Holly Acres Levee is identified on the Site Analysis - Existing Features/Surrounding Land Uses Map; please refer to page 82. The existing features identified are the structure zones, major streets, drainage flows, canals, and negative site impacts. The surrounding site character is described and the identified land uses are agricultural, residential, commercial, industrial, and institutional.

Zone One - Levee Structure

The surrounding character north of the Holly Acres levee is primarily agricultural and low-density/rural residential neighborhoods. South of the levee is the Gila River channel, a natural riparian environment.

Zone Two - Riparian Area

The Phoenix International Raceway is located one-half mile south and on the opposite Gila riverbank from the Holly Acres levee. During race events all streets and parking lots leading to the raceway overflow with traffic. The parking lots are large spaces devoid of any shade or vegetation. Estrella Mountain Regional Park is one mile south of the levee and Gila Indian Community is southeast of this site.

Site Impressions

Zone One - Levee Structure

The levee structure is a uniform facility which is very visible due to the embankment of large, darkly colored riprap and is not blended into the surrounding agricultural landscape.

Zone Two - Riparian Area

The Holly Acres levee is very visible from the adjacent agricultural fields because of the lack of vegetation to screen or blend the structure and the dark-colored rip-rap used. The levee is much higher on the south side of the structure than the other side, which slopes down towards the Gila River. The high side of the levee is veneered with large river rock, which isn't visible because of significant screening provided by dense riparian vegetation along the river channel. At two points along the levee are jetty or pier structures that extend into the river channel. The jetties offer views down to the Gila River channel and through a clearing to the nearby mountains.

The Gila River riparian area, with its running streams, small lakes, thickly grown riparian vegetation, and population of numerous species of wildlife, is the gem of the site. The environment provides a glimpse back in time when the Gila River flowed more freely.



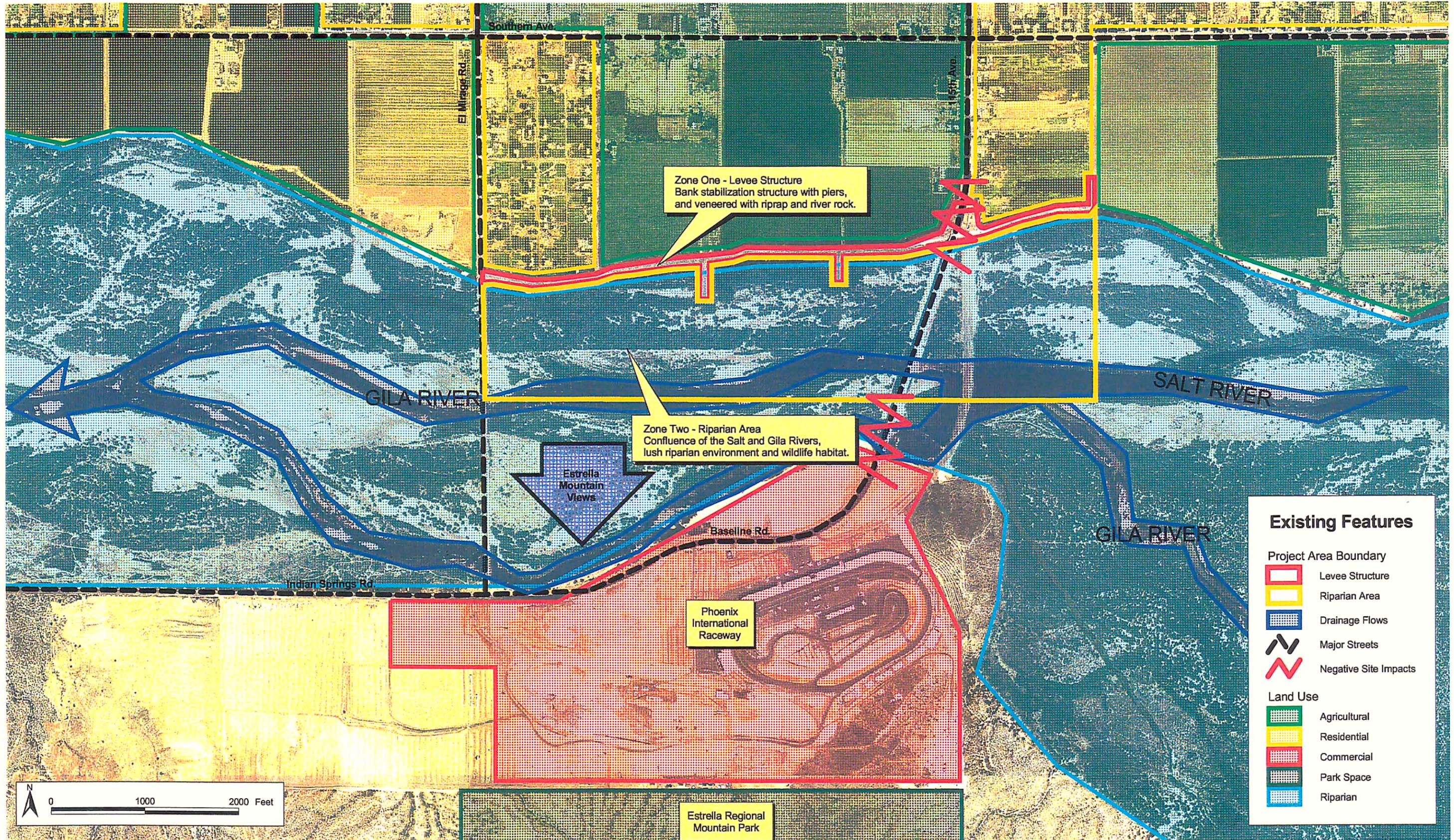
Levee Pier Structure – View to Gila River and Estrella Mountains



Gila River Riparian Area – West View



Levee Structure and Agricultural Area – West View



Opportunities and Constraints for Retrofit Treatments

Zone One - Levee Structure

The most significant opportunity at Holly Acres is the development of an essential link in the County trail system that connects three planned projects for the area: the Tres Rios and El Rio Vision Projects, the West Valley Recreation Corridor, and the Flood Control District projects. These projects will become models for future developments that integrate regional trail systems, provide riverside access, and restore riparian areas. The levee structure, because of its height and proximity to the river channel, offers an excellent opportunity to appreciate the mountain views and observe the riparian environment and wildlife habitat.

Zone Two - Riparian Area

The perceived constraints at Holly Acres are the existing water quality and damage to the riparian area from vehicular access. The water in the area consists of river water, runoff, and water from the 95th Avenue Water Treatment facility. The water is suitable for only limited recreational uses. Additionally, repairs are needed for areas of the river that have been damaged by public misuse.

Landscape Aesthetic and Multi-Use Treatment Recommendations

The cross-sections on this and the following page are illustrations of potential retrofit recommendations that are discussed within the text. The cross-sections also relate to the overall Holly Acres Concept plan on page 85.

The potential retrofit recommendations for Holly Acres include establishing a trail with trailhead facilities, screening the levee structure, and developing a riparian education center.

Zone One - Levee Structure

Aesthetic improvements include establishing an orchard-themed landscape buffer along the north side of the levee to screen the structure and to blend it with the surrounding agricultural use. The introduction of plantings and a variety of boulders are proposed to soften the uniform surface of the structure and visually enhance the levee.

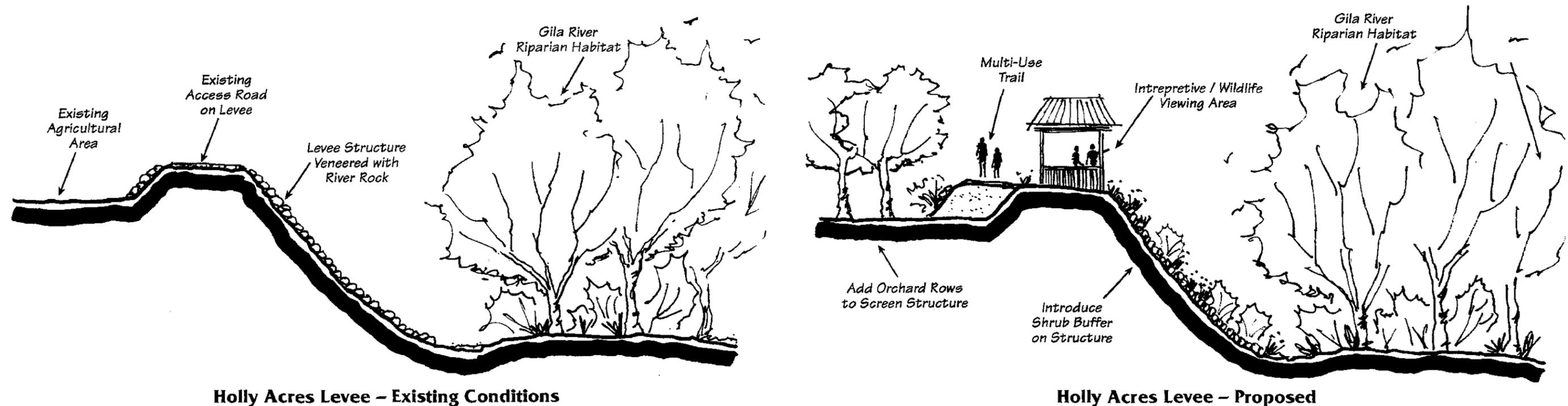
The Holly Acres levee is a key segment of the Gila River trail system, and well situated to function as a trailhead location. Viewing areas could be placed along the levee and at ends of piers to provide interpretive nodes with views to the riparian areas below. The Gila River provides an excellent opportunity to establish community recreation facilities such as a riparian education center. The center could be located on purchased land adjacent to the levee structure.

Aesthetic Treatment Retrofit Opportunities
None identified.

Landscaping Treatment Retrofit Opportunities
Tree Planting
Irrigation

Multi-Use Treatment Retrofit Opportunities
Soft Surface Trail
Trail Improvements - Meander existing maintenance road
Levee Extension - Construct trail access by street crossing
Safety Railing - Along structure
Gateway Features - At trail connection nodes
Trailhead Facilities
Interpretive Center
Wildlife Viewing Facilities

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments
Land Acquisition - To enlarge area for retrofit enhancements



Zone Two - Riparian Area

Additional interpretive nodes, wildlife-viewing structures, and recreational areas would be placed at key locations along the river channel with connections to the trail network.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

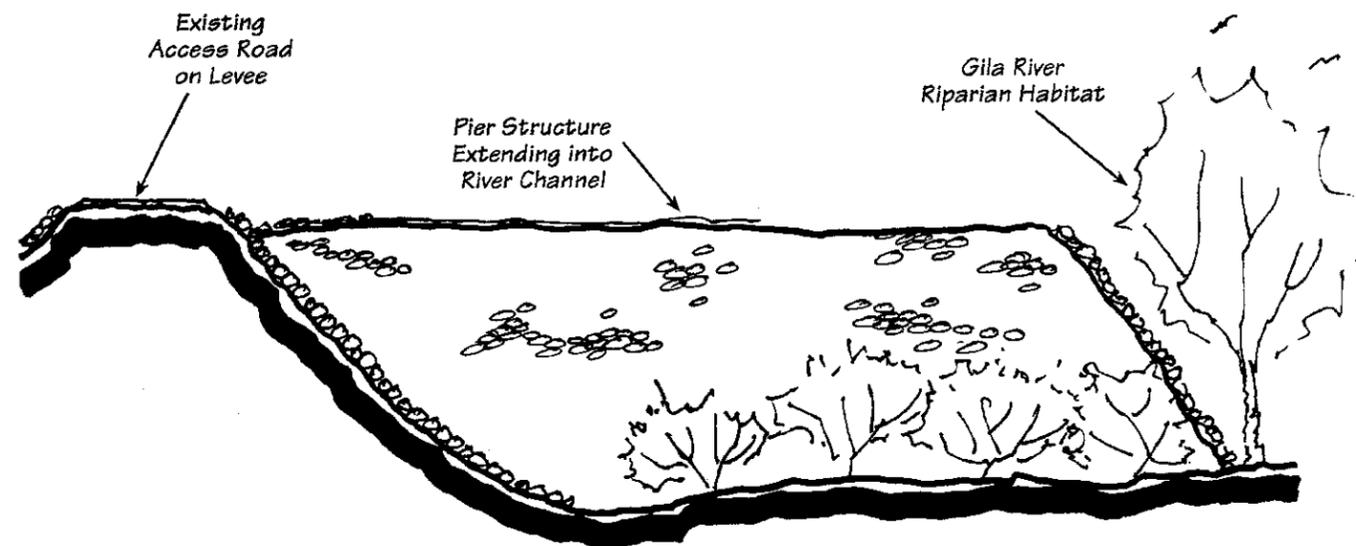
Revegetation - Seeding disturbed areas

Multi-Use Treatment Retrofit Opportunities

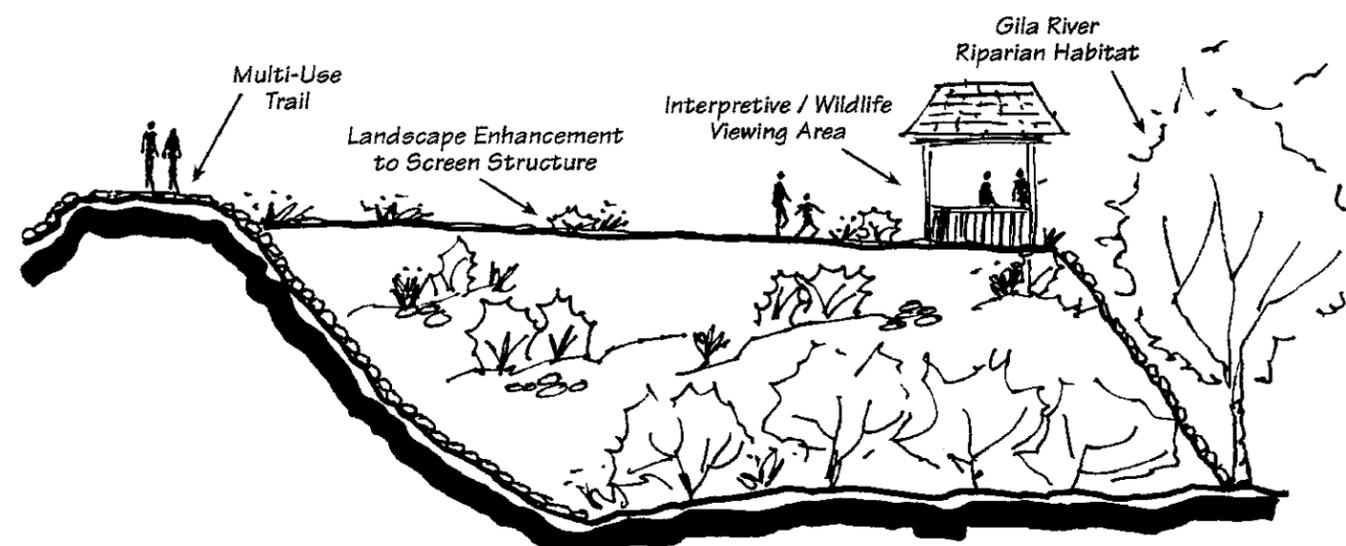
Soft Surface Trail
Wildlife Viewing Facilities

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

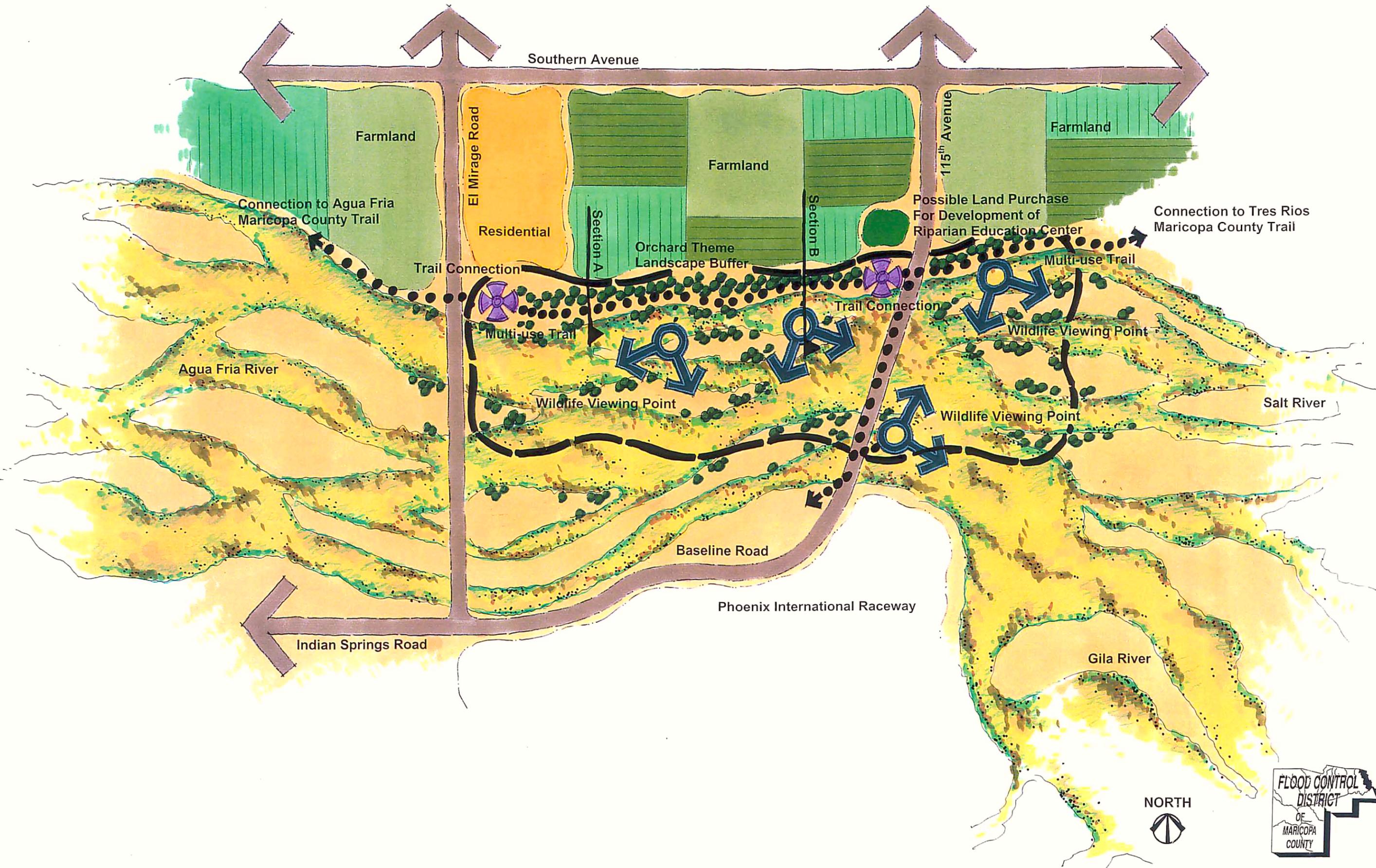
None identified.



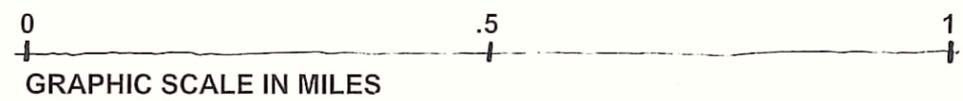
Holly Acres Levee - Existing Conditions



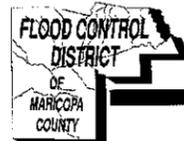
Holly Acres Levee - Proposed



HOLLY ACRES LEVEE CONCEPT



Carter-Burgess
OCTOBER 2000



Hydrologic Engineering Synopsis of Structure

(Source: Data On Structures, an unpublished Flood Control District Document)

Project Title: Bank Stabilization, Holly Acres Area

Watershed and Relationship to Other Structures: Salt-Gila Watershed for all areas upstream of this project.

Location: Located on the north bank of the Gila River between 113th Avenue and El Mirage Road. Access available at 115th Avenue, 121st Avenue and El Mirage Road.

Authorization: Board of Directors, Flood Control District of Maricopa County State of Arizona, HB 2457 34th Legislature Appropriation SB 1163

Federal Sponsor: None

Local Sponsor: Flood Control District of Maricopa County
Arizona Department of Water Resources

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: Levees, groins, rip-rap and gabions will prevent further erosion of the riverbank and the resultant loss of land and improvements. The immediate benefit in this case will be to protect the Holly Acres subdivision.

Project Features:

Length of projects	6,600 feet
Rip Rap	60,000 square yards
Gabions	18,500 square yards
Groins	700 feet

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations	
<hr/>			
Structure - 18. Holly Acres Levee and Bank Stabilization		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
<hr/>			
<i>Conformance to 1992 Policy for Aesthetic Treatment and Landscaping</i>			
1		3	The alignment of the bank structure is slightly curved to follow the river bank.
2		1	The height or profile of the levee structure is constant and does not vary.
3		1	The sides slopes of the levee are a uniform 3 to 1 slope.
4		3	The structure's earthwork partially blends into the surrounding natural terrain.
5		1	There is no on-site screening with trees and shrubs.
6		2	There is existing screening in the riparian area, but no screening along the river bank.
7		3	The levee is veneered with large rip-rap on the north side and river rock on the south side.
8		1	Disturbed areas are graded but not replanted.
9		1	There are no plantings for erosion control or to protect visual qualities.
10		1	There are no aesthetic treatment plantings.
11		1	The levee structure's sides are not furrowed.
12		4	The levee structure is free of weeds and debris.
 <i>Conformance Average</i>		 <i>1.83</i>	
<hr/>			
<i>Existing Aesthetic Features</i>			
13		1	This zone has no riparian/ river corridor features to preserve.
14		1	This zone has no landscape or natural features to preserve.
15		1	This zone has no wildlife habitat areas to preserve.
16		1	This zone has no open space elements to preserve.
17		1	This zone has no scenic corridors to preserve.
18		5	There are panoramic views south to the Gila River and the Estrella Mountains.
19		1	This zone has no meandering low-flow features.
20		2	The structure has partially revegetated.
21		3	The existing plantings do match the community character.
22		2	The levee's size and scale are partially out of proportion to its surroundings.
23		5	There are no attendant flood control facilities.
24		3	Some positive properties -riparian, agricultural +rural. Some negative rural + commercial.
25		1	There is no existing on-site irrigation.
26		1	There are no recharge or retention areas.
27		2	The levee structure has no screening and the rip-rap size and color are out of scale.
28		5	There are no overhead electrical lines and utility towers.
29		3	There is one maintenance road on top of the levee structure.
30		2	The levee is intersected by the 115th Ave. bridge.
31		2	There is occasional noise from the 115th Ave. bridge and nearby racetrack.
32		5	Additional landscaping is needed to screen the levee structure.
33		5	There is space along the north side of the levee for landscape enhancements.
 <i>Existing Aesthetic Features Average</i>		 <i>2.48</i>	
 <i>Conformance and Aesthetic Features Average</i>		 <i>2.15</i>	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 18. Holly Acres Levee and Bank Stabilization		
Zone 1 - Levee Structure		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Existing Multi-Use Features		
34 There are existing natural features beneficial for a greenway corridor.	1	This zone has no natural features.
35 There are existing multi-use features.	1	This zone currently has no existing multi-use features.
36 The area is currently accessible for multi-use.	1	This zone currently is not accessible for multi-use.
37 Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.
38 Multi-use features could be added without compromising public safety.	3	Multi-use features could be added after addressing side-slope safety concerns.
39 There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance road.
40 There are no physical constraints to accessing the site.	3	There are some constraints, the 115th Ave. bridge blocks access across the levee.
41 There are no constraints to multi-use due to site size.	3	The levee and piers structures are narrow, but can accommodate a multi-use trail.
42 There are no constraints to public multi-use due to structural hazards.	1	There are no constraints due to structural hazards.
43 There are no constraints to multi-use due to existing slopes.	3	There are some constraints to multi-uses, the levee has a 3 to 1 side-slope.
44 There are no constraints to multi-use construction due to earth mounds.	3	There are some constraints to multi-uses, the bank is veneered with large rip-rap.
Existing Multi-Use Features Average		2.18
Future Multi-Use Features		
45 There are possible connections to open space.	5	This zone is part of the Salt + Gila River systems and is close to the Estrella Mountains.
46 There is a possible connection to the Maricopa County Trail System.	5	The Gila River is a designated County Trail link with the Hassayampa and Western Canal.
47 There are possible connections to the local trail system.	5	There are proposed local trails south from Phoenix, Tolleson and the County to this site.
48 There are possible connections to residential neighborhoods.	5	There are existing rural + planned neighborhoods north of this site.
49 There are possible connections to recreation areas.	5	Casey Abbot Rec. Area is 2.5m west, Estrella Mtns 1m south and P.I.R. racetrack .5m so.
50 There are possible connections to multi-modal facilities.	3	No existing recreation areas, but future development may provide recreation.
51 There are possible connections to local commercial areas.	3	No existing multi-modal, but development may provide future facilities.
52 There are opportunities for special use commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
53 Site property could be sold to allow for special use commercial areas.	1	There is no additional property that can be sold.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	4	Agricultural land to the north could be acquired to add nature center facilities.
55 Adjacent land has natural features beneficial for a greenway corridor.	5	The riparian areas are greenways and the channel edges provide viewing opportunities.
56 Adjacent land needs design guidelines for future development.	4	Future development would benefit from comprehensive planning with an enhanced site.
57 There are opportunities for large-scale regional park facilities.	1	There are no opportunities for large-scale regional park facilities.
58 There are opportunities for small-scale local park facilities.	4	Some interpretive viewing shelters could be added to the levee and pier structures.
59 There are opportunities for riparian wash areas.	1	There is no space for riparian wash areas.
60 There are opportunities for recharge basins or ponding areas.	1	There is no space for recharge basins.
61 There are opportunities for multi-use trails.	5	This zone is could accommodate multi-use trails.
62 There are opportunities for separated-use trails.	1	There is no space to accommodate multiple separated use trails.
Future Multi-Use Features Average		3.39
Existing and Future Multi-Use Average		2.79
Conformance, Aesthetic Features + Multi-Use Average		2.47

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 18. Holly Acres Levee and Bank Stabilization Zone 2 - Riparian Area		1 to 5	1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element 4 Predominantly Conforming Element 5 Fully Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1	The alignment of the structure meanders to vary from a straight line.	5	The alignment in this zone varies, this is mostly undisturbed river riparian area.
2	The profile or height of the structure varies to modify the outline.	5	The height in this zone varies, this is mostly undisturbed river riparian area.
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The sides slopes in this zone varies, this is mostly undisturbed river riparian area.
4	The structure is designed to blend into the contour of the natural terrain.	5	Mostly undisturbed riparian area, except where 115th Ave bridge and pavement cross.
5	On-site screening with trees and shrubs are used to blend the structure.	4	There is on-site screening from the existing plants.
6	Off-site screening with plantings or earthwork buffers are used.	4	There is off-site screening from the existing plants and landforms.
7	There is veneering or plating of the structure with indigenous rock.	4	There is existing indigenous rock in this area.
8	Disturbed areas are graded and replanted to match surrounding area.	3	Disturbed areas are not graded or replanted, but the area has naturally revegetated.
9	Plantings are used to provide erosion control and protect visual qualities.	4	The existing plants provide erosion control and protect visual qualities.
10	Plantings are used that will not cause an impedence to design function.	4	The existing plants do not cause an impedence to design function.
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	3	This area is mostly free of debris, but the areas with public access have debris.
Conformance Average		3.92	
Existing Aesthetic Features			
13	There are riparian or river corridor features to preserve.	5	This area is part of the Gila River, a major riparian corridor, and should be preserved.
14	There are landscape or natural features to preserve.	5	There are a wide variety of riparian plants and should be preserved.
15	There are wildlife habitat areas to preserve.	5	There is a valuable wildlife habitat and should be preserved.
16	There are undisturbed open space elements to preserve.	4	There is mostly undisturbed open space and should be preserved.
17	There are scenic corridors to preserve.	5	There is a scenic riparian corridor and should be preserved.
18	There are panoramic views from the structure.	4	There are some panoramic view south to the Estrella Mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	5	There are meandering low-flow features.
20	The structure or area has revegetated.	4	Some of the disturbed areas have naturally revegetated.
21	The existing plantings match the community character.	5	The existing plantings match the riparian community character.
22	The structure's size and scale are proportional to its surroundings.	5	This zone's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	4	Mostly positive properties -riparian, agric. and rural. One negative property -commercial.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge and stormwater retention areas.	5	There are numerous water recharge areas in the riparian area.
27	The structure does not have negative on-site visual problems.	3	This zone has some negative visual problems at the bridge and old 115th Ave. crossing.
28	There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the site.	4	There is one short maintenance road south of the levee.
30	There are no intersecting arterial streets.	4	The riparian area is intersected by the 115th Avenue bridge.
31	There are no noise impacts that need buffering.	2	There is occasional noise from the 115th Avenue bridge and nearby racetrack.
32	Additional landscape features are needed.	4	Additional landscaping is needed to screen the levee structure and repair impacted areas.
33	There are opportunities for landscape enhancements.	4	Landscape enhancements can be added at accessed areas.
Existing Aesthetic Features Average		4.00	
Conformance and Aesthetic Features Average		3.96	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations	
Structure - 18. Holly Acres Levee and Bank Stabilization		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Zone 2 - Riparian Area			
Existing Multi-Use Features			
34		5	This zone is a large riparian area and has features beneficial for a greenway corridor.
35		4	There is the old 115th Ave. pavement area that is used as for fishing and picnicking.
36		4	This zone currently is accessible for multi-use.
37		4	Multi-use features can be added without impeding design function.
38		4	Multi-use features can be added safely after addressing water flow issues.
39		1	There is no space to meander the maintenance road due to existing riparian plantings.
40		2	The physical constraint is the grade difference of the channel edge and river bottom.
41		3	This zone has limited space for multi-use due to the existing riparian plantings.
42		4	There are no constraints due to structural hazards.
43		2	There are some constraints due to the existing slopes of the river channel edges.
44		3	There are some constraints due to existing earthwork mounds and rip-rap.
Existing Multi-Use Features Average		3.27	
Future Multi-Use Features			
45		5	This zone is part of the Salt and Gila River systems and is close to the Estrella Mountains.
46		5	The Gila River is a designated County Trail link with the Hassayampa and Western Canal.
47		5	There are proposed local trails south from Phoenix, Tolleson and the County to this site.
48		5	There are existing rural and planned neighborhoods north of this site.
49		5	Casey Abbot Rec. Area is 2.5m west, Estrella Mtns 1m south and P.I.R. racetrack .5m so.
50		3	No existing multi-modal, but development may provide future facilities.
51		3	No existing commercial areas, but future development may provide commercial nodes.
52		1	This area should remain as a riparian area.
53		1	No additional property that could be sold without affecting the riparian area.
54		4	Agricultural land to the north could be acquired to add nature center facilities.
55		5	The adjacent Gila and Salt Rivers have positive natural features.
56		4	Future development would benefit from comprehensive planning with an enhanced site.
57		1	There are no opportunities for large-scale regional park facilities.
58		3	Small-scale local park facilities in could be located where high water damage is least.
59		5	This zone is an existing riparian area.
60		5	This zone has numerous water recharge areas.
61		5	There is space to accommodate multi-use trails.
62		2	There is no space to accommodate multiple separated use trails.
Future Multi-Use Features Average		3.72	
Existing and Future Multi-Use Average		3.50	
Conformance, Aesthetic Features + Multi-Use Average		3.73	

McMicken Dam & Outlet Channel

Facility Location and Description

McMicken Dam and Outlet Channel is located in the far Northwest Valley. It extends a distance from near the alignment of 20000 Avenue, crosses SR 60 Grand Avenue, and continues northeast to the alignment of El Mirage Road. McMicken Dam begins near the White Tank Mountain Regional Park and ends at the McMicken Outlet Wash facility near the Agua Fria River.

McMicken Dam, built in 1956 to retard floodwaters and protect Luke Air Force Base, is a compacted earthfill dam over 9 miles long and 34 feet high. This structure collects runoff water from a rather large drainage area to the northwest which is then retained behind the dam, held in the basin area and released through a spillway. The water is channeled to the northeast to the outlet channel structure, 5.5 miles long and 18 feet high.

McMicken Dam will be evaluated under the Flood Control District's Structures Assessment Program. Phase I assessments of this dam is scheduled to be conducted in late 2001 and 2002. Geotechnical investigations and site specific repairs are anticipated to be conducted concurrent with the Phase I Assessments. As part of the White Tanks FRS# 3 Basin Project, the District is evaluating a project feature to divert flows from a wash (Waterfall Wash) at the south end of McMicken Dam into the McMicken Dam reservoir. Land acquisition for this project could provide a connection from the existing McMicken Dam right-of-way to White Tank Regional Park.



McMicken Natural Open Space – West View

Potential Significance to Provide Regional, Community or Local Open Space Amenities

McMicken Dam and Outlet Channel offers a trail link opportunity to connect the Maricopa County Regional Trail System and local city trail networks. Please refer to the McMicken Dam and Outlet Channel Potential Corridor Location Map on page 92.

McMicken Dam and Outlet Channel is an essential link connecting the regional county White Tank Mountains Park to the major trail connections along the Central Arizona Project Canal and the Agua Fria River. In addition, there is a potential connection south to the nearby White Tanks flood control structures and beyond to the Gila River trail. There are additional planned connections to the City of Surprise network of multi-modal routes along Peoria Avenue, Waddell Road, Greenway Road, Bell Road, Grand Avenue, and El Mirage Road.



McMicken Dam – Southwest View

Aesthetic Treatment and Landscaping Policy Conformance

McMicken Dam and Outlet Channel is separated into structure zones with different flood control elements or distinctive aesthetic qualities. Please refer to the site map on page 93 for the structure zones, zone descriptions, city boundaries, and arterial streets. Please also refer to the Site Evaluation Criteria ratings and relevant comments on pages 102-109.

Zone One - Upland Open Space Area

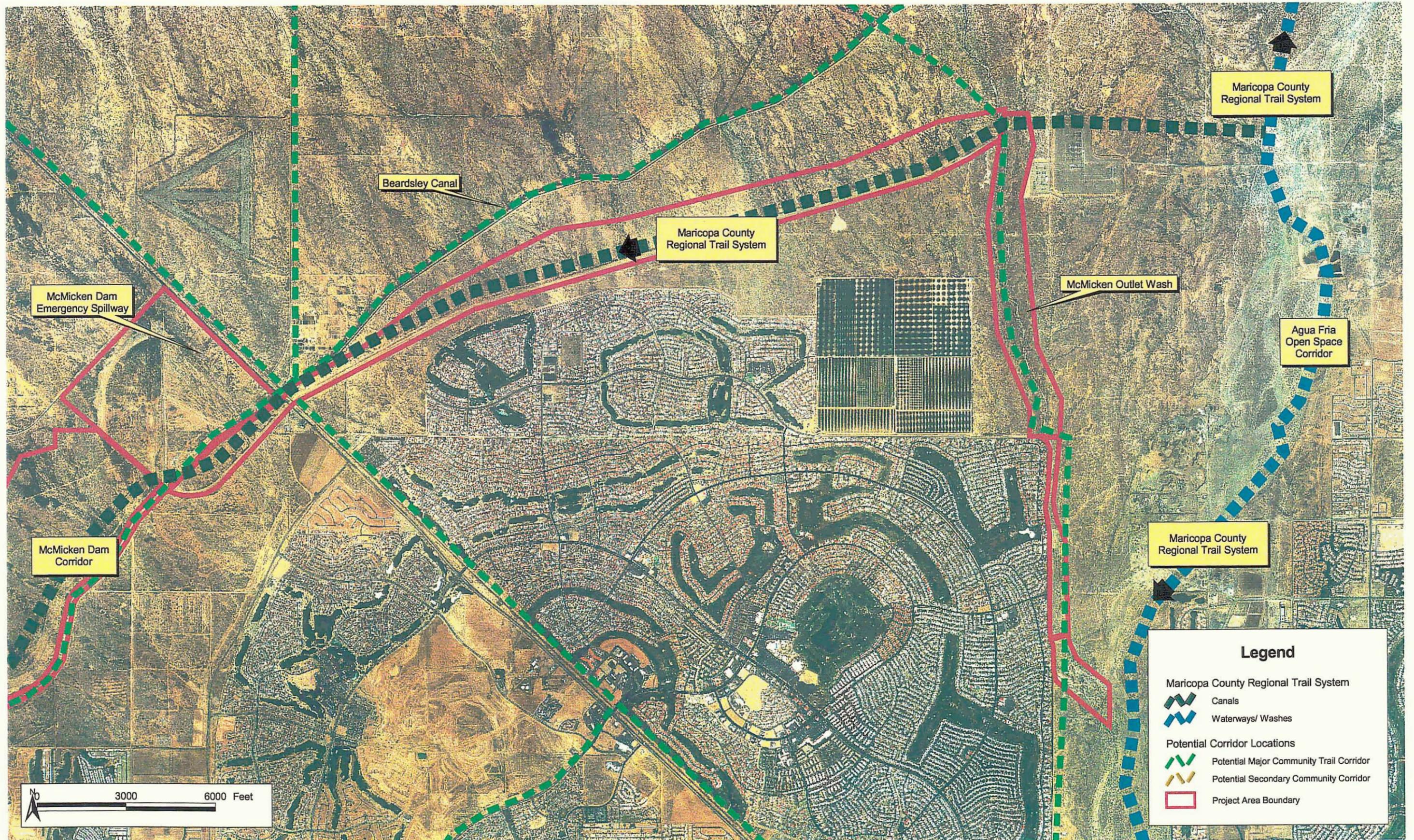
The upland open space area is mostly undisturbed land, a natural environment with desert upland vegetation and riparian washes up to the White Tank Mountains.

The upland open space area conforms to policy for the following reasons:

- This area varies in alignment, profile and slope.
- This area blends into the surrounding natural terrain.
- Screening is provided by the existing plants and landforms, and veneering by the indigenous rock.
- The existing plants provide erosion control, protect visual qualities and do not cause an impedance to design function.



Basin Area Shooting Range – Northeast View



McMicken Dam & McMicken Outlet Wash

Potential West Valley Trail Corridors Map

SR 303 Alignm
Estrella Freew

Tribby Wash

MATCHLINE

Union Hills Dr.

Zone Two - Upland Open Space Area
Upland desert vegetation and
multiple riparian washes.

Bell Rd.

Greenway Rd.

Cotton Lane

Zone One - Dam and Channel Structure
Large earthen dam and channel structure
with multiple maintenance roads. Channel has
retention areas and has revegetated with trees.

Waddell Rd.

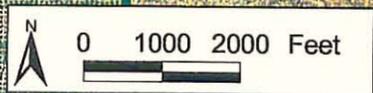
Cactus Rd.

SURPRISE

Peoria Ave.

Legend

-  Structure
-  Project Area Boundary
-  Dam and Channel Structure
-  Upland Open Space Area
-  Emergency Spillway
-  Outlet Channel
-  City Boundary
-  Major Streets
-  Railroad

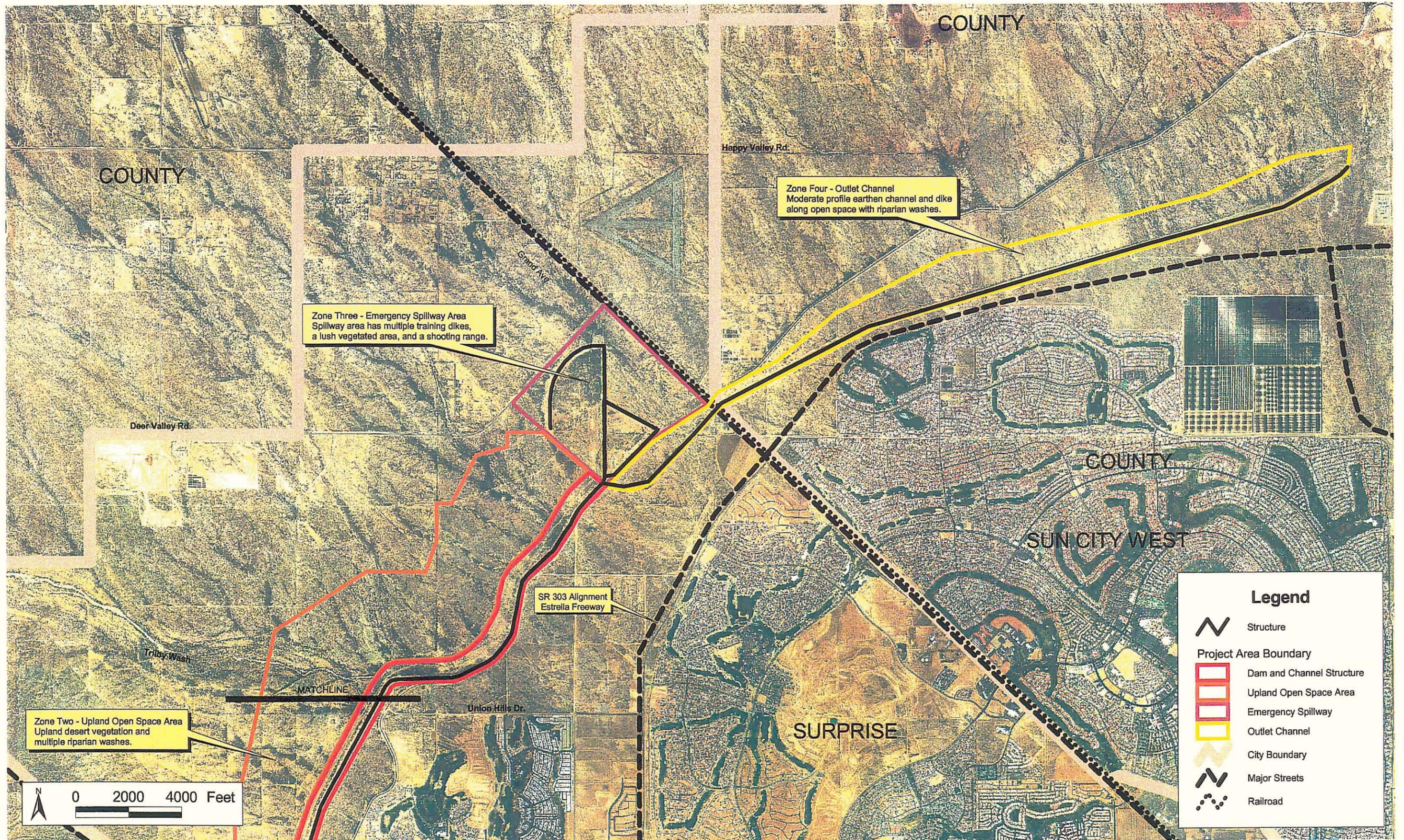


Center-Burgess

McMicken Dam & Outlet Channel

Site Map





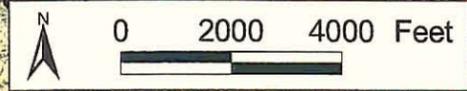
Zone Four - Outlet Channel
Moderate profile earthen channel and dike along open space with riparian washes.

Zone Three - Emergency Spillway Area
Spillway area has multiple training dikes, a lush vegetated area, and a shooting range.

Zone Two - Upland Open Space Area
Upland desert vegetation and multiple riparian washes.

Legend

- Structure
- Project Area Boundary**
- Dam and Channel Structure
- Upland Open Space Area
- Emergency Spillway
- Outlet Channel
- City Boundary
- Major Streets
- Railroad



McMicken Dam & Outlet Channel

Site Map

Zone Two - Dam and Channel Structure

The dam and channel structures extend a distance of fourteen miles and are located south of zone one, the upland open space area. They are north of Interstate 10 and parallel the freeway.

The dam and channel structures conform to policy for the following reasons:

- The structure’s alignment is mostly straight, but there are several gradual bends.
- The structures are mostly free of weeds and debris.

The dam and channel structures do not conform for the following reasons:

- The profile or height of the structure is constant and does not vary.
- The side slopes are a uniform 3 to 1 slope and do vary.
- The structure earthwork does not blend into the surrounding terrain.
- There are no screening techniques to make the structures more compatible with the environment such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with indigenous rock.
- No plantings are used to provide erosion control and protect visual qualities.
- The disturbed areas have not been replanted to match the surrounding flora.
- The structures are not furrowed to enhance the growth of vegetation.

Zone Three - Emergency Spillway Area

The emergency spillway area is located northwest of the dam structure. This area has several riparian washes with lush plants, and has also revegetated with desert plants and an established grassland area.

The emergency spillway area conforms to policy for the following reasons:

- The spillway area meanders in alignment, profile and slope.
- The spillway is designed to blend into the contour of the natural terrain.
- There is on-site screening from the existing plants.
- The existing plants provide erosion control and protect visual qualities.

The spillway area does not conform to policy for the following reasons:

- There are no screening techniques to make the basin more compatible with the environment, such as the placement of earthwork buffers or the use of trees and shrubs.
- The disturbed areas have not been replanted to match the surrounding area.

Zone Four - Outlet Channel

The earthen channel begins at Northern Avenue and extends three-quarters of a mile to the dam structure and basin.

The earthen channel conforms to aesthetic policy for the following reasons:

- The disturbed areas are regraded.

The earthen channel does not conform to policy for the following reasons:

- The channel does not meander in alignment, profile or slope.
- The channel is not designed to blend into the contour of the natural terrain.
- There are no screening techniques to make the structures more compatible with the environment such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.
- The disturbed areas have not been replanted to match the surrounding area.
- No plantings are used to provide erosion control and protect visual qualities.

Surrounding Site Character

The surrounding site character for McMicken Dam and Outlet Channel is identified on the Site Analysis - Existing Features/ Surrounding LandUses Map on page 95.

Zone One - Upland Open Space Area

The surrounding site character is primarily upland desert open space and riparian wash environments west to the White Tank Mountains. There is also scrub desert open space northwest of the structure.

Zone Two - Dam and Channel Structure

East and south of the structure are primarily agricultural and medium density residential areas. The Beardsley Canal is located adjacent to the eastern edge of McMicken Dam and crosses at the spillway to the northwest side of the outlet channel.

Zone Three - Emergency Spillway Area

The surrounding site character by the spillway area is mixed, with some undisturbed desert open space, accessed and impacted areas, and a dilapidated commercial area. The surrounding area is frequently accessed because of the shooting range, Beardsley Canal, and the numerous overhead electrical lines and towers and their many maintenance roads.

Zone Four - Outlet Channel

The surrounding site character by the outlet channel is a combination of undisturbed desert open space, an adjacent family ranch, and the nearby well-kept residential area of Sun City West.



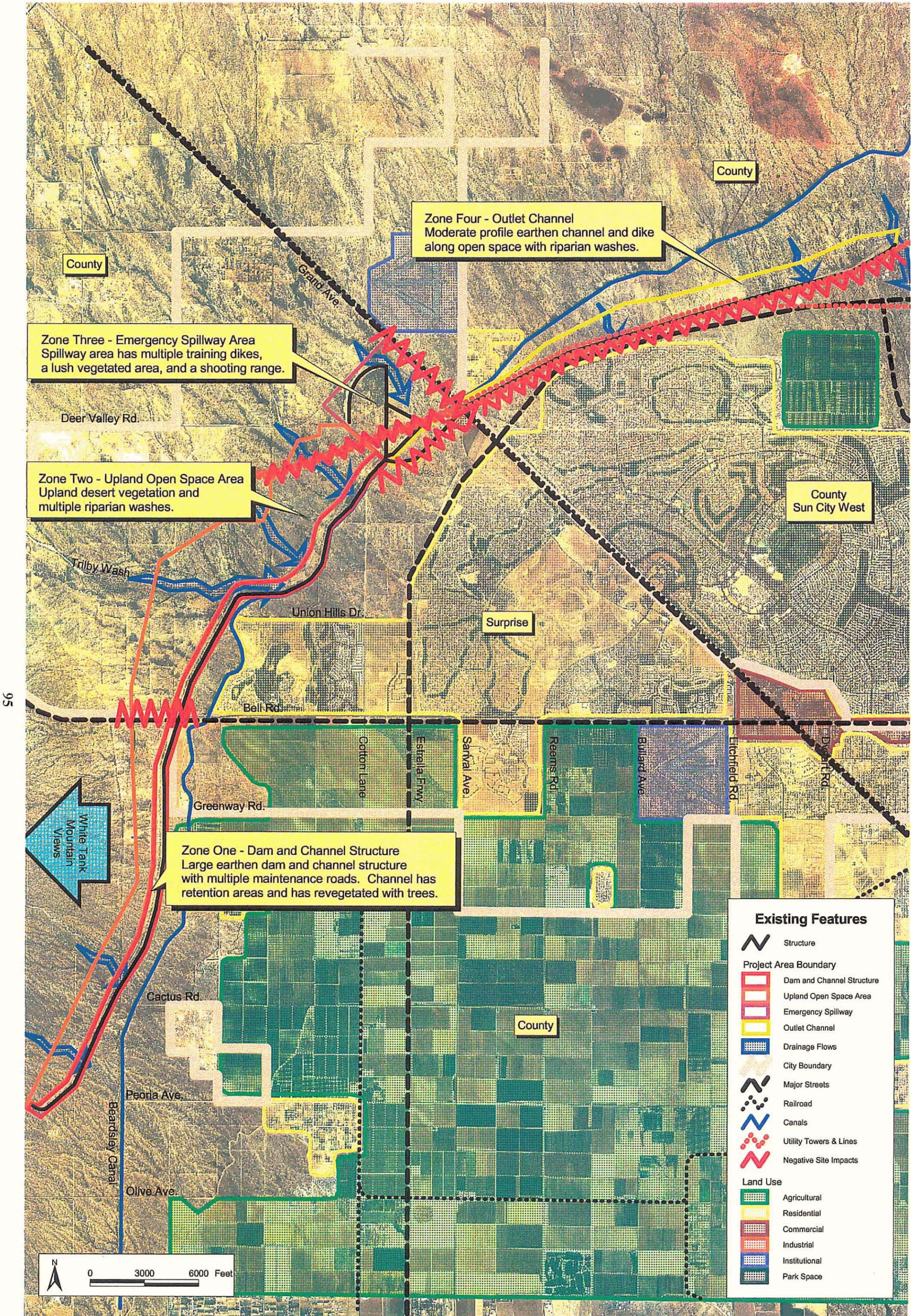
McMicken Outlet Channel – Southwest View



McMicken Dam Adjacent to Beardsley Canal



Mesquite Bosque – East View



Zone Four - Outlet Channel
Moderate profile earthen channel and dike along open space with riparian washes.

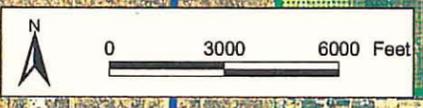
Zone Three - Emergency Spillway Area
Spillway area has multiple training dikes, a lush vegetated area, and a shooting range.

Zone Two - Upland Open Space Area
Upland desert vegetation and multiple riparian washes.

Zone One - Dam and Channel Structure
Large earthen dam and channel structure with multiple maintenance roads. Channel has retention areas and has revegetated with trees.

Existing Features

- Structure
- Project Area Boundary**
- Dam and Channel Structure
- Upland Open Space Area
- Emergency Spillway
- Outlet Channel
- Drainage Flows
- City Boundary
- Major Streets
- Railroad
- Canals
- Utility Towers & Lines
- Negative Site Impacts
- Land Use**
- Agricultural
- Residential
- Commercial
- Industrial
- Institutional
- Park Space



Site Impressions

Zone One - Upland Open Space Area

The zone west of McMicken Dam and channel is an upland open space area with indigenous plants and numerous desert alluvial washes that flow northwest to southeast. This zone has a gently sloping grade descending from the White Tank Mountains with varied contours throughout.

Zone Two - Dam and Channel Structure

The McMicken Dam structure is an earthen structure thirty four feet high, with a relatively straight alignment and a uniform 3-to-1 slope. The structure does not have any earthwork, landscape buffer or veneering to blend into its surroundings. The disturbed areas, mostly consisting of multiple maintenance and access roads, have not been ameliorated and have not revegetated due to soil compaction. At Greenway and Bell the road has been built up for access over the dam. Portions of the dam structure have revegetated and additional hydroseeding has been applied to encourage plant growth and provide erosion control on the sides of the dam.

The first impression of McMicken Dam is its immense scale in relation to its surroundings and its visual prominence within primarily flat terrain with a mountain range in the background. The dam structure is visually distinct as an inorganic form due to its uniform alignment, profile, and slope. In addition, there are other existing negative conditions: the surface of the dam structure is moderately devoid of vegetation, the numerous adjacent maintenance roads, and a visible excavated edge. The riparian and grassland areas are the most visually pleasing of the site and act as a landscape buffer for the structure.



Open Space Area – Northwest View



Outlet Channel Riparian Area – West View



View of east side of McMicken Dam at Bell Road

The channel area immediately west of the dam was used for dam borrow material, but has naturalized with numerous riparian habitat areas that match the nearby undisturbed desert environment. However, excavated edges from borrowed area are still present and noticeable. The zone north of Bell Road has been accessed and negatively impacted by vehicular use.

Zone Three - Emergency Spillway Area

The zone southwest of Grand Avenue is the emergency spillway area for McMicken Dam. The additional water retained in this area and the desert wash areas has created lush riparian environment, but the significance of lush vegetation located in the basin is diminished by the numerous spillway training dike structures. Also within this zone, surrounded by thirty-foot high earthen dikes, is a shooting and training range with multiple target areas. The shooting range is relatively barren of any vegetation and is a hazard to any vehicles or people on the dike or in the vicinity. Additionally, the emergency spillway area is negatively impacted by the multiple overhead electrical towers and lines.

Zone Four - Outlet Channel

The earthen outlet channel begins at a large concrete structure, the Principal Outlet, that directs the water flows retained on the west side of McMicken Dam to the channel. The structure runs the full height of the dam and has concrete baffles to slow and direct the water flows to the outlet channel. In this area, the channel is approximately fifty feet wide and fifteen feet deep, and is located near the Beardsley Canal. North of Grand Avenue, the channel widens to about 100 feet with an earthen berm along the southeast side. The berm is approximately ten feet high with four-to-one side slopes.

The outlet channel is negatively impacted by numerous access roads, especially near the Beardsley Canal and basin area. There are three rows of electrical towers and a dilapidated commercial area nearby. Riparian trees along the northwest edge are the only visual relief in an otherwise barren area. The area adjacent to the northwest edge of the channel is a natural desert environment with numerous washes and a gradual slope down to the channel. The low elevation along the northwestern portion of the channel retains water, creating a riparian habitat. The residential neighborhoods of Sun City West lie to the southeast, and a small ranch sits adjacent to the channel area. Parallel to the channel is a double row of large electrical towers that originate at a substation just beyond the northeast end of the channel.

Opportunities and Constraints for Retrofit Treatments

Zone One - Upland Open Space Area

The size of the Flood Control parcel adjacent to the dam and channel, its location near a regional park, the site's designation as a major Maricopa County trail link, and the future development plans for the area make this an essential greenway connection for both users and inhabiting wildlife.

Zone Two - Dam and Channel Structure

One of the most significant opportunities of the McMicken site is its key location and panoramic views of nearby White Tank Mountains Park. The height of the dam structure offers good views of the mountains and views below to the riparian environment and agriculture fields. The established riparian habitat areas offer good wildlife viewing opportunities.

The majority of the facility does not contain any multi-use features and is currently not accessible for multi-use. The dam structure as it exists would be difficult to set up for multi-use development because of steep side slopes.

Zone Three - Emergency Spillway Area

The primary retrofit treatment opportunity for the emergency spillway area is the size and location of this site along a major corridor and its potential to become a recreational destination point. This area could be retrofitted to a large regional park space that accommodates both recreational needs and the flood spillway function.

The retrofit constraint for the emergency spillway area are the existing uses: the shooting range, and the utility lines and access roads. Multi-use access and development in the vicinity of the shooting range may be impacted based on public safety considerations. In addition, the areas adjacent to major roads such as Grand Avenue and Bell Road would need buffering from the noise and visual impacts.

Zone Four - Outlet Channel

The primary retrofit treatment opportunity for the outlet channel is the potential recreation open space corridor connection between the McMicken Dam to McMicken Outlet Wash and extending to the Agua Fria River.

The retrofit constraint for the outlet channel is the multiple rows of overhead electrical towers and lines which detract from the positive natural amenities of this area.



North view of McMicken Dam structure at Bell Road



Basin along McMicken Dam



Outlet Channel - north view

Landscape Aesthetic and Multi-Use Treatment Recommendations

The cross-sections on the following pages are illustrations of potential retrofit concepts discussed within the text. The cross-sections also relate to the overall McMicken Dam and Outlet Channel Concept Plan on page 101.

Zone One - Upland Open Space Area

The open space area west of McMicken Dam is naturalized with desert and riparian areas and would provide an excellent opportunity for separated use trails.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

None identified.

Multi-Use Treatment Retrofit Recommendations

Soft Surface Trail

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

Land Acquisition - To incorporate natural features in greenway

Zone Two - Dam and Channel Structure

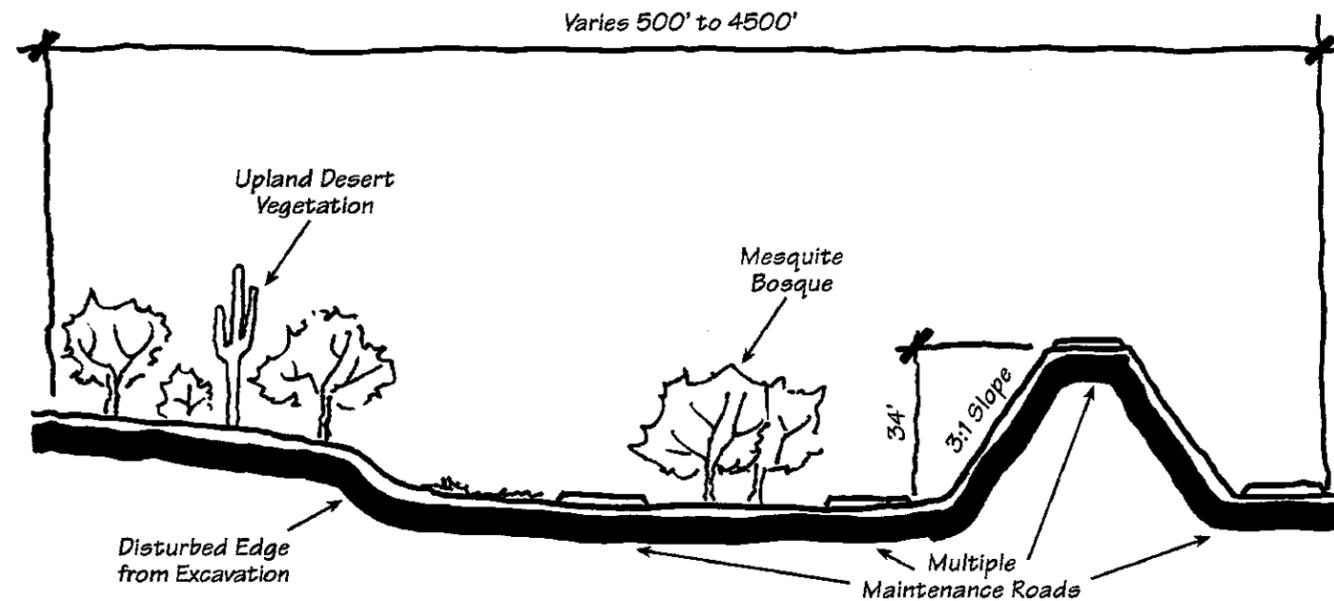
Preserving and restoring wildlife habitats provides an opportunity to locate nature education nodes by riparian areas. The disturbed areas from the original dam construction need re-grading and revegetation. Areas that have been accessed and negatively impacted by vehicles would also require restoration work. Introduction of a low-flow meandering channel would enhance the riparian ecosystem and improve essential wildlife habitats. The site is large enough to accommodate a variety of multi-use features, such as shared-use trails and/or separated-use trails. Creating enhanced trail connection points to access the dam trail with graded and landscaped areas would provide both aesthetic enhancement and multi-use access to the structure. The maintenance road on top of the dam would be appropriate for hiking once restrictive bollards were placed at the main connection points. Another alternative is to eliminate part of the structure and replace it with an enlarged basin with wetlands.

Aesthetic Treatment Retrofit Opportunities

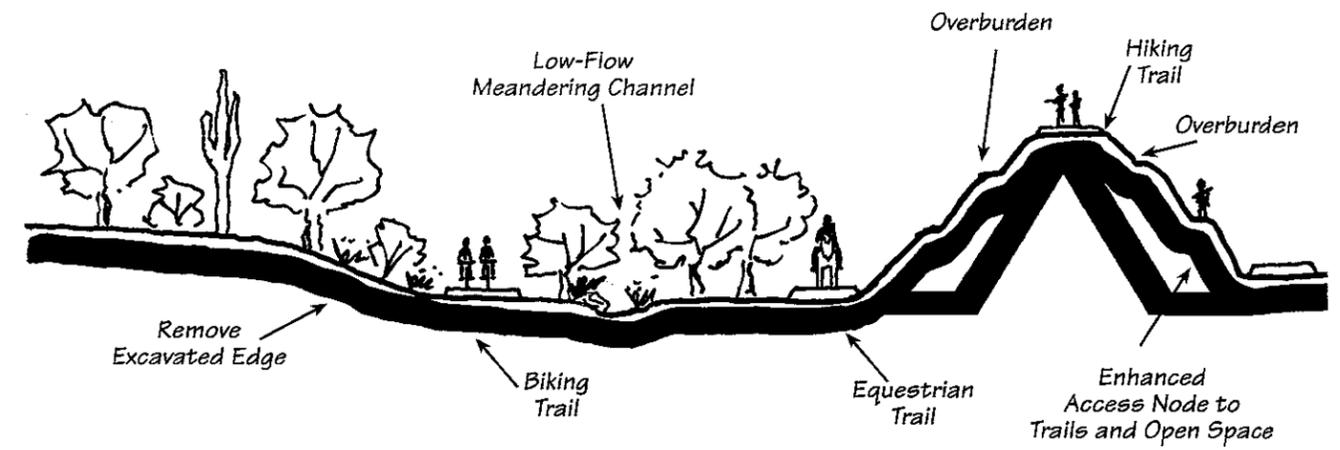
- Earthwork - Construct overburden area on dam structure
- Earthwork - Construct low-flow channel feature
- Earthwork - Construct recharge basin/ponding areas
- Rock Drop Structures - By ponding areas
- Earthwork - Removal of earthwork mounds

Landscaping Treatment Retrofit Opportunities

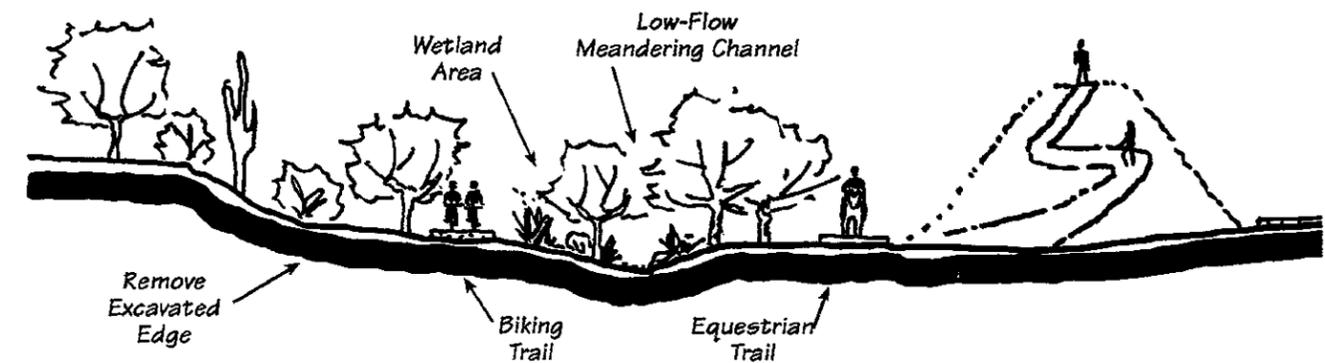
- Tree Planting
- Revegetation
- Irrigation



McMicken Dam - Existing Conditions



McMicken Dam - Modify Structure



McMicken Dam - Remove Portion of Structure

Multi-Use Treatment Retrofit Opportunities

- Soft-Surface Trail
- Trail Improvements - Meander existing maintenance road
- Trail Retention - Minor changes for existing maintenance road
- Wildlife Viewing Facility
- Gateway Features - At trail connection points
- Trailhead Facilities

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Three - Emergency Spillway Area

The emergency area is negatively impacted by the earthen training dike structures and the gunnery/training range. The existing use of this site would not be compatible with future surrounding development. Due to its prime location along McMicken Dam and the Maricopa County Trail system, this area may be best suited as a regional park. To develop the site to its full potential, the existing training dike structures should be removed and replaced with a basin. The regional park facilities could include a sport complex, swimming pool facilities, open play fields, picnic areas, playgrounds, and multi-modal facilities.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Remove structure and replace with a modified structure

Landscaping Treatment Retrofit Opportunities

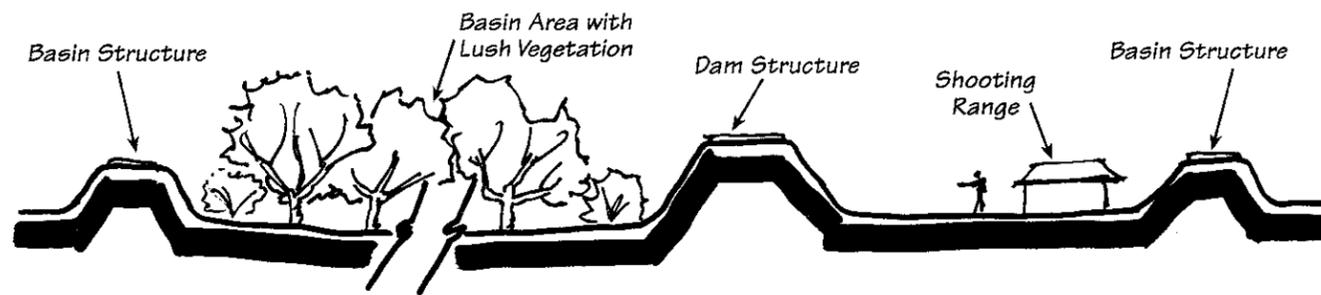
- Tree Planting
- Revegetation
- Irrigation

Multi-Use Treatment Retrofit Opportunities

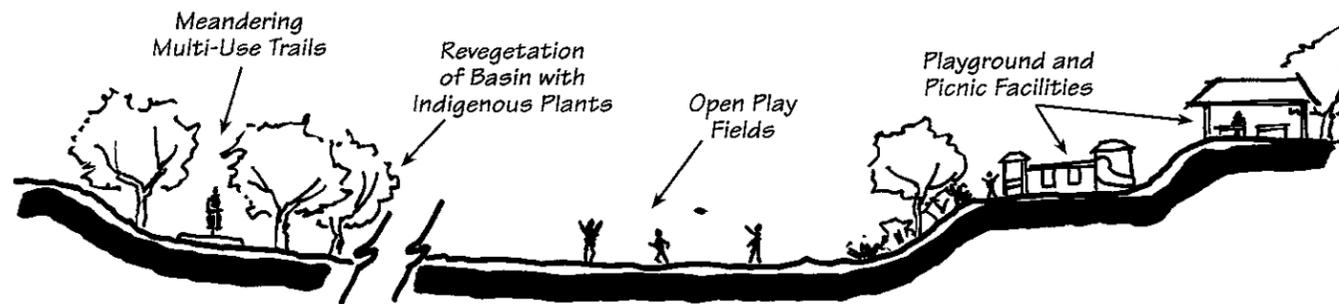
- Gateway Features - At trail connection points
- Recreation Area - Regional park facilities

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

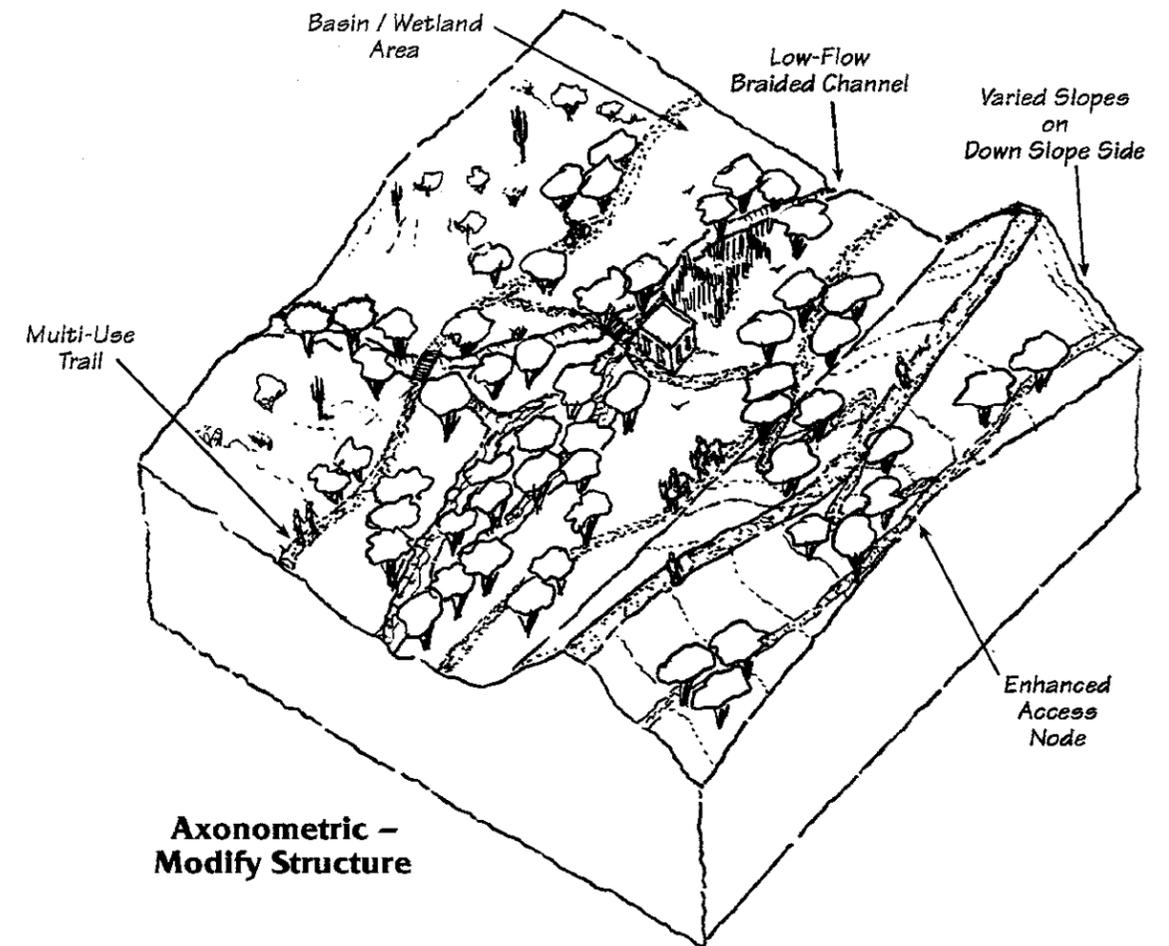
None identified.



McMicken Emergency Spillway Area – Existing Conditions



McMicken Emergency Spillway Area – Retrofit Improvements



Axonometric – Modify Structure

Zone Four - Outlet Channel

Retrofit improvements to the existing outlet channel would include modifying the channel slopes and alignments to create more visual interest, altering the height of the berm, introducing a meandering low-flow feature, and establishing basin/wetland areas. A multi-use trail is proposed for the western side of the outlet channel, away from the numerous electrical towers and the future 303 freeway. The established trees along the channel can provide screening for the trail.

Aesthetic Treatment Retrofit Opportunities

- Earthwork - Construct low-flow feature
- Earthwork - Construct recharge basin/ponding areas
- Rock Drop Structures - By ponding areas

Landscaping Treatment Retrofit Opportunities

- Tree Planting
- Revegetation
- Irrigation

Multi-Use Treatment Retrofit Opportunities

- Soft-Surface Trail
- Gateway Features - At trail connection points

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Hydrologic Engineering Synopsis of Structure

(Source: Data On Structures, an unpublished Flood Control District Document)

Project Title: McMicken Dam (Breached 1977) (Repaired Scheduled 1983)
Date of Final Acceptance: July 1956

Watershed and Relationship to Other Structures: The northern half of the structure sits across Trilby Wash and its tributaries. The southern half sits along the eastern slope of the White Tank Mountains.

Location: The structure sits south of Grand Avenue and west of the Beardsley Canal. Access structure from Cotton Lane from the south or Highway 60/89 Grand Avenue from the north.

Authorization: Watershed Protection and Flood Prevention Act, Public Law 566, 83rd Congress

Federal Sponsor: Corps of Engineers (1965)

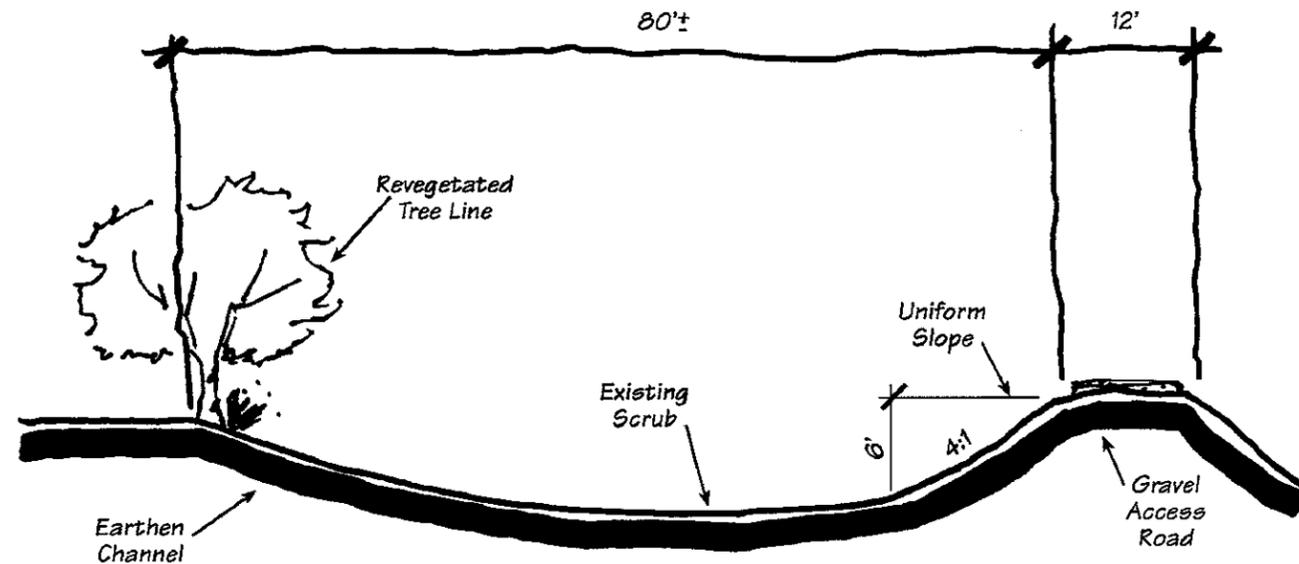
Local Sponsor: Flood Control District of Maricopa County
Agua Fria Soil Conservation District
Maricopa County Municipal Water Conservation District No. 1

Jurisdictional Agency: Arizona Department of Water Resources

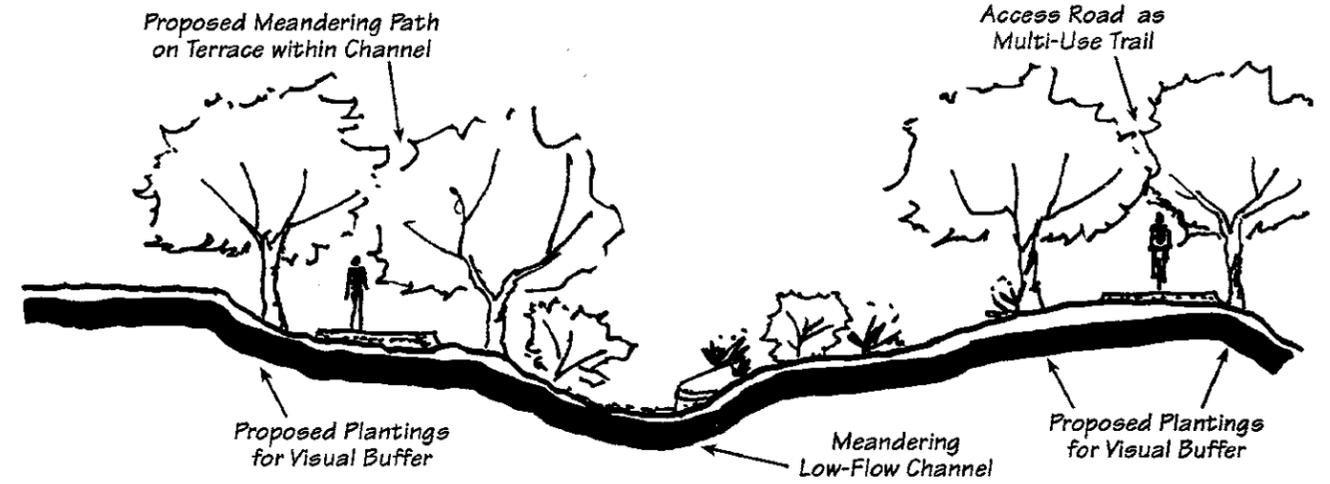
Functional Description: This structure collects runoff water from a rather large drainage area to the northwest. The water is channeled to the northeast to the outlet structure and on to the Agua Fria River in an open channel.

Project Features:

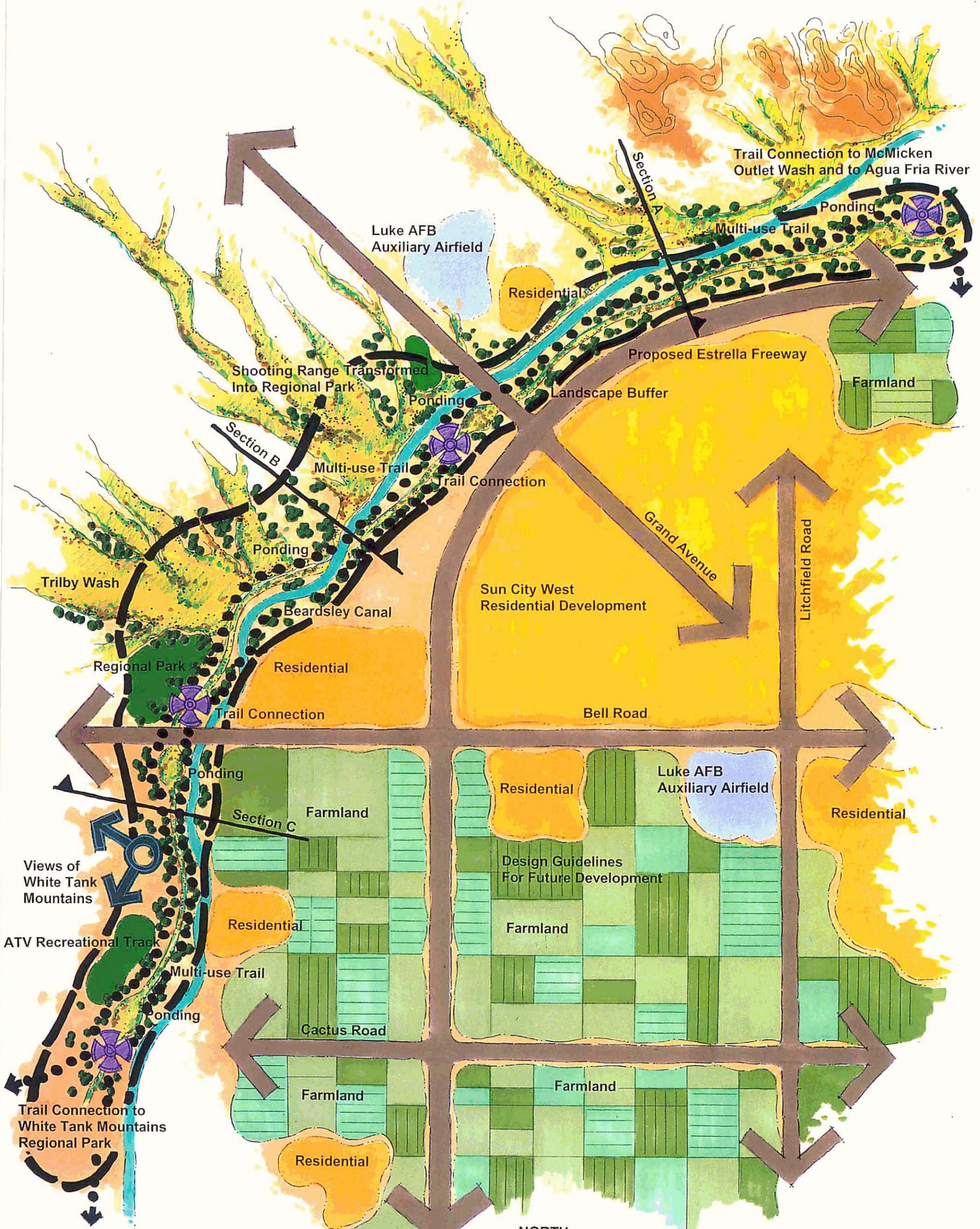
Type of structure	Compacted earthfill
Top of structure elevation	1,361.0
Length of structure	49,500 L.F.
Maximum height	34 feet
Top crest width	12 feet
Spillway crest elevation	1,354.0
Spillway capacity	16,000 CFS
Drainage area	247 square miles
Storage capacity	23,800 acre feet
Maximum water surface elev.	1,356.0
Freeboard	5.0 feet
Peak inflow	
Peak outflow	
Drawdown	3 to 4 1/2 days
Principal outlet discharge rate	
Principal outlet structure	2 each 24" RCP gated (Station 387+50, 398+35)



McMicken Outlet Channel – Existing Conditions



McMicken Outlet Channel – Retrofit Improvements



Trail Connection to White Tank FRS 3&4 and to Gila River

NORTH



Carter:Burgess

OCTOBER 2000

MCMICKEN DAM AND CHANNEL CONCEPT

Site Evaluation Criteria

#	SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations						
<hr/>									
	<i>Structure - 5. McMicken Dam and Outlet Channel</i>	<i>1 to 5</i>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element								
2 Slightly Conforming Element	5 Fully Conforming Element								
3 Moderately Conforming Element									
	<i>Zone 1 - Earthen Dam Structure</i>								
<hr/>									
<i>Conformance to 1992 Policy for Aesthetic Treatment and Landscaping</i>									
1	The alignment of the structure meanders to vary from a straight line.	2	The alignment of the dam is uniformly straight, but there are several gradual bends.						
2	The profile or height of the structure varies to modify the outline.	1	The height of the dam structure is constant and does not vary.						
3	The side slopes of the structure are varied to simulate the natural terrain.	2	The sides slopes are a uniform 3 to 1 slope, north of Union Hills the slope steps down.						
4	The structure is designed to blend into the contour of the natural terrain.	1	The dam's earthwork is not blended into the surrounding terrain.						
5	On-site screening with trees and shrubs are used to blend the structure.	1	There is no on-site screening with trees and shrubs.						
6	Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.						
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating with indigenous rock.						
8	Disturbed areas are graded and replanted to match surrounding area.	1	Disturbed areas are not graded or replanted, but the dam has partially revegetated.						
9	Plantings are used to provide erosion control and protect visual qualities.	3	The hydroseeding provides erosion control.						
10	Plantings are used that will not cause an impedence to design function.	1	There are no aesthetic treatment plantings.						
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.						
12	The structure and maintenance roads are kept free of weeds and debris.	3	The structure is free of debris, but the area north of Bell Road has debris.						
<hr/>									
<i>Conformance Average</i>		<i>1.50</i>							
<hr/>									
<i>Existing Aesthetic Features</i>									
13	There are riparian or river corridor features to preserve.	1	The dam area has no riparian features to preserve.						
14	There are landscape or natural features to preserve.	1	There are no landscape features to preserve.						
15	There are wildlife habitat areas to preserve.	1	There are no wildlife areas to preserve.						
16	There are undisturbed open space elements to preserve.	1	There is no open space elements to preserve.						
17	There are scenic corridors to preserve.	1	The dam blocks the views along its eastern side to the White Tank Mountains.						
18	There are panoramic views from the structure.	5	The dam offers panoramic views to the White Tank Mountains.						
19	There is a meandering low-flow feature modeled on riparian washes.	1	There are no meandering low-flow features.						
20	The structure or area has revegetated.	3	The sides of the structure have partially revegetated and have been hydroseeded.						
21	The existing plantings match the community character.	3	The existing plants on the structure are desert scrub.						
22	The structure's size and scale are proportional to its surroundings.	1	The dam's size and scale is large and is not proportional to its surroundings.						
23	The attendant flood control facilities structures blend into surroundings.	1	The spillway does not blend with its surroundings.						
24	The adjacent properties positively impact the site.	4	Mostly positive properties - open space, agricultural, and residential.						
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.						
26	There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.						
27	The structure does not have negative on-site visual problems.	2	The dam structure is large and partially devoid of vegetation.						
28	There are no overhead electrical lines and utility towers.	2	No electrical lines are over the dam, but they are nearby and visible from the dam.						
29	There are not multiple maintenance roads within the site.	1	There is a road on top of the dam and along each side of the structure.						
30	There are no intersecting arterial streets.	3	The dam is intersected by Greenway and Bell Roads.						
31	There are no noise impacts that need buffering.	2	There is some noise from Bell Road.						
32	Additional landscape features are needed.	5	Additional landscaping is needed to screen the dam structure.						
33	There are opportunities for landscape enhancements.	5	Landscape enhancements could be added at enhanced connection nodes.						
<hr/>									
<i>Existing Aesthetic Features Average</i>		<i>2.14</i>							
<hr/>									
<i>Conformance and Aesthetic Features Average</i>		<i>1.82</i>							

Site Evaluation Criteria

# SITE EVALUATION CRITERIA	Conformance Rating	Supportive Comments Based on Field Observations						
<hr/>								
<i>Structure - 5. McMicken Dam and Outlet Channel Zone 1 - Earthen Dam Structure</i>	<i>1 to 5</i>	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element							
2 Slightly Conforming Element	5 Fully Conforming Element							
3 Moderately Conforming Element								
<hr/>								
<i>Existing Multi-Use Features</i>								
34 There are existing natural features beneficial for a greenway corridor.	1	The dam structure area has no natural features beneficial for a greenway corridor.						
35 There are existing multi-use features.	4	There are no existing multi-use features, but the maint. roads could be used as trails.						
36 The area is currently accessible for multi-use.	1	This area is currently not accessible for multi-use.						
37 Multi-use features could be added without impeding design function.	4	Multi-use features can be added without impeding design function.						
38 Multi-use features could be added without compromising public safety.	4	Multi-use features can be added after addressing safety concerns.						
39 There is space to meander the maintenance road(s).	1	There is no space to meander the road on top or on the east side of the dam.						
40 There are no physical constraints to accessing the site.	1	The site is currently fenced and there is no public access.						
41 There are no constraints to multi-use due to site size.	3	The structure and parallel maintenance roads limit the type of multi-use.						
42 There are no constraints to public multi-use due to structural hazards.	2	The spillway area is hazardous to multi-use and needs addressing.						
43 There are no constraints to multi-use due to existing slopes.	1	The existing side slopes of the dam is a safety concern for multi-use.						
44 There are no constraints to multi-use construction due to earth mounds.	5	There are no earthwork or rip-rap mounds.						
<hr/> <i>Existing Multi-Use Features Average</i>		<i>2.45</i>						
<hr/>								
<i>Future Multi-Use Features</i>								
45 There are possible connections to open space.	5	This site is close to White Tanks Park and there is open space west of the structure.						
46 There is a possible connection to the Maricopa County Trail System.	5	McMicken Dam is a designated County Trail link with the CAP Canal and Agua Fria.						
47 There are possible connections to the local trail system.	5	This site is a designated Surprise trail route with connections to the local trail network.						
48 There are possible connections to residential neighborhoods.	4	There is a residential area east of the structure and future planned neighborhoods.						
49 There are possible connections to recreation areas.	3	No existing recreation areas, but there are park spaces planned nearby.						
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal, but development along Bell Road may provide future facilities.						
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.						
52 There are opportunities for special use commercial areas.	1	There is no space in this zone for specially planned commercial areas.						
53 Site property could be sold to allow for special use commercial areas.	1	There is no additional property that could be sold.						
54 Adjacent land could be acquired to provide for enhancements/ buffering.	5	There is open land east of the dam that could provide for enhancements and buffering.						
55 Adjacent land has natural features beneficial for a greenway corridor.	4	To the west is undisturbed open space w/ natural features beneficial for a greenway.						
56 Adjacent land needs design guidelines for future development.	4	The adjacent land has natural features to preserve and would benefit by linking to this site.						
57 There are opportunities for large-scale regional park facilities.	1	There is no space for regional park facilities.						
58 There are opportunities for small-scale local park facilities.	1	There is no space for local park facilities.						
59 There are opportunities for riparian wash areas.	1	There is no space for riparian areas.						
60 There are opportunities for recharge basins or ponding areas.	1	There is no space for recharge basins.						
61 There are opportunities for multi-use trails.	5	The existing maintenance roads can be used as multi-use trails.						
62 There are opportunities for separated-use trails.	5	The multiple maintenance roads can provide separated use trails.						
<hr/> <i>Future Multi-Use Features Average</i>		<i>3.17</i>						
<hr/> <i>Existing and Future Multi-Use Average</i>		<i>2.81</i>						
<hr/> <i>Conformance, Aesthetic Features + Multi-Use Average</i>		<i>2.32</i>						

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 5. McMicken Dam and Outlet Channel		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element
Zone 2 - Lowland Open Space Area			2 Slightly Conforming Element 5 Fully Conforming Element
			3 Moderately Conforming Element
<hr/>			
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1	The alignment of the structure meanders to vary from a straight line.	5	The alignment in this zone varies, this area is mostly undisturbed open space.
2	The profile or height of the structure varies to modify the outline.	5	The height or profile in this zone varies, this area is mostly undisturbed open space.
3	The side slopes of the structure are varied to simulate the natural terrain.	5	The sides slopes in this zone varies, this area is mostly undisturbed open space.
4	The structure is designed to blend into the contour of the natural terrain.	4	This zone is mostly undisturbed open space, except for excavated edge west of dam.
5	On-site screening with trees and shrubs are used to blend the structure.	5	The area has on-site screening from the existing plants.
6	Off-site screening with plantings or earthwork buffers are used.	5	There is off-site screening from the existing plants and landforms.
7	There is veneering or plating of the structure with indigenous rock.	5	There is veneering with existing indigenous rock.
8	Disturbed areas are graded and replanted to match surrounding area.	2	The excavated edges are disturbed areas that are not graded or replanted.
9	Plantings are used to provide erosion control and protect visual qualities.	5	The existing plants provide erosion control and protect visual qualities.
10	Plantings are used that will not cause an impedance to design function.	4	The existing plants do not cause an impedance to design function.
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	4	This zone is mostly free of weeds and debris, but the area north of Bell Road has debris.
Conformance Average		4.17	
<hr/>			
Existing Aesthetic Features			
13	There are riparian or river corridor features to preserve.	5	The area has numerous small to large riparian washes to preserve.
14	There are landscape or natural features to preserve.	5	This zone has upland desert vegetation and riparian plants to preserve.
15	There are wildlife habitat areas to preserve.	5	This zone has many wildlife habitats at the riparian areas to preserve.
16	There are undisturbed open space elements to preserve.	5	This zone has many undisturbed open space elements to preserve.
17	There are scenic corridors to preserve.	5	The area is a scenic corridor to the White Tank Mountains.
18	There are panoramic views from the structure.	5	This zone offers views west and southwest to the White Tank Mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	5	This zone has many meandering low-flow features.
20	The structure or area has revegetated.	4	The disturbed area west of the dam has revegetated.
21	The existing plantings match the community character.	5	The existing plantings match the upland desert and riparian community character.
22	The structure's size and scale are proportional to its surroundings.	5	This area's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	5	The adjacent properties are open space and positively affect the site.
25	There is existing on-site irrigation.	1	There is existing on-site irrigation.
26	There are water recharge and stormwater retention areas.	4	There are many water recharge and stormwater retention areas.
27	The structure does not have negative on-site visual problems.	4	Most of this area has no visual problems, except for the area w/ vehicular impacts.
28	There are no overhead electrical lines and utility towers.	3	Overhead electrical lines and towers cross the area north of Trilby Wash.
29	There are not multiple maintenance roads within the site.	3	There is a maintenance road west of the dam and some access roads.
30	There are no intersecting arterial streets.	2	This zone is intersected by Greenway and Bell Roads.
31	There are no noise impacts that need buffering.	3	There are some noise impacts from Bell Road.
32	Additional landscape features are needed.	5	Additional landscaping is needed to screen the dam structure.
33	There are opportunities for landscape enhancements.	5	Landscape enhancements can be added at ponding areas.
Existing Aesthetic Features Average		4.05	
Conformance and Aesthetic Features Average		4.11	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
Structure - 5. McMicken Dam and Outlet Channel								
Zone 2 - Lowland Open Space Area								
	1 to 5	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element							
2 Slightly Conforming Element	5 Fully Conforming Element							
3 Moderately Conforming Element								
Existing Multi-Use Features								
34	5	There are existing natural features beneficial for a greenway corridor.						
35	4	There are existing multi-use features.						
36	2	The area is currently accessible for multi-use.						
37	5	Multi-use features could be added without impeding design function.						
38	5	Multi-use features could be added without compromising public safety.						
39	5	There is space to meander the maintenance road(s).						
40	5	There are no physical constraints to accessing the site.						
41	5	There are no constraints to multi-use due to site size.						
42	5	There are no constraints to public multi-use due to structural hazards.						
43	4	There are no constraints to multi-use due to existing slopes.						
44	4	There are no constraints to multi-use construction due to earth mounds.						
Existing Multi-Use Features Average		4.45						
Future Multi-Use Features								
45	5	There are possible connections to open space.						
46	5	There is a possible connection to the Maricopa County Trail System.						
47	5	There are possible connections to the local trail system.						
48	4	There are possible connections to residential neighborhoods.						
49	3	There are possible connections to recreation areas.						
50	3	There are possible connections to multi-modal facilities.						
51	3	There are possible connections to local commercial areas.						
52	1	There are opportunities for special use commercial areas.						
53	1	Site property could be sold to allow for special use commercial areas.						
54	5	Adjacent land could be acquired to provide for enhancements/ buffering.						
55	5	Adjacent land has natural features beneficial for a greenway corridor.						
56	4	Adjacent land needs design guidelines for future development.						
57	4	There are opportunities for large-scale regional park facilities.						
58	5	There are opportunities for small-scale local park facilities.						
59	5	There are opportunities for riparian wash areas.						
60	5	There are opportunities for recharge basins or ponding areas.						
61	5	There are opportunities for multi-use trails.						
62	5	There are opportunities for separated-use trails.						
Future Multi-Use Features Average		4.06						
Existing and Future Multi-Use Average		4.26						
Conformance, Aesthetic Features + Multi-Use Average		4.18						

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations	
Structure - 5. McMicken Dam and Outlet Channel		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Zone 3 - Emergency Spillway Area			
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1		2	The alignment of the spillway training dike structures are uniformly straight.
2		1	The height or profile of the spillway training dike structures is constant and does not vary.
3		1	The sides slopes of the spillway training dike structures are a uniform 4 to 1 slope.
4		1	The earthwork is not blended into the surrounding natural terrain.
5		1	There is no on-site screening with trees and shrubs.
6		1	There is no off-site screening with plantings or earthwork buffers.
7		1	There is no veneering or plating with indigenous rock.
8		2	The disturbed areas are graded but not replanted.
9		1	There are no plantings for erosion control or to protect visual qualities.
10		1	There are no aesthetic treatment plantings.
11		1	The structure's sides are not furrowed.
12		2	This area has some debris, and the area near Grand Avenue has weeds and debris.
Conformance Average		1.25	
Existing Aesthetic Features			
13		3	The spillway area has several minor riparian washes to preserve.
14		5	The spillway retention area has revegetated into a mesquite bosque to preserve.
15		5	The mesquite bosque functions as a wildlife habitat to preserve.
16		3	There are several undisturbed open space areas in this zone that should be preserved.
17		2	Partial value as scenic corridor, retaining structures block views to the White Tank Mtns.
18		3	The spillway training dike structures offers views to the White Tank Mountains.
19		1	There are no meandering low-flow features.
20		4	The spillway area has revegetated with mesquite trees and other desert plants.
21		5	The existing mesquite bosque matches the riparian community character.
22		3	The retaining structure's size and scale are moderately out of proportion.
23		1	There are no attendant flood control facilities.
24		3	Some positive properties -open space, riparian. Some negative properties- commercial.
25		1	There is no existing on-site irrigation.
26		5	This spillway area is a large water recharge and stormwater retention area.
27		2	The visual problems are from the shooting range, street, electrical lines and substation.
28		1	There are three rows of overhead electrical lines and towers.
29		2	There is a maintenance road on basin retaining structure and several roads within the site.
30		5	There are no intersecting arterial streets.
31		2	There is noise by the shooting range and Grand Avenue.
32		5	Landscaping is needed to screen the basin berms, overhead lines and shooting range.
33		5	Landscape and earthwork enhancements could amend the basin area.
Existing Aesthetic Features Average		3.14	
Conformance and Aesthetic Features Average		2.20	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
Structure - 5. McMicken Dam and Outlet Channel								
Zone 3 - Emergency Spillway Area								
	1 to 5	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element							
2 Slightly Conforming Element	5 Fully Conforming Element							
3 Moderately Conforming Element								
Existing Multi-Use Features								
34	5	There are existing natural features beneficial for a greenway corridor.						
35	2	There are existing multi-use features.						
36	3	The area is currently accessible for multi-use.						
37	3	Multi-use features could be added without impeding design function.						
38	2	Multi-use features could be added without compromising public safety.						
39	4	There is space to meander the maintenance road(s).						
40	2	There are no physical constraints to accessing the site.						
41	5	There are no constraints to multi-use due to site size.						
42	5	There are no constraints to public multi-use due to structural hazards.						
43	4	There are no constraints to multi-use due to existing slopes.						
44	3	There are no constraints to multi-use construction due to earth mounds.						
Existing Multi-Use Features Average		3.45						
Future Multi-Use Features								
45	4	There are possible connections to open space.						
46	5	There is a possible connection to the Maricopa County Trail System.						
47	5	There are possible connections to the local trail system.						
48	4	There are possible connections to residential neighborhoods.						
49	3	There are possible connections to recreation areas.						
50	3	There are possible connections to multi-modal facilities.						
51	3	There are possible connections to local commercial areas.						
52	4	There are opportunities for special use commercial areas.						
53	5	Site property could be sold to allow for special use commercial areas.						
54	2	Adjacent land could be acquired to provide for enhancements/ buffering.						
55	5	Adjacent land has natural features beneficial for a greenway corridor.						
56	4	Adjacent land needs design guidelines for future development.						
57	4	There are opportunities for large-scale regional park facilities.						
58	4	There are opportunities for small-scale local park facilities.						
59	4	There are opportunities for riparian wash areas.						
60	5	There are opportunities for recharge basins or ponding areas.						
61	5	There are opportunities for multi-use trails.						
62	5	There are opportunities for separated-use trails.						
Future Multi-Use Features Average		4.11						
Existing and Future Multi-Use Average		3.78						
Conformance, Aesthetic Features + Multi-Use Average		2.99						

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations	
Structure - 5. McMicken Dam and Outlet Channel		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Zone 4 - Outlet Channel			
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1		1	The alignment of the earthen outlet channel is uniformly straight.
2		1	The height or profile of the channel and controlling berm is constant and does not vary.
3		1	The sides slopes of the berm are a uniform 4 to 1 slope.
4		1	The earthwork is not blended into the surrounding natural terrain.
5		1	There is no on-site screening with trees and shrubs.
6		1	There is no off-site screening with plantings or earthwork buffers.
7		1	There is no veneering or plating with indigenous rock.
8		2	Disturbed areas are graded but not replanted.
9		1	There are no plantings to provide erosion control and protect visual qualities.
10		1	There are no aesthetic treatment plantings.
11		1	The structure's sides are not furrowed.
12		2	The structure is mostly free of debris, but the area around Grand Avenue has debris.
Conformance Average		1.17	
Existing Aesthetic Features			
13		5	The outlet channel area has many riparian features northwest of the channel.
14		4	There is an established line of trees along the west edge of the channel.
15		3	The existing riparian washes and trees provide wildlife habitat.
16		4	The open space west of the channel should be preserved.
17		1	There are no scenic corridors to preserve.
18		3	The channel offers view to the White Tank and other mountains.
19		3	There is no meandering feature, but there is a low-flow channel on the western edge.
20		4	There is an established line of trees along the western edge of the channel.
21		3	The existing plantings match the riparian character.
22		3	The channel and berm are moderately out of scale with its surroundings.
23		5	There are no attendant facilities structures.
24		4	Most properties are positive -open space, agric., residential. One neg. commercial prop.
25		1	There is no existing on-site irrigation.
26		1	There are no water recharge or retention areas.
27		2	The channel area is uniform and there's a lack of plantings to screen the overhead lines.
28		1	There are three rows of electrical lines and towers over the channel area.
29		3	There is a maintenance road on top of the channel berm.
30		2	The channel is intersected by Grand Avenue.
31		2	There are negative noise impacts from Grand Avenue.
32		4	Additional landscaping is needed to provide visual screen from the overhead lines.
33		4	Landscape can be added along a low-flow feature and at key connection nodes.
Existing Aesthetic Features Average		2.95	
Conformance and Aesthetic Features Average		2.06	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
Structure - 5. McMicken Dam and Outlet Channel								
Zone 4 - Outlet Channel								
	1 to 5	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element							
2 Slightly Conforming Element	5 Fully Conforming Element							
3 Moderately Conforming Element								
Existing Multi-Use Features								
34	5	There are existing natural features beneficial for a greenway corridor.						
35	4	There are existing multi-use features.						
36	4	The area is currently accessible for multi-use.						
37	4	Multi-use features could be added without impeding design function.						
38	5	Multi-use features could be added without compromising public safety.						
39	5	There is space to meander the maintenance road(s).						
40	4	There are no physical constraints to accessing the site.						
41	3	There are no constraints to multi-use due to site size.						
42	4	There are no constraints to public multi-use due to structural hazards.						
43	3	There are no constraints to multi-use due to existing slopes.						
44	5	There are no constraints to multi-use construction due to earth mounds.						
Existing Multi-Use Features Average		4.18						
Future Multi-Use Features								
45	3	There is undeveloped land west of the outlet channel area.						
46	5	McMicken Dam is a designated County Trail link with the CAP Canal and Agua Fria.						
47	5	This site is a designated Surprise trail route with connections to the local trail network.						
48	5	There is a residential area southeast of the channel.						
49	3	There are no existing recreation areas, but there are planned park spaces nearby.						
50	3	No multi-modal facilities, but development along Hwy 303 could provide facilities.						
51	3	No existing commercial areas, but future development may provide commercial nodes.						
52	1	There is no space in this zone for specially planned commercial areas.						
53	1	No additional property that could be sold without affecting the width of the greenway.						
54	5	There is open land around the channel that could provide for enhancements/ buffering.						
55	5	There is undisturbed open land west of this area that could be part of a greenway.						
56	4	The adjacent land has natural features to preserve and would benefit by linking to this site.						
57	1	There is no space in this zone for regional park facilities.						
58	3	Local park facilities could be added by connection nodes.						
59	5	Riparian areas could be part of the modified channel.						
60	5	Recharge basins could be part of the modified channel.						
61	5	The existing maintenance road could be used as a multi-use trail.						
62	5	Separated-use trails could be established in the adjoining open space area.						
Future Multi-Use Features Average		3.72						
Existing and Future Multi-Use Average		3.95						
Conformance, Aesthetic Features + Multi-Use Average		3.01						

McMicken Outlet Wash

Facility Location and Description

McMicken Outlet Wash is located in the Northwest Valley in the unincorporated county near the cities of Peoria and Surprise, about two miles north of the intersection of Bell Road and El Mirage Road. The facility property begins at the McMicken Dam outlet channel, located at the alignment of Happy Valley Road, and extends to the alignment of Union Hills Drive.

McMicken Dam and basin direct drainage flows to the McMicken Outlet Channel, which conveys the flows into McMicken Outlet Wash and into the Agua Fria River. The McMicken Outlet Wash was built in 1990 to drain runoff and irrigation overflow from Sun City West through the 1.6-mile-long unlined channel adjacent to El Mirage Road. A 620-foot-long concrete drop structure, one-half mile south of Deer Valley Drive, was built to control the runoff flows.

The original requirement for the McMicken Dam Project was to acquire land rights or easements up to the Standard Project Flood (SPF) event. This requirement applied to the reservoir pool, the outlet channel and the outlet wash. FCD Hydrology Branch has indicated that the District has insufficient land rights on portions of the McMicken Outlet Wash to meet this requirement. This issue will be evaluated further in the Phase I Assessments

Potential Significance to Provide Regional, Community or Local Open Space Amenities

There is excellent potential for McMicken Outlet Wash to significantly contribute to the regional trail network as the facility is located between two important trail links in the Maricopa County Regional Trail System. The McMicken Dam facility and the Agua Fria River are designated trail connections for both the County Trail System and the West Valley Recreation Corridor. This facility also offers an opportunity to connect the County Trail and Recreation Corridor with local city trail networks. Please refer to the McMicken Outlet Wash Potential Corridor Locations Map on page 111.

Aesthetic Treatment and Landscaping Policy Conformance

McMicken Outlet Wash is separated into two structure zones with different flood control elements and distinctive aesthetic character. Please refer to the Site Map on page 112 for the structure zones, zone descriptions, city boundaries, and arterial streets. Please also refer to the Site Evaluation Criteria rating and relevant comments on pages 119 to 122.

Zone One – Natural Wash

The natural wash is located at Happy Valley Road alignment and extends two miles to Deer Valley Drive. The existing natural desert wash is approximately eight feet deep and fifteen to twenty feet wide with a sand and rock channel bottom and accompanying riparian vegetation.

The wash channel zone conforms to aesthetic policy for the following reasons:

- The natural wash varies in alignment, profile and slope.
- The natural wash blends into the contour of the natural terrain.
- There is screening from the existing natural plants.
- The natural wash has veneering from the existing river rock.
- The existing plantings provide erosion control and protect visual qualities.
- The existing plantings do not cause an impedance to design function.



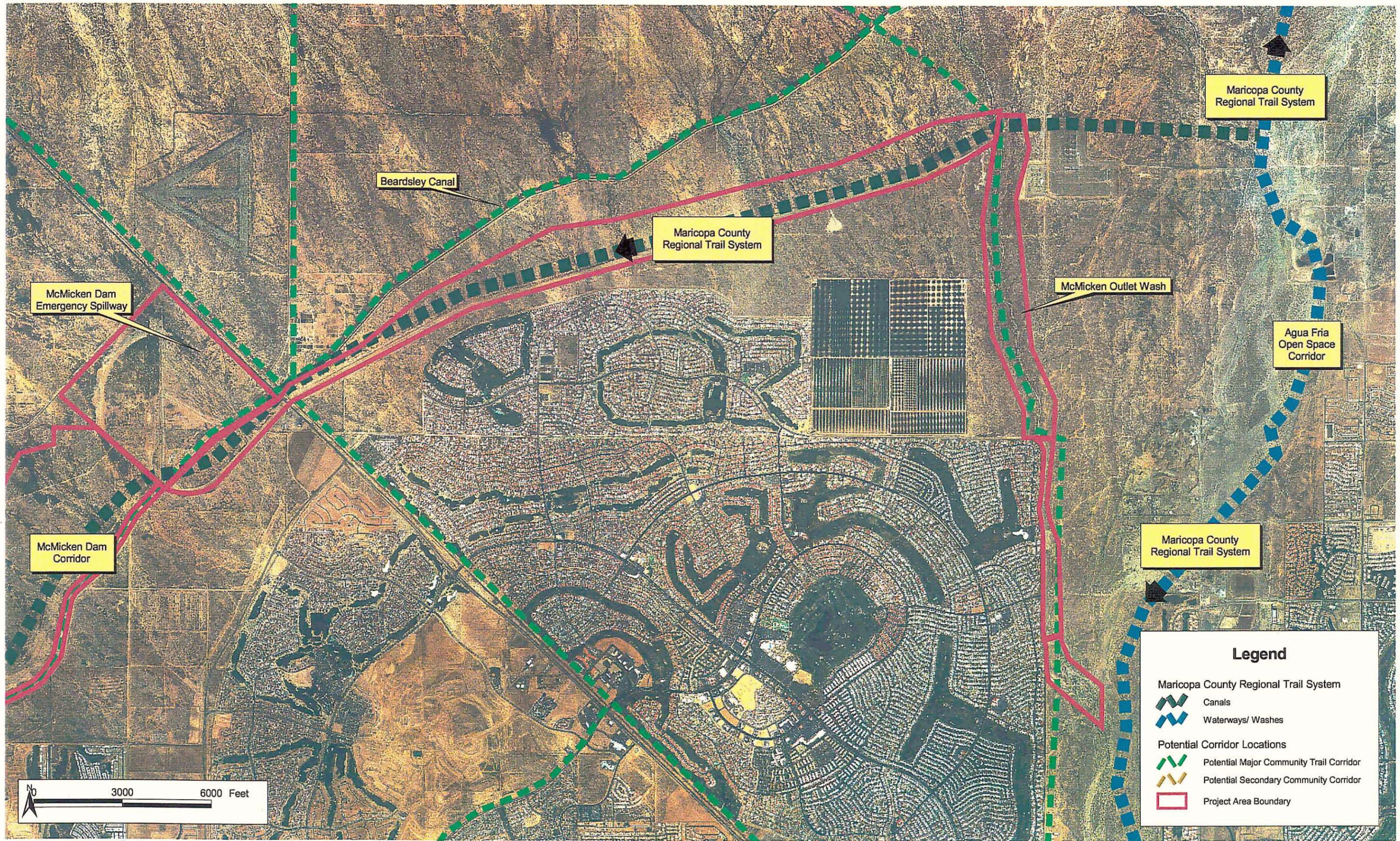
Earthen Channel and El Mirage Road – North View



Natural Wash Channel – South View

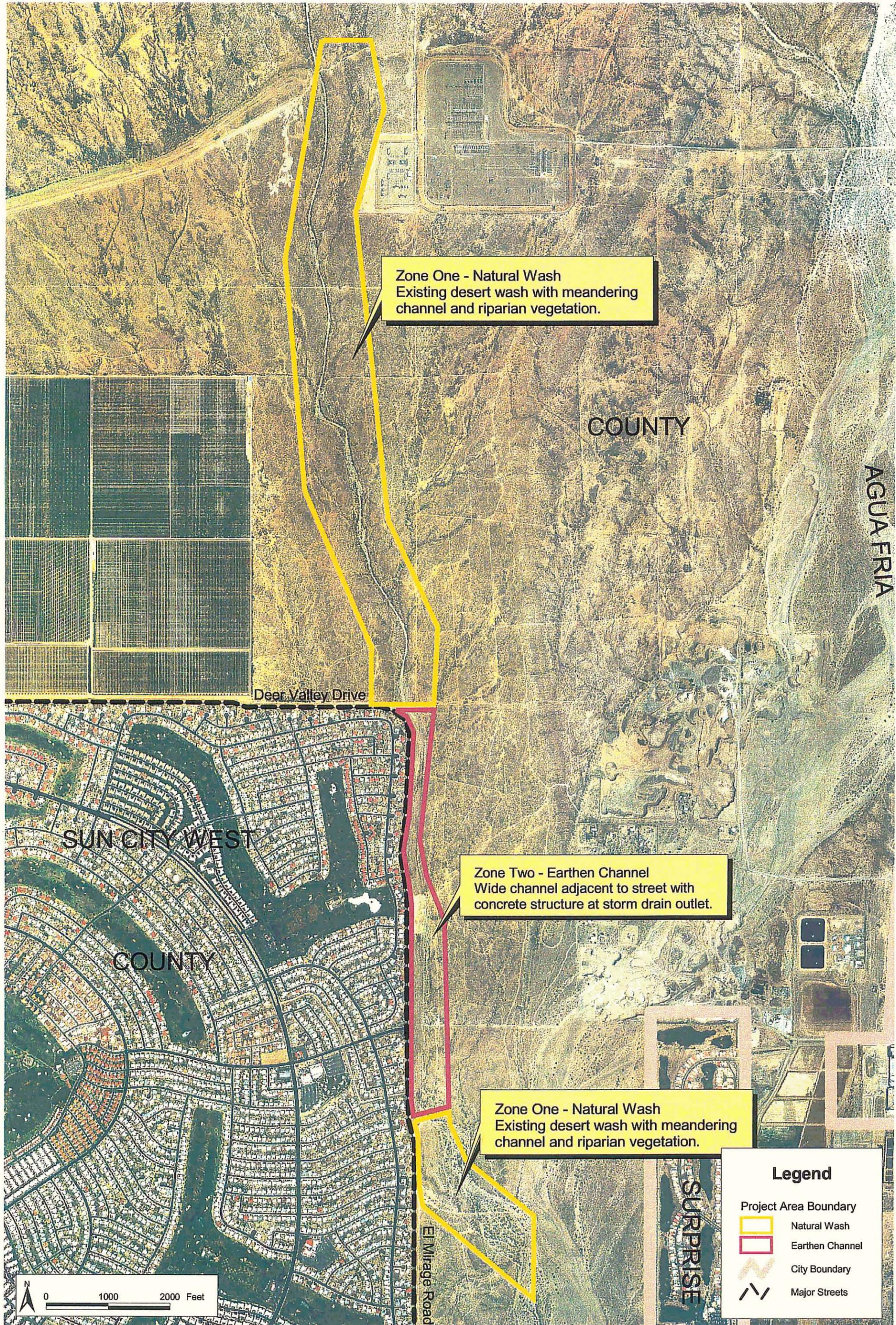


Natural Wash Channel – South View



McMicken Outlet Wash & McMicken Dam

Potential West Valley Trail Corridors Map



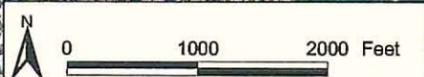
Zone One - Natural Wash
Existing desert wash with meandering channel and riparian vegetation.

Zone Two - Earthen Channel
Wide channel adjacent to street with concrete structure at storm drain outlet.

Zone One - Natural Wash
Existing desert wash with meandering channel and riparian vegetation.

Legend

- Project Area Boundary
- Natural Wash
- Earthen Channel
- City Boundary
- Major Streets



Zone One – Natural Wash, cont.

The natural wash does not conform to policy for the following reasons:

- Disturbed areas are not graded and replanted to match the surrounding area.

Zone Two - Earthen Channel

The earthen channel begins at Deer Valley Drive and extends three-quarters of a mile to a section of natural wash channel near the confluence with the Agua Fria River. The earthen channel is approximately one hundred feet wide and fifteen feet deep.

The earthen channel conforms to aesthetic policy for the following reasons:

- The profile of the channel varies.
- The channel partially blends into the contour of the natural terrain.
- The disturbed areas are regraded.
- The existing plantings provide erosion control and protect visual qualities.

The earthen channel does not conform to policy for the following reasons:

- The alignment or slope of the channel does not meander or vary.
- There are no screening techniques to make the structures more compatible with the environment, such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.
- The disturbed areas have not been replanted to match the surrounding area.

Surrounding Site Character

The surrounding site character for McMicken Outlet Wash is identified on the Site Analysis - Existing Features/Surrounding Land Use Map; please refer to page 114.

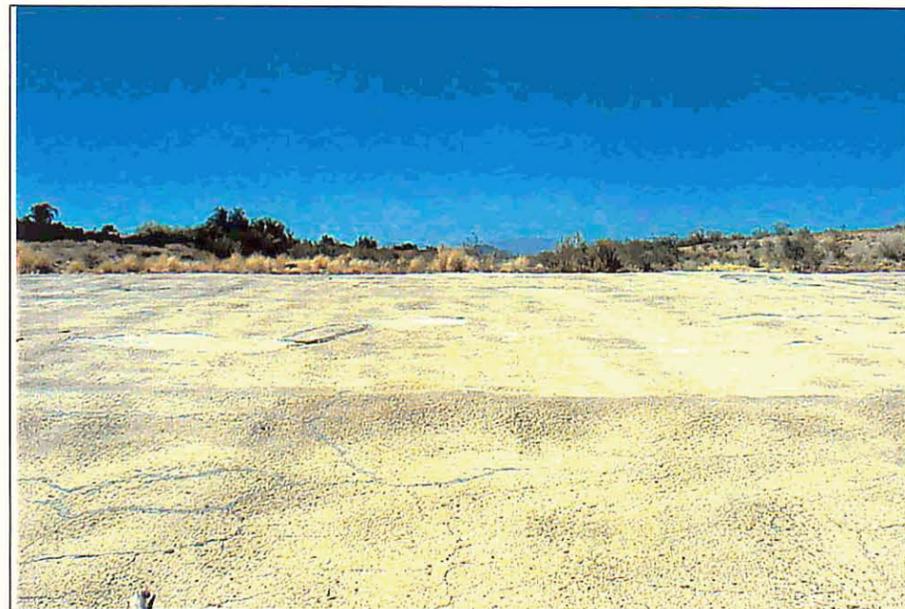
Zone One – Natural Wash

The surrounding site character near the natural wash is open space, agricultural, and industrial. A majority of the adjacent land use is scenic open space areas with undisturbed desert vegetation and numerous riparian washes. The agricultural use west of the channel is a large orange grove. The industrial use is a large power substation located at the northeast end of the natural wash. This is a negative visual impact on the area. There are numerous rows of transformer and electrical towers, and several overhead lines crossing the wash.

Zone Two – Earthen Channel

The surrounding site character near the earthen channel is open space, residential, and industrial. The adjacent open space area has desert vegetation, but is disturbed by off-road vehicle use. The residential use, a medium-density neighborhood adjacent to a golf course, has positive character. The industrial use east of the channel is a large sand and gravel mining operation adjacent to the Agua Fria river. This is a heavily impacted mining area, but due to the existing grades it is not visible from the channel area. El Mirage Road parallels the residential area and borders the western edge of the channel.

Future development plans for this area include the construction of a six-lane divided El Mirage Parkway from Bell Road to the planned 303 Freeway. The freeway alignment extends east to west adjacent to the McMicken Outlet Channel and crosses the McMicken Outlet Wash natural channel. The El Mirage Parkway alignment extends north to south and crosses the earthen channel at Deer Valley Drive. Please refer to the McMicken Outlet Wash Concept plan at the end of this section.



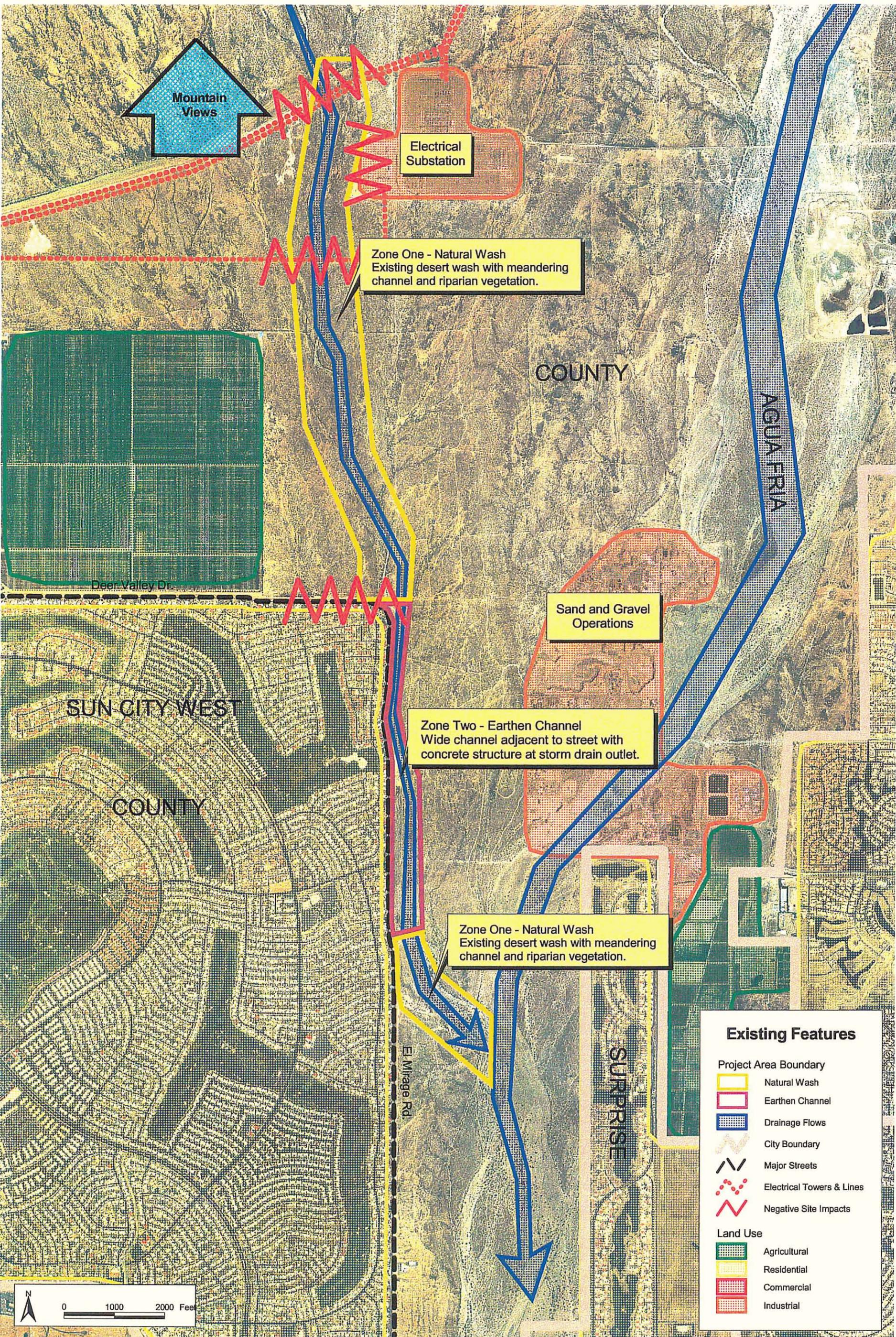
Concrete Pad by Storm Drain Outlet



Concrete Reinforcements – earthen channel



Concrete Pad in earthen channel



114

Site Impressions

Zone One – Natural Wash

The natural wash is visually pleasing because of its natural form with meandering, braided channels and lush riparian vegetation. However, there are some negative impacts in this area: portions of the wash have down-cutting and eroded banks due to increased water flows, and several rows of electrical towers and lines cross the wash.

There is another natural wash section south of the constructed earthen channel and near the confluence with the Agua Fria River. The natural wash changes to a very wide, braided channel with steep and jagged canyon-like edges, providing a picturesque view of the Agua Fria.

Zone Two – Earthen Channel

While the earthen channel is uniformly straight with unvaried side slopes, the channel is very wide, containing natural low-flow channels and riparian vegetation. In addition, the profile of the eastern edge of the channel varies, resembling the natural open space beyond. Naturally revegetated areas along the earthen channel edges also help blend the rest of the structure into its surroundings.

A concrete drop structure reinforces the earthen channel and manages the storm run-off flows from the Sun City West neighborhoods. The concrete structure is large and visually negative without screening from plantings or earthwork. In addition, the area by El Mirage Road is visually negative due to the blank expanse of residential walls and barrenness from a lack of landscaping.



Baffle structure at drain pipe outlet

Opportunities and Constraints for Retrofit Treatments

The retrofit opportunity for McMicken Outlet Wash is its strategic location adjacent to two major trail corridors in the Maricopa County Regional Trail System. McMicken Outlet Wash is a key open space corridor linking McMicken Dam Outlet Channel to the Agua Fria River. The Outlet Wash also has the potential to creating a local loop corridor that bypasses the sand and gravel operations in this area of the Agua Fria River. In addition, the Outlet Wash area provides an opportunity to use the existing natural features of this area to incorporate into the proposed Parkway and create a positive entryway to Sun City West.

Zone One – Natural Wash

The retrofit opportunities for the natural wash are the surrounding desert open space and natural wash that provide a quality trail space.

The retrofit constraints for the natural wash are to manage the future road impacts on this area, incorporating the multi-use trail connections, and preserving the scenic resources.

Zone Two – Earthen Channel

The retrofit opportunities for the earthen channel are the width of the structure, which provides space for multi-use improvements, and the partially naturalized condition and short length of the channel, which allow for easier retrofit enhancements.

The retrofit constraints are the large concrete drop structure and the lack of space for screening enhancements between the earthen channel and El Mirage Road.



Earthen channel by El Mirage Road – north view

The most significant constraints for McMicken Outlet Wash are the future parkway and highway plans, which will heavily impact the entire area. A comprehensive aesthetic and multi-use plan should be developed in conjunction with the proposed road plans to include:

- Restoring and preserving the existing riparian channels and open spaces with a revegetation program and restricting off-road vehicular access.
- Developing a thematic and coordinated planting design that includes the wash channels, El Mirage Road, the proposed Parkway, and the 303 Freeway crossing.
- Incorporating grade-separated crossings for the proposed trail connections.
- Generating design guidelines for future adjacent residential developments.



Confluence of natural wash with Agua Fria

Landscape Aesthetic and Multi-Use Retrofit Treatment Opportunities

The cross-sections on this and the following page are illustrations of potential retrofit treatment opportunities discussed herein. The cross-sections also relate to the overall McMicken Outlet Wash Concept Plan on page 118.

The overall landscape aesthetic and multi-use treatment opportunities for McMicken Outlet Wash are to enhance the existing desert vegetation and channel features, introduce multi-use trails to complete the connections, and for these flood control features to become part of an integrated Parkway. Due to the scale of the proposed changes along this corridor, it would be beneficial to expand the flood control boundaries to protect, and provide a buffer zone between, the proposed trails, multi-uses, and the future parkway and freeway.

Zone One – Natural Wash

The natural wash area requires only minor aesthetic and landscaping treatment retrofit improvements because of the existing natural condition of the site. The eroded edges of the wash need some earthwork and natural rock placement to repair and reinforce the channel, and the disturbed areas need revegetation. A recharge basin or ponding area could be established where the McMicken outlet channel directs its flows into the wash. This would reduce water velocity and lessen down-cutting and erosion. The negative views of the electrical substation should be screened from the natural wash with berms and landscape plantings. Acquiring the land between the substation and wash will provide an opportunity to create a buffer and enlarge the open space area around the natural wash.

The multi-use treatment retrofit improvements include constructing meandering soft-surface trails adjacent to the natural wash to provide scenic views of the channel and the surrounding open space. An enhanced gateway feature could be introduced at the McMicken outlet channel trail connection point.

Aesthetic Treatment Retrofit Opportunities

- Earthwork & Rock Placement - Repair and reinforce wash channel
- Earthwork - Construct recharge basin/ponding areas
- Rock Drop Structures - By ponding areas
- Earthwork - Landscape berms for screening

Landscaping Treatment Retrofit Opportunities

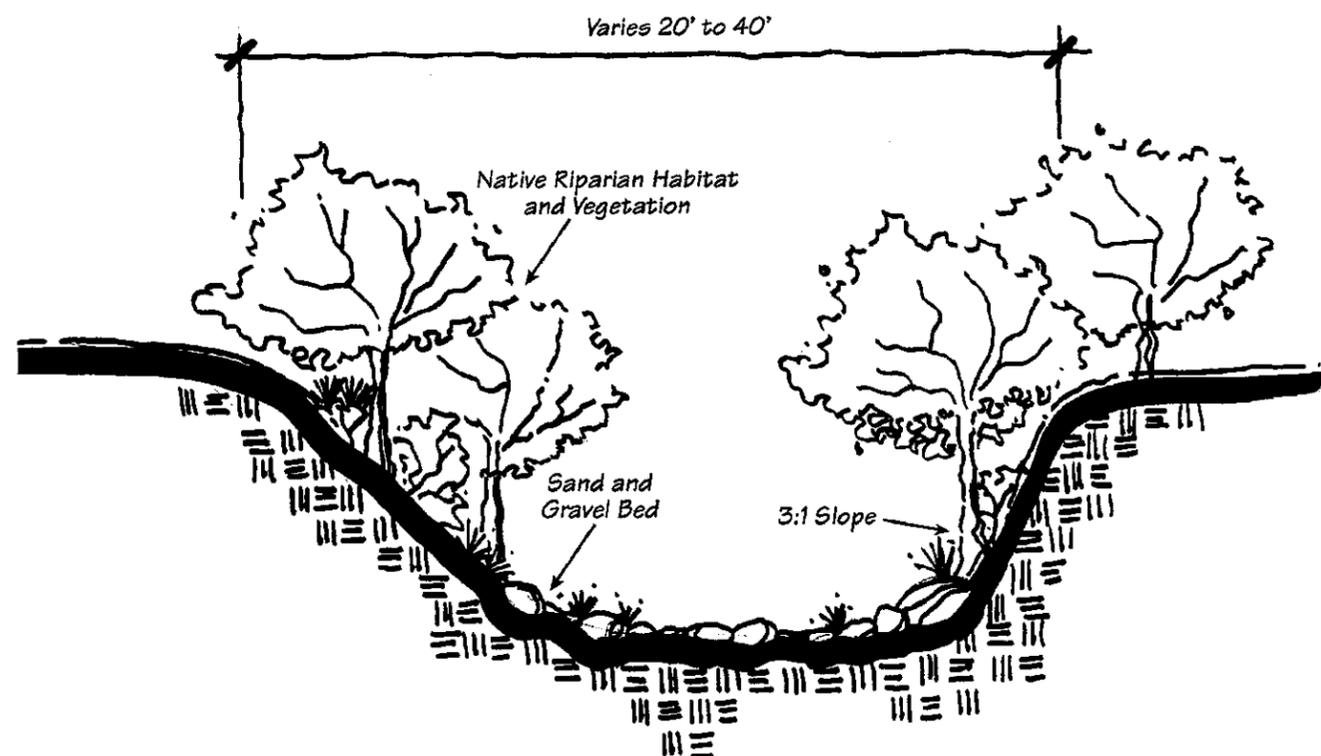
- Tree Planting
- Revegetation - Seeding disturbed areas
- Irrigation System

Multi-Use Treatment Retrofit Opportunities

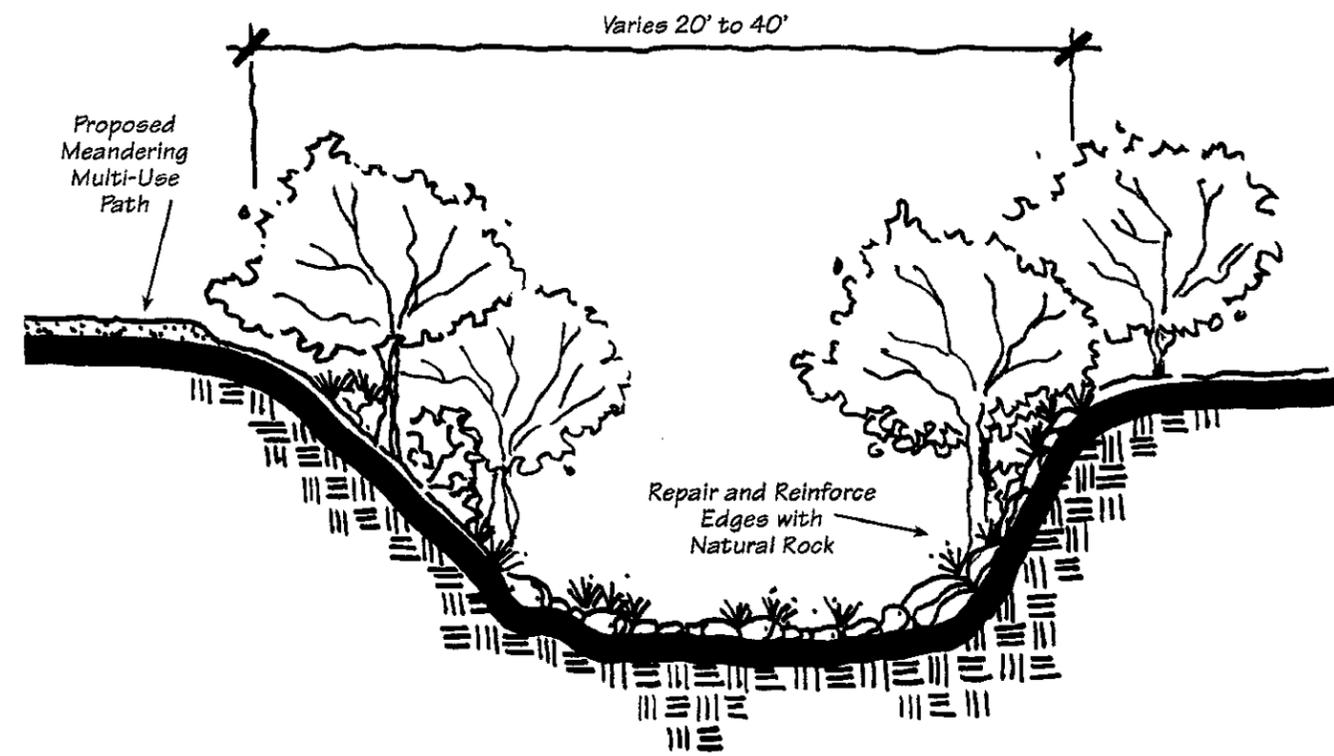
- Soft Surface Trail
- Gateway Features - At trail connection nodes

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatments

- Land Acquisition - To enlarge area for retrofit treatments



McMicken Outlet Wash Section A – Existing Conditions



McMicken Outlet Wash Section A – Proposed Retrofit Improvements

Zone Two – Earthen Channel

Aesthetic and landscape treatment retrofit opportunities for the constructed earthen channel include introducing a meandering low-flow channel, varying the channel slopes, creating basin areas to pond water, and revegetating with desert and riparian plantings. The concrete structure could be replaced with a modified concrete structure colored and textured to blend into the surrounding landscape, incorporating large boulders to disperse drainage flows and islands of riparian plantings to visually minimize the size of the structure.

Multi-use treatment retrofit enhancements propose adding soft-surface trails along both sides of the channel and providing pedestrian access nodes to the adjacent neighborhoods. Trailhead facilities could be established by the overlook at the confluence with the Agua Fria and include parking spaces, shaded picnic facilities, and viewing areas. In addition, acquiring land along the eastern edge of the earthen channel will widen the open space/greenway area and provide a buffer between the area and the proposed El Mirage Parkway.

Aesthetic Treatment Retrofit Opportunities

- Earthwork - Construct low flow channel
- Earthwork - Construct recharge basin/ponding areas
- Rock Drop Structures - By ponding areas

Landscaping Treatment Retrofit Opportunities

- Tree Planting
- Revegetation - Seeding disturbed areas
- Irrigation System

Multi-Use Treatment Retrofit Opportunities

- Soft Surface Trail
- Trailhead Facilities
- Gateway Facilities - At trail connection points

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatments

- Land Acquisition - To incorporate natural features in greenway

Hydrologic Engineering Synopsis of Structure

(Source: Data On Structures, an unpublished Flood Control District Document)

Project Title: McMicken Outlet Wash – Date of Final Acceptance:

Watershed and Relationship to Other Structures: This structure was built to drain away runoff from Sun City and irrigation overflow.

Location: Access from Bell Road to El Mirage Road; turn north for 2 miles. El Mirage Drain runs parallel to El Mirage Road.

Authorization:

Federal Sponsor:

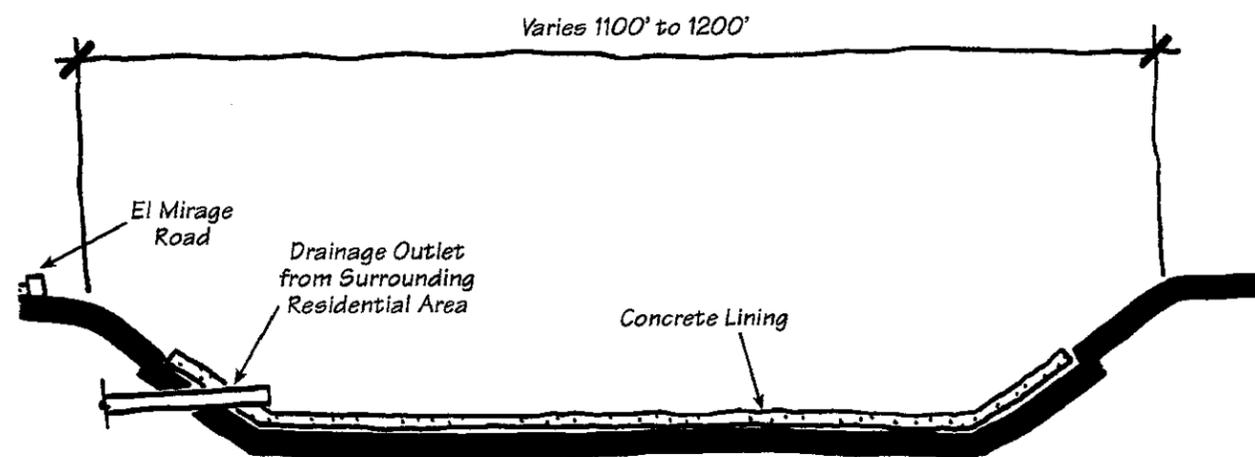
Local Sponsor: Del Webb Corp.

Jurisdictional Agency: Arizona Department of Water Resources

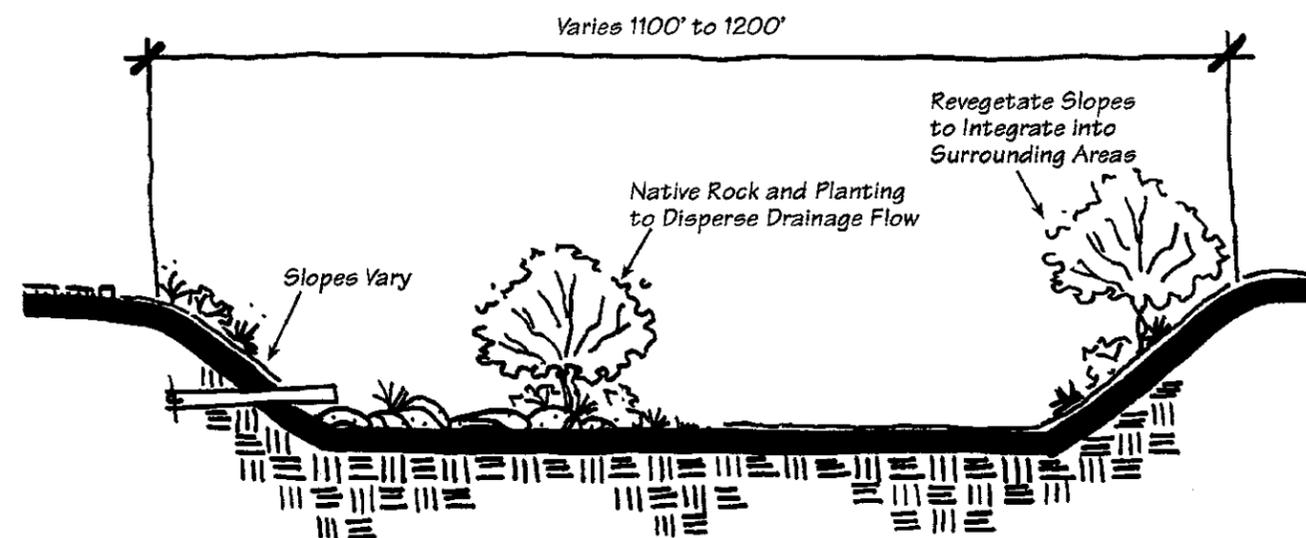
Functional Description: This structure drains local runoff and farm runoff into the Agua Fria River.

Project Features:

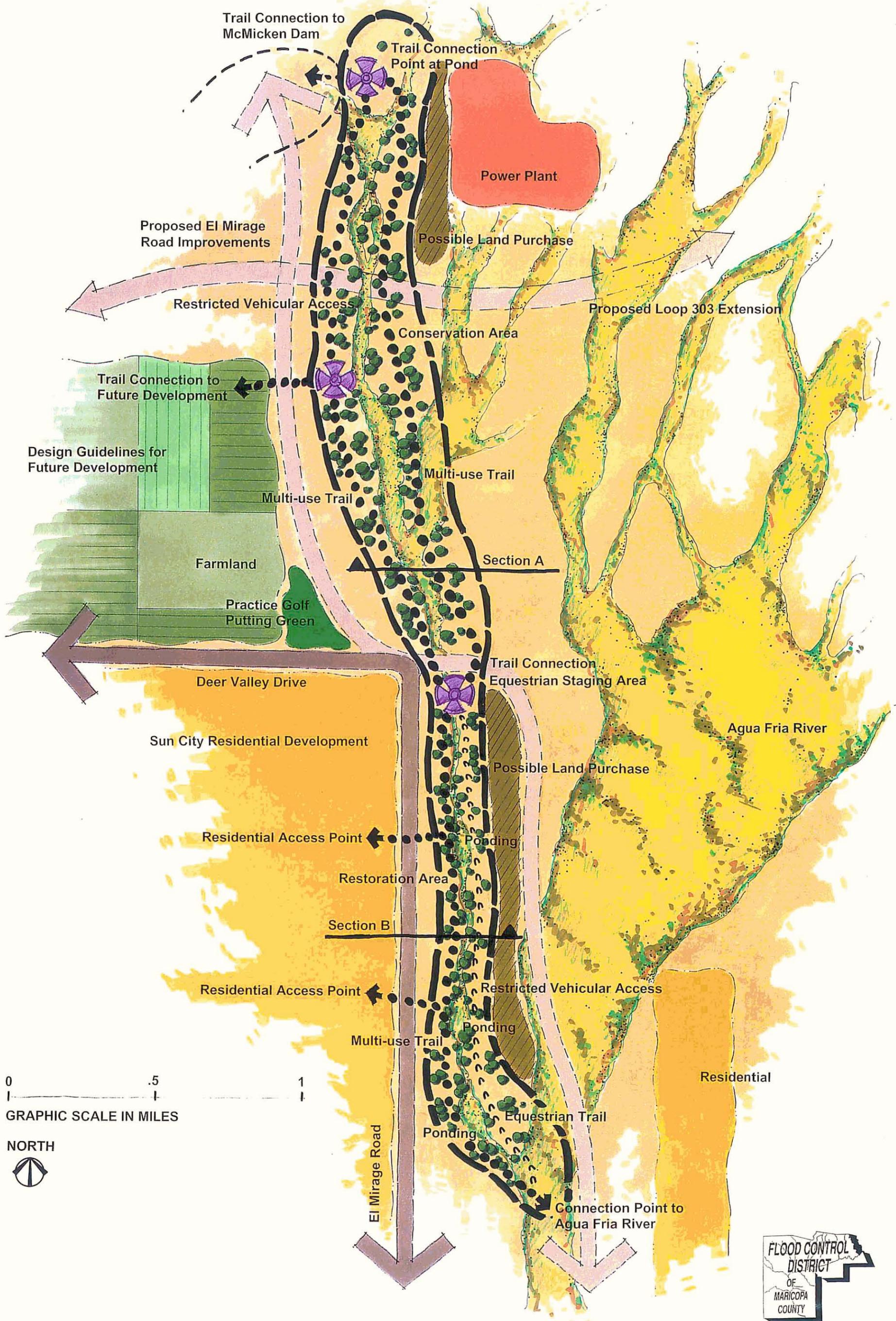
- Basically an unlined channel 1.6 miles long
- Drop structure (concrete) 1 (620 feet long)



McMicken Outlet Wash Section B – Existing Conditions



McMicken Outlet Wash Section B – Proposed



0 .5 1
 GRAPHIC SCALE IN MILES



MCMICKEN WASH CONCEPT

Carter-Burgess
 OCTOBER 2000

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 9. McMicken Outlet Wash		
Zone 1 - Natural Wash		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	5	The alignment of the natural wash channel varies, this is a natural desert riparian wash.
2 The profile or height of the structure varies to modify the outline.	5	The height or profile varies, this is a natural desert riparian wash.
3 The side slopes of the structure are varied to simulate the natural terrain.	5	The side slopes vary, this is a natural desert riparian wash.
4 The structure is designed to blend into the contour of the natural terrain.	5	This is mostly undisturbed open space and blends into the surrounding natural terrain.
5 On-site screening with trees and shrubs are used to blend the structure.	5	The on-site screening is from the existing plantings.
6 Off-site screening with plantings or earthwork buffers are used.	5	The off-site screening is from the existing plantings.
7 There is veneering or plating of the structure with indigenous rock.	3	There is no veneering, except for the naturally occurring river rock.
8 Disturbed areas are graded and replanted to match surrounding area.	4	There are no disturbed areas.
9 Plantings are used to provide erosion control and protect visual qualities.	4	The existing plantings provide erosion control and protect visual qualities.
10 Plantings are used that will not cause an impedance to design function.	4	The existing plantings do not cause an impedance to design function.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	4	This zone is free of weeds and debris.
Conformance Average		4.17
Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	5	This is a large natural desert riparian wash with numerous tributary washes.
14 There are landscape or natural features to preserve.	5	The natural wash channel area has upland desert vegetation and riparian plants.
15 There are wildlife habitat areas to preserve.	5	This entire zone has wildlife habitat areas to preserve.
16 There are undisturbed open space elements to preserve.	5	There are open space areas along each side of the wash to preserve.
17 There are scenic corridors to preserve.	5	This zone provides a scenic corridor to the northern foothills.
18 There are panoramic views from the structure.	5	This zone provides panoramic views to the northern foothills.
19 There is a meandering low-flow feature modeled on riparian washes.	5	There is an existing natural low-flow channel with meanders.
20 The structure or area has revegetated.	5	This area has naturally revegetated.
21 The existing plantings match the community character.	5	The existing plantings match the riparian character.
22 The structure's size and scale are proportional to its surroundings.	5	The natural wash's size and scale are proportional with its surroundings.
23 The attendant flood control facilities structures blend into surroundings.	5	There are no attendant flood control facilities.
24 The adjacent properties positively impact the site.	4	Most positive -open space, riparian, agric. One negative prop. -industrial electric substn.
25 There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26 There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27 The structure does not have negative on-site visual problems.	3	The wash channel has some visual problems in areas with channel erosion.
28 There are no overhead electrical lines and utility towers.	4	There is one overhead electrical line with towers that crosses the wash.
29 There are not multiple maintenance roads within the site.	5	There are no maintenance roads within the site.
30 There are no intersecting arterial streets.	3	No existing streets, but there are plans for Estrella Fwy + El Mirage Parkway projects.
31 There are no noise impacts that need buffering.	4	There are no noise impacts.
32 Additional landscape features are needed.	5	Landscaping is needed to screen the electrical substation and the future road projects.
33 There are opportunities for landscape enhancements.	5	This zone has space for enhancements and landscape could be added by eroded banks.
Existing Aesthetic Features Average		4.29
Conformance and Aesthetic Features Average		4.23

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 9. McMicken Outlet Wash		
Zone 1 - Natural Wash		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Existing Multi-Use Features		
34	5	There are existing natural features beneficial for a greenway corridor.
35	1	There are existing multi-use features.
36	5	The area is currently accessible for multi-use.
37	5	Multi-use features could be added without impeding design function.
38	5	Multi-use features could be added without compromising public safety.
39	3	There is space to meander the maintenance road(s).
40	5	There are no physical constraints to accessing the site.
41	5	There are no constraints to multi-use due to site size.
42	5	There are no constraints to public multi-use due to structural hazards.
43	3	There are no constraints to multi-use due to existing slopes.
44	4	There are no constraints to multi-use construction due to earth mounds.
Existing Multi-Use Features Average		4.18
Future Multi-Use Features		
45	5	There are possible connections to open space.
46	5	There is a possible connection to the Maricopa County Trail System.
47	5	There are possible connections to the local trail system.
48	4	There are possible connections to residential neighborhoods.
49	4	There are possible connections to recreation areas.
50	3	There are possible connections to multi-modal facilities.
51	3	There are possible connections to local commercial areas.
52	1	There are opportunities for special use commercial areas.
53	1	Site property could be sold to allow for special use commercial areas.
54	5	Adjacent land could be acquired to provide for enhancements/ buffering.
55	5	Adjacent land has natural features beneficial for a greenway corridor.
56	4	Adjacent land needs design guidelines for future development.
57	1	There are opportunities for large-scale regional park facilities.
58	4	There are opportunities for small-scale local park facilities.
59	5	There are opportunities for riparian wash areas.
60	5	There are opportunities for recharge basins or ponding areas.
61	5	There are opportunities for multi-use trails.
62	5	There are opportunities for separated-use trails.
Future Multi-Use Features Average		3.89
Existing and Future Multi-Use Average		4.04
Conformance, Aesthetic Features + Multi-Use Average		4.13

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 9. McMicken Outlet Wash		
Zone 2 - Earthen Channel		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	2	The alignment of the earthen channel is uniformly straight.
2 The profile or height of the structure varies to modify the outline.	3	The height or profile of the channel is constant and does not vary.
3 The side slopes of the structure are varied to simulate the natural terrain.	2	The sides slopes of the channel are a uniform 4 to 1 slope.
4 The structure is designed to blend into the contour of the natural terrain.	3	The earthwork is partially blended into the surrounding natural terrain.
5 On-site screening with trees and shrubs are used to blend the structure.	3	There is some on-site screening with trees and shrubs.
6 Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7 There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating with indigenous rock.
8 Disturbed areas are graded and replanted to match surrounding area.	2	Disturbed areas are graded but not replanted.
9 Plantings are used to provide erosion control and protect visual qualities.	3	The existing plantings provide erosion control and protect visual qualities.
10 Plantings are used that will not cause an impedence to design function.	3	The existing plantings do not cause an impedence to design function.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	3	The channel area has some weeds and debris along El Mirage Road.
Conformance Average		2.25
Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	3	There are riparian features at the south end of the earthen channel area.
14 There are landscape or natural features to preserve.	3	There are landscape features along the channel and the southern end of the channel.
15 There are wildlife habitat areas to preserve.	2	There are nominal wildlife habitat areas to preserve.
16 There are undisturbed open space elements to preserve.	3	The open space adjacent to the southern end of the channel should be preserved.
17 There are scenic corridors to preserve.	4	The southern end of the channel provides a scenic corridor to the Agua Fria.
18 There are panoramic views from the structure.	4	There are panoramic views from the channel edge to the Agua Fria.
19 There is a meandering low-flow feature modeled on riparian washes.	1	There is no meandering low-flow feature.
20 The structure or area has revegetated.	3	The edges and other portion of the channel have revegetated.
21 The existing plantings match the community character.	4	The existing plantings match the riparian character.
22 The structure's size and scale are proportional to its surroundings.	3	The channel is moderately out of scale with its surroundings.
23 The attendant flood control facilities structures blend into surroundings.	1	The large concrete pads at the residential drainage outlets do not blend.
24 The adjacent properties positively impact the site.	3	Some positive prop. -open space + riparian. Some negative -residentl walls + barren rd.
25 There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26 There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27 The structure does not have negative on-site visual problems.	1	The channel is uniform and the large concrete pads areas need screening.
28 There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29 There are not multiple maintenance roads within the site.	5	There are no maintenance roads within the site.
30 There are no intersecting arterial streets.	2	No intersecting streets, but the El Mirage Parkway road projects is planned.
31 There are no noise impacts that need buffering.	2	There is noise from the parallel El Mirage Road.
32 Additional landscape features are needed.	5	Additional landscaping is needed within and along the channel and El Mirage Road.
33 There are opportunities for landscape enhancements.	5	Landscape can be added along a low-flow feature and at key connection nodes.
Existing Aesthetic Features Average		2.90
Conformance and Aesthetic Features Average		2.58

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
<i>Structure - 9. McMicken Outlet Wash</i>		<i>1 to 5</i>	1 Non-Conforming Element 4 Predominantly Conforming Element
<i>Zone 2 - Earthen Channel</i>			2 Slightly Conforming Element 5 Fully Conforming Element
			3 Moderately Conforming Element
<hr/>			
<i>Existing Multi-Use Features</i>			
34	There are existing natural features beneficial for a greenway corridor.	3	The existing washes at each end of this channel are beneficial for a greenway corridor.
35	There are existing multi-use features.	1	This zone currently has no existing multi-use features.
36	The area is currently accessible for multi-use.	5	This zone is currently accessible for multi-use.
37	Multi-use features could be added without impeding design function.	5	Multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	3	Multi-use features could be added after addressing safety concerns.
39	There is space to meander the maintenance road(s).	3	There is no maintenance road, but there is space to meander a road.
40	There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use due to site size.	5	There are no constraints to multi-use due to site size, this zone has enough space.
42	There are no constraints to public multi-use due to structural hazards.	3	The stormdrain outlet is potentially dangerous and needs addressing.
43	There are no constraints to multi-use due to existing slopes.	2	There are some constraints, the existing channel slopes at the south end are steep.
44	There are no constraints to multi-use construction due to earth mounds.	2	There are some naturally occurring earthwork and rip-rap mounds in the existing washes.
<i>Existing Multi-Use Features Average</i>		<i>3.36</i>	
<hr/>			
<i>Future Multi-Use Features</i>			
45	There are possible connections to open space.	5	Most land north of this site is currently open space.
46	There is a possible connection to the Maricopa County Trail System.	5	This site connects to McMicken Dam Outlet Channel and provides a link to the Agua Fria.
47	There are possible connections to the local trail system.	5	El Mirage Parkway is a designated Surprise trail route with connections to local trails.
48	There are possible connections to residential neighborhoods.	5	There is a residential area west of the channel.
49	There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation.
50	There are possible connections to multi-modal facilities.	3	No existing multi-modal, but development along El Mirage Prkwy may provide facilities.
51	There are possible connections to local commercial areas.	1	No existing commercial areas, but future development may provide commercial nodes.
52	There are opportunities for special use commercial areas.	1	This area should remain as an open space greenway.
53	Site property could be sold to allow for special use commercial areas.	1	No additional property that could be sold without affecting the width of the greenway.
54	Adjacent land could be acquired to provide for enhancements/ buffering.	5	There are open space areas that could be acquired to widen the channel greenway.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	There is undisturbed open land around this area that could be part of a greenway.
56	Adjacent land needs design guidelines for future development.	4	Future development would benefit from comprehensive planning with an enhanced site.
57	There are opportunities for large-scale regional park facilities.	1	There is no space for regional park facilities.
58	There are opportunities for small-scale local park facilities.	4	Local park facilities could be added by connection points and at the key viewing spots.
59	There are opportunities for riparian wash areas.	5	There is space for additional riparian enhancements.
60	There are opportunities for recharge basins or ponding areas.	5	There is space for recharge basins.
61	There are opportunities for multi-use trails.	5	The existing maintenance roads along the channel could be used as multi-use trails.
62	There are opportunities for separated-use trails.	5	The multiple maintenance roads along the channel could provide separated use trails.
<i>Future Multi-Use Features Average</i>		<i>3.78</i>	
<i>Existing and Future Multi-Use Average</i>		<i>3.57</i>	
<i>Conformance, Aesthetic Features + Multi-Use Average</i>		<i>3.07</i>	

Perryville Bank Stabilization

Facility Location and Description

Perryville Bank Stabilization is located in the Southwest Valley, contiguous with the bank of the Gila River. The Gila River is one of the largest watercourses in Maricopa County and a prominent natural feature in the southwest valley. This river is a relatively unknown gem of the valley, a lush riparian environment with running water and abundant wildlife.

Perryville Bank Stabilization is located about six miles south of Interstate 10 and one-quarter mile south of the intersection of Southern Avenue and County Route 85 and the alignment of Perryville Road. This facility is also situated within the predominantly agricultural heritage landscape of the Southwest Valley, which provides open vistas to the Estrella and White Tank Mountains.

Perryville Bank Stabilization is a riprap and gabion structure just under one-half mile long. This bank stabilization was built in 1984 to prevent further erosion of the riverbank and the resultant loss of land and improvements. This facility was installed specifically to protect a section of the Buckeye Canal extension.

Potential Significance to Provide Regional, Community or Local Open Space Amenities

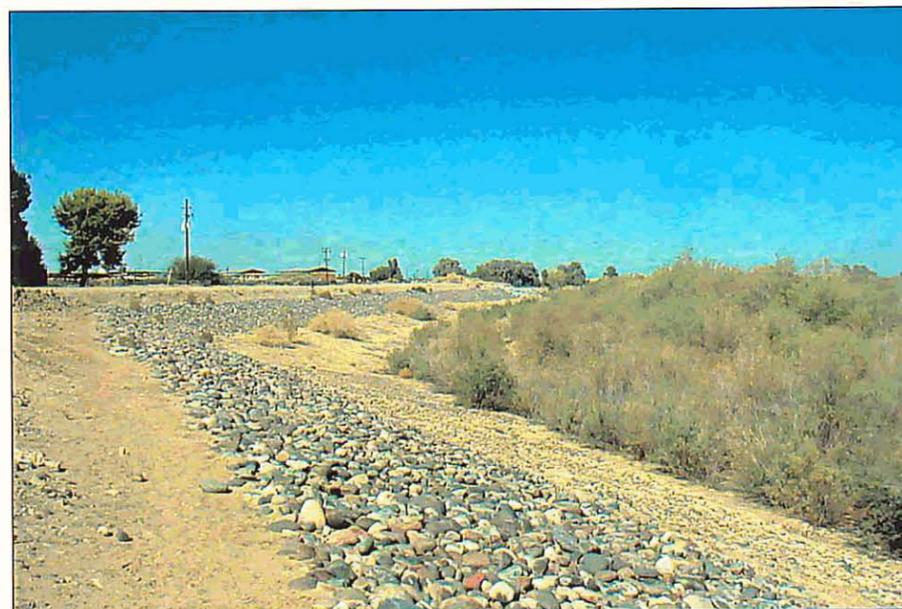
The potential for the Perryville facility is excellent because of its significant location along the banks of the Gila River. The Gila and the Agua Fria Rivers are major water channels and land features of the south and west valley that are important regional-scale recreational, transportation, and aesthetic amenities. The Gila River is also a major component of the Maricopa County Regional Trail System, connecting east to west from the Western Canal to the Hassayampa River. The Agua Fria is also part of this system, connecting north to south from the Central Arizona Project Canal to the Gila River. Please refer to the Perryville Bank Stabilization Potential Corridor Locations Map on page 124.

Several ongoing enhancement projects coincide with the purpose of this assessment study for potential landscape aesthetic and multi-use opportunities. The Perryville facility is located within the heart of the El Rio Vision project area. This project proposes restoration of the riparian environment, preservation of the agricultural heritage landscapes, linkages to the surrounding communities, and enhancement of flood control elements. Perryville is located about four miles west of the confluence of the Agua Fria and Gila Rivers, which is within the Tres Rios project area, another riparian restoration and multi-use project.

The Perryville facility is relatively close to other regional recreational open space, such as the Estrella Mountain Regional Park and Casey Abbot Recreational Area two miles east of this facility. In addition, the Perryville facility is located near other community and local open spaces. The Buckeye Canal and Roosevelt Irrigation District Canal are potentially important east-west corridor connections through the adjacent cities of Buckeye and Goodyear and most of the South Valley.



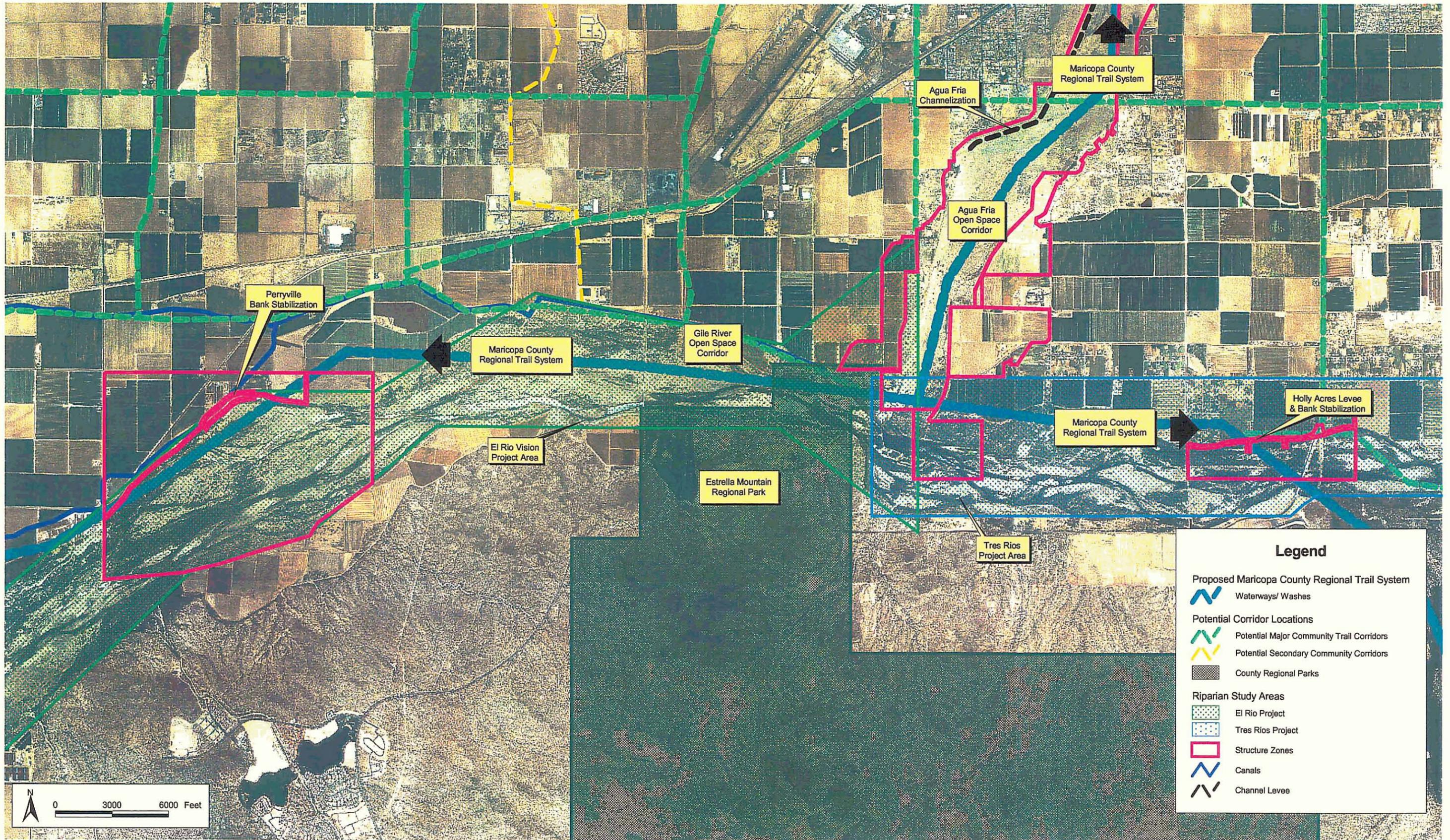
Agriculture Fields and Local Wildlife – West View



Bank Stabilization Structure – Northeast View

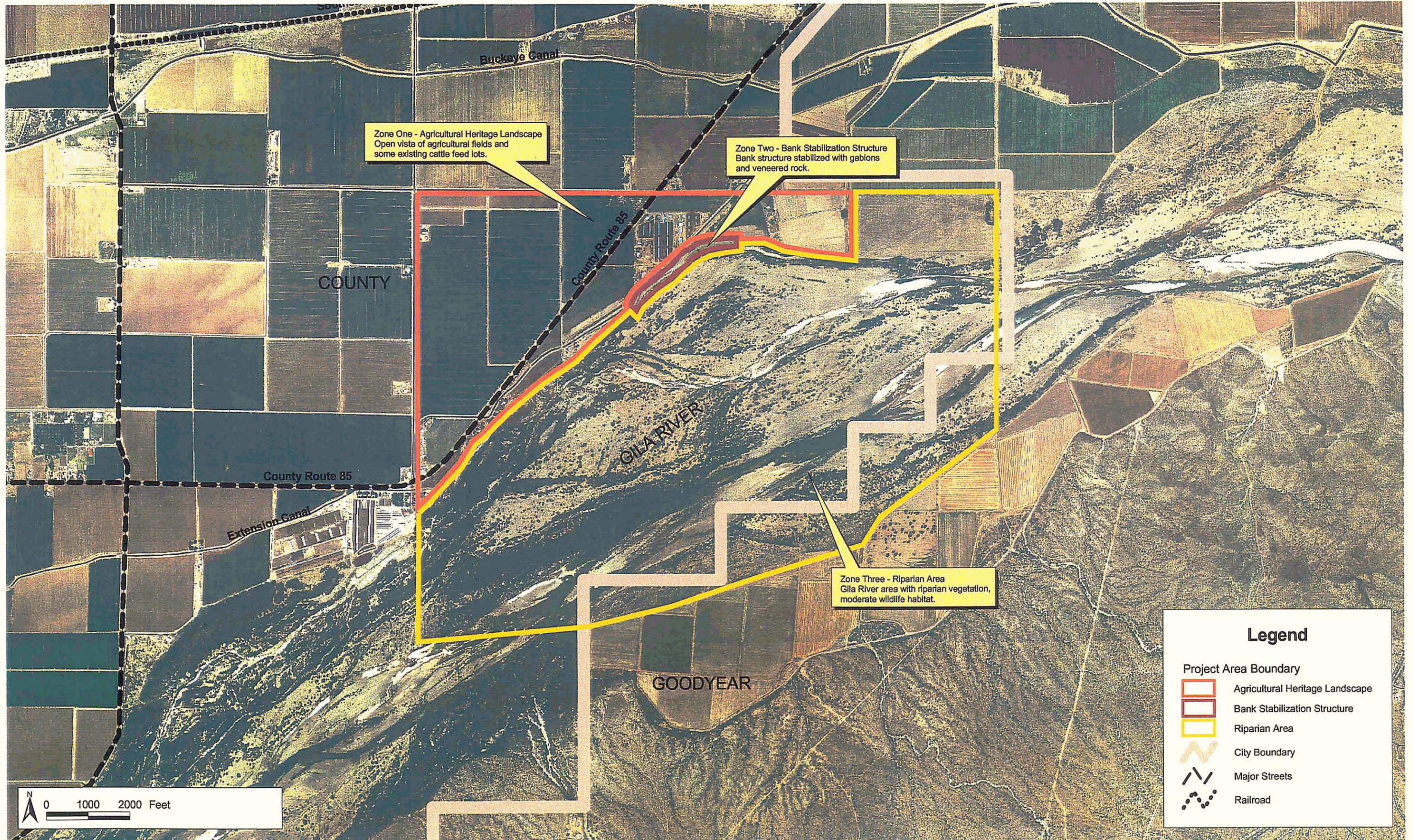


Bank Stabilization and Gila River Channel – South View



Perryville Bank Stabilization

Potential Corridor Connections Map



Zone One - Agricultural Heritage Landscape
Open vista of agricultural fields and
some existing cattle feed lots.

Zone Two - Bank Stabilization Structure
Bank structure stabilized with gablons
and veneered rock.

Zone Three - Riparian Area
Gila River area with riparian vegetation,
moderate wildlife habitat.

Legend

- Project Area Boundary
- Agricultural Heritage Landscape
- Bank Stabilization Structure
- Riparian Area
- City Boundary
- Major Streets
- Railroad



Perryville Bank Stabilization

Site Map

Aesthetic Treatment and Landscaping Policy Conformance

Perryville Bank Stabilization facility is separated into three structure zones with different flood control elements or distinctive aesthetic character. Please refer to the Site Map on page 126 for the structure zones, zone descriptions, city boundaries, and arterial streets. Please also refer to the conformance ratings, comments, and additional zone information at the very end of the Perryville Bank Stabilization section.

Zone One - Agricultural Heritage Landscape

The agricultural heritage landscape adjacent to this facility is primarily located north of the banks of the Gila River and the Perryville Bank structure.

The agricultural area conforms to aesthetic policy for the following reasons:

- These agricultural areas do not vary in alignment, profile, or slope because they are agricultural fields.
- These areas blend into the surrounding agricultural terrain.
- The disturbed areas are graded and replanted to match the surrounding areas.
- The agricultural areas provide erosion control and protect visual qualities.
- The area is mostly free of weeds and debris.

The agricultural area does not conform to policy for the following reason:

- There are no screening techniques to make the site and structure more compatible with the environment such as placement of earth mounds, use of trees and shrubs, or veneering.



Bank Stabilization – Southwest View

Zone Two - Bank Structure

The bank structure is located approximately one-quarter mile south of the intersection of Southern Avenue and County Route 85 and extends for a distance of just under one-half mile.

The bank structure conforms to aesthetic policy for the following reasons:

- The structure varies in alignment, profile, and slope.
- The bank structure's earthwork blends with the surrounding natural terrain.
- The structure is veneered with river rock.
- The structure is free of weeds and debris.

The bank structure does not conform to policy for the following reasons:

- There is no planting or earthwork used to blend the bank structure.
- Disturbed areas are not graded or replanted to match the surrounding area.
- There are no screening techniques to make the structure more compatible with the environment, such as the placement of earth mounds or the use of trees and shrubs.
- No plantings are used to provide erosion control and protect visual qualities.

Zone Three - Riparian Area

The riparian area is the Gila River, located south of the Perryville structure.

The riparian area conforms to aesthetic policy for the following reasons:

- The riparian area varies in alignment, height, and slope.
- The earthwork blends into the surrounding natural terrain.
- The existing plants provide erosion control, protect visual qualities and do not cause an impedence to the designed function.
- The riparian area exists in a natural and mostly unaltered condition.
- Natural biological and riparian processes are allowed to take place.



Gila River Channel – Southwest View

Surrounding Site Character

The surrounding site character for the Perryville Bank Stabilization structure is reflected on the Site Analysis - Existing Features/Surrounding Land Use Map; please refer to page 127.

Zone One - Agricultural Heritage Landscape

The surrounding site character by this zone consists of primarily of agricultural uses which provide positive open vistas of crop fields. There is an industrial site located adjacent to County Route 85 and the Union Pacific Southern Pacific Railroad. The Buckeye Canal and an extension canal bisect this agricultural area and are positive visual features.

Zone Two - Bank Structure

The surrounding site character by the bank structure are acres of agricultural fields, small family farms, and a cattle feed lot just north of the structure. The Gila River is south of the structure and is a natural area with lush riparian vegetation. There is a small automobile dump located southwest of the bank structure and along the river bank.

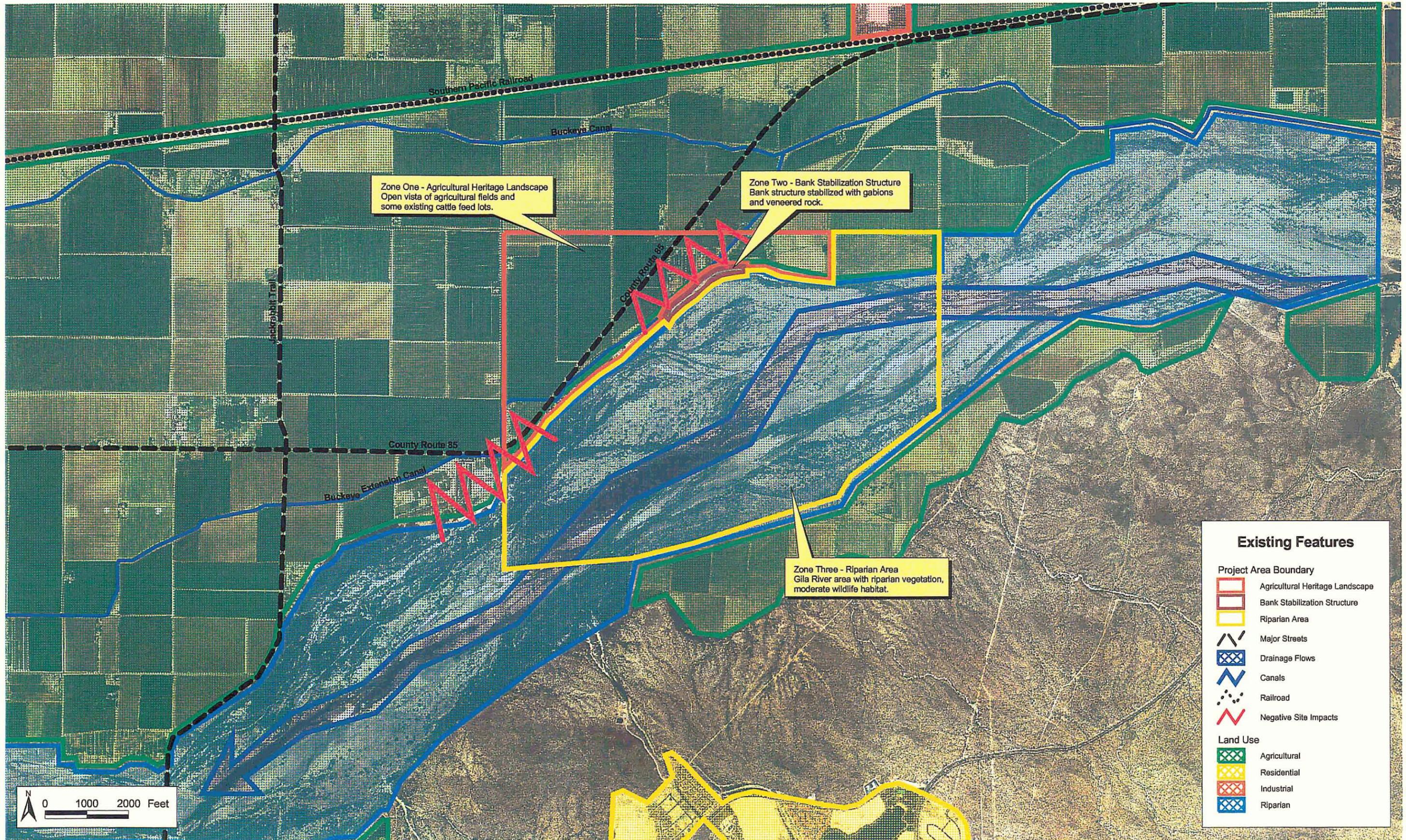
Zone Two - Riparian Area

The surrounding site character by the riparian area is the Gila River, a natural area with riparian vegetation. Above the river channel are agricultural crop fields which occur along both banks of the river. The open space area to the south has numerous riparian washes and foothills that slope up to the Estrella Mountains.

While the surrounding area is currently agricultural, there are many residential developments occurring or planned for the adjacent City of Goodyear, particularly at Estrella Mountain Ranch two miles south of Perryville.



Buckeye Extension Canal – Northeast View



Zone One - Agricultural Heritage Landscape
Open vista of agricultural fields and
some existing cattle feed lots.

Zone Two - Bank Stabilization Structure
Bank structure stabilized with gabions
and veneered rock.

Zone Three - Riparian Area
Gila River area with riparian vegetation,
moderate wildlife habitat.

Existing Features

Project Area Boundary

- Agricultural Heritage Landscape
- Bank Stabilization Structure
- Riparian Area

Other Features

- Major Streets
- Drainage Flows
- Canals
- Railroad
- Negative Site Impacts

Land Use

- Agricultural
- Residential
- Industrial
- Riparian

Perryville Bank Stabilization

Site Analysis - Existing Features and Surrounding Land Use

Site Impressions

Zone One - Agricultural Heritage Landscape

The surrounding agricultural fields are visually pleasing because they provide open vistas of the Gila River, Estrella and White Tank Mountains, which are a traditional part of basin and range landscapes. Another positive feature in this area are the small family farm homesteads encircled by large trees. However, the adjacent cattle feedlots are a negative visual and sensory feature. These farms are barren of any vegetation, and the large shade structures are crowded with animals and their overpowering smell.

Zone Two - Bank Structure

The bank structure is about fifteen feet high and less than one-half mile long. Overall, this facility is relatively small and in scale with the topographic and other natural characteristics of the Gila River. The uniformly rough texture of the river rock on the structure detracts from the surrounding natural environment. While this rock is similar to the river rock, this facility does not replicate the existing riparian example of vegetation groupings with partially buried rocks. The bank edge offers a good vantage point to view the Gila River channel, nearby foothills, and the Estrella Mountains. The dependable water source of the nearby canals provides an opportunity for local wildlife to flourish. These canals attract numerous birds, especially cranes, to feed on the available fish.

Zone Three - Riparian Area

The Gila River channel is a natural riparian environment and habitat with areas of lush riparian vegetation and flowing water in meandering channels with a sand, gravel, and rock bottom. This is a mostly undisturbed environment with vegetation significant enough to screen the bank stabilization from the river.



Bank Stabilization Structure – Southwest view

This portion of the river is not as lush as areas further upstream because of a reduced quantity of flowing water.

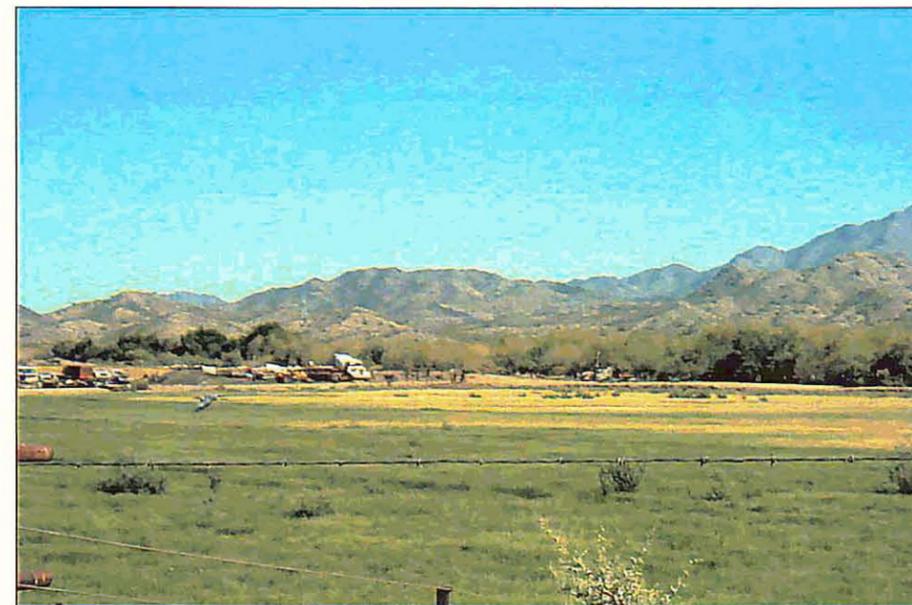
Opportunities and Constraints for Retrofit Treatments

The primary retrofit treatment opportunity for Perryville Bank Stabilization structure is the significant ability for this site to contribute to the Maricopa County Regional Trail System, the El Rio Vision project, and local trail networks.

Zone One - Agricultural Heritage Landscape

The retrofit opportunity for the agricultural heritage landscape is to remain as currently used and become part of an agricultural preserve. This adjacent land also provides space for establishing an agricultural center to showcase the state's agricultural heritage, as well as an incentive to preserve the surrounding family farms and agricultural fields.

The retrofit constraint for the agricultural area is the intense use of existing cattle farms, detracting from other surrounding positive elements. Converting the cattle feedlots to open-field cattle ranches would reduce the negative visual and sensory impacts on this area.



Agricultural heritage landscape – view to the Estrella Mountains

Zone Two - Bank Structure

The retrofit opportunity for the bank structure is the opportunity to establish a connection to the adjacent extension canal and to link with the Buckeye Canal one-quarter mile north. This location also makes the bank structure area an ideal location for an enhanced gateway feature.

The retrofit constraints are the narrow width of the Flood Control property, which limits the scale of potential enhancements. In addition, the need to maintain vehicular access along the canal for the adjacent farms and automobile dump is a limiting factor.

Zone Three - Riparian Area

The retrofit opportunity for the riparian area is to provide wildlife viewing areas connected by small-scale foot trails.

The retrofit constraint for the riparian area is to limit any negative impacts on this natural environment and to protect these improvements during periods of high flows.



View from bank structure to the Estrella Mountains

Landscape Aesthetic and Multi-Use Treatment Retrofit Opportunities

The cross-sections on this page are illustrations of potential retrofit recommendations discussed within this text. The cross-sections also relate to the overall Perryville Bank Concept Plan on page 130.

The treatment retrofit opportunities for the Perryville site include establishing a trailhead facility, providing a wildlife education facility and constructing an agricultural center. The design of these facilities and thematic elements for the Perryville site could be based on local agricultural archetypes.

Zone One - Agricultural Heritage Landscape

Establishing an agricultural center in the Perryville area provides an opportunity to showcase the state's agricultural heritage, as well as an incentive to preserve the existing family farms and agricultural fields. The agricultural areas adjacent to the bank structure can be enhanced with revegetation of the disturbed areas. Berming and tree plantings along the entire bank area could define the river edge, provide a canopied corridor, and recreate the agricultural homestead row of trees.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Berms for screening

Landscaping Treatment Retrofit Opportunities

Tree Planting
Revegetation - Seeding disturbed areas
Irrigation

Multi-Use Treatment Retrofit Opportunities

Interpretive Center

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatments

Land Acquisition - To enlarge area for retrofit treatments

Zone Two - Bank Structure

As the Perryville facility is located close to the juncture of a major county road and several canals, it would be an excellent location for an enhanced trail node within the Gila River trail system.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

Tree Planting
Irrigation

Multi-Use Treatment Retrofit Opportunities

Soft Surface Trail
Gateway Features - At trail connection nodes
Trailhead Facilities

Zone Three - Riparian Area

The riparian area can be fully appreciated through an educational and interpretive nature center with wildlife viewing areas along the canal and river. The river bank offers views from above of the riparian areas of the Gila River.

Aesthetic Treatment Retrofit Opportunities

None identified.

Landscaping Treatment Retrofit Opportunities

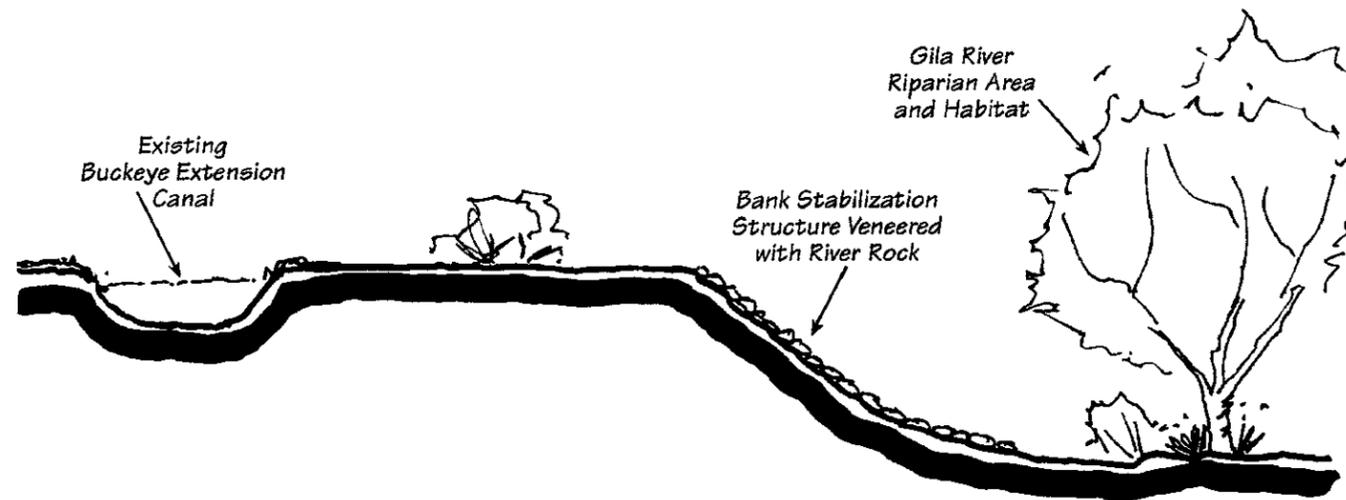
Revegetation - Seeding disturbed areas

Multi-Use Treatment Retrofit Opportunities

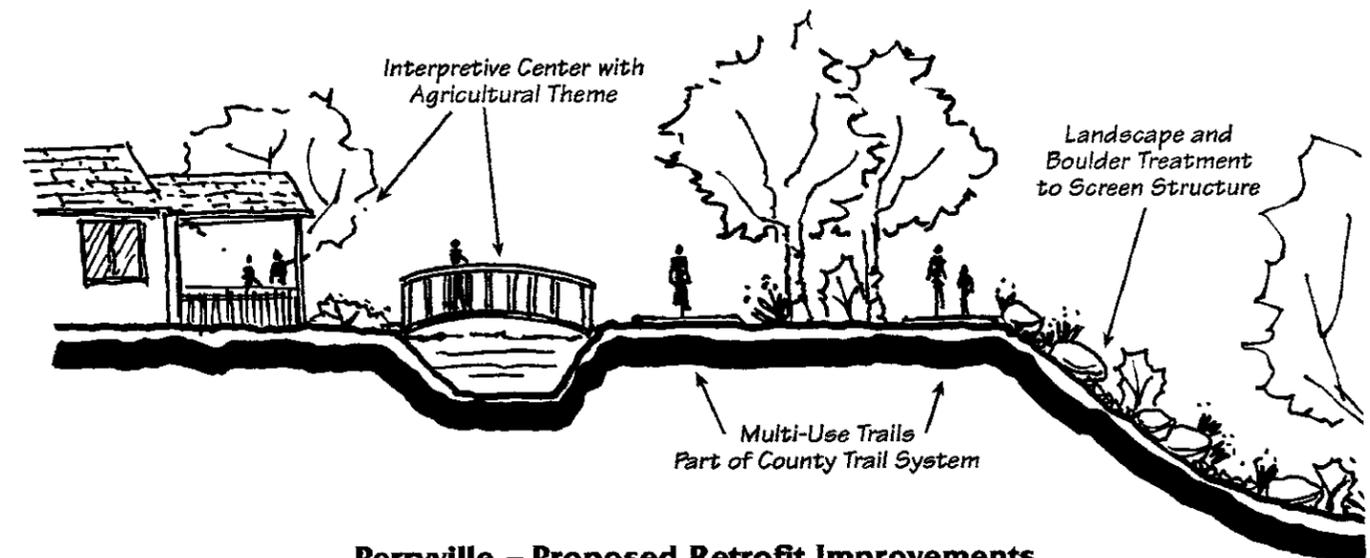
Soft Surface Trail
Wildlife Viewing Facilities

Land Acquisition Opportunities for Landscape Aesthetic and Multi-Use Treatments

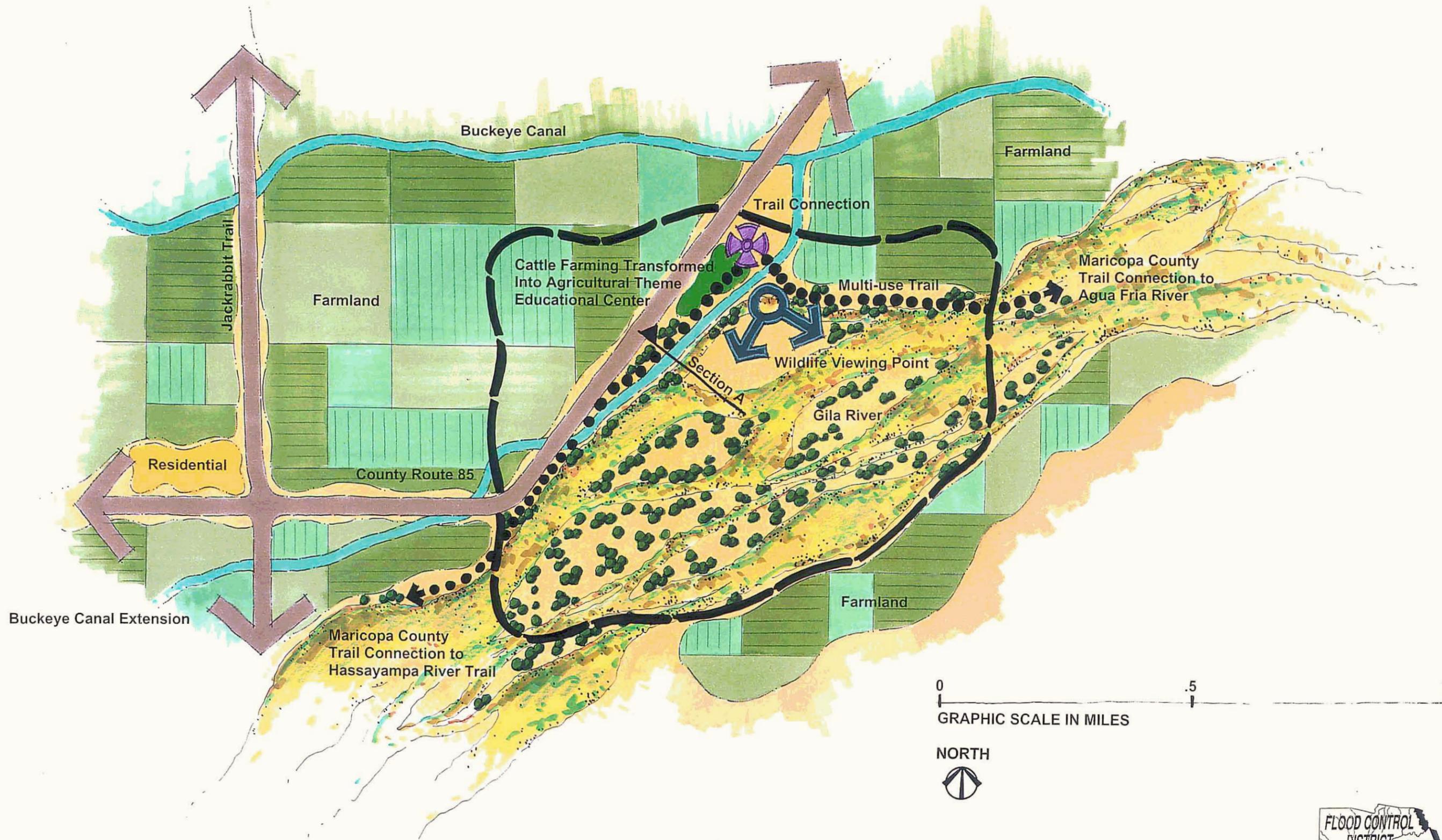
None identified.



Perryville - Existing Conditions



Perryville - Proposed Retrofit Improvements



PERRYVILLE BANK CONCEPT



Carter-Burgess

OCTOBER 2000



Hydrologic Engineering Synopsis of Structure

(Source: Data On Structures, an unpublished Flood Control District Document)

Project Title: Bank Stabilization, Perryville Area – Date of Final Acceptance:
June 1, 1984

Watershed and Relationship to Other Structures: Salt-Gila Watershed
for all areas upstream of the project.

Location: Located on the north bank of the Gila River, near Buckeye, approxi-
mately one-quarter mile south of the intersection of Southern Avenue and
Highway 80 (SR 85).

Authorization: Board of Directors, Flood Control District of Maricopa County
State of Arizona, HB 2457 34th Legislature Appropriation SB 1163

Federal Sponsor: None

Local Sponsor: Flood Control District of Maricopa County
Arizona Department of Water Resources

Jurisdictional Agency: Arizona Department of Water Resources

Functional Description: It is hoped that the use of riprap and gabions will
prevent further erosion of the riverbank and the resultant loss of land and
improvements. The immediate benefit in this case will be to protect a section of
the RID Canal.

Project Features:

RipRap	10,066 square yards
Gabions	6,192 square yards
Length of project	2,300 feet

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 8. Perryville Bank Stabilization		
Zone 1 - Agricultural Heritage Landscape		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	1	The alignment in this zone does not vary, this is an agricultural area.
2 The profile or height of the structure varies to modify the outline.	1	The height or profile in this zone does not vary, this is an agricultural area.
3 The side slopes of the structure are varied to simulate the natural terrain.	1	The sides slopes in this zone do not vary, this is an agricultural area.
4 The structure is designed to blend into the contour of the natural terrain.	4	The earthwork blends into the natural terrain, this is an agricultural area
5 On-site screening with trees and shrubs are used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6 Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7 There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating with indigenous rock.
8 Disturbed areas are graded and replanted to match surrounding area.	3	The agricultural areas are graded and replanted to match surrounding area.
9 Plantings are used to provide erosion control and protect visual qualities.	3	The agricultural fields provide erosion control and protect visual qualities.
10 Plantings are used that will not cause an impedance to design function.	3	The agricultural fields do not cause an impedance to design function.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	4	This zone is mostly free of weeds and debris.
Conformance Average		2.00
Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	1	There are no riparian/ river corridor features to preserve.
14 There are landscape or natural features to preserve.	4	There are existing agricultural fields and tree-lines to preserve.
15 There are wildlife habitat areas to preserve.	1	There are no wildlife habitat areas to preserve.
16 There are undisturbed open space elements to preserve.	1	There are no undisturbed open space elements to preserve.
17 There are scenic corridors to preserve.	4	The scenic corridors n.w. to the White Tank Mtns and corridors s.e. to the Estrella Mtns.
18 There are panoramic views from the structure.	4	There are views to the White Tank Mountains and the Estrella Mountains.
19 There is a meandering low-flow feature modeled on riparian washes.	1	There are no meandering low-flow features.
20 The structure or area has revegetated.	3	There is no revegetation, this is an agricultural area.
21 The existing plantings match the community character.	4	The existing agriculture fields and tree-lines match the community character.
22 The structure's size and scale are proportional to its surroundings.	3	This is an agricultural area.
23 The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24 The adjacent properties positively impact the site.	3	Some positive properties -agricultural + rural. Some negative -agricultural + commercial.
25 There is existing on-site irrigation.	5	There is existing on-site flood irrigation from agriculture canals.
26 There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27 The structure does not have negative on-site visual problems.	2	There are negative on-site visual problems with the nearby cattle farm and dump.
28 There are no overhead electrical lines and utility towers.	4	There are some adjacent overhead electrical lines and utility towers.
29 There are not multiple maintenance roads within the site.	3	There are several access roads in the agricultural area.
30 There are no intersecting arterial streets.	4	The County Highway intersects the agricultural area.
31 There are no noise impacts that need buffering.	2	There is some noise from the adjacent highway.
32 Additional landscape features are needed.	4	Additional landscaping is needed for the unplanted areas and to screen negative views.
33 There are opportunities for landscape enhancements.	4	Landscape enhancements can be added to the canal areas.
Existing Aesthetic Features Average		2.81
Conformance and Aesthetic Features Average		2.40

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 8. Perryville Bank Stabilization		
Zone 1 - Agricultural Heritage Landscape		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Existing Multi-Use Features		
34 There are existing natural features beneficial for a greenway corridor.	4	This area has existing farm fields are beneficial for an agricultural greenway corridor.
35 There are existing multi-use features.	1	There are no existing multi-use features.
36 The area is currently accessible for multi-use.	3	This area is accessible for multi-use.
37 Multi-use features could be added without impeding design function.	5	Multi-use features could be added without impeding design function.
38 Multi-use features could be added without compromising public safety.	5	Multi-use features could be added without compromising safety.
39 There is space to meander the maintenance road(s).	1	This is an agricultural area. a meandering maintenance road is not efficient.
40 There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.
41 There are no constraints to multi-use due to site size.	5	There are no constraints to multi-use due to site size.
42 There are no constraints to public multi-use due to structural hazards.	5	There are no constraints due to structural hazards.
43 There are no constraints to multi-use due to existing slopes.	5	There are no constraints due to existing slopes.
44 There are no constraints to multi-use construction due to earth mounds.	5	There are no constraints due to earthwork or rip-rap mounds.
Existing Multi-Use Features Average		4.00
Future Multi-Use Features		
45 There are possible connections to open space.	5	This agricultural area is part of the Gila River system and is close to the Estrella Mountains.
46 There is a possible connection to the Maricopa County Trail System.	5	The Gila River is a designated County Trail link with the Hassayampa and Western Canal.
47 There are possible connections to the local trail system.	5	There are proposed local trails south from the County and Goodyear to this site.
48 There are possible connections to residential neighborhoods.	4	There are no residential neighborhoods, but there are planned areas on the south side.
49 There are possible connections to recreation areas.	4	Casey Abbot Rec. Area and Estrella Mountains are three miles east.
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal, but development along County Hwy may provide future facilities.
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52 There are opportunities for special use commercial areas.	3	Special use commercial areas can be located on suitable agricultural parcels.
53 Site property could be sold to allow for special use commercial areas.	3	Some of this property could be sold to allow for special use commercial areas.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	5	Agricultural land to the northwest could be acquired to add nature center/agric. facilities.
55 Adjacent land has natural features beneficial for a greenway corridor.	4	The adjacent Gila River areas have positive natural features for a greenway corridor.
56 Adjacent land needs design guidelines for future development.	4	Future development would benefit from comprehensive planning with this enhanced site.
57 There are opportunities for large-scale regional park facilities.	3	There are some opportunities for large-scale regional park facilities.
58 There are opportunities for small-scale local park facilities.	4	There are opportunities for small-scale local park facilities.
59 There are opportunities for riparian wash areas.	2	There are some opportunities for riparian wash areas.
60 There are opportunities for recharge basins or ponding areas.	2	There are some opportunities for recharge basins.
61 There are opportunities for multi-use trails.	4	There are opportunities for multi-use trails.
62 There are opportunities for separated-use trails.	4	There are opportunities for separated-use trails.
Future Multi-Use Features Average		3.72
Existing and Future Multi-Use Average		3.86
Conformance, Aesthetic Features + Multi-Use Average		3.13

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations	
Structure - 8. Perryville Bank Stabilization		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
<hr/>			
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1		4	The alignment of the bank structure is curved to follow the river bank.
2		1	The height or profile of the bank structure is constant and does not vary.
3		1	The sides slopes of the bank structure are a uniform 3 to 1 slope.
4		3	The bank structure's earthwork partially blends into the surrounding natural terrain.
5		1	There is no on-site screening with trees and shrubs.
6		2	There is existing screening in the riparian area, but no screening along the river bank.
7		3	The south side of the bank is veneered with river rock.
8		1	Disturbed areas are graded but not replanted.
9		1	There are no plantings for erosion control or to protect visual qualities.
10		1	There are no aesthetic treatment plantings.
11		1	The bank structure's sides are not furrowed.
12		4	The bank structure is free of weeds and debris.
Conformance Average		1.92	
<hr/>			
Existing Aesthetic Features			
13		1	The bank structure area has no riparian/ river corridor features to preserve.
14		1	There are no landscape or natural features to preserve.
15		1	There are no wildlife habitat areas to preserve.
16		1	There are no open space elements to preserve.
17		1	There are no scenic corridors to preserve.
18		5	There are panoramic views southeast to the Gila River and the Estrella Mountains.
19		1	There are no meandering low-flow features.
20		1	The bank structure has not revegetated.
21		1	There are no existing plantings.
22		4	The bank structure's size and scale are proportional to its surroundings.
23		5	There are no attendant flood control facilities.
24		2	Some positive properties -riparian, agricultural +rural. Some negative agric.+ commercial.
25		1	There is no existing on-site irrigation.
26		1	There are no recharge or retention areas.
27		2	The levee has little screening and the river rock is out of scale with its surroundings.
28		5	There are no overhead electrical lines and utility towers.
29		3	There is one maintenance road on top of the levee structure.
30		5	There are no intersecting arterial streets.
31		2	There are some noise impacts from the cattle farms that need buffering.
32		4	Additional landscaping is needed to screen the bank structure.
33		4	Landscape enhancements can be added along the northwest side of the bank.
Existing Aesthetic Features Average		2.43	
Conformance and Aesthetic Features Average		2.17	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 8. Perryville Bank Stabilization		
Zone 2 - Bank Structure		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Existing Multi-Use Features		
34		There are existing natural features beneficial for a greenway corridor. 1 The bank structure area has no natural features beneficial for a greenway corridor.
35		There are existing multi-use features. 1 There are no existing multi-use features.
36		The area is currently accessible for multi-use. 3 This area currently is accessible for multi-use.
37		Multi-use features could be added without impeding design function. 4 Multi-use features can be added without impeding design function.
38		Multi-use features could be added without compromising public safety. 4 Multi-use features can be added without compromising safety.
39		There is space to meander the maintenance road(s). 1 There is no space to meander the maintenance road.
40		There are no physical constraints to accessing the site. 3 There are some constraints, the site can only be accessed by adjacent canal roads.
41		There are no constraints to multi-use due to site size. 3 The bank area is narrow due to the adjacent canal, but can fit a multi-use trail.
42		There are no constraints to public multi-use due to structural hazards. 1 There are no constraints due to structural hazards.
43		There are no constraints to multi-use due to existing slopes. 4 There are few constraints due to existing slopes, the bank has a 4 to 1 side slope.
44		There are no constraints to multi-use construction due to earth mounds. 3 There are some constraints to multi-uses, the bank is veneered with large rip-rap.
Existing Multi-Use Features Average		2.55
Future Multi-Use Features		
45		There are possible connections to open space. 5 This area is part of the Gila River system and is close to the Estrella Mountains.
46		There is a possible connection to the Maricopa County Trail System. 5 The Gila River is a designated County Trail link with the Hassayampa and Western Canal.
47		There are possible connections to the local trail system. 5 There are proposed local trails south from the County and Goodyear to this site.
48		There are possible connections to residential neighborhoods. 3 There are no residential neighborhoods, but there are planned areas on the south side.
49		There are possible connections to recreation areas. 5 Casey Abbot Rec. Area and Estrella Mountains are three miles east.
50		There are possible connections to multi-modal facilities. 3 There are no existing multi-modal facilities.
51		There are possible connections to local commercial areas. 3 There are no existing commercial areas.
52		There are opportunities for special use commercial areas. 5 There are opportunities for specially planned commercial areas.
53		Site property could be sold to allow for special use commercial areas. 1 There is no additional property that could be sold.
54		Adjacent land could be acquired to provide for enhancements/ buffering. 4 Agricultural land to the northwest could be acquired to add nature center/agric. facilities.
55		Adjacent land has natural features beneficial for a greenway corridor. 5 The adjacent Gila River areas have positive natural features.
56		Adjacent land needs design guidelines for future development. 4 Future development would benefit from comprehensive planning with this enhanced site.
57		There are opportunities for large-scale regional park facilities. 1 There is no space for large-scale regional park facilities.
58		There are opportunities for small-scale local park facilities. 4 Interpretive viewing shelters could be added to the bank structure.
59		There are opportunities for riparian wash areas. 1 There is no space for riparian wash areas.
60		There are opportunities for recharge basins or ponding areas. 1 There is no space for recharge basins.
61		There are opportunities for multi-use trails. 5 This area could accommodate a multi-use trail.
62		There are opportunities for separated-use trails. 1 There is no space to accommodate multiple separated use trails.
Future Multi-Use Features Average		3.39
Existing and Future Multi-Use Average		2.97
Conformance, Aesthetic Features + Multi-Use Average		2.57

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 8. Perryville Bank Stabilization		
Zone 3 - Riparian Area		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	5	The alignment in this area varies, this zone is mostly undisturbed river riparian area.
2 The profile or height of the structure varies to modify the outline.	5	The height or profile in this area varies, this zone is mostly an undisturbed riparian area.
3 The side slopes of the structure are varied to simulate the natural terrain.	5	The sides slopes in this area varies, this zone is mostly undisturbed river riparian area.
4 The structure is designed to blend into the contour of the natural terrain.	5	The earthwork blends into surrounding terrain, this is mostly undisturbed riparian area.
5 On-site screening with trees and shrubs are used to blend the structure.	4	This area has on-site screening from the existing plants.
6 Off-site screening with plantings or earthwork buffers are used.	4	This area has off-site screening from the existing plants and landforms.
7 There is veneering or plating of the structure with indigenous rock.	4	This area is veneering or plating with existing indigenous rock.
8 Disturbed areas are graded and replanted to match surrounding area.	3	The disturbed areas are graded to match. No replanting, but the area has revegeted.
9 Plantings are used to provide erosion control and protect visual qualities.	4	The existing plants provide erosion control and protect visual qualities.
10 Plantings are used that will not cause an impedance to design function.	4	The existing plants do not cause an impedance to design function.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	3	This area is mostly free of debris, but the areas with public access have debris.
Conformance Average		3.92
Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	5	This area is part of the Gila River, a major riparian corridor, and should be preserved.
14 There are landscape or natural features to preserve.	4	There are a variety of riparian plants and should be preserved.
15 There are wildlife habitat areas to preserve.	4	This area is a valuable wildlife habitat and should be preserved.
16 There are undisturbed open space elements to preserve.	4	This area is mostly undisturbed open space and should be preserved.
17 There are scenic corridors to preserve.	5	This area is a scenic riparian corridor and should be preserved.
18 There are panoramic views from the structure.	4	There are some panoramic view southeast to the Estrella Mountains.
19 There is a meandering low-flow feature modeled on riparian washes.	5	This area has meandering low-flow features.
20 The structure or area has revegetated.	4	Some of the disturbed areas have naturally revegetated.
21 The existing plantings match the community character.	5	The existing plantings match the riparian community character.
22 The structure's size and scale are proportional to its surroundings.	5	This area's size and scale are proportional to its surroundings.
23 The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24 The adjacent properties positively impact the site.	3	Some positive properties -riparian, agricultural +rural. Some negative agric. +commercial.
25 There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26 There are water recharge and stormwater retention areas.	5	There are numerous water recharge areas in the riparian area.
27 The structure does not have negative on-site visual problems.	3	There are some negative visual problems by vehicular impacted areas.
28 There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29 There are not multiple maintenance roads within the site.	5	There are not multiple maintenance roads within the site.
30 There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31 There are no noise impacts that need buffering.	3	There are some noise impacts from the cattle farms that need buffering.
32 Additional landscape features are needed.	4	Additional landscaping is needed to repair impacted areas.
33 There are opportunities for landscape enhancements.	4	This is a large riparian area that has many opportunities for landscape enhancements.
Existing Aesthetic Features Average		4.00
Conformance and Aesthetic Features Average		3.96

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
Structure - 8. Perryville Bank Stabilization								
Zone 3 - Riparian Area								
	1 to 5	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element							
2 Slightly Conforming Element	5 Fully Conforming Element							
3 Moderately Conforming Element								
Existing Multi-Use Features								
34 There are existing natural features beneficial for a greenway corridor.	5	This is a large riparian area and has features beneficial for a greenway corridor.						
35 There are existing multi-use features.	2	There are some existing trail features.						
36 The area is currently accessible for multi-use.	4	This area is accessible for multi-use.						
37 Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.						
38 Multi-use features could be added without compromising public safety.	4	Multi-use features could be added safely after addressing water flow issues.						
39 There is space to meander the maintenance road(s).	3	There is some space to meander the maintenance road.						
40 There are no physical constraints to accessing the site.	2	The physical constraint is the grade difference of the channel edge and river bottom.						
41 There are no constraints to multi-use due to site size.	3	This zone has limited space for multi-use due to the existing riparian plantings.						
42 There are no constraints to public multi-use due to structural hazards.	4	There are no constraints due to structural hazards.						
43 There are no constraints to multi-use due to existing slopes.	2	There are some constraints due to the existing slopes of the river channel edges.						
44 There are no constraints to multi-use construction due to earth mounds.	3	There are some constraints due to existing earthwork mounds and rip-rap.						
Existing Multi-Use Features Average		3.27						
Future Multi-Use Features								
45 There are possible connections to open space.	5	This area is part of the Gila River system and is close to the Estrella Mountains.						
46 There is a possible connection to the Maricopa County Trail System.	5	The Gila River is a designated County Trail link with the Hassayampa and Western Canal.						
47 There are possible connections to the local trail system.	5	There are proposed local trails south from the County and Goodyear to this site.						
48 There are possible connections to residential neighborhoods.	3	There are no residential neighborhoods, but there are planned areas on the south side.						
49 There are possible connections to recreation areas.	5	Casey Abbot Recreation Area and Estrella Mountains are three miles east.						
50 There are possible connections to multi-modal facilities.	3	There are no existing multi-modal facilities.						
51 There are possible connections to local commercial areas.	3	There are no existing commercial areas.						
52 There are opportunities for special use commercial areas.	1	This area should remain as a riparian area.						
53 Site property could be sold to allow for special use commercial areas.	1	There is no additional property that can be sold without affecting the riparian area.						
54 Adjacent land could be acquired to provide for enhancements/ buffering.	4	Agricultural land to the northwest can be acquired to add nature center/ agric. facilities.						
55 Adjacent land has natural features beneficial for a greenway corridor.	5	The adjacent Gila River areas have positive natural features.						
56 Adjacent land needs design guidelines for future development.	4	Future development would benefit from comprehensive planning with this enhanced site.						
57 There are opportunities for large-scale regional park facilities.	1	There are no opportunities for large-scale regional park facilities in the river channel.						
58 There are opportunities for small-scale local park facilities.	3	Small-scale local park facilities in can be located where high water damage is least.						
59 There are opportunities for riparian wash areas.	5	This is a riparian area with numerous washes.						
60 There are opportunities for recharge basins or ponding areas.	5	This area has numerous water recharge areas.						
61 There are opportunities for multi-use trails.	5	This area has space to accommodate multi-use trails.						
62 There are opportunities for separated-use trails.	4	This area has space to accommodate multiple separated use trails.						
Future Multi-Use Features Average		3.72						
Existing and Future Multi-Use Average		3.50						
Conformance, Aesthetic Features + Multi-Use Average		3.73						

White Tanks FRS #3

Facility Location and Description

White Tanks FRS #3 is located in the West Valley just two miles east of the White Tank Mountains. The facility lies along the alignment of 191st Avenue and the Beardsley Canal and extends southwest to the alignment of 195th Avenue. The north part of the facility begins at Northern Avenue and extends to just south of Bethany Home Road.

White Tanks #3, built in 1954, is a compacted earthfill dam structure 1.45 miles long and 30 feet high. This structure collects runoff water from the eastern slopes of the White Tank Mountains, impounds it and releases it through three gated outlets or over the emergency spillway at the south end of the structure. Water released from this structure flows into the Beardsley Canal or into desert washes.

White Tanks #3 will be evaluated under the Flood Control District's Structures Assessment Program. Phase I assessments of this structure are scheduled for late fiscal year 2000/2001. In addition, the District is exploring alternatives for replacing the dam with a natural appearing detention basin complex designed to maximize multi-use opportunities. A potential retrofit treatment to remove the dam structure and replace with a large retention basin with enhanced desert revegetation, low flow areas, and recreational amenities has been developed by BRW, Inc. and Dames & Moore, subsidiaries of URS Corporation.

Potential Significance to Provide Regional, Community or Local Open Space Amenities

The White Tanks FRS #3 facility has significant potential to contribute to future regional, community and local open space needs by providing a recreational park destination. This site has the potential to be a major park or open space facility, which could become one of the major recreational attractions of an open space corridor linking McMicken Dam corridor and White Tank Regional Park with the Gila River, El Rio Open Space Corridor.

Linking these significant corridors and creating destination nodes increases the recreational opportunities for the Maricopa County Regional Trail System. Creating an enhanced recreation open space and providing trailhead amenities would allow White Tanks #3 to serve as a base facility for trail connections with White Tank Regional Park. Please refer to the White Tanks 3 & 4 Potential Corridor Location Map on page 139.

Aesthetic Treatment and Landscaping Policy Conformance

White Tanks FRS #3 is separated into structure zones with different flood control elements or distinctive aesthetic qualities. Please refer to the Site Map on page 140 for structure zones, zone descriptions, city boundaries, and arterial streets. Please also refer to the Site Evaluation Criteria ratings and relevant comments on pages 148 to 153.

Zone One - Inlet Channel

The earthen inlet channel begins at Northern Avenue and extends three-quarters of a mile to the dam structure and basin.

The inlet channel conforms to aesthetic policy for the following reason:

- The disturbed areas are regraded.

The inlet channel does not conform to policy for the following reasons:

- The inlet does not meander in alignment, profile or slope.
- The inlet is not designed to blend into the contour of the natural terrain.
- There are no screening techniques to make the structures more compatible with the environment, such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.



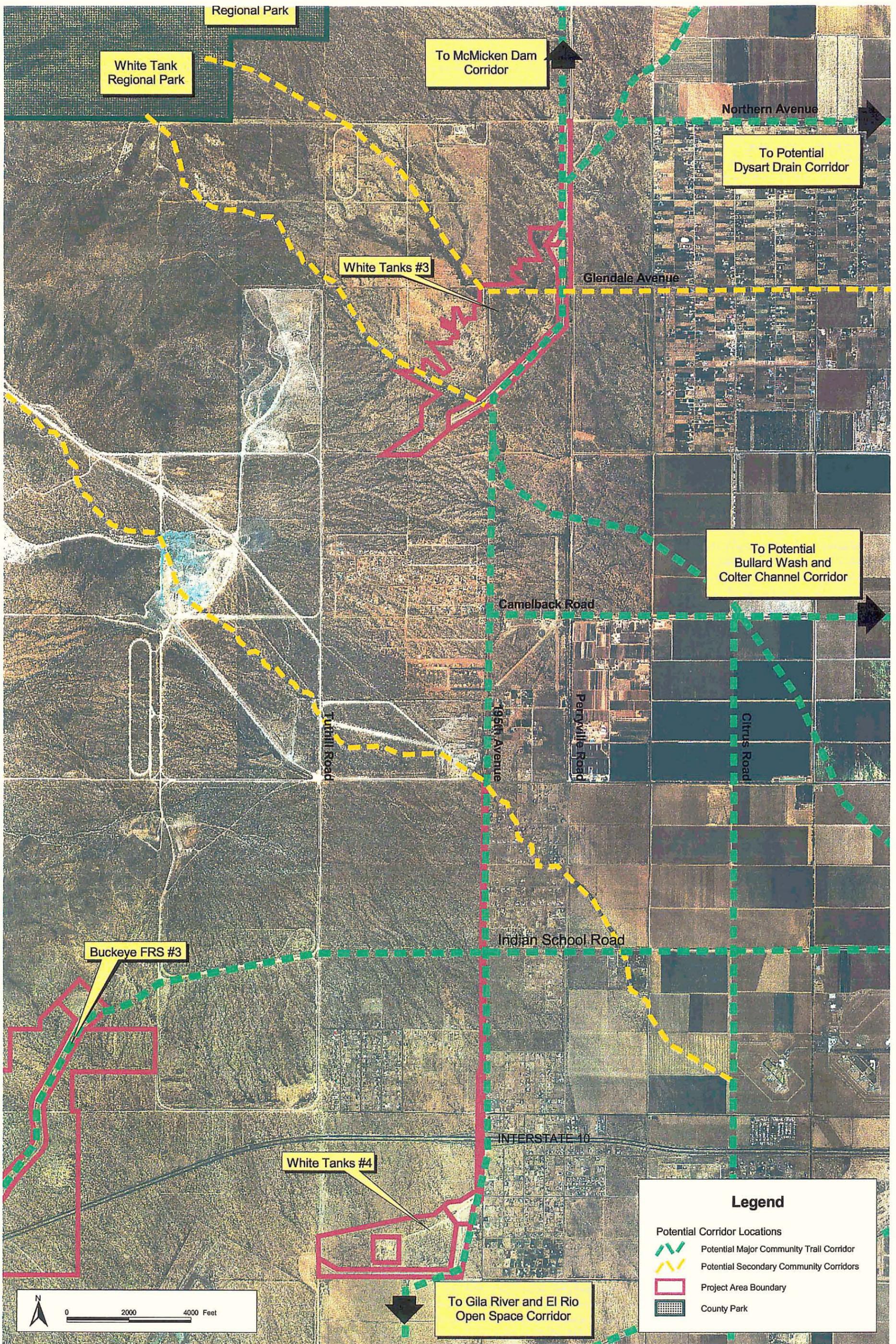
Zone One - Inlet Channel – Southwest View



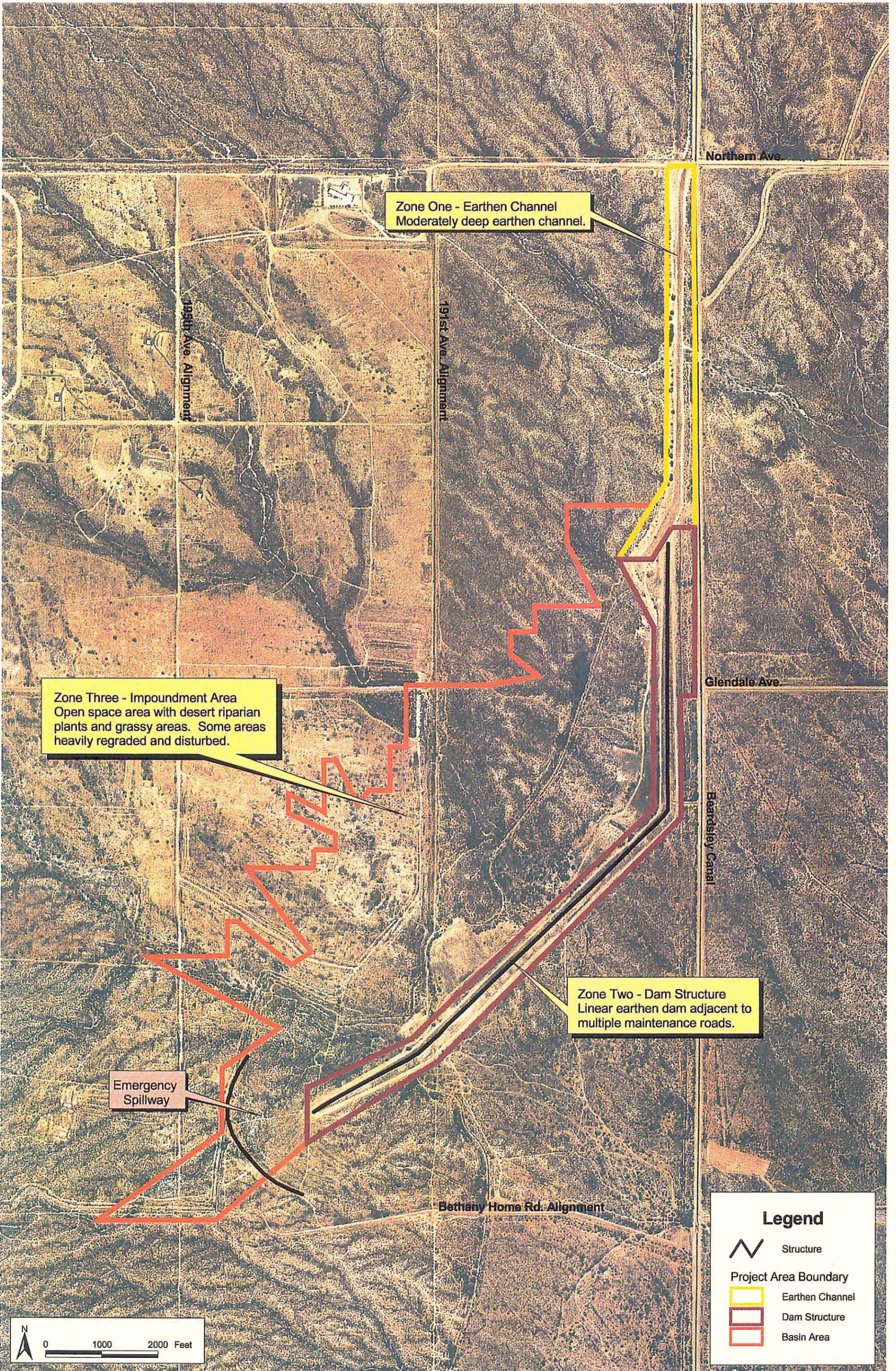
Zone Two - Dam Structure – Southwest View



Zone Three - Impoundment Area – Northwest View



White Tanks 3 & 4 Potential Corridor Connections Map



Zone One - Earthen Channel
Moderately deep earthen channel.

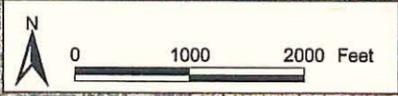
Zone Three - Impoundment Area
Open space area with desert riparian plants and grassy areas. Some areas heavily regraded and disturbed.

Zone Two - Dam Structure
Linear earthen dam adjacent to multiple maintenance roads.

Emergency Spillway

Legend

- Structure
- Project Area Boundary
- Earthen Channel
- Dam Structure
- Basin Area



Zone One - Inlet Channel, cont.

The inlet channel does not conform to policy for the following reasons:

- The disturbed areas have not been replanted to match the surrounding area.
- No plantings are used to provide erosion control and protect visual qualities.

Zone Two - Dam Structure

The dam structure is located one-quarter mile north of Glendale Avenue, continues south one-quarter mile, curves southwest and extends to the alignment of 107th west. This earthen structure has partially revegetated.

The dam conforms to aesthetic policy for the following reason:

- The dam structure is mostly free of debris.

The dam structure does not conform to policy for the following reasons:

- The dam structure does not meander in alignment, profile, or slope.
- The dam is not designed to blend into the contour of the natural terrain.
- There are no screening techniques to make the dam more compatible with the environment, such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.
- The disturbed areas have not been replanted to match the surrounding area.
- No plantings are used to provide erosion control and protect visual qualities.

Zone Three - Impoundment Area

The impoundment area is located northwest of the dam structure. This area has several major riparian washes with lush plants and has also revegetated with desert plants and an established grassland area.

The impoundment area conforms to aesthetic policy for the following reasons:

- The basin area meanders in alignment, profile and slope.
- The basin is designed to blend into the contour of the natural terrain.
- There is on-site screening from the existing plants.
- The existing plants provide erosion control and protect visual qualities.

The impoundment area does not conform to policy for the following reasons:

- There are no screening techniques to make the basin more compatible with the environment such as the placement of earthwork buffers or the use of trees and shrubs.
- The disturbed areas have not been replanted to match the surrounding area.

Surrounding Site Character

The surrounding site character for White Tanks FRS #3 is identified on the Site Analysis - Existing Features/Surrounding Land Uses map.; please refer to page 142.

Zone One - Inlet Channel

The surrounding site character by the earthen inlet channel is positive views of mostly undisturbed desert open space and numerous riparian washes. There are also positive views of nearby green agricultural fields, and pockets of well-kept rural residential neighborhoods.

Zone Two - Dam Structure

The surrounding site character by the dam structure is open vistas of desert open space to the White Tank Mountains and the adjacent Beardsley Canal. The open space area is moderately undisturbed land with a combination of desert upland, desert scrub, and riparian vegetation along numerous desert washes.

Zone Three - Impoundment Area

The surrounding site character by the impoundment area is positive views of desert open space and riparian washes. However, portions of the impoundment area and beyond have been impacted by industrial uses that have damaged the desert aesthetic amenities. The Case Equipment and Caterpillar Proving Grounds properties are heavily disturbed areas with regraded land, constructed berms, and multiple roads with construction activity. Large tracts of this land have been cleared of all vegetation, and portions of the riparian washes have been altered and interrupted.



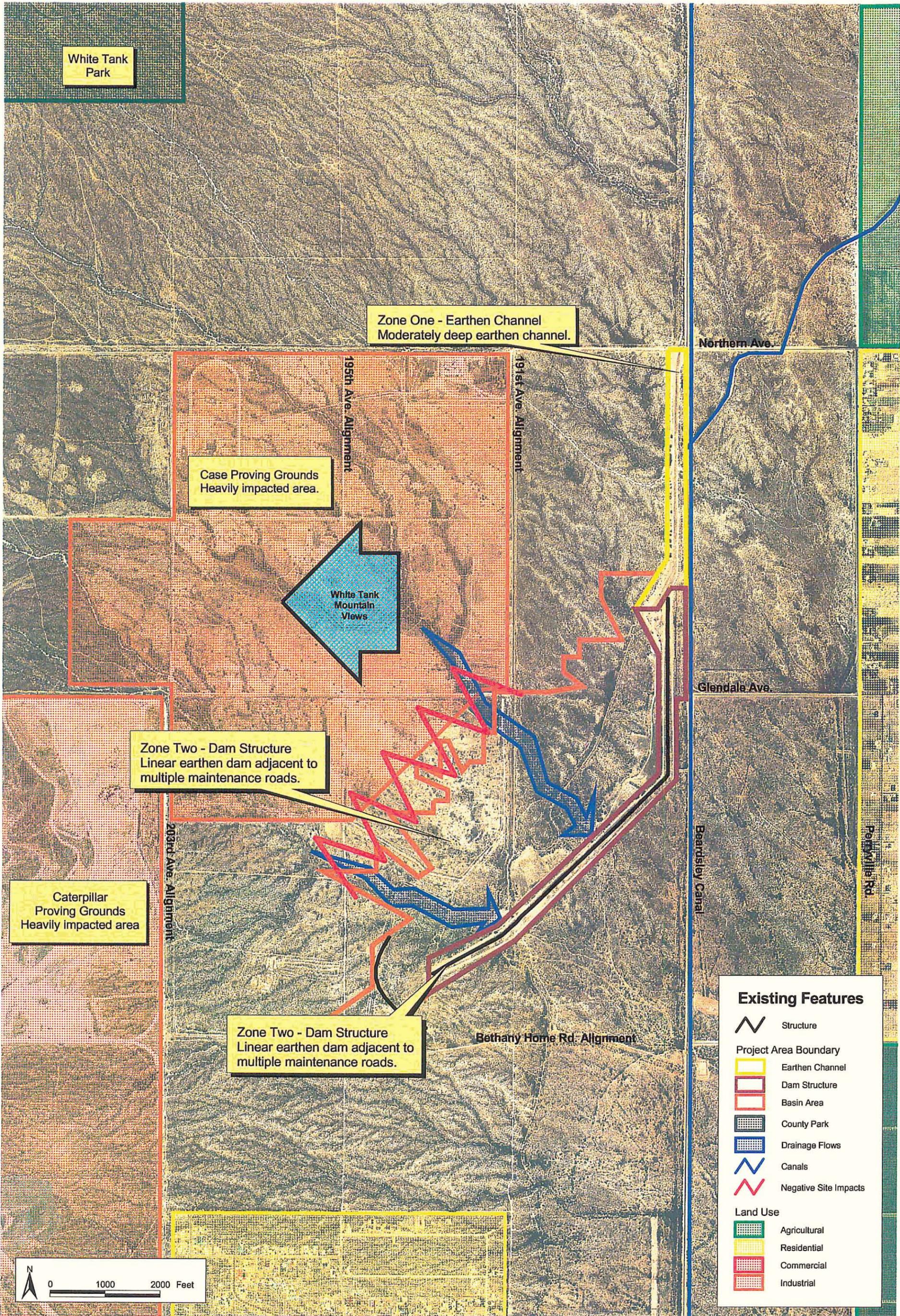
Zone One - Inlet Channel – Accessed and Impacted Area



Zone Two - Flood Area – West View



Flood Area and Dam Structure – North View



White Tank Park

Zone One - Earthen Channel
Moderately deep earthen channel.

Case Proving Grounds
Heavily impacted area.



Zone Two - Dam Structure
Linear earthen dam adjacent to multiple maintenance roads.

Caterpillar Proving Grounds
Heavily impacted area

Zone Two - Dam Structure
Linear earthen dam adjacent to multiple maintenance roads.

Existing Features

- Structure
- Project Area Boundary
- Earthen Channel
- Dam Structure
- Basin Area
- County Park
- Drainage Flows
- Canals
- Negative Site Impacts

Land Use

- Agricultural
- Residential
- Commercial
- Industrial



Future land use plans for this area, according to Maricopa County Planning, include rural residential development and a community planned area development proposed for the adjacent Caterpillar property.

Site Impressions

Overall, the impression of the site is positive because of the panoramic views of the White Tank Mountains.

Zone One - Inlet Channel

The earthen inlet channel is about 12 feet deep with a uniform 3:1 side slope. The channel is devoid of any vegetation and is bounded by maintenance roads on both sides. This area has also been accessed and negatively impacted by off-road vehicles as shown in the picture below.

Zone Two - Dam Structure

The structure is unappealing due to its linear form and sparse vegetation. The dam structure is large and negatively impacts the area due to its size and multiple parallel maintenance roads.

Zone Three - Impoundment Area

The basin area is visually pleasing because it is moderately undisturbed desert open space. The area immediately adjacent to the dam has no visible evidence of excavation because the disturbed areas were graded to match the existing terrain. However, the northwest portion of this area has been negatively impacted by construction roads, several maintenance roads, and sparsely vegetated areas.

Opportunities and Constraints for Retrofit Treatments

The primary retrofit treatment opportunity for White Tanks FRS #3 is its potential to serve as the site of a major recreation feature attraction due to its significant location between McMicken Dam, White Tanks FRS #4, and the Gila River. The location of these facilities and their proximity to one another provides an excellent opportunity to establish a recreational open space, linking all of these structures and creating a significant West Valley trail corridor. The other opportunity for White Tanks #3, due to its moderately undisturbed condition, is to provide passive-use recreation and serve as a base facility with trail links to White Tank Regional Park.

Zone One - Earthen Channel

The primary retrofit opportunity for the earthen channel is its potential as a trail corridor. In addition, the surrounding undisturbed desert environment provides a framework for potential enhancements for the channel.

The retrofit constraint is the narrow width of Flood Control District property which limits the scale of potential enhancements for this zone.

Zone Two - Dam Structure

The retrofit opportunities for the dam structure are the panoramic views to the White Tank Mountains and the adjacent riparian areas.

The constraints to retrofitting the dam structure include the existing size and slopes which may prohibit potential enhancements; the need to maintain the structural integrity of the dam when applying landscape aesthetics; and the ability to perform required inspections.

Zone Three - Impoundment Area

The retrofit opportunities for the basin area are the existing desert riparian washes, a natural and lush environment that offers wildlife viewing opportunities. This existing condition is the genesis for the potential basin retrofit to a nature-centered and passive-use park.

The constraints to retrofitting the basin area are the existing disturbed portions that need to be graded and replanted to match the surrounding area.



Inlet channel – North view



Impacted Portion of Impoundment Area.



Impoundment Area – West View to White Tank Mountains

Landscape Aesthetic and Multi-Use Treatment Recommendations

The cross-sections on this page and the following pages are illustrations of potential retrofit recommendations discussed within this text. The cross-sections also relate to the overall White Tanks #3 Concept Plan on page 146.

The landscape aesthetic and multi-use recommendations for White Tanks FRS#3 consider its context in the overall West Valley open space and trail network. White Tank Mountains Regional Park, McMicken Dam, and the wash channel of White Tanks FRS #4 are within a two-mile radius of the site. The overall recommendation is to provide a network of trailways and greenways with a series of destination nodes of recreational open space. The existing riparian washes, which cross from northeast to southwest, can become links between the community and this major McMicken Dam-Gila River trail connection. The surrounding open space offers an opportunity to preserve and enhance significantly valuable riparian wash areas that function as wildlife corridors. The undeveloped land around these facilities also offers an opportunity to preserve and enhance valuable riparian wash areas and to create park spaces for the community.

The different existing site characteristics of White Tanks #3 and White Tanks #4 have guided the recommendations for the landscape aesthetics and multi-uses. The White Tanks #3 site is less disturbed, has more desert vegetation, and is closer to natural open space. Therefore, it is more suitable to retain and enhance the natural environment by programming for passive recreational uses. The White Tanks #4 site is more disturbed, has less desert vegetation, is closer to freeway access, and has existing multi-use. This site is more suitable to have landscape enhancements and be programmed for active recreational uses.

Zone One - Earthen Channel

The earthen channel can be modified by widening and creating terraces within a meandering channel. The modification provides an opportunity to construct multi-use paths on the terraces above the five-year flow level. The creation of a meandering low-flow channel with varied side embankments will create a more aesthetically pleasing channel. The renovation would widen the channel and offer the opportunity to introduce multi-use trails and riparian plantings for shade and visual enhancement. The channel would be reinforced with the placement of rock drop structures to modulate the water flows.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Construct low flow feature

Landscaping Treatment Retrofit Opportunities

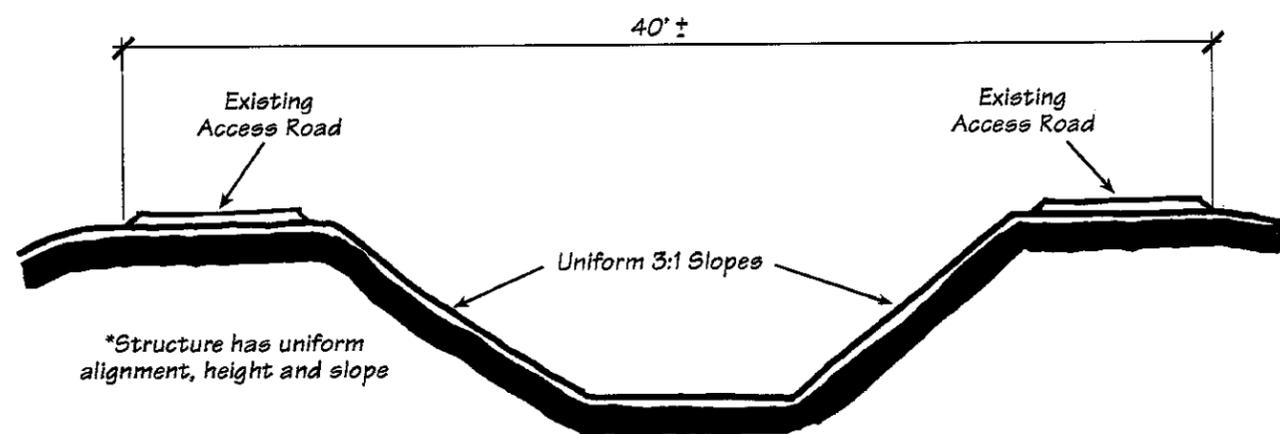
Tree Planting
Revegetation - Seeding disturbed areas
Irrigation

Multi-Use Treatment Retrofit Opportunities

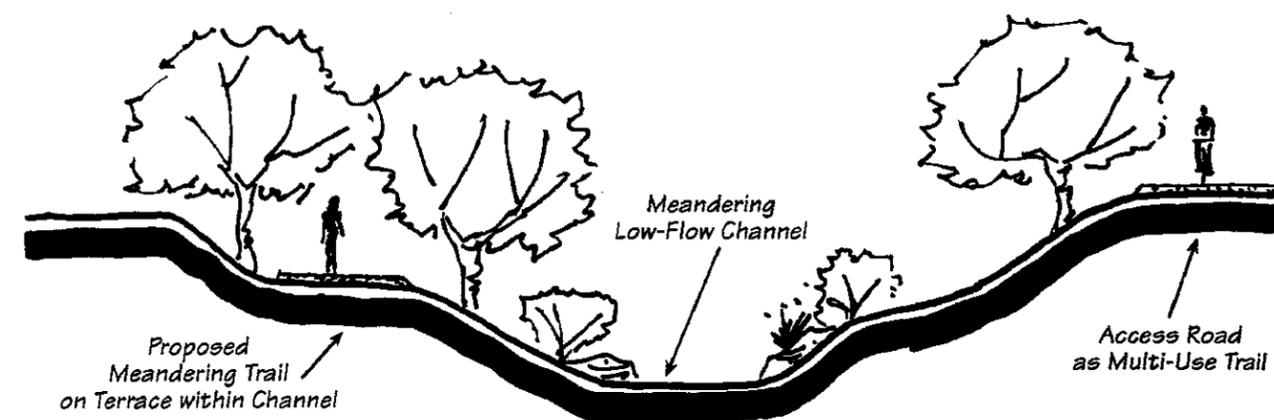
Soft-Surface Trail
Gateway Features - At trail connection points

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

Land Acquisition - To enlarge area for retrofit treatments



White Tanks FRS 3 – Existing Conditions



White Tanks FRS 3 – Retrofit Improvements – Channel

Zone Two - Dam Structure

The landscape aesthetic and multi-use recommendations consider two options: retaining and retrofitting the existing structure, or removing the structure and replacing it with a large basin feature. Both potential retrofit enhancements propose retrofitting this facility as a passive-use park with trailhead facilities and an environmental education center.

Option 1 – Modification of the Dam Structure

The existing maintenance roads on top of and adjacent to the dam structure could be retained and modified for separated-use trails. The dam structure could be retrofitted with earthwork to add overburden areas along the dam, which would provide an area for landscape planting but maintain the structural integrity of the dam facility. Gateway features with enhanced landscape plantings, boulders, signs and access trails could be created at trail connection points to provide passage to the trail atop the dam as well as access to the rest of the site.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Construct overburden area on dam structure

Landscaping Treatment Retrofit Opportunities

Revegetation

Multi-Use Treatment Retrofit Opportunities

Trail Retention - Minor changes for existing maintenance road
Gateway Features - At trail connection points

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Option 2 – Removal of the Dam Structure

This option proposes the demolition of the structure and replacement with a basin/wetland area. The new basin could be constructed to have varied slopes throughout the site to provide a mix of high and low-lying areas, and to create a low-flow feature. This would create both upland and wetland environments and provide opportunities for nature viewing areas connected by boardwalks.

Currently, the Flood Control District Structures Assessment Program is analyzing the condition of the White Tanks FRS #3 dam. The program is evaluating the possible removal of the structure and replacement with a basin or an outfall channel to direct water flows to White Tanks FRS #4 and the Gila River.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Remove structure and replace with a modified structure

Landscaping Treatment Retrofit Opportunities

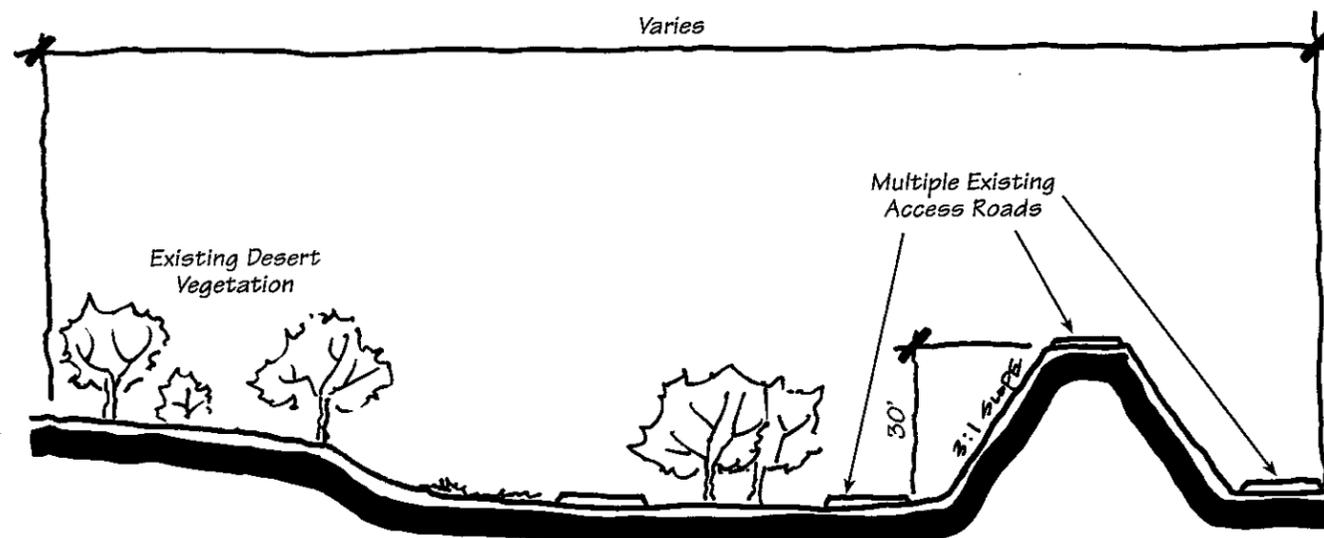
Tree Planting
Revegetation
Irrigation

Multi-Use Treatment Retrofit Opportunities

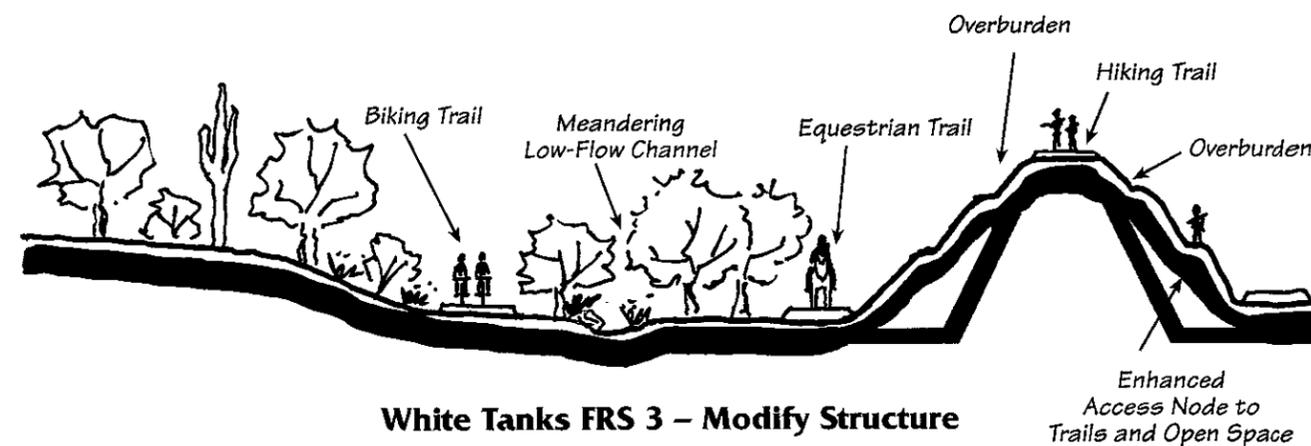
Gateway Features - At trail connection points
Recreation Area - Regional park facilities

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.



White Tanks FRS 3 – Dam & Impoundment Area – Existing Conditions



White Tanks FRS 3 – Modify Structure



WHITE TANKS FRS 3 & 4 CONCEPTS



Carter-Burgess
OCTOBER 2000

Zone Three - Impoundment Area

The landscape aesthetic and multi-use recommendations for designating a passive use for this site suggest adding an environmental interpretive center and wildlife viewing facilities. In addition, introducing a low-flow channel feature and creating ponding areas with rock drop structures will enhance the existing basin environment of natural desert open space and riparian washes. These enhancements would improve the wildlife habitat and viewing opportunities.

Aesthetic Treatment Retrofit Opportunities

- Earthwork - Construct low-flow channel feature
- Earthwork - Construct recharge basin/ponding areas
- Rock Drop Structures near ponding areas

Landscaping Treatment Retrofit Opportunities

- Tree Planting
- Revegetation
- Irrigation

Multi-Use Treatment Retrofit Opportunities

- Recreation Area - Regional park facilities

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Hydrologic Engineering Synopsis of Structure

(Source: Data On Structures, an unpublished Flood Control District Document)

Project Title: White Tanks No. 3 – Date of Final Acceptance: 1954

Watershed and Relationship to Other Structures: Eastern slopes of the White Tank Mountains.

Location: Access from Northern Avenue just past Beardsley Canal. Proceed south along the canal to the structure. From south on Indian School Road proceed north approximately 3 miles on Jackrabbit Trail which dead-ends into the structure.

Authorization:

Federal Sponsor: Soil Conservation Service

Local Sponsor: Maricopa County Municipal Water Conservation District No. 1

Jurisdictional Agency: Arizona Department of Water Resources

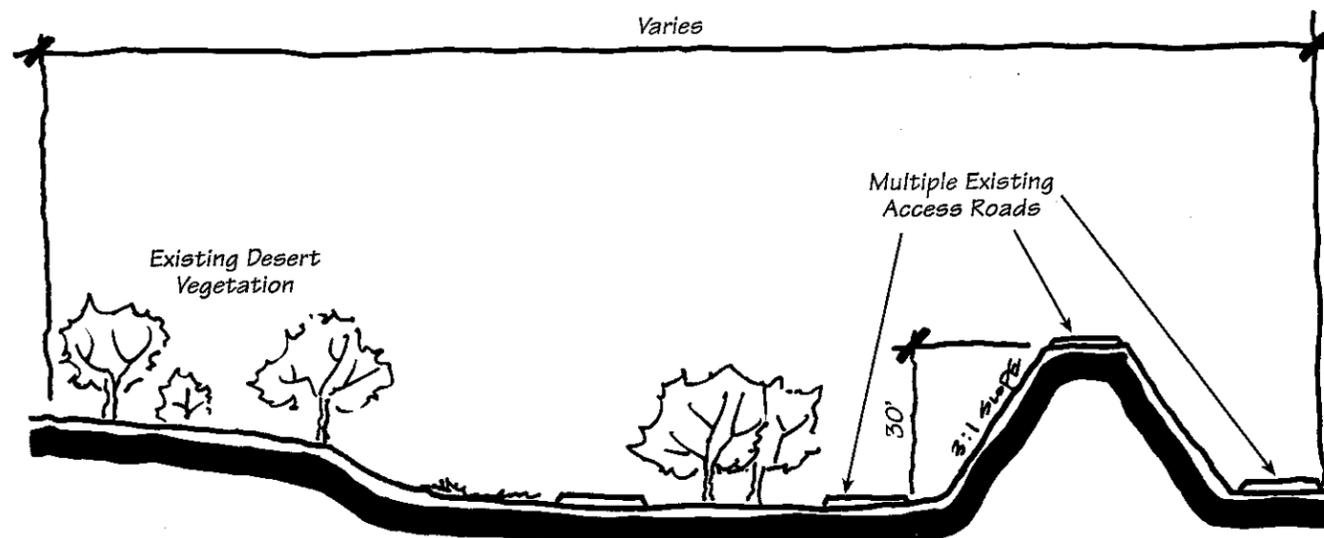
Functional Description: This structure collects runoff water from the eastern slopes of the White Tanks Mountains, impounds it and releases it through 3

gated outlets or over the emergency spillway at the south end of the structure. A

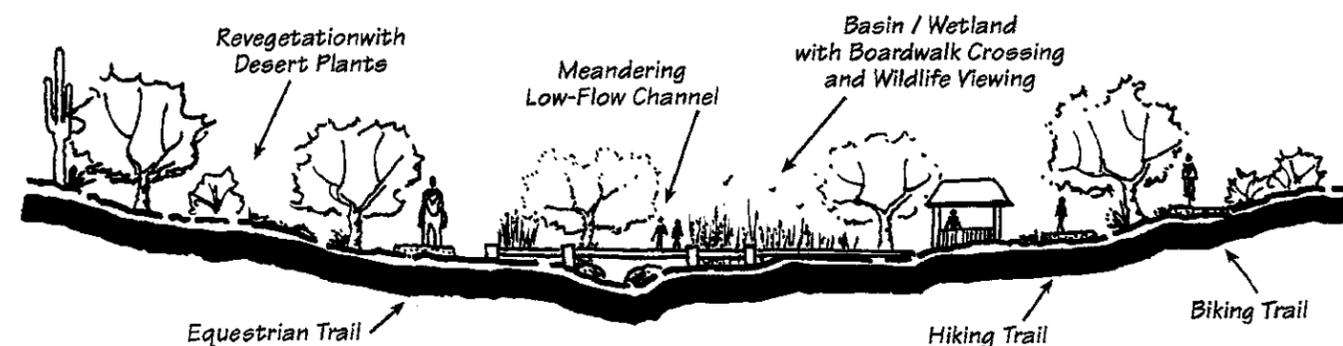
diversion dike west of the Beardsley Canal starts at Northern Avenue and runs south to the structure. Water released from this structure will go into the Beardsley Canal or into the desert washes.

Project Features:

Type of structure	Compacted earthfill
Top of structure elevation	1,216.0
Length of structure	7,667 feet
Maximum height	30 feet
Top crest width	10 feet
Spillway crest elevation	1,210.0
Spillway capacity	11,750 CFS
Drainage area	24 square miles
Storage capacity	2,655 acre feet
Maximum water surface elev.	1,213.0
Freeboard	
Peak inflow	
Peak outflow	
Drawdown	80 hours
Principal outlet discharge rate	
Principal outlet structure	3 ungated pipes – 2 each 48" RCP



White Tanks FRS 3 – Dam & Impoundment Area – Existing Conditions



White Tanks FRS 3 – Remove Structure

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations	
<i>Structure - 6. White Tanks FRS 3</i>		<i>1 to 5</i>	<div style="display: flex; justify-content: space-between;"> 1 Non-Conforming Element 4 Predominantly Conforming Element </div>
<i>Zone 1 - Earthen Inlet Channel</i>			<div style="display: flex; justify-content: space-between;"> 2 Slightly Conforming Element 5 Fully Conforming Element </div>
<i>Zone 3 - Earthen Inlet Channel</i>			<div style="display: flex; justify-content: space-between;"> 3 Moderately Conforming Element </div>
<hr/>			
<i>Conformance to 1992 Policy for Aesthetic Treatment and Landscaping</i>			
1		The alignment of the structure meanders to vary from a straight line.	1 The alignment of the channel is uniformly straight.
2		The profile or height of the structure varies to modify the outline.	1 The height or profile of the channel is constant and does not vary.
3		The side slopes of the structure are varied to simulate the natural terrain.	1 The sides slopes of the channel are a uniform 3 to 1 slope.
4		The structure is designed to blend into the contour of the natural terrain.	1 The earthwork of the channel does not blend into the surrounding natural terrain.
5		On-site screening with trees and shrubs are used to blend the structure.	1 There is no on-site screening with trees and shrubs.
6		Off-site screening with plantings or earthwork buffers are used.	1 There is no off-site screening with plantings or earthwork buffers.
7		There is veneering or plating of the structure with indigenous rock.	1 There is no veneering or plating with indigenous rock.
8		Disturbed areas are graded and replanted to match surrounding area.	2 Disturbed areas are graded but not replanted.
9		Plantings are used to provide erosion control and protect visual qualities.	1 There are no plantings to provide erosion control and protect visual qualities.
10		Plantings are used that will not cause an impedance to design function.	1 There are no aesthetic treatment plantings.
11		The structure's sides are furrowed to enhance the growth of vegetation.	1 The structure's sides are not furrowed.
12		The structure and maintenance roads are kept free of weeds and debris.	2 The structure is mostly free of debris, but the area by Northern Avenue has debris.
<i>Conformance Average</i>		<i>1.17</i>	
<hr/>			
<i>Existing Aesthetic Features</i>			
13		There are riparian or river corridor features to preserve.	1 The channel has no riparian features to preserve.
14		There are landscape or natural features to preserve.	1 There are no landscape or natural features to preserve.
15		There are wildlife habitat areas to preserve.	1 There are no wildlife habitat areas to preserve.
16		There are undisturbed open space elements to preserve.	1 There are no open space elements to preserve.
17		There are scenic corridors to preserve.	1 There are no scenic corridors to preserve.
18		There are panoramic views from the structure.	5 The channel offers views west to the White Tank Mountains.
19		There is a meandering low-flow feature modeled on riparian washes.	1 There is no meandering low-flow feature.
20		The structure or area has revegetated.	1 The structure or area has not revegetated.
21		The existing plantings match the community character.	1 There are no existing plantings.
22		The structure's size and scale are proportional to its surroundings.	2 The channel and berm are mostly out of scale with its surroundings.
23		The attendant flood control facilities structures blend into surroundings.	1 There are several culvert pipes at the north end which do not blend.
24		The adjacent properties positively impact the site.	3 Some positive properties -open space, agric., residential. One negative -commercial.
25		There is existing on-site irrigation.	1 There is no existing on-site irrigation.
26		There are water recharge and stormwater retention areas.	1 There are no water recharge or retention areas.
27		The structure does not have negative on-site visual problems.	1 The channel is uniform and devoid of any vegetation.
28		There are no overhead electrical lines and utility towers.	5 There are no overhead electrical lines and utility towers.
29		There are not multiple maintenance roads within the site.	2 There is a maintenance road along each side of the channel.
30		There are no intersecting arterial streets.	5 There are no intersecting arterial streets.
31		There are no noise impacts that need buffering.	2 There is some occasional noise from the C.A.S.E. property.
32		Additional landscape features are needed.	5 Additional landscaping is needed to improve the visual qualities.
33		There are opportunities for landscape enhancements.	5 Landscape enhancements could be added along a meandering low-flow feature.
<i>Existing Aesthetic Features Average</i>		<i>2.19</i>	
<i>Conformance and Aesthetic Features Average</i>		<i>1.68</i>	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
<hr/>		
Structure - 6. White Tanks FRS 3 Zone 1 - Earthen Inlet Channel	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
<hr/>		
<i>Existing Multi-Use Features</i>		
34 There are existing natural features beneficial for a greenway corridor.	1	The channel zone has no existing natural features for a greenway corridor.
35 There are existing multi-use features.	1	There are no existing multi-use features.
36 The area is currently accessible for multi-use.	1	This area is not accessible for multi-use.
37 Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.
38 Multi-use features could be added without compromising public safety.	3	Multi-use features could be added after addressing channel flow safety concerns.
39 There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance road.
40 There are no physical constraints to accessing the site.	4	There are no physical constraints to accessing the site.
41 There are no constraints to multi-use due to site size.	2	There are constraints due to site size, the channel zone is narrow.
42 There are no constraints to public multi-use due to structural hazards.	4	There are no constraints due to structural hazards.
43 There are no constraints to multi-use due to existing slopes.	3	There are some constraints due to the existing channel slopes.
44 There are no constraints to multi-use construction due to earth mounds.	5	There are no earthwork or rip-rap mounds.
<hr/>		
<i>Existing Multi-Use Features Average</i>	2.64	
<hr/>		
<i>Future Multi-Use Features</i>		
45 There are possible connections to open space.	5	The White Tank Mountains are 1.5 miles west, and there is undeveloped land around this zone.
46 There is a possible connection to the Maricopa County Trail System.	4	This is not part of the Trail System, but it is close to McMicken Dam and White Tanks 4.
47 There are possible connections to the local trail system.	5	Not part of the local trail system, but could be a link from McMicken Dam to the Gila River.
48 There are possible connections to residential neighborhoods.	4	There are residential areas one-half mile east of the channel.
49 There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation areas.
50 There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development may provide facilities.
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52 There are opportunities for special use commercial areas.	1	The earthen channel zone is too small to accommodate special uses.
53 Site property could be sold to allow for special use commercial areas.	1	There is no additional property that could be sold.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	5	There is open land by the channel that can provide space for enhancements/ buffering.
55 Adjacent land has natural features beneficial for a greenway corridor.	5	The adjacent land has undisturbed riparian washes.
56 Adjacent land needs design guidelines for future development.	5	The adjacent land has natural features to preserve and would benefit by linking to this site.
57 There are opportunities for large-scale regional park facilities.	1	There is no space to accommodate regional park facilities.
58 There are opportunities for small-scale local park facilities.	1	There is no space to accommodate local park facilities.
59 There are opportunities for riparian wash areas.	4	Riparian areas can be part of a meandering low-flow channel.
60 There are opportunities for recharge basins or ponding areas.	1	There is no space for recharge basins.
61 There are opportunities for multi-use trails.	4	The existing maintenance roads along the channel could be used as multi-use trails.
62 There are opportunities for separated-use trails.	3	The multiple maintenance roads along the channel could provide separated use trails.
<hr/>		
<i>Future Multi-Use Features Average</i>	3.22	
<hr/>		
<i>Existing and Future Multi-Use Average</i>	2.93	
<hr/>		
<i>Conformance, Aesthetic Features + Multi-Use Average</i>	2.30	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations	
Structure - 6. White Tanks FRS 3 Zone 2 - Earthen Dam Structure	1 to 5	1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element	4 Predominantly Conforming Element 5 Fully Conforming Element

Conformance to 1992 Policy for Aesthetic Treatment and Landscaping

1	The alignment of the structure meanders to vary from a straight line.	2	The alignment of the dam is uniformly straight, but there are several gradual bends.
2	The profile or height of the structure varies to modify the outline.	1	The height or profile of the dam structure is constant and does not vary.
3	The side slopes of the structure are varied to simulate the natural terrain.	1	The sides slopes do not vary, they are a uniform 3 to 1 slope.
4	The structure is designed to blend into the contour of the natural terrain.	1	The earthwork is not blended into the surrounding terrain.
5	On-site screening with trees and shrubs are used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6	Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating with indigenous rock.
8	Disturbed areas are graded and replanted to match surrounding area.	1	Disturbed areas are not graded or replanted, but the dam has partially revegetated.
9	Plantings are used to provide erosion control and protect visual qualities.	1	There are no plantings to provide erosion control and protect visual qualities.
10	Plantings are used that will not cause an impedance to design function.	1	There are no aesthetic treatment plantings.
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	3	The structure is free of weeds and debris.

Conformance Average

1.25

Existing Aesthetic Features

13	There are riparian or river corridor features to preserve.	1	There are no riparian features to preserve.
14	There are landscape or natural features to preserve.	1	There are no landscape features to preserve.
15	There are wildlife habitat areas to preserve.	1	There are no wildlife areas to preserve.
16	There are undisturbed open space elements to preserve.	1	There is no open space elements to preserve.
17	There are scenic corridors to preserve.	1	The earthen dam blocks the views from the east to the White Tank Mountains.
18	There are panoramic views from the structure.	5	The dam offers panoramic views west to the White Tank Mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There are no low-flow meandering features.
20	The structure or area has revegetated.	2	The sides of the structure have partially revegetated.
21	The existing plantings match the community character.	3	The existing plants on the structure are desert scrub.
22	The structure's size and scale are proportional to its surroundings.	1	The dam's size and scale is large and is not proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	Some positive properties -open space, agric., residential. One negative -commercial.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27	The structure does not have negative on-site visual problems.	2	The dam structure is large and mostly devoid of vegetation.
28	There are no overhead electrical lines and utility towers.	4	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the site.	1	There is a road on top of the dam and along each side of the structure.
30	There are no intersecting arterial streets.	4	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	2	There is some occasional noise from the C.A.S.E. property.
32	Additional landscape features are needed.	5	Additional landscaping is needed to screen the dam structure.
33	There are opportunities for landscape enhancements.	5	Landscape enhancements could be added at enhanced connection nodes.

Existing Aesthetic Features Average

2.19

Conformance and Aesthetic Features Average

1.72

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 6. White Tanks FRS 3		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element
Zone 2 - Earthen Dam Structure			2 Slightly Conforming Element 5 Fully Conforming Element
3 Moderately Conforming Element			
<hr/>			
Existing Multi-Use Features			
34	There are existing natural features beneficial for a greenway corridor.	1	The earthen dam zone has no natural features for a greenway corridor.
35	There are existing multi-use features.	1	This zone currently has no existing multi-use features.
36	The area is currently accessible for multi-use.	1	This zone currently is not accessible for multi-use.
37	Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	4	Multi-use features could be added after addressing dam side slope safety concerns.
39	There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance road on top or on the eastern side.
40	There are no physical constraints to accessing the site.	4	There are no constraints to accessing the site.
41	There are no constraints to multi-use due to site size.	3	The structure and parallel maintenance roads limit the type of multi-use.
42	There are no constraints to public multi-use due to structural hazards.	4	There are no constraints due to structural hazards.
43	There are no constraints to multi-use due to existing slopes.	2	The side slopes of the dam is a safety concern.
44	There are no constraints to multi-use construction due to earth mounds.	4	There are no earthwork or rip-rap mounds.
Existing Multi-Use Features Average		2.64	
<hr/>			
Future Multi-Use Features			
45	There are possible connections to open space.	5	The White Tank Mtns are 1.5 miles west. There is undeveloped land around this zone.
46	There is a possible connection to the Maricopa County Trail System.	4	This is not part of the Trail System, but it is close to McMicken Dam and White Tanks 4.
47	There are possible connections to the local trail system.	5	Not part of the local trail system, but could be a link from McMicken Dam to the Gila River.
48	There are possible connections to residential neighborhoods.	4	There are residential areas one-half mile east of the channel.
49	There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation areas.
50	There are possible connections to multi-modal facilities.	3	No existing multi-modal, but future development may provide facilities.
51	There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52	There are opportunities for special use commercial areas.	1	This zone has no space to accommodate special uses.
53	Site property could be sold to allow for special use commercial areas.	1	This zone has no additional property that could be sold.
54	Adjacent land could be acquired to provide for enhancements/ buffering.	5	There is open land around the channel that could provide for enhancements/ buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	5	The adjacent land has undisturbed riparian washes.
56	Adjacent land needs design guidelines for future development.	5	The adjacent land has natural features to preserve and would benefit by linking to this site.
57	There are opportunities for large-scale regional park facilities.	1	This zone has no space for regional park facilities.
58	There are opportunities for small-scale local park facilities.	1	This zone has no space for local park facilities.
59	There are opportunities for riparian wash areas.	1	This zone has no space for riparian areas.
60	There are opportunities for recharge basins or ponding areas.	1	This zone has no space for recharge basins.
61	There are opportunities for multi-use trails.	4	The existing maintenance roads could be used as multi-use trails.
62	There are opportunities for separated-use trails.	4	The multiple maintenance roads could provide separated use trails.
Future Multi-Use Features Average		3.11	
Existing and Future Multi-Use Average		2.87	
Conformance, Aesthetic Features + Multi-Use Average		2.30	

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
	Structure - 6. White Tanks FRS 3 Zone 3 - Impoundment Area	1 to 5	1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element 4 Predominantly Conforming Element 5 Fully Conforming Element
	Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1	The alignment of the structure meanders to vary from a straight line.	3	The alignment of the impoundment area varies, this is mostly undisturbed open space.
2	The profile or height of the structure varies to modify the outline.	3	The height or profile in this zone varies, this is mostly undisturbed open space.
3	The side slopes of the structure are varied to simulate the natural terrain.	3	The sides slopes in this zone varies, this is mostly undisturbed open space.
4	The structure is designed to blend into the contour of the natural terrain.	3	The area's earthwork moderately blends into the surrounding natural terrain.
5	On-site screening with trees and shrubs are used to blend the structure.	2	The on-site screening is from the existing plants.
6	Off-site screening with plantings or earthwork buffers are used.	2	The off-site screening is from the existing plants.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating with indigenous rock.
8	Disturbed areas are graded and replanted to match surrounding area.	1	Several disturbed areas are not graded or replanted.
9	Plantings are used to provide erosion control and protect visual qualities.	1	There are no plantings used for erosion control or to protect visual qualities.
10	Plantings are used that will not cause an impedance to design function.	1	There are no aesthetic treatment plantings.
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	4	The structure is mostly free of weeds and debris.
	Conformance Average	2.08	
	Existing Aesthetic Features		
13	There are riparian or river corridor features to preserve.	4	The area has several major riparian washes to preserve.
14	There are landscape or natural features to preserve.	4	There are grassland areas and existing desert trees that should be preserved.
15	There are wildlife habitat areas to preserve.	3	There are some wildlife habitats at the riparian areas to preserve.
16	There are undisturbed open space elements to preserve.	4	There are several undisturbed open space areas in this zone that should be preserved.
17	There are scenic corridors to preserve.	4	The scenic corridor west of the White Tank Mountains should be preserved.
18	There are panoramic views from the structure.	4	The impoundment area offers views to the White Tank Mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	3	There are existing meandering low-flow features.
20	The structure or area has revegetated.	3	The impoundment area has moderately revegetated with desert plants.
21	The existing plantings match the community character.	3	The existing plantings match the riparian community character.
22	The structure's size and scale are proportional to its surroundings.	4	The impoundment area's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	3	Some positive properties -open space, agric., residential. One neg. commercial prop.
25	There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26	There are water recharge and stormwater retention areas.	5	This impoundment area is a large water recharge and stormwater retention area.
27	The structure does not have negative on-site visual problems.	2	The disturbed areas that are not graded or replanted.
28	There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the site.	2	There are several maintenance roads within the impoundment area.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	2	There is some occasional noise from the C.A.S.E. property.
32	Additional landscape features are needed.	4	Additional landscaping is needed to screen the impoundment area and dam structures.
33	There are opportunities for landscape enhancements.	4	Landscape and earthwork enhancements could amend the impoundment area.
	Existing Aesthetic Features Average	3.33	
	Conformance and Aesthetic Features Average	2.71	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 6. White Tanks FRS 3 Zone 3 - Impoundment Area		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Existing Multi-Use Features		
34 There are existing natural features beneficial for a greenway corridor.	4	This zone has existing riparian washes and desert open space beneficial for a greenway.
35 There are existing multi-use features.	2	The impoundment area currently has some off-road vehicular use.
36 The area is currently accessible for multi-use.	2	This zone currently is partially accessible for multi-use.
37 Multi-use features could be added without impeding design function.	4	Multi-use features can be added without impeding design function.
38 Multi-use features could be added without compromising public safety.	4	Multi-use features can be added without compromising safety.
39 There is space to meander the maintenance road(s).	4	There is space to meander the maintenance road.
40 There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.
41 There are no constraints to multi-use due to site size.	5	There are no constraints to multi-use due to site size.
42 There are no constraints to public multi-use due to structural hazards.	5	There are no constraints due to structural hazards.
43 There are no constraints to multi-use due to existing slopes.	3	There are some constraints due to existing slopes.
44 There are no constraints to multi-use construction due to earth mounds.	3	There are some constraints due to earthwork mounds or rip-rap.
Existing Multi-Use Features Average		3.73
Future Multi-Use Features		
45 There are possible connections to open space.	5	The White Tank Mtns are 1.5 miles west. There is undeveloped land around this zone.
46 There is a possible connection to the Maricopa County Trail System.	4	This is not part of the Trail System, but it is close to McMicken Dam and White Tanks 4.
47 There are possible connections to the local trail system.	5	Not part of the local trail system, but could be a link from McMicken Dam to the Gila River.
48 There are possible connections to residential neighborhoods.	4	There are residential areas one-half mile east of the impoundment area.
49 There are possible connections to recreation areas.	3	No existing recreation areas, but future development may provide recreation areas.
50 There are possible connections to multi-modal facilities.	3	No existing facilities, but future development may provide multi-modal facilities.
51 There are possible connections to local commercial areas.	3	No existing commercial areas, but future development may provide commercial nodes.
52 There are opportunities for special use commercial areas.	4	Commercial areas related to White Tanks 3 natural park theme and trailhead designation.
53 Site property could be sold to allow for special use commercial areas.	1	This zone has no additional property that could be sold.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	5	There is open land around the channel that could provide for enhancements/ buffering.
55 Adjacent land has natural features beneficial for a greenway corridor.	5	The adjacent land has undisturbed riparian washes.
56 Adjacent land needs design guidelines for future development.	5	Design guidelines could preserve natural features and create positive links with this site.
57 There are opportunities for large-scale regional park facilities.	2	This zone has space for a regional park, but the natural features should remain.
58 There are opportunities for small-scale local park facilities.	4	This zone has space for local park facilities.
59 There are opportunities for riparian wash areas.	4	This zone has space for riparian areas.
60 There are opportunities for recharge basins or ponding areas.	4	This zone has space for recharge basins/ ponding areas.
61 There are opportunities for multi-use trails.	4	This zone has space for multi-use trails, the existing roads could be used.
62 There are opportunities for separated-use trails.	4	This zone has space for separated-use trails, the existing roads could be used.
Future Multi-Use Features Average		3.83
Existing and Future Multi-Use Average		3.78
Conformance, Aesthetic Features + Multi-Use Average		3.24

White Tanks FRS #4

Facility Location and Description

White Tanks FRS #4 is located in the West Valley at the intersection of Jackrabbit Trail/195th Avenue. It extends from the inlet channel at Indian School Road and passes under Interstate 10 to Van Buren Street. The dam structure and flood impoundment area continue west to the alignment of Tuthill Road/203rd West.

White Tanks FRS #4, built in 1954, is a compacted earthfill dam 1.30 miles long and 20 feet high. This structure collects runoff water from the southeastern slopes of the White Tanks Mountains, impounds and releases it through two gated outlets or through the emergency spillways. The 2.50 miles of channel structure are either natural earthen or concrete construction.

White Tanks FRS #4 will be evaluated under the Flood Control District's Structures Assessment Program. Phase I assessments of this structure are scheduled to be conducted in late fiscal year 2000/2001.

Potential Significance to Provide Regional, Community or Local Open Space Amenities

The White Tanks FRS #4 facility has excellent potential to contribute to future regional, community and local open space needs by providing a significant recreational park destination. This site has the potential to be a major park or open space facility, which could become one of the major recreational attractions of an open space corridor linking McMicken Dam corridor and White Tank Regional Park with the Gila River, El Rio open space corridor.

Linking these significant corridors and creating destination nodes increases the recreational opportunities for the Maricopa County Regional Trail System. Creating an enhanced recreation open space and providing trailhead amenities would allow White Tanks #4 to serve as a base facility for trail connections with the Gila River, El Rio open space corridor. Please refer to the White Tanks #4 Potential Corridor Location Map on page 155.

Aesthetic Treatment and Landscaping Policy Conformance

White Tanks FRS #4 is separated into five zones with different flood control elements and distinctive aesthetic character. Please refer to the Site Map on page 157 for the structure zones, zone descriptions, city boundaries, and arterial streets, zone descriptions, city boundaries, and arterial streets. Please also refer to the Site Evaluation Criteria ratings and relevant comments on pages 166 to 175

Zone One - Naturalized Inlet Channel

The naturalized inlet channel is located along the west side of Jackrabbit Trail, extending from Indian School Road to one-quarter mile north of McDowell Road.

The inlet channel conforms to policy for the following reasons:

- The inlet channel varies in profile and slope.
- The inlet channel blends into the surrounding natural terrain.
- There is on-site screening from the existing plants.
- The inlet channel has veneering from the existing river rock.
- The existing plantings provide erosion control and protect visual qualities.
- The existing plantings do not cause an impedance to design function.



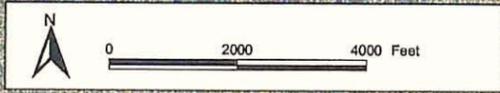
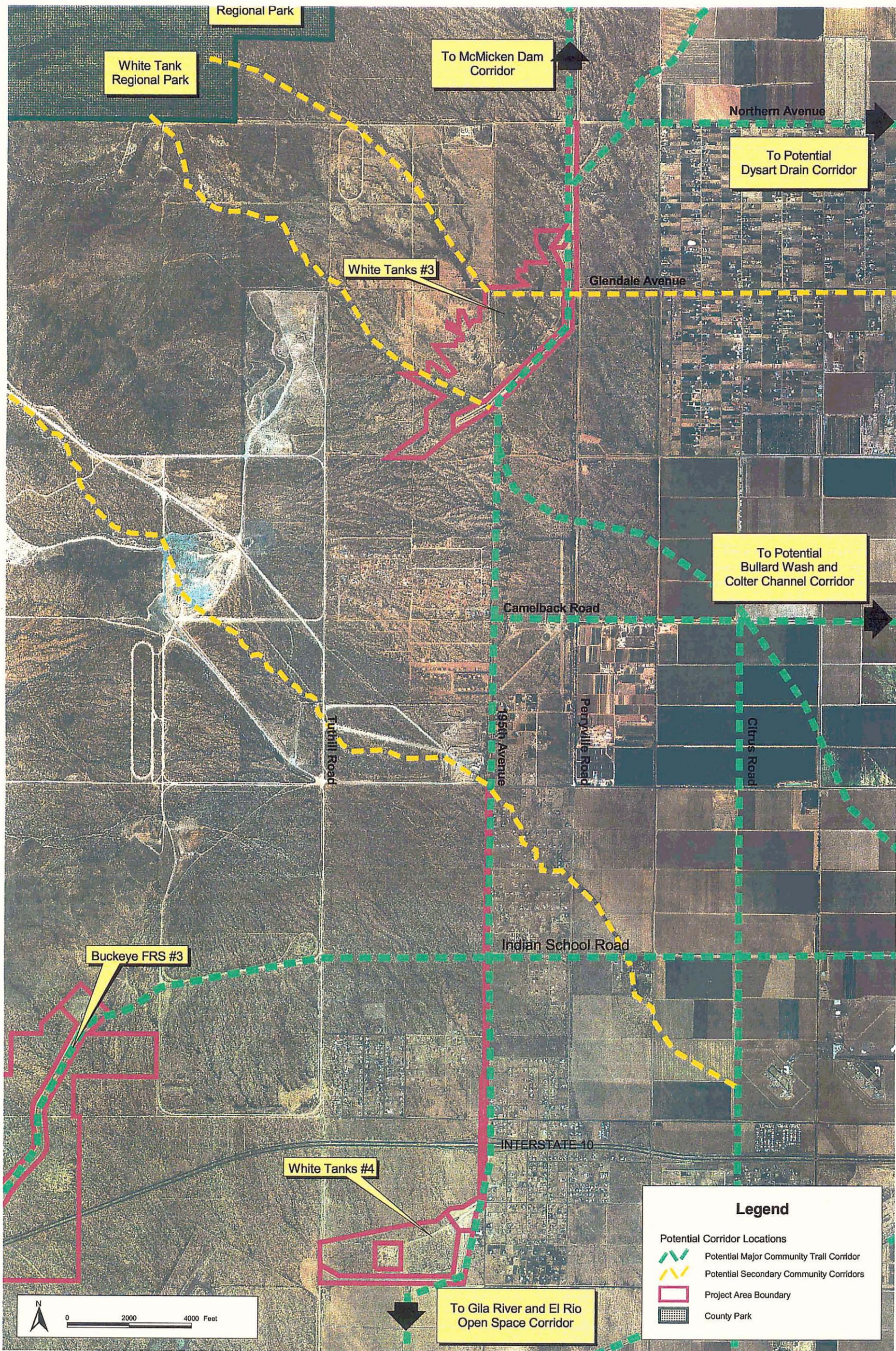
Naturalized Inlet Channel – North View



Concrete-Lined Inlet Channel – North View



Dam Structure and Impoundment Area – Northeast View



Legend

- Potential Corridor Locations
- Potential Major Community Trail Corridor
- Potential Secondary Community Corridors
- Project Area Boundary
- County Park

White Tanks 3 & 4 Potential Corridor Connections Map

Zone One - Naturalized Inlet Channel, cont.

The inlet channel does not conform to policy for the following reasons:

- The inlet channel does not vary in alignment.
- There is no off-site screening with plantings or earthwork buffers.
- Disturbed areas are not graded and replanted to match the surrounding area.
- The inlet channel has some weed and debris.

Zone Two - Concrete-Lined Inlet Channel

The concrete-lined inlet channel begins one-quarter mile north of McDowell Road, passes under Interstate 10, and then extends another one-half mile to the dam and basin structures.

The lined inlet channel conforms to aesthetic policy for the following reason:

- The concrete-lined channel has several bends.

The lined inlet channel does not conform to policy for the following reasons:

- The inlet channel does not meander in profile or slope, and is mostly straight.
- The channel is not designed to blend into the contour of the natural terrain.
- There are no screening techniques to make the structures more compatible with the environment, such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.
- The disturbed areas have not been replanted to match the surrounding area.
- No plantings are used to provide erosion control and protect visual qualities.

Zone Three - Dam Structure

The dam begins one-half mile south of Interstate 10, continues south to Van Buren Street, curves west and extends to the alignment of Tuthill Road/203rd West. This earthen structure is mostly devoid of vegetation.

The dam structure conforms to aesthetic policy for the following reason:

- The dam structure is mostly free of debris.

The dam structure does not conform to policy for the following reasons:

- The dam structure does not meander in alignment, profile, or slope.
- The dam is not designed to blend into the contour of the natural terrain.
- There are no screening techniques to make the dam more compatible with the environment, such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.
- The disturbed areas have not been replanted to match the surrounding area.
- No plantings are used to provide erosion control and protect visual qualities.

Zone Four - Impoundment Area

The impoundment area, located northwest of the dam structure, has revegetated with desert plants and an established grassland area.

The impoundment area conforms to aesthetic policy for the following reasons:

- The impoundment area meanders in profile and slope.
- The impoundment is designed to blend into the contour of the natural terrain.
- There is on-site screening from the existing plants.
- The existing plantings provide erosion control and protect visual qualities.

The impoundment area does not conform to policy for the following reasons:

- The impoundment area does not meander in alignment.
- There are no screening techniques to make the basin more compatible with the environment, such as the placement of earthwork buffers or the use of trees and shrubs.
- The disturbed areas have not been replanted to match the surrounding area.

Zone Five - Borrow Pit Area

The borrow pit, originally excavated by ADOT under permit, lies within the impoundment area. This area is a deep pit with earthen mounds, roads, and vegetation. The material was used for fill in the construction of Interstate 10.

The borrow pit area conforms to aesthetic policy for the following reasons:

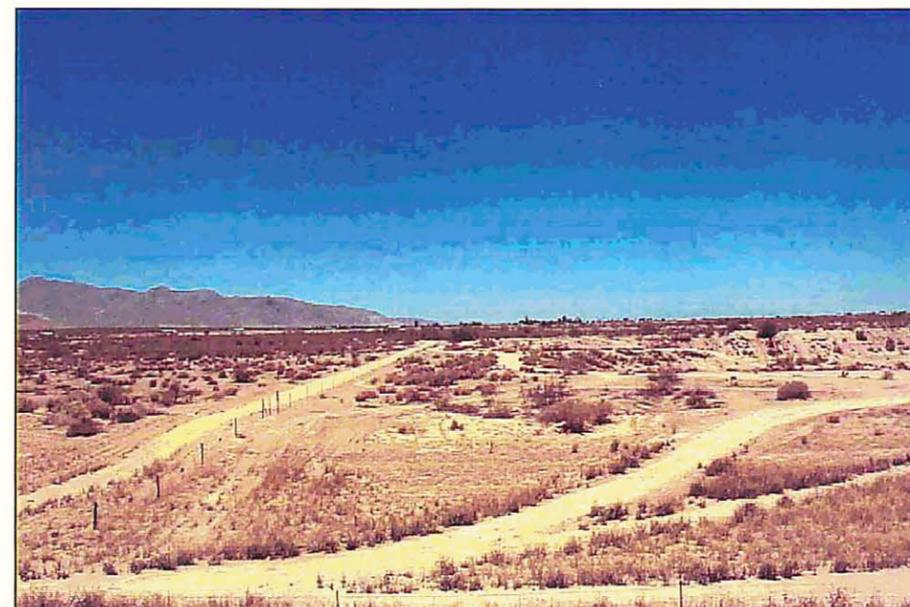
- The borrow pit meanders in profile and slope.
- The dam structure is mostly free of debris.

The borrow pit area does not conform to policy for the following reasons:

- The borrow pit does not meander in alignment.
- The borrow pit is not designed to blend into the contour of the natural terrain.
- There are no screening techniques to make the borrow pit more compatible with the environment, such as placement of earthwork buffers, use of trees and shrubs, or veneering of the structure with naturally occurring rock.
- The disturbed areas have not been replanted to match the surrounding area.
- No plantings are used to provide erosion control and protect visual qualities.



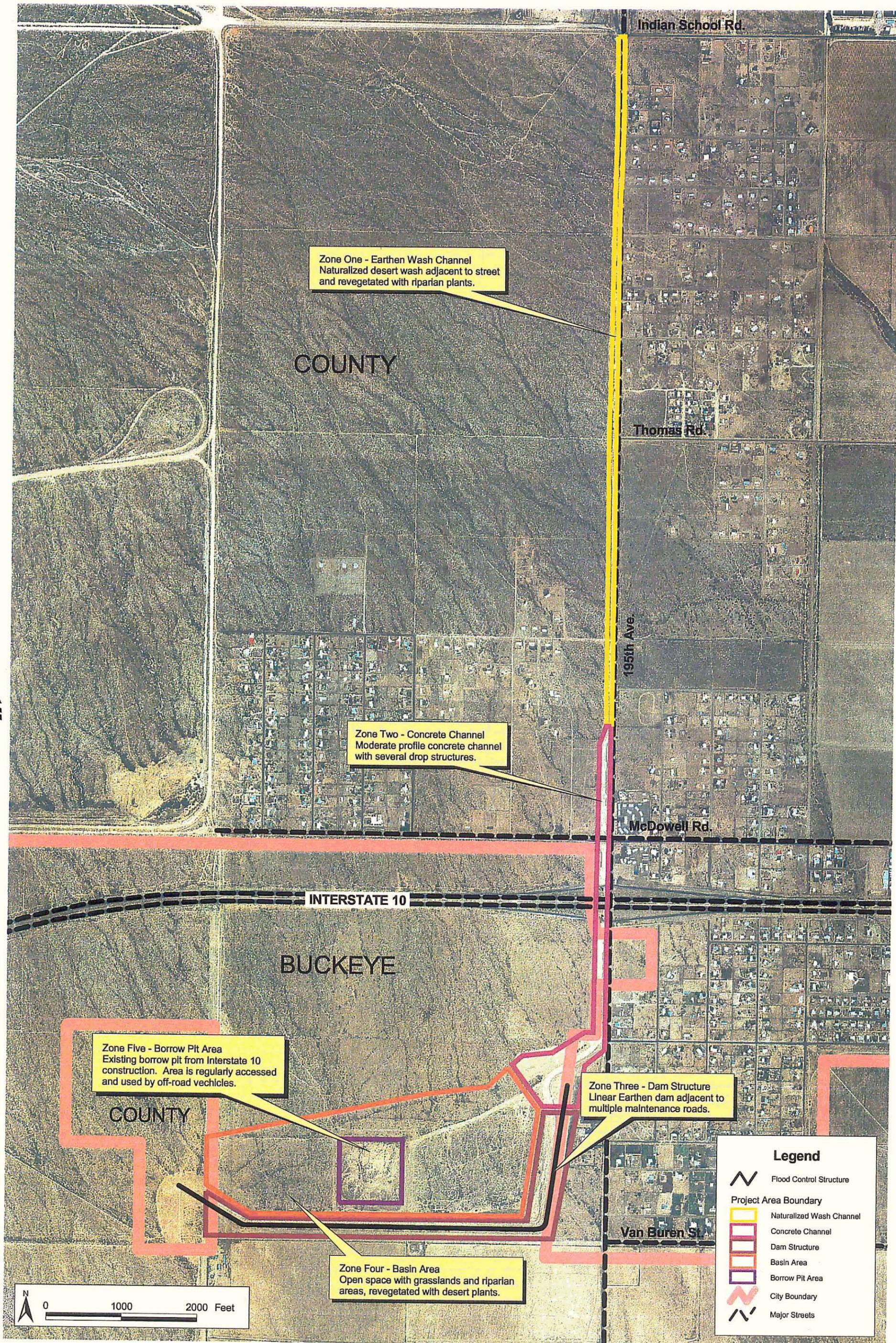
South Side of Dam Structure – Northeast View



Borrow Pit in Impoundment Area



Borrow Pit in Impoundment Area



White Tanks FRS 4

Site Map

Surrounding Site Character

The surrounding site character for White Tanks FRS #4 is identified on the Site Analysis - Existing Features/Surrounding Land Uses map; please refer to page 159.

Zone One - Naturalized Inlet Channel

The surrounding site character by the naturalized inlet channel is primarily undisturbed desert open space with indigenous vegetation and numerous riparian washes. The rural residential area along the east side of 195th Avenue has mixed character, some positive properties and some unkempt properties. A nearby industrial site is the Caterpillar Proving Grounds, which has both undisturbed desert areas and heavily impacted and regraded areas.

Zone Two - Concrete-Lined Inlet Channel

A surrounding site character that negatively impacts the concrete-lined inlet channel is the Interstate 10 freeway overpass and access ramps, a heavily constructed area without any buffering. There are some rural residential areas adjacent to the channel with mixed character, some positive properties and some unkempt properties. In addition, there is some undisturbed desert open space with native vegetation just south of the freeway.

Zone Three - Dam Structure

The surrounding site character by the dam structure is open space south of the dam, fallow agricultural land stripped of vegetation. Next to this is a lone rural residential property by Tuthill Road and Van Buren Street. The rural residential area on the east side of Jackrabbit Trail has mixed character with several small

commercial businesses. The industrial use, located between the dam and Jackrabbit Trail, is a machine and large equipment rental business. The institutional use is a restricted Luke Air Force Base auxiliary airfield.

Zone Four - Impoundment Area

The surrounding site character by the impoundment area is an open space area with undisturbed desert vegetation and located south of the freeway.

Zone Five - Borrow Pit Area

The surrounding site character by the borrow pit area is an open space area with undisturbed desert vegetation and located south of the freeway.

Future land use plans for the area, according to Maricopa County Planning, include a mix of rural and medium density residential, small and large lot residential, and a community retail center. There is also a community planned area development proposed for the adjacent Caterpillar property.

Site Impressions

Zone One - Naturalized Inlet Channel

The naturalized inlet channel, a green channel that has naturalized into a desert wash with a sand and rock bottom and riparian vegetation along the edges, is a positive aesthetic amenity. This inlet channel is not a naturally occurring desert wash because the natural washes in this area typically extend northwest to southeast and empty into this channel. This channel was constructed at this location parallel to the road when Jackrabbit Trail was built.

Zone Two - Concrete-Lined Inlet Channel

The concrete-lined inlet channel was constructed in conjunction with Interstate 10 improvements. It is primarily a straight and uniform channel which includes several drop structures and culverts underneath road crossings. Serious visual problems include the scale of the channel; its visual dominance in relation to the size of the bridge opening; and the lack of a sufficient right-of-way buffer area to provide a graceful transition between the channel, Jackrabbit Trail and the I-10 bridge structure.

Zone Three - Dam Structure

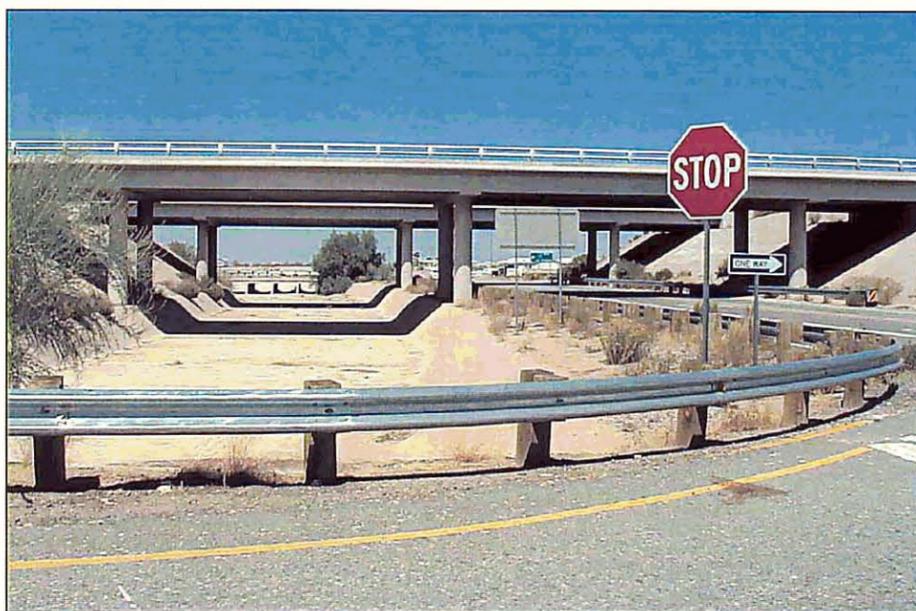
The first impression of the dam structure is its immense scale in relation to its surroundings and its visual prominence within primarily flat terrain. The dam structure is also visually distinct as an inorganic form due to its uniform alignment, profile, and slope. The surface of the dam is mostly devoid of vegetation, especially on the exposed southern slopes, and maintenance roads run adjacent to the structure. All of these make the structure a negative visual element.

Zone Four - Impoundment Area

The impoundment area has some undisturbed desert open space with existing trees and shrubs. The impacted areas have revegetated with desert plants and a grassy area adjacent to the dam. An access road runs through the basin area from the concrete channel, crossing to the borrow pit.

Zone Five - Borrow Pit Area

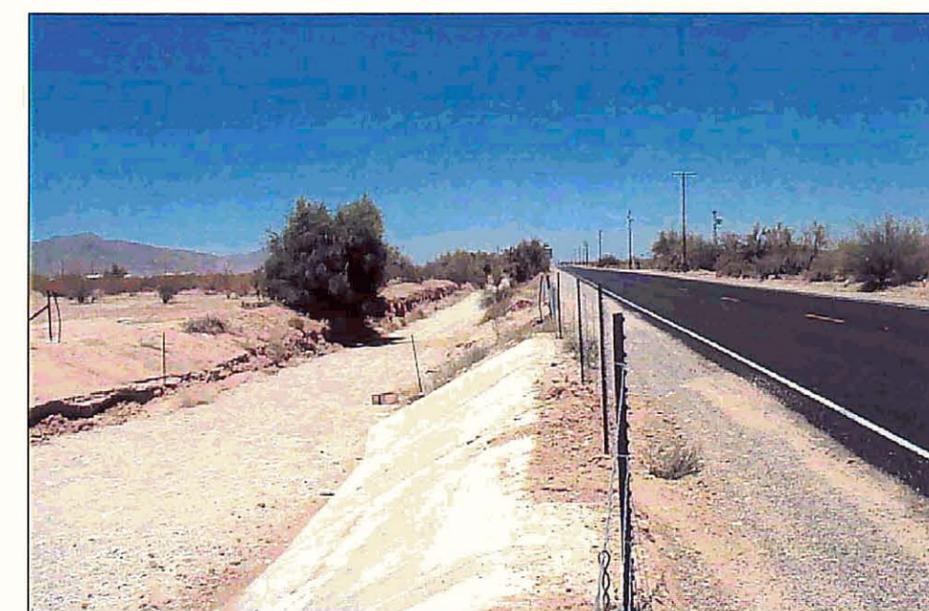
The borrow pit area is a deep open hole with multiple earthen mounds, roads, and some vegetation. The borrow pit area has been accessed by crossing through the inlet channel, and is frequently used by the public for off-road vehicle riding.



Concrete-Lined Inlet Channel by Interstate Underpass – North View



Impoundment Area – View of White Tank Mountains



Naturalized Inlet Channel and Jackrabbit Trail – North View

Caterpillar Proving Grounds
Heavily impacted area.

Indian School Rd.

Zone One - Earthen Wash Channel
Naturalized desert wash adjacent to street
and revegetated with riparian plants.

White Tank
Mountain Views

Thomas Rd.

195th Ave.

Zone Two - Concrete Channel
Moderate profile concrete channel
with several drop structures.

McDowell Rd.

INTERSTATE 10

Zone Five - Borrow Pit Area
Existing borrow pit from Interstate 10
construction. Area is regularly accessed
and used by off-road vehicles.

Zone Three - Dam Structure
Linear Earthen dam adjacent to
multiple maintenance roads.

Van Buren St.

Luke AFB
Auxiliary Airfield

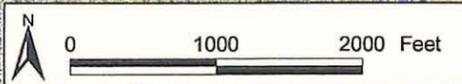
Zone Four - Basin Area
Open space with grasslands and riparian
areas, revegetated with desert plants.

Existing Features

-  Flood Control Structure
- Project Area Boundary**
-  Naturalized Wash Channel
-  Concrete Channel
-  Dam Structure
-  Basin Area
-  Borrow Pit Area
-  Drainage Flows
-  Major Streets
-  Canals
-  Negative Site Impacts

Land Use

-  Agricultural
-  Residential
-  Commercial
-  Industrial
-  Institutional



Opportunities and Constraints for Retrofit Treatments

The primary retrofit treatment opportunity for White Tanks FRS #4 is its potential to become a major recreation feature attraction for recreationalists along a possible future floodway corridor. This corridor might extend from McMicken Dam Corridor and White Tanks #3 to the Gila River, which would provide an outfall for White Tanks #3 and White Tanks #4. The size of the White Tank #4 facility and its strategic location along this corridor would make this site a major feature attraction. The most important multi-use recreation opportunity is for White Tanks #4 site and structure to serve as a future active sports recreation complex.

Zone One - Naturalized Inlet Channel

The retrofit treatment opportunity for the inlet channel is that its natural condition and the adjacent undisturbed desert area to the west provide an aesthetic amenity, which could become a canopied recreational corridor with landscaping and multi-use enhancement.

The retrofit constraints are the narrow width of the flood control property, which limits the scale of enhancements; the proximity of Jackrabbit Trail to the wash; and the channel improvements needed to retain the site's flood control function due to the lack of space available between the wash and the road.



Basin Grassland Area – North View

Zone Two - Concrete-Lined Inlet Channel

The primary retrofit treatment opportunity for the concrete-lined inlet channel is its key location at the junction of the McMicken Dam-Gila River corridor, making it a potential community gateway feature.

The retrofit constraints are the narrow width of Flood Control property and the possible rapid flows concentrated in this channel. Future widening of Jackrabbit Trail would require constructing a culvert and addressing the space constraints in order to successfully implement a trail connection through the underpass.

Zone Three - Dam Structure

The retrofit treatment opportunities for the dam structure are the panoramic views to the White Tank Mountains.

The constraints to retrofitting the dam structure include the existing size and slopes, which may prohibit potential enhancements; the need to maintain the structural integrity of the dam when applying landscape aesthetics; and the ability to perform required inspections.



Concrete and Rock Lined Inlet Channel

Zone Four - Impoundment Area

The primary retrofit treatment opportunity for the impoundment area is the potential of this site to be a key recreational destination node along the McMicken Dam-Gila River corridor. The other treatment opportunity is that the existing desert vegetation and grassland area provide aesthetic amenities that could be integrated into landscape treatment retrofits.

The retrofit treatment constraint is to incorporate a variety of active recreational facilities into a functioning floodwater impoundment area.

Zone Five - Borrow Pit Area

The retrofit treatment opportunity for the borrow pit is enhancing the existing multi-use function of off-road riding.

The retrofit treatment constraint is the existing condition of the borrow pit area, which may require extensive modifications to be a functioning off-road riding area.

The Flood Control Structures Assessment Program has identified White Tanks #4 as a potential candidate for structure removal and replacement with a basin structure. The current Area Drainage Master Plan for the West Valley is considering alternative outfall channels from White Tanks #4 to the Gila River, which would provide an opportunity for the completing a north to south trail linkage.



View of East Side of Dam Structure

Landscape Aesthetic and Multi-Use Treatment Recommendations

The cross-sections on this and the following pages are illustrations of potential treatment retrofit opportunities that are further discussed within the text. The cross-sections also relate to the overall White Tanks #3 and #4 Concept Plan on page 165.

The key opportunity is to establish an open space corridor extending from McMicken Dam southward to the confluence with the Gila River. White Tanks #3 and #4 would become two major recreational feature attractions providing trailhead nodal facilities and a complex of active and passive recreational facilities and areas.

The existing riparian washes near the inlet channel could become links between the community and the McMicken Dam-Gila River trail corridor. The undeveloped surrounding land also offers an opportunity to preserve and enhance valuable riparian wash areas and create additional recreational open space for the community.

The different existing site characteristics of White Tanks #3 and White Tanks #4 have guided the landscape aesthetics and multi-use recommendations for these sites. The White Tanks #3 site is less disturbed, has more desert vegetation, is closer to natural open space, and is more suitable to remain a natural environment with passive recreational uses. The White Tanks #4 site is more disturbed, has less desert vegetation, is closer to freeway access, has existing multi-use, and is more suitable for additional landscape enhancements with active recreational uses.

The potentials for active recreational uses for White Tanks #4 are a regional park/sports complex with open play fields located in the basin and additional built facilities outside of the high flood level. The existing off-road vehicle uses could be formalized into an ATV/motorcycle park and a BMX bicycle park, with a focus on family riding and development of trail riding skills for beginners and youngsters under close supervision of parents. There are very few established areas for off-road uses, and constructing such a park would lessen use where it is not desired. A park would also increase local economic development by providing a destination site for sports and off-road uses.

Zone One - Naturalized Inlet Channel

The west side of the naturalized inlet channel is undisturbed desert open space; it would be beneficial to acquire it and enlarge the area for retrofit treatments. The channel bank could be repaired and stabilized with rock and planting enhancements and gateway features, and trail facilities could be added to create a canopied recreational greenway corridor.

Aesthetic Treatment Retrofit Opportunities

Earthwork and Rock Placement - Repair and reinforce channel

Landscaping Treatment Retrofit Opportunities

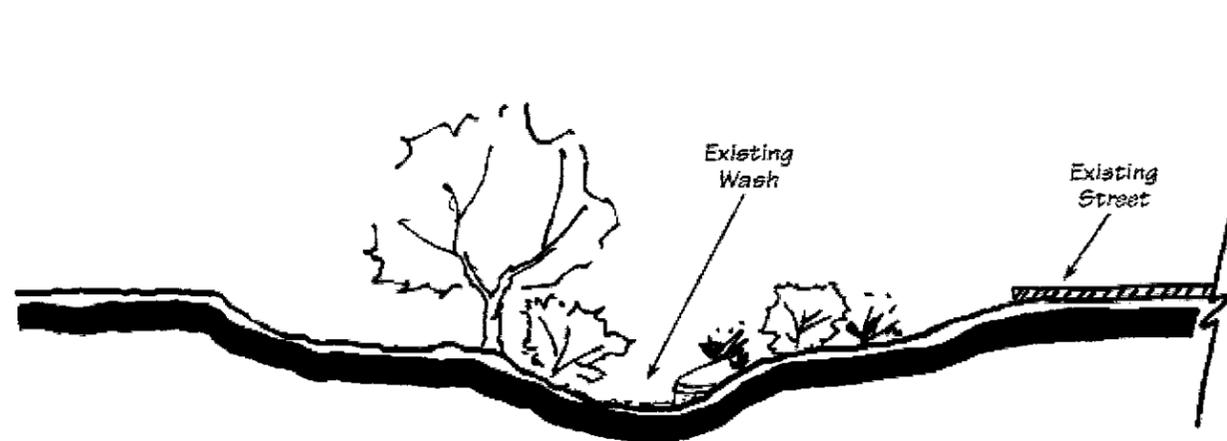
Tree Planting
Revegetation
Irrigation

Multi-Use Treatment Retrofit Opportunities

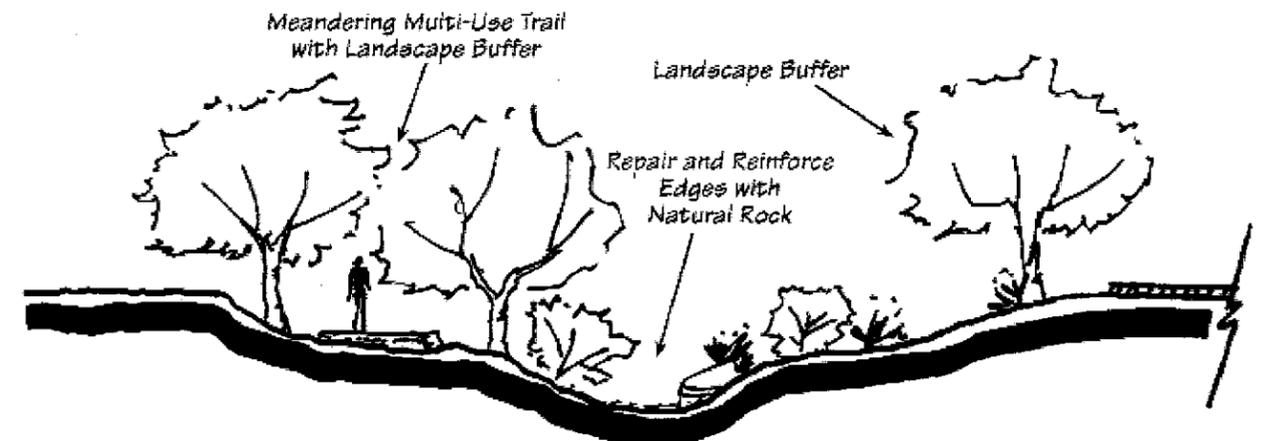
Soft-Surface Trail
Gateway Features - At trail connection points

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

Land Acquisition - To enlarge area for retrofit treatments



White Tanks FRS 4 - Wash - Existing Conditions



White Tanks FRS 4 - Wash - Retrofit Improvements

Zone Two - Concrete-Lined Channel

The freeway off-ramp areas are vitally important because they are the entryway to the surrounding community and could become an enhanced and distinctive gateway that presents a more positive community image. To accomplish this, the recommended treatment retrofit for the channel is to add landscape plantings to soften the visual impact of the channel and enable the structure to blend more fully with its surroundings. This is necessary due to the channel's large scale and high visibility due adjacent to Jackrabbit Road and its intersection with I-10. The multi-use recommendation is to meander a trail along the channel and install a guardrail to mitigate the safety concerns of the rapid water flows. Due to the constraint at the freeway underpass, the channel could be buried in an underground culvert to provide space for trail enhancements.

Another possible option for the concrete channel is to remove the structure and replace it with with a modified one designed to blend into the desert environment. Additional land acquisition would be required to provide space for a modified channel of visual interest, constructed of rough-finish colored concrete that meanders and large boulders designed to blend with the surroundings.

Aesthetic Treatment Retrofit Opportunities

Culvert - Underground channel

Landscaping Treatment Retrofit Opportunities

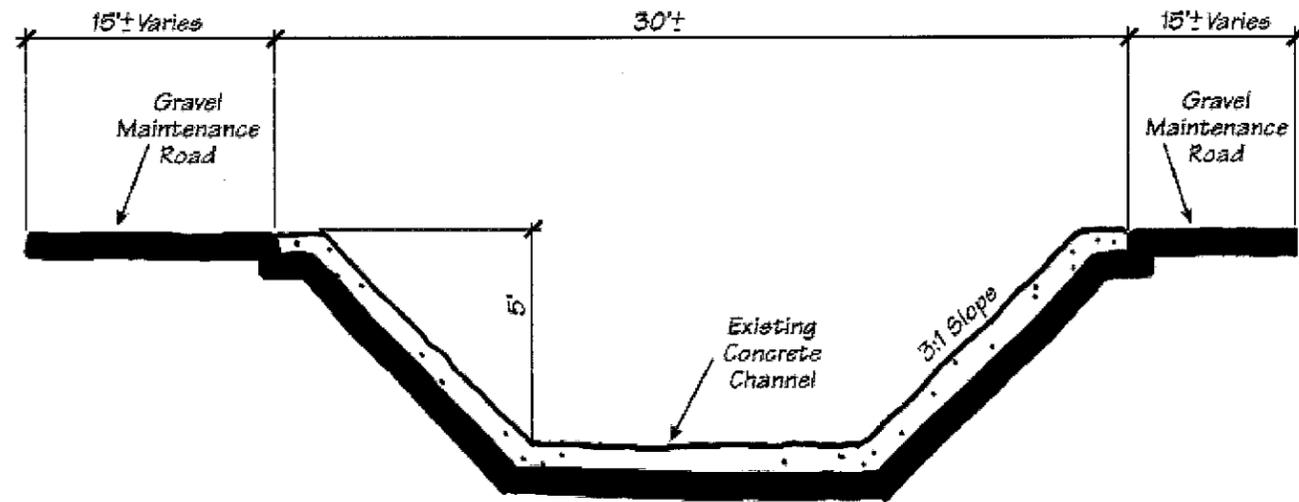
Tree Planting
Irrigation

Multi-Use Treatment Retrofit Opportunities

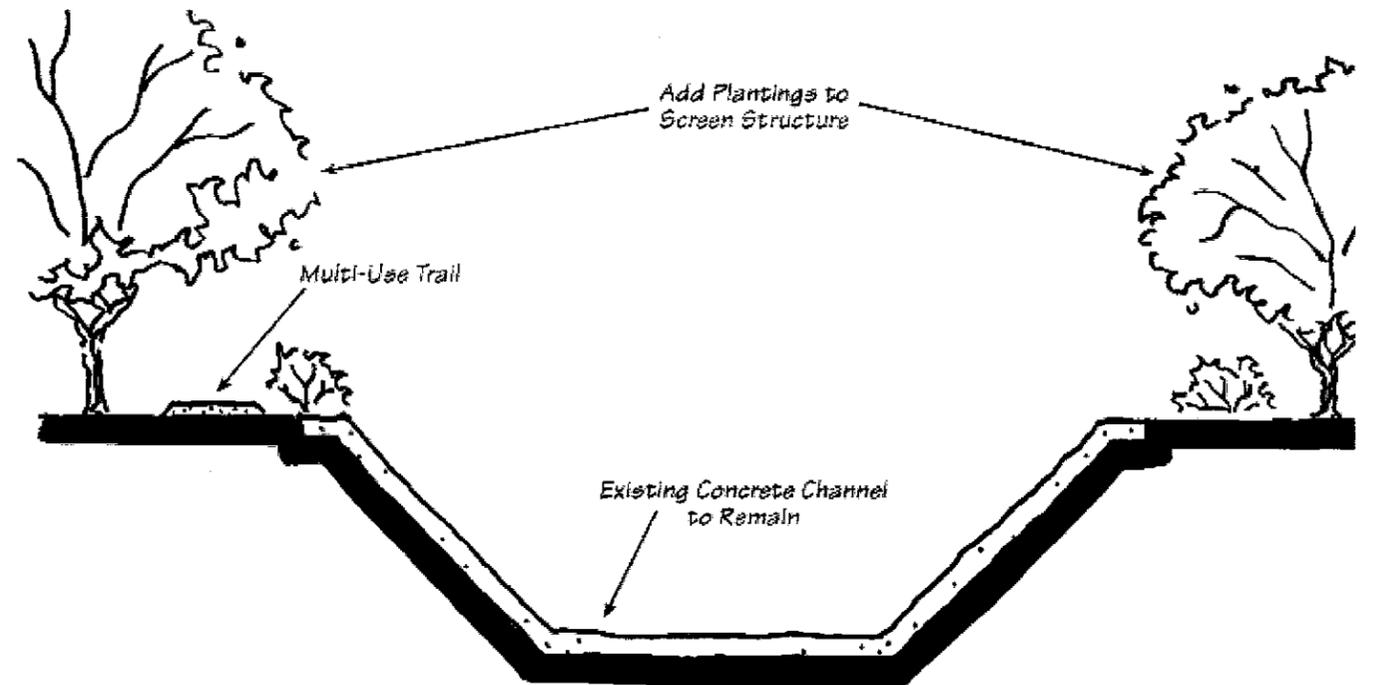
Trail Improvements - Meander existing maintenance road
Trail Retention - Minor changes for existing maintenance road

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

Land Acquisition - To enlarge area for retrofit enhancements



White Tanks FRS 4 - Channel - Existing Conditions



White Tanks FRS 4 - Channel - Proposed Retrofit Improvements

Zone Three - Dam Structure

The concept site design considers two options: retaining and retrofitting the existing structure, or removing the structure and replacing it with a basin.

Currently, the Flood Control District's Structures Assessment Program is analyzing the condition of the White Tanks #4 dam. The program is evaluating the possible removal of the structure and replacement with an outfall channel to direct water flows from White Tanks #3 in the north, through White Tanks #4 and the Gila River in the south.

Option 1 - Modification of the Dam Structure

The existing maintenance roads, on top of and adjacent to the dam structure, could be retained and modified for separated-use trails. The dam structure could be modified with earthwork to add overburden areas that would provide an area for landscape planting while maintaining the structural integrity of the dam facility. Gateway features with enhanced landscape plantings, boulders, signs and access trails could be created at trail connection points to provide passage to the top of the dam and access to the rest of the site.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Construct overburden area on dam structure

Landscaping Treatment Retrofit Opportunities

Tree Planting
Revegetation - Seeding disturbed areas
Irrigation

Multi-Use Treatment Retrofit Opportunities

Trail Improvements - Meander existing maintenance road
Trail Retention - Minor changes for existing maintenance road
Gateway Features - At trail connection point

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Option 2 - Removal of the Dam Structure

This option proposes the removal of the dam structure and replacement with a large retention basin.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Remove structure and replace with a modified structure

Landscaping Treatment Retrofit Opportunities

Tree Planting
Revegetation - Seeding disturbed areas
Irrigation

Multi-Use Treatment Retrofit Opportunities

Gateway Features - At trail connection points
Recreation Area - Regional park facilities
Recreation Area - Special use park facilities

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.

Zone Four - Impoundment Area

The impoundment area is suitable for additional landscape enhancements and for active recreational uses. The portion of the basin with an existing grassy area could be converted into an open play field with programmed sport activities. Other built facilities could be located above the high flood level.

Aesthetic Treatment Retrofit Opportunities

Earthwork - Construct low flow channel feature

Landscaping Treatment Retrofit Opportunities

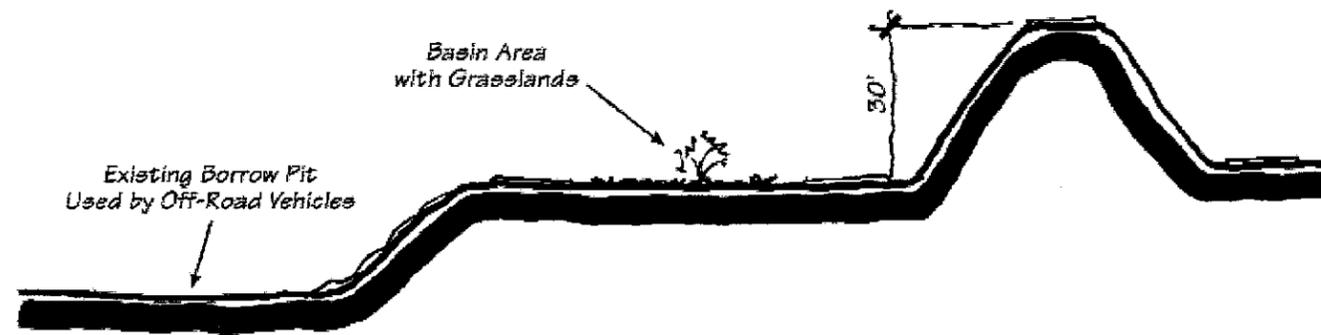
Tree Planting
Revegetation - Seeding disturbed areas
Irrigation

Multi-Use Treatment Retrofit Opportunities

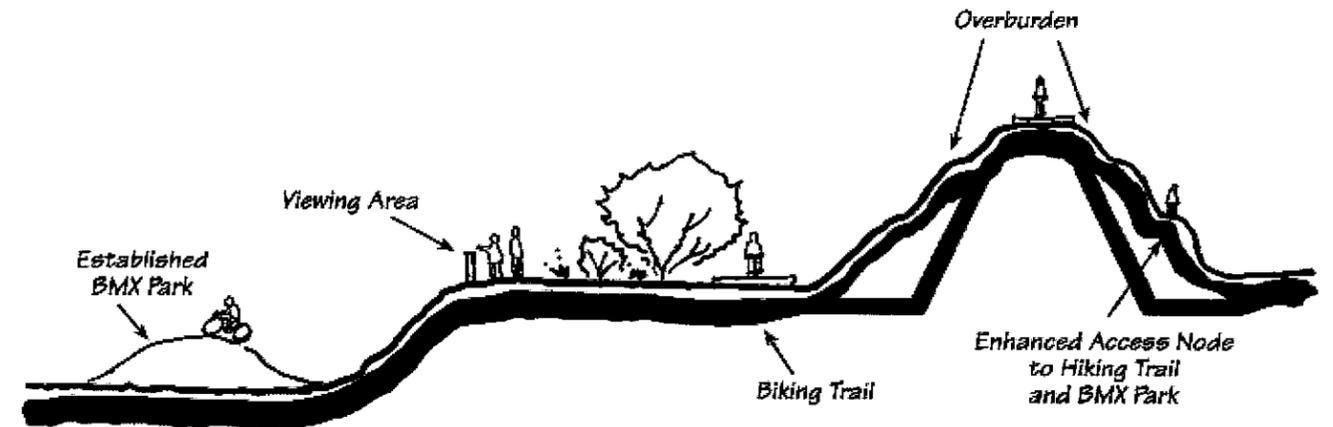
Recreation Area - Regional park facilities

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments

None identified.



White Tanks FRS 4 - Existing Conditions



White Tanks FRS 4 - Dam & Basin - Retrofit Improvements

Zone Five - Borrow Pit Area

The borrow pit, a remnant from interstate construction, is currently accessible to the public and used as off-highway vehicle recreation. Because of the current site conditions in the borrow pit, this area would need minor modifications to be improved and to increase its recreation potential.

Aesthetic Treatment Retrofit Opportunities
None identified.

Landscaping Treatment Retrofit Opportunities
None identified.

Multi-Use Treatment Retrofit Opportunities
Recreation Area - Special use park facilities, minor modifications

Land Acquisition Opportunities for Landscape Aesthetics and Multi-Use Treatments
None identified.

Hydrologic Engineering Synopsis of Structure

(Source: Data On Structures, an unpublished Flood Control District Document)

Project Title: White Tanks Retarding Dam No. 4 – Date of Final Acceptance: 1954

Watershed and Relationship to Other Structures: Avondale Wash, a tributary to the Gila River.

Location: Take I-10 west to Jackrabbit Trail south to Van Buren Street.

Authorization: Pilot

Federal Sponsor: Soil Conservation Service (1954)

Local Sponsor: Maricopa County Municipal Water Conservation District No. 1

Jurisdictional Agency: Arizona Department of Water Resources

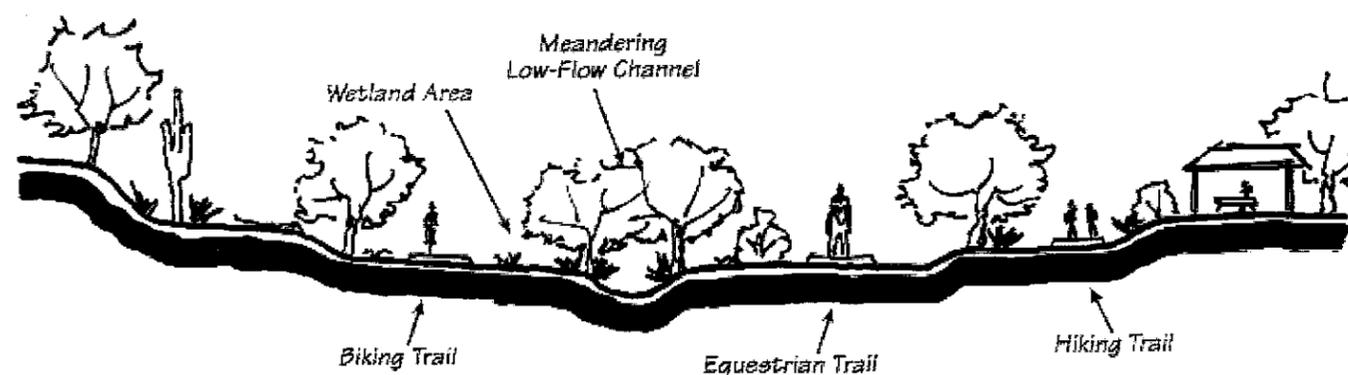
Functional Description: This structure collects the runoff water from the southeastern slopes of the White Tanks Mountains, impounds it and releases it through 2 gated outlets or through the emergency spillways. This drainage area has been split by the Interstate 10 highway. It passes under I-10 via several routes: 4 each 10' x 8' culverts directly north of the structure and 5 each culverts at the underpass for Jackrabbit Trail. There are 19 CMP pipes between the

culverts listed above. There is also a large borrow pit north of the structure. The capacity of this borrow has not been calculated.

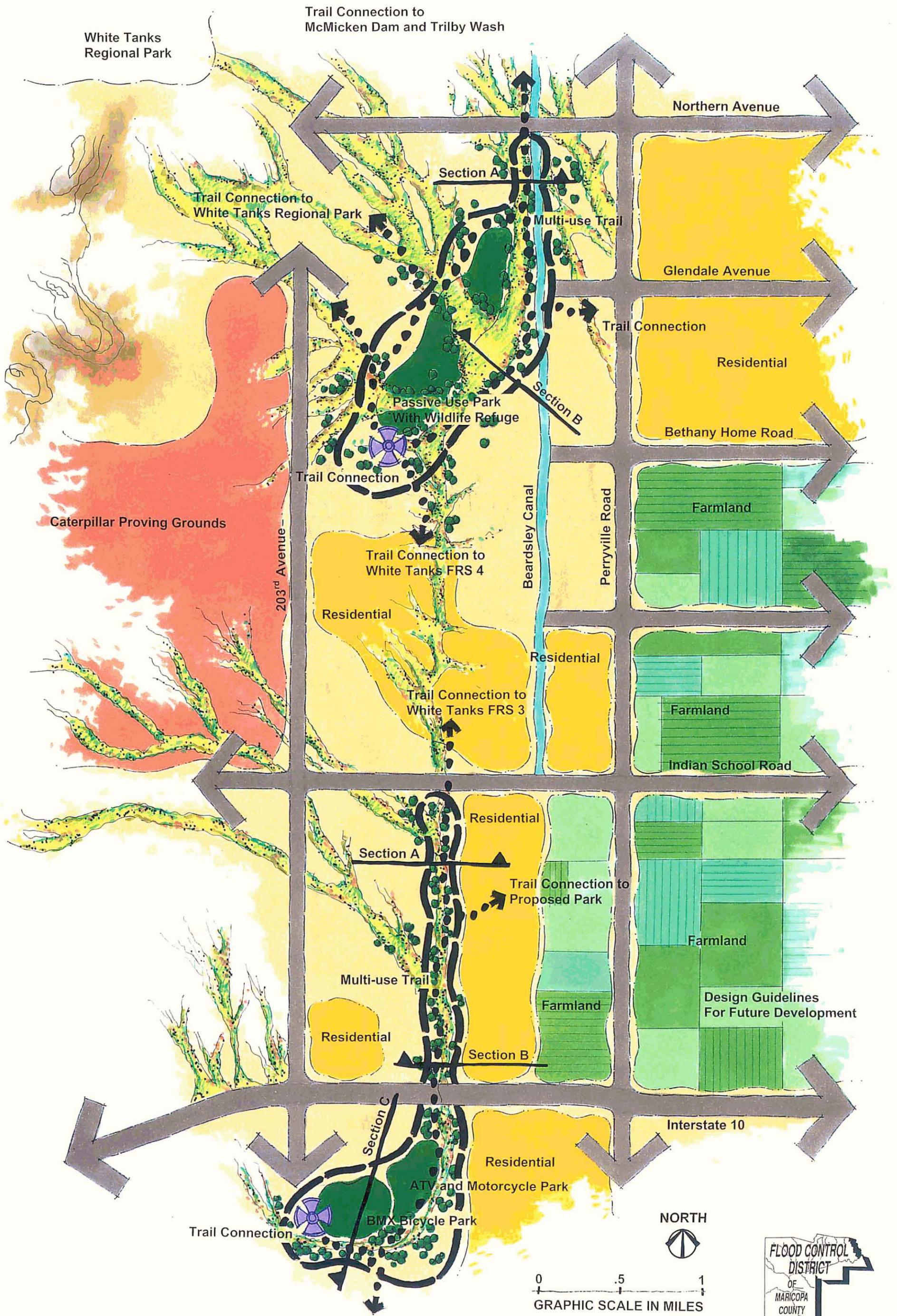
Project Features:

Type of structure	Compacted earthfill
Top of structure elevation	1,056.0
Length of structure	6,839 feet
Maximum height	20 feet
Top crest width	10 feet
Spillway crest elevation	1,050.0
Spillway capacity	
Drainage area	14.23 square miles
Storage capacity	2,250 acre feet
Maximum water surface elev.	1,053.0
Freeboard	
Peak inflow	
Peak outflow	
Drawdown	118 hours
Principal outlet discharge rate	30" RCP = 75 cfs 36" RCP = 108 cfs
Principal outlet structure	2 gated pipes/1 each 30" RCP/1 each 36" RCP

*Emergency spillways (2), one at each end of the structure.



White Tanks FRS 4 – Remove Structure



WHITE TANKS FRS 3 & 4 CONCEPTS



Carter::Burgess
OCTOBER 2000

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 7. White Tanks FRS 4		
Zone 1 - Earthen Inlet Wash Channel		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	2	The alignment is relatively straight, this is a constructed channel.
2 The profile or height of the structure varies to modify the outline.	3	The height or profile varies, the channel has naturalized.
3 The side slopes of the structure are varied to simulate the natural terrain.	3	The side slopes vary, the channel has naturalized.
4 The structure is designed to blend into the contour of the natural terrain.	3	The channel blends into the surrounding open space and desert wash terrain.
5 On-site screening with trees and shrubs are used to blend the structure.	3	The on-site screening is from the existing plantings.
6 Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7 There is veneering or plating of the structure with indigenous rock.	3	There is some veneering from the naturally occurring river rock.
8 Disturbed areas are graded and replanted to match surrounding area.	2	Some disturbed areas are not graded or replanted.
9 Plantings are used to provide erosion control and protect visual qualities.	3	The existing plantings provide erosion control and protect visual qualities.
10 Plantings are used that will not cause an impedance to design function.	3	The existing plantings do not cause an impedance to design function.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The channel's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	2	This zone has some weeds and debris.
Conformance Average		2.42
Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	4	This is a naturalized channel fed by numerous existing washes.
14 There are landscape or natural features to preserve.	4	There are has riparian plants to preserve.
15 There are wildlife habitat areas to preserve.	3	The channel has nominal value as a wildlife habitat.
16 There are undisturbed open space elements to preserve.	1	There are no open space elements to preserve because this zone width is narrow.
17 There are scenic corridors to preserve.	1	There are no scenic corridors to preserve.
18 There are panoramic views from the structure.	4	There are panoramic views to the White Tank Mountains.
19 There is a meandering low-flow feature modeled on riparian washes.	4	There is an existing natural low-flow channel.
20 The structure or area has revegetated.	4	This zone has naturally revegetated.
21 The existing plantings match the community character.	4	The existing plantings match the riparian character.
22 The structure's size and scale are proportional to its surroundings.	4	The channel size and scale are proportional to its surroundings.
23 The attendant flood control facilities structures blend into surroundings.	5	There are no attendant flood control facilities.
24 The adjacent properties positively impact the site.	3	Some positive properties -open space, residential. Some negative properties -residential.
25 There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26 There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27 The structure does not have negative on-site visual problems.	3	The channel has some visual problems in areas with channel erosion.
28 There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29 There are not multiple maintenance roads within the site.	5	There are no maintenance roads within the site.
30 There are no intersecting arterial streets.	3	There are no intersecting arterial streets, but Jackrabbit Trail is adjacent to the wash.
31 There are no noise impacts that need buffering.	2	There are noise impacts from the adjacent street.
32 Additional landscape features are needed.	4	Additional landscaping is needed to screen the adjacent road and repair eroded areas.
33 There are opportunities for landscape enhancements.	4	There is some space along the western side of the channel to add enhancements.
Existing Aesthetic Features Average		3.29
Conformance and Aesthetic Features Average		2.85

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 7. White Tanks FRS 4		
Zone 1 - Earthen Inlet Wash Channel		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Existing Multi-Use Features		
34 There are existing natural features beneficial for a greenway corridor.	3	There are some natural features beneficial for a greenway corridor.
35 There are existing multi-use features.	1	The channel area does not have existing multi-use features.
36 The area is currently accessible for multi-use.	5	This area is accessible for multi-use.
37 Multi-use features could be added without impeding design function.	5	Multi-use features could be added without impeding design function.
38 Multi-use features could be added without compromising public safety.	5	Multi-use features could be added safely.
39 There is space to meander the maintenance road(s).	1	There is no maintenance road, and there is limited space to meander a road.
40 There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.
41 There are no constraints to multi-use due to site size.	3	This zone is narrow and would limit multi-use to alongside to the channel.
42 There are no constraints to public multi-use due to structural hazards.	5	There are no constraints due to structural hazards.
43 There are no constraints to multi-use due to existing slopes.	2	There are some constraints with the existing channel slopes.
44 There are no constraints to multi-use construction due to earth mounds.	4	There are no constraints due to earthwork or rip-rap mounds.
Existing Multi-Use Features Average		3.55
Future Multi-Use Features		
45 There are possible connections to open space.	4	Most land west of this site is open space. This site is close to the White Tank Mountains.
46 There is a possible connection to the Maricopa County Trail System.	4	This is not part of the Trail System, but it is close to McMicken Dam via White Tanks 3.
47 There are possible connections to the local trail system.	4	Not part of the local trail system, but could be a link from McMicken Dam to the Gila River.
48 There are possible connections to residential neighborhoods.	3	There are residential areas east and southwest of the wash.
49 There are possible connections to recreation areas.	2	No existing recreation areas, but future development may provide recreation areas.
50 There are possible connections to multi-modal facilities.	2	No existing multi-modal, but development along Interstate 10 may provide facilities.
51 There are possible connections to local commercial areas.	2	No existing commercial areas, but future development may provide commercial nodes.
52 There are opportunities for special use commercial areas.	1	This zone is too small to accommodate special uses.
53 Site property could be sold to allow for special use commercial areas.	1	There is no additional property that could be sold.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	5	There is open land to the west that could provide for enhancements and buffering.
55 Adjacent land has natural features beneficial for a greenway corridor.	5	There is undisturbed open land to the west that could provide for a greenway.
56 Adjacent land needs design guidelines for future development.	3	Future development would benefit from comprehensive planning with an enhanced site.
57 There are opportunities for large-scale regional park facilities.	1	There is no space to accommodate regional park facilities.
58 There are opportunities for small-scale local park facilities.	1	There is no space to accommodate local park facilities.
59 There are opportunities for riparian wash areas.	3	There is some space for additional riparian enhancements.
60 There are opportunities for recharge basins or ponding areas.	1	There is no space for recharge basins.
61 There are opportunities for multi-use trails.	2	This zone could only accommodate a single multi-use trail along the western side.
62 There are opportunities for separated-use trails.	1	There is no space to accommodate multiple separated use trails.
Future Multi-Use Features Average		2.50
Existing and Future Multi-Use Average		3.02
Conformance, Aesthetic Features + Multi-Use Average		2.94

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 7. White Tanks FRS 4 Zone 2 - Concrete-Lined Inlet Channel		1 to 5 1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element 4 Predominantly Conforming Element 5 Fully Conforming Element
<hr/>		
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	2	The alignment of the channel is uniformly straight, but there are several gradual bends.
2 The profile or height of the structure varies to modify the outline.	1	The height of the channel is constant and does not vary.
3 The side slopes of the structure are varied to simulate the natural terrain.	1	The sides slopes of the channel are a uniform 3 to 1 slope.
4 The structure is designed to blend into the contour of the natural terrain.	2	The earthwork blends into the surrounding natural terrain, which is relatively flat.
5 On-site screening with trees and shrubs are used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6 Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7 There is veneering or plating of the structure with indigenous rock.	2	The channel is mostly concrete, but there is one section with concreted rock veneering.
8 Disturbed areas are graded and replanted to match surrounding area.	2	Disturbed areas are graded but not replanted.
9 Plantings are used to provide erosion control and protect visual qualities.	1	There are no plantings used for erosion control or to protect visual quality.
10 Plantings are used that will not cause an impedance to design function.	1	There are no aesthetic treatment plantings.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	2	The structure has some debris.
Conformance Average		1.42
<hr/>		
Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	1	The channel area has no riparian/ river corridor features to preserve.
14 There are landscape or natural features to preserve.	1	There are no landscape or natural features to preserve.
15 There are wildlife habitat areas to preserve.	1	There are no wildlife habitat areas to preserve.
16 There are undisturbed open space elements to preserve.	1	There are no open space elements to preserve.
17 There are scenic corridors to preserve.	1	There are no scenic corridors to preserve.
18 There are panoramic views from the structure.	1	There are no views from the channel, they are blocked by residences and the freeway.
19 There is a meandering low-flow feature modeled on riparian washes.	1	There is no low-flow meandering feature.
20 The structure or area has revegetated.	1	The structure or area has not revegetated.
21 The existing plantings match the community character.	1	There are no existing plantings.
22 The structure's size and scale are proportional to its surroundings.	3	The channel is moderately and out of scale with its surroundings.
23 The attendant flood control facilities structures blend into surroundings.	1	There are several drop structures within the channel.
24 The adjacent properties positively impact the site.	1	Some negative residential properties and the Interstate underpass is by this zone.
25 There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26 There are water recharge and stormwater retention areas.	1	There are no water recharge or retention areas.
27 The structure does not have negative on-site visual problems.	1	The channel area is mostly devoid of vegetation.
28 There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29 There are not multiple maintenance roads within the site.	2	There is a maintenance road along the channel.
30 There are no intersecting arterial streets.	2	The channel is intersected by McDowell Road + Interstate 10 passes over the channel.
31 There are no noise impacts that need buffering.	1	There is noise from Jackrabbit Trail which parallels the channel.
32 Additional landscape features are needed.	5	Landscaping is needed to provide a visual screen from the street and underpass.
33 There are opportunities for landscape enhancements.	5	Landscape can be added along the channel.
Existing Aesthetic Features Average		1.76
Conformance and Aesthetic Features Average		1.59

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 7. White Tanks FRS 4		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element
Zone 2 - Concrete-Lined Inlet Channel			2 Slightly Conforming Element 5 Fully Conforming Element
			3 Moderately Conforming Element
<hr/>			
Existing Multi-Use Features			
34	There are existing natural features beneficial for a greenway corridor.	1	The channel area has no natural features.
35	There are existing multi-use features.	1	There are no existing multi-use features.
36	The area is currently accessible for multi-use.	2	This area is not accessible, but there is a vehicular crossing to access the basin area.
37	Multi-use features could be added without impeding design function.	3	Multi-use features could be added along the sides without impeding the design function.
38	Multi-use features could be added without compromising public safety.	2	Features could be added after addressing the safety concerns of rapid water flows.
39	There is space to meander the maintenance road(s).	1	There is no space to meander the maintenance road.
40	There are no physical constraints to accessing the site.	2	There are constraints to access along the channel from the lack of space available.
41	There are no constraints to multi-use due to site size.	2	There are constraints due to site size, most of the channel property is narrow.
42	There are no constraints to public multi-use due to structural hazards.	1	There are constraints due to structural hazards of the drop structures.
43	There are no constraints to multi-use due to existing slopes.	4	There are no constraints due to existing slopes.
44	There are no constraints to multi-use construction due to earth mounds.	4	There are no earthwork or rip-rap mounds.
Existing Multi-Use Features Average		2.09	
<hr/>			
Future Multi-Use Features			
45	There are possible connections to open space.	4	Most land west of this site is open space. This site is close to White Tank Mountains.
46	There is a possible connection to the Maricopa County Trail System.	4	Not part of the County Trail System, but is close to McMicken Dam via White Tanks 3.
47	There are possible connections to the local trail system.	4	Not part of the local trail system, but could be a link from McMicken Dam to the Gila River.
48	There are possible connections to residential neighborhoods.	3	There are residential areas east of the channel.
49	There are possible connections to recreation areas.	2	No existing recreation areas, but future development may provide recreation areas.
50	There are possible connections to multi-modal facilities.	2	No existing multi-modal, but development along Interstate 10 may provide future facilities.
51	There are possible connections to local commercial areas.	2	There is one commercial area not suitable for connection, possible future comm. nodes.
52	There are opportunities for special use commercial areas.	1	There is no space to accommodate special uses.
53	Site property could be sold to allow for special use commercial areas.	1	There is no additional property that could be sold.
54	Adjacent land could be acquired to provide for enhancements/ buffering.	4	There is open land to the west that could provide for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	1	There is no adjacent land has natural features beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	3	Future development would benefit from comprehensive planning with an enhanced site.
57	There are opportunities for large-scale regional park facilities.	1	There is no space to accommodate regional park facilities.
58	There are opportunities for small-scale local park facilities.	1	There is no space to accommodate local park facilities.
59	There are opportunities for riparian wash areas.	1	There is no space for riparian enhancements.
60	There are opportunities for recharge basins or ponding areas.	1	There is no space for recharge basins.
61	There are opportunities for multi-use trails.	2	This zone could only accommodate a single multi-use trail along the western side.
62	There are opportunities for separated-use trails.	1	There is no space to accommodate multiple separated use trails.
Future Multi-Use Features Average		2.11	
Existing and Future Multi-Use Average		2.10	
Conformance, Aesthetic Features + Multi-Use Average		1.85	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
<hr/>		
Structure - 7. White Tanks FRS 4 Zone 3 - Earthen Dam Structure	1 to 5	1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element 4 Predominantly Conforming Element 5 Fully Conforming Element
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Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1 The alignment of the structure meanders to vary from a straight line.	2	The alignment of the earthen dam is uniformly straight, but there is one alignment bend.
2 The profile or height of the structure varies to modify the outline.	1	The height or profile of the dam structure is constant and does not vary.
3 The side slopes of the structure are varied to simulate the natural terrain.	1	The sides slopes are a uniform 3 to 1 slope.
4 The structure is designed to blend into the contour of the natural terrain.	1	The earthwork is not blended into the surrounding terrain.
5 On-site screening with trees and shrubs are used to blend the structure.	1	There is no on-site screening with trees and shrubs.
6 Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7 There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating with indigenous rock.
8 Disturbed areas are graded and replanted to match surrounding area.	1	Disturbed areas are not graded or replanted, but the dam has minimally revegetated.
9 Plantings are used to provide erosion control and protect visual qualities.	1	There are no plantings to provide erosion control and protect visual qualities.
10 Plantings are used that will not cause an impedence to design function.	1	There are no aesthetic treatment plantings.
11 The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12 The structure and maintenance roads are kept free of weeds and debris.	4	The structure is mostly free of debris.
<hr/>		
Conformance Average	1.33	
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Existing Aesthetic Features		
13 There are riparian or river corridor features to preserve.	1	The earthen dam has no riparian features to preserve.
14 There are landscape or natural features to preserve.	1	There are no landscape features to preserve.
15 There are wildlife habitat areas to preserve.	1	There are no wildlife areas to preserve.
16 There are undisturbed open space elements to preserve.	1	There is no open space elements to preserve.
17 There are scenic corridors to preserve.	1	The dam blocks views along its southern and eastern side to the White Tank Mountains.
18 There are panoramic views from the structure.	3	The dam offers views to the White Tank Mountains.
19 There is a meandering low-flow feature modeled on riparian washes.	1	There are no low-flow features.
20 The structure or area has revegetated.	2	The dam has minimally revegetated.
21 The existing plantings match the community character.	2	The existing plants on the structure are desert scrub.
22 The structure's size and scale are proportional to its surroundings.	1	The dam's size and scale is large and is not proportional to its surroundings.
23 The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24 The adjacent properties positively impact the site.	2	The properties are open space, agricultural, residential and are moderately negative.
25 There is existing on-site irrigation.	1	There is no existing on-site irrigation.
26 There are water recharge and stormwater retention areas.	1	There are no recharge or retention areas.
27 The structure does not have negative on-site visual problems.	2	The dam structure is large and mostly devoid of vegetation.
28 There are no overhead electrical lines and utility towers.	5	There are no overhead electrical lines and utility towers.
29 There are not multiple maintenance roads within the site.	2	There is a road on top of the dam and along each side of the structure.
30 There are no intersecting arterial streets.	1	There are no overhead electrical lines and utility towers.
31 There are no noise impacts that need buffering.	2	There is vehicular noise from the Interstate and Jackrabbit Trail.
32 Additional landscape features are needed.	5	Additional landscaping is needed to screen the dam structure.
33 There are opportunities for landscape enhancements.	5	Landscape enhancements could be added at enhanced connection nodes.
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Existing Aesthetic Features Average	1.95	
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Conformance and Aesthetic Features Average	1.64	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations						
Structure - 7. White Tanks FRS 4								
Zone 3 - Earthen Dam Structure								
	1 to 5	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 Non-Conforming Element</td> <td style="width: 50%;">4 Predominantly Conforming Element</td> </tr> <tr> <td>2 Slightly Conforming Element</td> <td>5 Fully Conforming Element</td> </tr> <tr> <td>3 Moderately Conforming Element</td> <td></td> </tr> </table>	1 Non-Conforming Element	4 Predominantly Conforming Element	2 Slightly Conforming Element	5 Fully Conforming Element	3 Moderately Conforming Element	
1 Non-Conforming Element	4 Predominantly Conforming Element							
2 Slightly Conforming Element	5 Fully Conforming Element							
3 Moderately Conforming Element								
Existing Multi-Use Features								
34 There are existing natural features beneficial for a greenway corridor.	1	The earthen dam area has no natural features beneficial for a greenway corridor.						
35 There are existing multi-use features.	1	There are no existing multi-use features.						
36 The area is currently accessible for multi-use.	1	This area is not accessible for multi-use.						
37 Multi-use features could be added without impeding design function.	4	Multi-use features could be added without impeding design function.						
38 Multi-use features could be added without compromising public safety.	3	Multi-use features could be added after addressing safety concerns.						
39 There is space to meander the maintenance road(s).	1	There is no space to meander the road on top or on the east and south side of the dam.						
40 There are no physical constraints to accessing the site.	1	The site is currently fenced and there is no public access.						
41 There are no constraints to multi-use due to site size.	2	The structure and parallel maintenance roads limit the type of multi-use.						
42 There are no constraints to public multi-use due to structural hazards.	5	There are no constraints due to structural hazards.						
43 There are no constraints to multi-use due to existing slopes.	1	The side slope of the dam is a safety concern.						
44 There are no constraints to multi-use construction due to earth mounds.	5	There are no earthwork or rip-rap mounds.						
Existing Multi-Use Features Average		2.27						
Future Multi-Use Features								
45 There are possible connections to open space.	4	The land northwest of this site is open space and this site is close to White Tank Mtns.						
46 There is a possible connection to the Maricopa County Trail System.	4	This is not part of the Trail System, but it is close to McMicken Dam via White Tanks 3.						
47 There are possible connections to the local trail system.	4	Not part of the local trail system, but could be a link from McMicken Dam to the Gila River.						
48 There are possible connections to residential neighborhoods.	2	There are residential neighborhoods east of the earthen dam.						
49 There are possible connections to recreation areas.	2	No existing recreation areas, but future development may provide recreation areas.						
50 There are possible connections to multi-modal facilities.	2	No existing multi-modal, but development along Interstate 10 may provide facilities.						
51 There are possible connections to local commercial areas.	2	One commercial area not suitable for connection, possible future commercial nodes.						
52 There are opportunities for special use commercial areas.	1	There is no space to accommodate special uses.						
53 Site property could be sold to allow for special use commercial areas.	1	There is no additional property that could be sold.						
54 Adjacent land could be acquired to provide for enhancements/ buffering.	3	There is open land south and east that could provide for enhancements and buffering.						
55 Adjacent land has natural features beneficial for a greenway corridor.	2	The adjacent land has some natural features beneficial for a greenway corridor.						
56 Adjacent land needs design guidelines for future development.	3	Future development would benefit from comprehensive planning with an enhanced site.						
57 There are opportunities for large-scale regional park facilities.	1	There is no space for regional park facilities.						
58 There are opportunities for small-scale local park facilities.	1	There is no space for local park facilities.						
59 There are opportunities for riparian wash areas.	1	There is no space for riparian areas.						
60 There are opportunities for recharge basins or ponding areas.	1	There is no space for recharge basins.						
61 There are opportunities for multi-use trails.	3	The existing maintenance roads could be used as multi-use trails.						
62 There are opportunities for separated-use trails.	3	The multiple maintenance roads could provide separated use trails.						
Future Multi-Use Features Average		2.22						
Existing and Future Multi-Use Average		2.25						
Conformance, Aesthetic Features + Multi-Use Average		1.95						

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
<hr/>			
	Structure - 7. White Tanks FRS 4	1 to 5	
1	Zone 4 - Impoundment Area	1	1 Non-Conforming Element 2 Slightly Conforming Element 3 Moderately Conforming Element 4 Predominantly Conforming Element 5 Fully Conforming Element
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Conformance to 1992 Policy for Aesthetic Treatment and Landscaping			
1	The alignment of the structure meanders to vary from a straight line.	1	The alignment of the impoundment area does not meander.
2	The profile or height of the structure varies to modify the outline.	2	The profile of the area does not vary.
3	The side slopes of the structure are varied to simulate the natural terrain.	2	The side slopes of the area does not vary.
4	The structure is designed to blend into the contour of the natural terrain.	3	The earthwork blends into the natural terrain.
5	On-site screening with trees and shrubs are used to blend the structure.	3	There is some on-site screening from the existing trees and shrubs.
6	Off-site screening with plantings or earthwork buffers are used.	1	There is no off-site screening with plantings or earthwork buffers.
7	There is veneering or plating of the structure with indigenous rock.	1	There is no veneering or plating with indigenous rock.
8	Disturbed areas are graded and replanted to match surrounding area.	1	The disturbed area of the borrow pit is not graded and the area is not replanted.
9	Plantings are used to provide erosion control and protect visual qualities.	2	There existing plantings provide erosion control and protect visual qualities.
10	Plantings are used that will not cause an impedance to design function.	1	There are no additional plantings.
11	The structure's sides are furrowed to enhance the growth of vegetation.	1	The structure's sides are not furrowed.
12	The structure and maintenance roads are kept free of weeds and debris.	2	The structure is partially free of weeds and debris.
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Conformance Average		1.67	
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Existing Aesthetic Features			
13	There are riparian or river corridor features to preserve.	3	This area has several minor riparian washes to preserve.
14	There are landscape or natural features to preserve.	3	There is a grassland area and existing desert trees that should be preserved.
15	There are wildlife habitat areas to preserve.	2	There is a minor wildlife habitat at the grassland area to preserve.
16	There are undisturbed open space elements to preserve.	3	There are several undisturbed open space areas in this zone that should be preserved.
17	There are scenic corridors to preserve.	1	There are no scenic corridors to preserve.
18	There are panoramic views from the structure.	3	The impoundment area offers views to the White Tank Mountains.
19	There is a meandering low-flow feature modeled on riparian washes.	1	There are no meandering low-flow features.
20	The structure or area has revegetated.	3	The impoundment area has revegetated.
21	The existing plantings match the community character.	3	The existing plantings match the riparian community character.
22	The structure's size and scale are proportional to its surroundings.	3	The area's size and scale are proportional to its surroundings.
23	The attendant flood control facilities structures blend into surroundings.	1	There are no attendant flood control facilities.
24	The adjacent properties positively impact the site.	2	Some positive properties -open space, residential. Some negative commercial, residentl.
25	There is existing on-site irrigation.	2	There is no existing on-site irrigation.
26	There are water recharge and stormwater retention areas.	5	This area is a large water recharge and stormwater retention area.
27	The structure does not have negative on-site visual problems.	2	The impoundment area lacks vegetation.
28	There are no overhead electrical lines and utility towers.	1	There are no overhead electrical lines and utility towers.
29	There are not multiple maintenance roads within the site.	5	There are several maintenance roads within the impoundment area.
30	There are no intersecting arterial streets.	5	There are no intersecting arterial streets.
31	There are no noise impacts that need buffering.	2	There is vehicular noise from the Interstate and Jackrabbit Trail.
32	Additional landscape features are needed.	4	Additional landscape features are needed to screen the basin and dam structures.
33	There are opportunities for landscape enhancements.	4	Landscape enhancements could amend the impoundment area.
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Existing Aesthetic Features Average		2.76	
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Conformance and Aesthetic Features Average		2.21	

Site Evaluation Criteria

#	Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 7. White Tanks FRS 4		1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element
Zone 4 - Impoundment Area		3	2 Slightly Conforming Element 5 Fully Conforming Element
			3 Moderately Conforming Element
<hr/>			
Existing Multi-Use Features			
34	There are existing natural features beneficial for a greenway corridor.	2	There are some trees and grasslands that are partially beneficial for a greenway.
35	There are existing multi-use features.	3	There are no existing multi-use features.
36	The area is currently accessible for multi-use.	2	The Impoundment Area is currently not accessible for multi-use.
37	Multi-use features could be added without impeding design function.	4	Multi-use features can be added without impeding design function.
38	Multi-use features could be added without compromising public safety.	4	Multi-use features can be added after addressing safety concerns.
39	There is space to meander the maintenance road(s).	4	There is space to meander the maintenance road.
40	There are no physical constraints to accessing the site.	5	There are no physical constraints to accessing the site.
41	There are no constraints to multi-use due to site size.	5	There are no constraints to multi-use due to site size.
42	There are no constraints to public multi-use due to structural hazards.	5	There are no constraints to public multi-use due to structural hazards.
43	There are no constraints to multi-use due to existing slopes.	5	There are no constraints to multi-use due to existing slopes.
44	There are no constraints to multi-use construction due to earth mounds.	5	There are no constraints to multi-use construction due to earth mounds.
Existing Multi-Use Features Average		4.00	
<hr/>			
Future Multi-Use Features			
45	There are possible connections to open space.	4	The land northwest of this area is open space and this area is close to White Tank Mtns.
46	There is a possible connection to the Maricopa County Trail System.	3	No existing recreation areas, but future development may provide recreation areas.
47	There are possible connections to the local trail system.	3	Not part of the local trail system, but could be a link from McMicken Dam to the Gila River.
48	There are possible connections to residential neighborhoods.	3	There are residential neighborhoods east of the area.
49	There are possible connections to recreation areas.	2	No existing recreation areas, but future development may provide recreation areas.
50	There are possible connections to multi-modal facilities.	2	No existing facilities, but development along Interstate 10 may provide future facilities.
51	There are possible connections to local commercial areas.	2	One commercial area not suitable for connection, possible future commercial nodes.
52	There are opportunities for special use commercial areas.	2	Specially planned commercial areas could accompany large scale recreational uses.
53	Site property could be sold to allow for special use commercial areas.	3	Site property could be sold to allow for specific planned development.
54	Adjacent land could be acquired to provide for enhancements/ buffering.	4	Open land to the north could provide additional area for enhancements and buffering.
55	Adjacent land has natural features beneficial for a greenway corridor.	2	The adjacent land has some natural features beneficial for a greenway corridor.
56	Adjacent land needs design guidelines for future development.	3	Future development would benefit from comprehensive planning with an enhanced site.
57	There are opportunities for large-scale regional park facilities.	5	There is space for large-scale regional park facilities.
58	There are opportunities for small-scale local park facilities.	4	There is space for small-scale local park facilities.
59	There are opportunities for riparian wash areas.	3	There is space for riparian areas.
60	There are opportunities for recharge basins or ponding areas.	4	There is space for recharge basins.
61	There are opportunities for multi-use trails.	3	The existing roads could be used as multi-use trails.
62	There are opportunities for separated-use trails.	3	Separated-use trails could be located throughout this area.
Future Multi-Use Features Average		3.06	
Existing and Future Multi-Use Average		3.53	
Conformance, Aesthetic Features + Multi-Use Average		2.87	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 7. White Tanks FRS 4		
Zone 5 - Borrow Pit Area		
	1 to 5	1 Non-Conforming Element 4 Predominantly Conforming Element 2 Slightly Conforming Element 5 Fully Conforming Element 3 Moderately Conforming Element
Conformance to 1992 Policy for Aesthetic Treatment and Landscaping		
1		The alignment of the structure meanders to vary from a straight line.
2		The profile or height of the structure varies to modify the outline.
3		The side slopes of the structure are varied to simulate the natural terrain.
4		The structure is designed to blend into the contour of the natural terrain.
5		On-site screening with trees and shrubs are used to blend the structure.
6		Off-site screening with plantings or earthwork buffers are used.
7		There is veneering or plating of the structure with indigenous rock.
8		Disturbed areas are graded and replanted to match surrounding area.
9		Plantings are used to provide erosion control and protect visual qualities.
10		Plantings are used that will not cause an impedance to design function.
11		The structure's sides are furrowed to enhance the growth of vegetation.
12		The structure and maintenance roads are kept free of weeds and debris.
	1.17	
Existing Aesthetic Features		
13		There are riparian or river corridor features to preserve.
14		There are landscape or natural features to preserve.
15		There are wildlife habitat areas to preserve.
16		There are undisturbed open space elements to preserve.
17		There are scenic corridors to preserve.
18		There are panoramic views from the structure.
19		There is a meandering low-flow feature modeled on riparian washes.
20		The structure or area has revegetated.
21		The existing plantings match the community character.
22		The structure's size and scale are proportional to its surroundings.
23		The attendant flood control facilities structures blend into surroundings.
24		The adjacent properties positively impact the site.
25		There is existing on-site irrigation.
26		There are water recharge and stormwater retention areas.
27		The structure does not have negative on-site visual problems.
28		There are no overhead electrical lines and utility towers.
29		There are not multiple maintenance roads within the site.
30		There are no intersecting arterial streets.
31		There are no noise impacts that need buffering.
32		Additional landscape features are needed.
33		There are opportunities for landscape enhancements.
	2.00	
Existing Aesthetic Features Average		
Conformance and Aesthetic Features Average		
	1.58	

Site Evaluation Criteria

# Site Evaluation Questions	Conformance Rating	Supportive Comments Based on Field Observations
Structure - 7. White Tanks FRS 4		
Zone 5 - Borrow Pit Area		
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<i>Existing Multi-Use Features</i>		
34 There are existing natural features beneficial for a greenway corridor.	1	There are no existing natural features.
35 There are existing multi-use features.	3	There is existing multi-use in the borrow pit by off-road recreational vehicles.
36 The area is currently accessible for multi-use.	2	The borrow pit area is accessible via the channel crossing.
37 Multi-use features could be added without impeding design function.	4	Multi-use features can be added without impeding design function.
38 Multi-use features could be added without compromising public safety.	4	Multi-use features can be added after addressing safety concerns.
39 There is space to meander the maintenance road(s).	4	There is space to meander the maintenance road.
40 There are no physical constraints to accessing the site.	4	There are no physical constraints to accessing the site.
41 There are no constraints to multi-use due to site size.	4	There are no constraints to multi-use due to site size.
42 There are no constraints to public multi-use due to structural hazards.	2	There are constraints due to the existing hazards of the borrow pit.
43 There are no constraints to multi-use due to existing slopes.	2	The side-slope of the borrow pit is a safety concern.
44 There are no constraints to multi-use construction due to earth mounds.	2	There are earthwork mounds in the borrow pit.
Existing Multi-Use Features Average		2.91
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<i>Future Multi-Use Features</i>		
45 There are possible connections to open space.	4	The land northwest of this area is open space and this area is close to White Tank Mtns.
46 There is a possible connection to the Maricopa County Trail System.	3	No existing recreation areas, but future development may provide recreation areas.
47 There are possible connections to the local trail system.	3	Not part of the local trail system, but could be a link from McMicken Dam to the Gila River.
48 There are possible connections to residential neighborhoods.	3	There are residential neighborhoods east of the basin.
49 There are possible connections to recreation areas.	2	No existing recreation areas, but future development may provide recreation areas.
50 There are possible connections to multi-modal facilities.	2	No existing facilities, but development along Interstate 10 may provide future facilities.
51 There are possible connections to local commercial areas.	2	One commercial area not suitable for connection, possible future commercial nodes.
52 There are opportunities for special use commercial areas.	2	Specially planned commercial areas could accompany large scale recreational uses.
53 Site property could be sold to allow for special use commercial areas.	3	Site property could be sold to allow for specific planned development.
54 Adjacent land could be acquired to provide for enhancements/ buffering.	4	Open land to the north could provide additional area for enhancements and buffering.
55 Adjacent land has natural features beneficial for a greenway corridor.	2	The adjacent land has some natural features beneficial for a greenway corridor.
56 Adjacent land needs design guidelines for future development.	3	Future development would benefit from comprehensive planning with an enhanced site.
57 There are opportunities for large-scale regional park facilities.	5	There is no space for large-scale regional park facilities.
58 There are opportunities for small-scale local park facilities.	4	There is no space for small-scale local park facilities.
59 There are opportunities for riparian wash areas.	3	There are no opportunities for riparian areas.
60 There are opportunities for recharge basins or ponding areas.	4	There is space for recharge basins.
61 There are opportunities for multi-use trails.	3	The existing roads could be used as multi-use trails.
62 There are opportunities for separated-use trails.	3	Separated-use trails could be located throughout this area.
Future Multi-Use Features Average		3.06
Existing and Future Multi-Use Average		2.98
Conformance, Aesthetic Features + Multi-Use Average		2.28

Funding Sources

A variety of funding sources may be available to implement potential projects. The funding sources listed include resources for alternative modes of transportation, environmental education, river corridor enhancement, sustainable development, and recycling. There is the potential to include many facets in a project; for example, a trailhead may include an educational/interpretive center and recycling bins. The following list may improve concepts and elements to include in projects.

There is a note describing the potential opportunities provided by the funding source for various types of projects after each funding description. This listing can provide direction for agencies to pool multiple resources and find ways to finance projects. The list provides contacts so that a community may follow up on those resources which best fit their needs.

Suggested sources may include the following:

Alcoa Foundation

Grants are made for educational, health and welfare, cultural, civic and community, and youth organization purposes at the discretion of the foundation directors.

Contact: F. Worth Hobbs, President
Address: 3029 Alcoa Building
425 Sixth Avenue
Pittsburgh, PA 15219-1850

Website: www.reeusda.gov
Phone: (412) 553-2348

Deadlines: None; the foundation directors meet approximately every six weeks to discuss recent requests.

Financial Data: Grants vary in amount, depending upon the needs and nature of request.

Application Info: There is no special form for grant application. Priority consideration is given to programs and organizations in or near communities worldwide where Alcoa plants or offices are located.

Request should be in letter form with the following included: (1) a description of the project; (2) the purpose and objective; (3) an itemized budget for the project, including income and expenses; (4) the amount of money requested; (5) a list of other corporate and foundation donors; (6) service; and (7) an audited financial statement.

AlliedSignal Foundation – Other Grants

On a modest basis, the Foundation provides support to a small number of national and local public policy, economic development, law-related and envi-

ronmental organizations and programs.

Website: www.alliedsignal.com

America the Beautiful Fund

They are offering between 100 – 1000 seed packets on the basis of availability and relative need for volunteer efforts to grow food for the needy, elderly, handicapped and confined; for charitable plant sales; to beautify neighborhoods; to start new educational programs; and to show that growing plants can give people and communities new hope as they help to beautify and nourish America.

Contact: America the Beautiful Fund
Address: 1730 K Street NW, Suite 1002
Washington D.C. 20006

Phone: (800) 522-3557

Application Info: Attach a short letter describing your project.

American Greenways Eastman Kodak Grant Program

The program encourages action-oriented greenway projects. Keys to determining which projects will receive grants are the importance of the project to local greenway development efforts, how likely the project is to produce tangible results, and the extent to which the grant results in matching funds from other sources.

Contact: The Conservation Fund
Address: 1800 North Kent Street, Suite 1120
Arlington, VA 22209

Website: www.conservationfund.org

Phone: (703) 525-6300

Fax: (703) 525-4610

Deadlines: Applications may be submitted from March 1 to June 1 each year. Announcement of awards will be made in early fall.

Financial Data: The program's grant amounts range between \$500-\$2,500

Application Info: Applications can be obtained from the website:
www.conservationfund.org

American River – Coalition Grant

American Rivers is a national conservation organization dedicated to protecting and restoring America's river systems and to fostering a river stewardship ethic.

Contact: Ms. Rebecca Wadder, American River
Address: 1025 Vermont Avenue, N.W., Suite 720
Washington D.C. 20005

Website: www.amrivers.org

Phone: (202) 347-7550

Fax: (202) 347-9240

Deadlines: Open

Financial Data: Open

Application Info: Please send a letter requesting information on your project. American River will send any corresponding grant information.

Andrew W. Mellon Foundation, The

The purpose of the Foundation is to "aid and promote such religious, charitable, scientific, literary and educational purposes as may be in the furtherance of public welfare or tend to promote the well-doing or well-being of mankind."

Contact: The Andrew W. Mellon Foundation
Address: 140 East 62nd Street
New York, New York 10021

Website: www.mellon.org

Phone: (213) 838-8400

Deadlines: Applications are reviewed throughout the year

Application Info: No special forms are required.

Arizona Department of Environmental Quality Recycling Unit

The Waste Reduction Initiative Through Education (WRITE) grants are for recycling education; the Waste Reduction Assistance (WRA) grants are for recycling projects.

Contact: The Conservation Fund
Address: 1800 North Kent Street, Suite 1120
Arlington, VA 22209

Website: www.conservationfund.org

Phone: (703) 525-6300

Fax: (703) 525-4610

Deadlines: Applications may be submitted from March 1 to June 1 each year. Announcement of awards will be made in early fall.

Financial Data: The program's grant amounts range between \$500-\$2,500

Application Info: Applications can be obtained from the website:
www.conservationfund.org

Arizona Game & Fish Department

- Heritage Fund, Urban Wildlife Habitat Fund Component - Establishment of wildlife habitat/populations in harmony with urban environmental public awareness.

- Heritage Fund, Public Access Fund Component - To increase & maintain public access for recreation. Federal, state, local and private landowners.

- Heritage Fund, Schoolyard Habitat Fund Component - Wildlife education on school sites; development of urban wildlife habitats.

- Heritage Fund, Identification Inventory, Acquisition, Protection and

Management of Sensitive Habitat, IIPAM - Projects to preserve and enhance Arizona's natural biological diversity.

Contact: Ms. Robyn Beck, Heritage Grants Coordinator
Funding Planning Section
Address: 221 West Greenway Road
Phoenix, Arizona 85023-4399
Phone: (602) 942-3000
Fax: (703) 525-4610
Deadlines: Open
Financial Data: Based on Arizona Lottery

Arizona State Parks

Provide grants for local, regional and state parks (LRSP), historical preservation, trails, off-highway vehicle recreation (OHV), State Lake Improvements Funds (SLIF), and Law Enforcement and Boating Safety Fund (LEBSF).

<http://www.pr.state.az.us/partnerships/grants/grants.html>

• Trail & Recreational Development Renovation Mitigation/Restoration

Contact: Terry Hesline, Parks
Address: 1300 West Washington
Phoenix, Arizona 85007
Phone: (602) 542-6697

• Acquisition and Development of Outdoor Recreational Areas and Facilities

Contact: Warner Poppleton, Recreation Planner
Address: 1300 West Washington
Phoenix, Arizona 85007
Phone: (602) 542-6697

• Acquisition of Future Trail Alignments, Design Engineering and Facilities

Contact: Pam Gilmore, Recreational Planner
Address: 1300 West Washington
Phoenix, Arizona 85007
Phone: (602) 542-7116

• Environmental Education

Must have a product or result which will be of benefit to Arizona.

Contact: Environmental Educ. Coordinator
Address: 1300 West Washington
Phoenix, Arizona 85007

Phone: (602) 398-9346
• **Park Development and Land Acquisition**

Contact: Lyle Bair, Grants Manager
Address: 1300 West Washington
Phoenix, Arizona 85007
Phone: (602) 542-7127

• Boating Resources and Facilities

Contact: Peggy Tabor, Recreation Planner
Address: 1300 West Washington
Phoenix, Arizona 85007
Phone: (602) 542-7128

Arizona Water Protection Fund

Funds projects that will enhance riparian areas. The authorizing legislation calls for "a coordinated effort for the restoration and conservation of water resources of this state. This policy is designed to allow the people of this state to prosper while protecting and restoring this state's rivers and streams and associated riparian habitats, including fish and wildlife resources that are dependent on these important habitats."

Contact: Arizona Department of Water Resources, Arizona Water Protection Fund Commission
Address: 500 North Third Street
Phoenix, Arizona 85004
Website: www.awpf.state.az.us
Phone: (602) 417-2460
Deadlines: Currently the Legislature is unable to fulfill funding requests; however, approximately \$2 million was reverted to AWPf in March after a large, previously funded project was terminated.
Financial Data: The source of funding is from the Arizona State Legislature, Central Arizona Project (CAP), and private gifts, grants or donations.

Arthur B. Schultz Foundation

Seeks to promote environmental conservation, greater access and recreational opportunity for the disabled, socially responsible economic development, and global understanding in an effort to realize a more healthy, harmonious, and accessible world. Foundation supports organizations and initiatives promoting conservation of healthy ecosystems and open spaces, as well as environmental research and education, initiatives promoting greater access and recreational opportunity for the disabled, socially and environmentally responsible entrepreneurial project recognizing an interdependent global economy, and initiatives designed to promote global peace and understanding between people of different nations and ethnic backgrounds.

Contact: Arthur B. Schultz Foundation
Address: P.O. Box 7275
Incline Village, Nevada 89452
Website: www.absfoundation.org
Phone: (775) 831-5104
Fax: (775) 831-6301
Deadlines: Open
Financial Data: Varies
Application Info: No telephone calls regarding proposals.

Body Shop USA Foundation, Inc., The

This foundation makes grants to organizations that serve and preserve the environment through education or direct service.

Contact: Debbie Osborne, The Body Shop Foundation
Address: Watersmead, Littlehampton
West Sussex BN17 6LS
Email Address: Debbie.Osborne@the-body-shop.com
Phone: 01903.731500
Fax: 01903.844021

Capital Planet Foundation

Support hands-on environmental projects for children and youths. Objective is to encourage innovative programs that empower children and youth around the world to work individually and collectively to solve environmental problems in their neighborhoods and communities.

Contact: Sona Chambers, The Captain Planet Foundation
Address: One CNN Center, 6 North
Atlanta, Georgia 30303
Website: www.turner.com
Financial Data: \$250 - \$2,500

Central Arizona Project (CAP) – Investing in the Community

Support organizations that promote CAP's purpose to ensure an adequate water supply to the residents of Maricopa, Pima and Pinal Counties. CAP primarily contributes to organizations within its three-county service area involved in water education issues and environmental projects.

Phone: (623) 869-2450
Website: www.cap-az.com
Deadlines: Grants awarded in June must be received on May 1; those awarded in December must be received by November 1.
Financial Data: up to \$5,000

Community Development Block Grants

Federal funds which are given to the cities to use to meet local priorities and needs.



Contact: Your local Mayor's Office
Financial Data: \$500 - \$50,000
Application Info: Applicants may be public entities, special for construction

Community Facility District (CFD's)

CFD's, which may only be formed within municipal boundaries by a sponsoring municipality, may be used to provide for the acquisition, construction, operation and maintenance of a wide variety of public infrastructure, including open space areas for recreational purposes.

Contact: Individual Municipalities

Cooperative Development Foundation

CDF brings together the funds and partners to incubate and replicate innovative programs through new and existing cooperative enterprise.

Contact: Ellen Quinn, Funds Manager
Email Address: equinn@ncba.org
Phone: (202) 383-5474

Development Fees

Counties and cities may impose development fees on landowners in a "benefit area" to pay for a proportionate share of the public facilities required to serve a development. The county development fee statute defines public facilities to include only neighborhood parks intended to serve development within a one-half mile radius, but excludes regional parks.

Contact: Individual Municipalities or Maricopa County, Community Development
Address: 3003 North Central, Suite 1040
Phoenix, Arizona 850125
Phone: (602) 240-2210

Educational Foundation of America, The

The foundation supports smaller, more grass-roots organizations and projects with sustainability, replicability, and potential for long-term environmental impact. Interests include energy efficiency and conservation, environmental edu-

cation, alternatives to nuclear energy, sustainable agriculture, water quality issues, and public land resources conservation. The foundation encourages educational institutions, nonprofit organizations, public agencies, and research institutions to apply.

Contact: Ms. Diane Allison, Executive Director
Educational Foundation of America
Address: 35 Church Lane
Westport, Connecticut 06880-3515
Phone: (203) 236-6498
Website: www.efaw.org
Deadlines: Open
Financial Data: \$10,000 - \$200,000

The Energy Foundation

The Energy Foundation will support regional transportation reform through analysis, policy research, regulatory work, and advocacy. The Foundation will explore policy options that promote alternatives to increased single occupancy vehicle use and to new highway construction.

Contact: The Energy Foundation
Address: Presidio Building 1012, 2nd Floor
Torney Avenue, P.O. Box 29905
San Francisco, CA 94129-0905
Phone: (415) 561-6700
Fax: (415) 561-6709
Website: www.ef.org

Environmental Protection Agency (EPA) Clean Water State Revolving Fund

Low-interest loan program established by the Federal Clean Water Act to make money available to local agencies for a wide range of water quality improvement projects.

Contact: Ms. Juanita Licata, Water Division
Address: United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Email Address: licata.juanita@epamail.epa.gov
Phone: (415) 744-1948
Deadlines: Open
Financial Data: \$200,000 - \$40,000,000
Application Info: Applicants may be public entities, special for construction of treatment facilities. Public and private entities are eligible for implementation of non-point source control projects, and for estuary protection plans.

Environmental Protection Agency (EPA) Climate Change Action Plan

This grant program funds proposals focusing on source reduction, recycling and composting. Emphasis is placed on measurability of projects in terms of volumes of waste reduced to be translated into greenhouse gas reductions.

Contact: Mr. Timonie Hood, Waste Management Division
Address: United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Email Address: hood.timonie@epa.gov
Phone: (415) 744-1113
Deadlines: Uncertain
Financial Data: Maximum \$60,000 per project
Application Info: N/A

Environmental Protection Agency (EPA) Environmental Education (EE) Fund

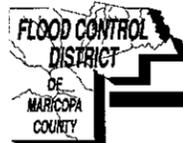
The EPA supports projects which design, demonstrate or disseminate environmental education practices, methods, or techniques.

Contact: Ms. Stacey Benfer
Address: Office of Community and Government Relations
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Email Address: benfer.stacey@epamail.epa.gov
Phone: (415) 744-1161
Deadlines: Open
Financial Data: Two levels; (1) \$5,000 or less (2) \$5,000 - \$25,000
Application Info: Applicants may be educational institutions, public agencies, or nonprofit organizations.

Environmental Protection Agency (EPA) Nonpoint Source Water Pollution Control

These funds are for the implementation of State nonpoint source pollution control programs.

Contact: Ms. Audrey Shileikis, Water Division
Address: United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Email Address: shileikis.audrey@epa.gov
Phone: (415) 744-1968
Deadlines: Open
Financial Data: Past awards range from \$20,000-\$300,000
Application Info: State Water Quality agencies are the lead agencies for this grant program.



**Environmental Protection Agency (EPA)
Wetlands Protection Grants**

Assist state, tribal, and local wetlands protection efforts. Funds can be used to develop new wetlands protection programs or refine existing protection programs

Contact: Ms. Cheryl McGovern, Water Division
Address: United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Email Address: mcgovern.cheryl@epa.gov
Phone: (415) 744-2013
Deadlines: Open

**Environmental Protection Agency (EPA)
Sustainable Development Challenge Grant (SDCG)**

Encourages community groups, businesses, and government agencies to work together on sustainable development efforts that protect the local environment and conserve natural resources while supporting a healthy economy and an improved quality of life.

Contact: Ms. Debbie Schechter, Cross Media Division, EPA
Address: United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Website: www.epa.gov
Phone: (415) 744-1624

Environmental Protection Agency (EPA) Pollution Prevention Act

Grants/cooperative agreements will be awarded under the authority of the Pollution Prevention Act of 1990. PPIS provides funds to state and tribal programs that address the reduction or elimination of pollution across all environmental media and strengthen the efficiency and effectiveness of State technical assistance programs in providing source reduction information to businesses.

Eligibility is limited to the 50 states, the District of Columbia, the U.S. Virgin Islands, the Commonwealth of Puerto Rico, any territory or possession of the United States, any agency or instrumentality of a state including state universities, and all federally recognized Native American Tribes. For convenience, the term "State" in this notice refers to all eligible applicants. Local governments, private universities, private nonprofit entities, private businesses, and individuals are not eligible. State applicants are encouraged to establish partnerships with business and other environmental assistance providers to seamlessly deliver pollution prevention assistance. Successful applicants will be those that make the most efficient use of Federal/state government funding. In many cases, this has been accomplished through partnerships.

Agency: EPA
Total Funds Available: \$5,000,000
Federal Register: DOCID:fr16de99-79, published 16-Dec-99
Contact: Christopher Kent
Phone: 202-260-3480
Applications: Pollution Prevention Division (7409)
Office of Pollution Prevention and Toxics, EPA

**Federal Highway Administration,
Department of Transportation (DOT)**

Provides funds to states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses.

Contact: Office of Environmental and Planning, DOT
Address: 400 Seventh Street, SW
Washington, D.C. 20509
Phone: (202) 366-0150
Financial Data: Available grant amounts range from \$386,274 to \$2,755,454

Five-Star Restoration Challenge Grant Program

The Five-Star Restoration Program, an outgrowth of the Administration's Clean Water Action Plan, provides modest financial assistance on a competitive basis to support community-based wetland and riparian restoration projects that build diverse partnerships and foster local natural resource stewardship.

Contact: Mr. Tom Kelsch, National Fish & Wildlife Foundation
Address: 1120 Connecticut Avenue, N.W., Suite 900
Washington, DC 20036
Email Address: kelsch@nfwf.org
Phone: (202) 857-0166
Fax: (202) 587-0162
Deadlines: March 2, expected to be distributed annually
Financial Data: \$5,000 - \$20,000

Freshwater Mussel Fund

The fund is to be used for the enhancement and protection of the mussel resource and the restoration and cultivation of mussel shell populations allegedly affected by illegal acts.

Contact: Ms. Kari Duncan, U.S. Fish & Wildlife Service, Division of Environmental Quality
Address: 4401 North Fairfax Drive, Room 840
Arlington, VA 22203
Website: www.nfwf.org
Deadlines: November 15, expected to be distributed annually
Financial Data: \$100,000 - \$200,000 (Distributed)

General Obligation Bonds

A county or municipality may issue general obligation bonds, which are backed by the full faith and credit of the county or municipality, for any lawful or necessary purpose. Each county and municipality has a constitutionally set debt cap which limits the bond issuance capacity. Prior to issuing general obligation bonds, the county or municipality must receive authorization by a majority vote of qualified electors at an election. The primary advantage associated with general obligation bonds is the ability to use the bond proceeds for most any purpose and, if county general obligation bonds are used, to spread the benefits and burdens of the funds and tax more uniformly countywide.

Contact: Individual Municipalities or Maricopa County

Geraldine R. Dodge Foundation, Inc.

The foundation's special interests include ecosystems and habitat preservation, pollution prevention and reduction, biodiversity/species conservation, energy conservation, and enlightened environmental policy through education and communication.

Contact: Mr. Scott McVay, Executive Director
Address: 1631 Madison Avenue
P.O. Box 1239
Morristown, NJ 07962-1239
Website: http://jefferson.village.virginia.edu/readings/dodge.html
Phone: (973) 540-8442
Fax: (973) 540-1211

Historic Preservation Fund Grants (HPS)

The Historic Preservation Fund provides matching grants to encourage private and non-federal investment in historic preservation efforts nationwide. It also assists State, local governments, Native American tribes, and the National Trust for Historic Preservation in expanding and accelerating their historic preservation activities nationwide. HPF grants serve as a catalyst and as "seed money" for preserving and protecting our nation's irreplaceable heritage for this and future generations.

Contact: Mr. John Renaud
Address: Historic Preservation Fund, Heritage Preservation Services,
National Park Service
1849 C Street, NW, NC330
Washington, DC 20240
Website: www.info@nps.gov
Phone: (202) 343-1059
Fax: (202) 343-3921

Improvement District

Counties may form an improvement district to establish and maintain a park or recreational area for the benefit of the property within the district. The improvement district funds improvements by making assessments against the property within the district, with each property owner receiving an assessment on the property in proportion to the benefits to be received by each lot. The improvement district may also fund the improvements with assessment bonds, which are repaid over a period of years by the assessments made on the property within the district. The primary disadvantages associated with the use of county improvement districts are that approval by a majority of the landowners is required and an improvement district would need to be established for each benefit area of an open space improvement.

Contact: Mr. Bill Scalzo
Maricopa County Parks and Recreation Services
Address: 3475 West Durango
Phoenix, Arizona 85009
Website: www.maricopa.gov
Phone: (602) 506-4864

Lawrence Foundation, The

The initial focus of our contributions and grants will be education, environment and health, although our interests may lead us into other areas on an occasional basis.

Contact: The Lawrence Foundation
Address: PMB 481
2118 Wilshire Blvd.
Santa Monica, CA 90403-5784
Website: www.thelawrencefoundation.org
Phone: (310) 828-0494
Deadlines: Grants awarded twice a year

Levinson Foundation

Funding is evenly distributed among three categories:

- The environment, including primarily preservation of ecosystems and biological diversity, but also including environmental justice, alternative energy and alternative agriculture, and toxics.
- Social, including primarily local economical development and responses to globalization, but also including empowerment of youth and direct aid and social service.
- Jewish/Israel, including Jewish culture and spirituality, building Jewish community in the diaspora, Jewish history and education, and social and environmental issues in Israel.

Contact: The Max and Anna Levinson Foundation
Address: P.O. Box 6309
Santa Fe, NM 87502-6309
Website: www.levinsonfoundation.org
Phone: (505) 995-8802
Fax: (505) 995-8982
Deadlines: Yearly
Financial Data: \$5,000 - \$500,000

Lindbergh Grants

The Lindbergh Grants program functions as a provider of seed money and credibility for pilot projects that subsequently receive larger sums from other sources to continue and expand the work. Lindbergh Grants are made in the following categories: agricultural; aviation/aerospace; conservation of natural resources, including animals, plants, water, and general conservation (land, air, energy, etc.); education, including humanities education, health and population sciences, and adaptive technology; and waste minimization and management.

Contact: The Charles A. and Anne Morrow Lindbergh Foundation
Address: 2150 Third Avenue North, Suite 310
Anoka, MN 55303-2200
Website: www.lindberghfoundations.org
Phone: (763) 576-1596
Fax: (763) 576-1664
Deadlines: Second Tuesday of June, annually
Financial Data: Maximum of \$10,580

Marshall Fund of Arizona

The Marshall Fund seeks projects that address and explore new ideas. It also provides funds to meet critical budget problems for important ongoing projects. Grants can be made to tax-exempt organizations which qualify under Section 501(C)(3) of the Internal Revenue Code.

Contact: Ms. Maxi Marshall
Address: 3295 North Civic Center Blvd., Suite 15
Scottsdale, Arizona 85251
Phone: (480) 941-5249
Deadlines: Open
Application Info: Applications can be submitted at any time.

Migratory Bird Conservancy

The Five-Star Restoration Program, an outgrowth of the Administration's Clean Water Action Plan, provides modest financial assistance on a competitive basis to support community-based wetland and riparian restoration projects that build diverse partnerships and foster local natural resource stewardship.

Contact: Mr. Peter Stangel, National Fish & Wildlife Foundation

Email Address: stangel@nfwf.org
Phone: (404) 679-7099
Deadlines: March 1, annually
Contact: Ms. Anne Frances, National Fish & Wildlife Foundation
Email Address: frances@nfwf.org
Phone: (202) 857-0166
Deadlines: March 1, annually

Mitigation Fees

Mitigation for impacts to the "Water of the US" as defined under the provisions of the Clean Water Act, which is administered by the Army Corps of Engineers and the EPA jointly, takes the form of restoration or enhancement of water related areas. Mitigation occurs in many steps, if the area is unavailable. First, there is on-site mitigation; second, in-kind one-for-one replacement of lost habitat; third, off-site replacement or enhancement. Last, if previous options do not exist, in lieu fees can be assessed by the Corps as compensation. These fees are usually directed to a non-profit, habitat-related group such as the Nature Conservancy or another land trust in the Valley.

Contact: Ms. Theresa Hoff
Flood Control District Ecologist
Phone: (602) 506-1501
Contact: Mr. Tim Wade
Arizona Game and Fish, Habitat Eval. Specialist
Phone: (602) 981-9400 ext. 219
Contact: Ms. Anne Palaruan
Army Corp. of Engineers, Regulatory
Phone: (602) 640-5385

Mott Foundation

To respond to unique opportunities to advance environmental protection in the United States and internally.

Contact: Ms. Theresa Hoff, Flood Control District Ecologist
Website: www.mott.org
Deadlines: Strongly encourages submitting proposals the 1st quarter of the year.
Financial Data: Varies

National Environmental Education and Training Foundation, Inc.

The program supports environmental education and training projects related to health and drinking water projects. Yet it retains a focus on youth, particularly environmental education projects that focus on higher grade levels and go beyond the classroom. The foundation supports environmental education projects that leverage resources, bring focus to the field, and empower citizens to make informed decisions on environmental issues. Past grants have supported

water resources, toxins and environmental health, and education on all levels. Qualified applicants may be aquariums, botanical gardens, educational institutions, museums, nonprofit organizations, public agencies, religious organizations, research institutions, or zoos.

Contact: Ms. Samantha Blodgett, Grants Coordinator, (202) 261-6478
 Address: 1707 H Street, N.W., Suite 900
 Washington DC 20006
 Website: www.neetf.org
 Phone: (202) 833-2933
 Fax: (202) 261-6464
 Deadlines: Yearly
 Financial Data: \$4,500-\$15,000

**National Fish and Wildlife Foundation (NFWF)
 Challenge Grants Fund**

The National Fish and Wildlife Foundation funds projects to conserve and restore fish, wildlife, and native plants through challenge grant programs. The Foundation awards challenge grants to projects that address priority actions promoting fish and wildlife conservation and the habitats on which they depend; work proactively to involve other conservation and community interests; leverage Foundation-provided funding; and evaluate project outcomes.

Contact: Mr. David Brunner, Director
 Address: 28 2nd Street, 6th Floor
 San Francisco, CA 94105
 Website: www.nfwf.org
 Phone: (415) 778-0999
 Fax: (415) 778-0998
 Deadlines: June 1 and October 15, annually
 Financial Data: \$25,000-\$75,000, with small grants and some over \$150,000

National Trails Endowment

The American Hiking Society (AHS) manages a fund of money created by contributions to an annual endowment fund for trails. Money from the endowment will be made available to organizations for which foot trails are a primary focus, and for projects to establish, protect, and maintain foot trails.

Contact: American Hiking Society
 Address: 1422 Fenwick Lane
 Silver Spring, MD 20910
 Website: www.NTE@americanhiking.org
 Phone: (301) 565-6704
 Deadlines: Open
 Financial Data: \$1,000 - \$10,0000

NFL Community Football Fields Program

The NFL Community Football Fields Program is a partnership of the National Football League (NFL) and the Local Initiatives Support Corporation (LISC). The goals of the NFL Community Football Fields Program are to provide non-profit, neighborhood-based organizations with financing and technical assistance to improve the quality, safety and accessibility of local football fields and parks.

Contact: Mr. Matthew B. Wexler, Program Officer
 Local Initiatives Support Corporation
 Address: 733 Third Avenue, 8th Floor
 New York, NY 10019
 Email Address: mwexler@liscnet.org
 Phone: (212) 455-9884
 Deadlines: Applications may be submitted from March 1 to June 1 each year. Announcement of awards will be made in early fall.
 Financial Data: Maximum of \$100,000
 Application Info: Applications can be obtained from the website www.pps.org

**NRCS and NACD Partnership:
 Challenge Grants for Conservation**

The Foundation, in partnership with the Natural Resources Conservation Service and the National Association of Conservation Districts, announces an opportunity for challenge grants. The program's primary goal is to support model projects which positively engage private landowners, primarily farmers and ranchers, in the conservation and enhancement of wildlife and natural resources on their land.

Contact: National Fish and Wildlife Foundation
 Southwest Regional Office
 Address: 28 2nd Street, 6th Floor
 San Francisco, CA 94105
 Website: www.nfwf.org
 Phone: (415) 778-0999
 Fax: (415) 778-0998
 Deadlines: TBA

Pathways to Nature Conservation Fund, The

The Pathways to Nature™ Conservation Fund offers grants to enhance environmental education activities and bird and wildlife viewing opportunities at significant nature tourism destinations in the United States and Canada.

Contact: Mr. Peter Stangel, National Fish & Wildlife Foundation
 Email Address: stangel@nfwf.org
 Phone: (404) 679-7099
 Deadlines: TBA

PowerBar Direct Impact on Rivers and Trails (DIRT)

PowerBar supports efforts to protect threatened land and rivers from development and environmental degradation which threaten recreational use and public

enjoyment.

Contact: PowerBar, DIRT Program
 Address: 2150 Shattuck Avenue
 Berkeley, CA 94704
 Website: www.powerbar.com/whoware/email_fr.htm
 Phone: (510) 843-1330
 Fax: (510) 843-1446
 Deadlines: Annually
 Financial Data: \$1,000 - \$5,000

Project WET

The goal of Project WET is to facilitate and promote awareness, appreciation, knowledge, and stewardship of water resources, both through the development and dissemination of classroom-ready teaching aids and through the establishment of state and internationally sponsored Project WET programs.

Contact: Kerry Schwartz, Water Resource Research Center
 Address: 350 North Campbell Avenue
 Tucson, Arizona 85721
 Email Address: kschwartz@ag.arizona.edu
 Website: www.ag.arizona.edu
 www.phillips66.com
 Phone: (520) 792-9591

Rails-to-Trails Conservancy

The Rails-to-Trails Conservancy (TRC) is a non-profit organization created in 1985 by trail enthusiasts. The RTC program consists of technical assistance, public education, advocacy, negotiation, legislation, and regulatory action. Through its nationwide network of contacts in the recreation and conservation communities, RTC notifies trail advocates, local governments and groups about upcoming abandonments; assists public and private agencies in proper legal procedures; and publicizes rails-to-trails issues through the country. RTC provides extensive technical assistance to agencies, organization, and individuals seeking to convert rails to trails.

Contact: Mr. Gary S. Kania/NWR-2003
 National Fish & Wildlife Foundation
 Address: 1100 17th Street, N.W., 10th Floor
 Washington, DC 20036
 Website: www.railtrails@transact.org
 Phone: (202) 331-9696
 Fax: (202) 331-9680

Refuge 2003

The Foundation is providing challenge grants for on-the-ground conservation efforts that directly benefit the resources protected by individual refuges.



Contact: Mr. Gary S. Kania/NWR-2003
National Fish & Wildlife Foundation
Address: 1120 Connecticut Avenue, N.W., Suite 900
Washington, DC 20036
Website: www.nfwf.org
Phone: (415) 778-0999
Fax: (415) 778-0998
Deadlines: February 15, 2001 (Possibly, annually)

Recreational Equipment, Inc. (REI) Conservation Grants

Conservation Grants are intended to protect lands and waterways, make them more accessible to people who enjoy the outdoors, and better utilize and preserve our natural resources for recreation.

Contact: Grants Administrator, REI Public Affairs
Address: P.O. Box 1938
Sumner, WA 98390-0800
Website: www.rei.com
Deadlines: March - October, annually

Recreational Equipment, Inc. (REI) Great Places Grants

REI Great Places Grants help protect and enhance some of our members' most cherished spots to camp, climb, hike, bike, ski and paddle.

Contact: Grants Administrator, REI Public Affairs
Address: P.O. Box 1938
Sumner, WA 98390-0800
Website: www.rei.com
Financial Data: \$15,000 - \$25,000

Recreational Equipment, Inc. (REI) Community Recreation Grants

Community Recreation Grants are given to non-profit organizations to increase access to outdoor activities, encourage involvement in muscle-powered sports, and promote safe participation in outdoor muscle-powered sports and proper care for outdoor resources.

Contact: Grants Administrator, REI Public Affairs
Address: P.O. Box 1938
Sumner, WA 98390-0800
Website: www.rei.com
Financial Data: \$500 - \$5,000

Revenue Bonds

Revenue Bonds are bonds issued by a municipality and backed by a dedicated revenue stream. Municipalities with a population of 75,000 or less may issue revenue bonds for utilities and "recreational facilities," which include swimming pools, parks, playgrounds, municipal golf courses and ball parks.

Contact: Individual Municipalities

Rockefeller Brothers Fund

The fund's objective is to improve the well-being of all people through support of efforts in the United States and abroad that contribute ideas, develop leaders, and encourage institutions in transition to global interdependence.

Contact: Arthur B. Schultz Foundation
Address: 437 Madison Avenue, 37th Floor
New York, New York 10022-7001
Website: www.rbf.org
Phone: (212) 812-4200
Fax: (212) 812-4299
Financial Data: \$25,000 - \$300,000

Species Recovery Fund

Created to spur the implementation of habitat restoration efforts, species reintroduction projects, private landowner habitat protection activities, and other creative endeavors that directly improve conditions for species.

Contact: Rebecca Harrison, National Wildlife Federation
Email Address: Harrison@nwf.org
Phone: (202) 797-6892
Deadlines: Fall (Yearly)
Financial Data: Variable

Surdna Foundation, The

The goal is to prevent irreversible damage to the environment; support government, private, and voluntary actions that will produce a sustainable environment; and foster a population of environmentally informed citizens.

Contact: Mr. Edward Skloot, Executive Director
The Surdna Foundation

Address: 330 Madison Avenue, 30th Floor
New York, New York 10017-5001
Website: www.surdna.org
Phone: (212) 557-0010
Financial Data: \$20,000 - \$300,000

Toyota USA Foundation

Grants were awarded to start the French Creek Project in Pennsylvania. This project is an environmental program for high school students and their teachers involving the preservation of a historic waterway.

Contact: Toyota USA Foundation
Address: 19001 South Western Avenue
Torrance, CA 90509
Phone: (310) 468-6766

Transaction Privilege/Sales Tax

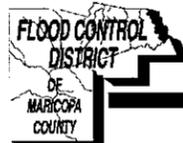
A municipality may impose a transaction privilege or sales tax within its jurisdiction to fund the cost of open space recreation areas. However, unless all of the municipalities within the county adopt the tax, the open space plan would be carried out only in certain jurisdictions and the open space areas would be subject to different jurisdictions' control.

Contact: Individual Municipalities

Transportation Equity Act TEA 21
Transportation Enhancement Funding

Transportation Enhancement funds are now available statewide for the design and implementation of pedestrian, bicycle, landscaping, scenic, historic preservation, archaeological, and other projects that are near, impacted by, or a functional part of a transportation system.

Contact: Maricopa Association of Governments (MAG)
Address: 302 North 1st Avenue, Saguaro Room, 2nd Floor
Phoenix, AZ 85003



Phone: (602) 254-6300

Turner Foundation – Forest Habitats

- To support ecosystem-wide habitat protection with particular emphasis on locally developed strategies for private and public lands.
• To support efforts which defend wild places from destructive practices such as mining, logging, and over-grazing.
• To support efforts that creates understanding of the relationship between wildlife, habitat protection and long-term economic stability.
• To protect the world's last remaining vast tracts of relatively undisturbed forestlands.
• To protect forest ecosystems through reducing wood consumption, eliminating waste, and promoting safe, sustainable non-wood alternatives.

Contact: Peter Bahouth, Executive Director
Address: Attention: Program Department
One CNN Center, Suite 1090- South Tower
Atlanta, GA 30303
Website: www.turnerfoundation.org

Turner Foundation – Water/Toxins

To protect rivers, lakes, wetlands, aquifers, oceans and other water systems from contamination, degradation, and other abuses.

Contact: Peter Bahouth, Executive Director
Address: Attention: Program Department
One CNN Center, Suite 1090- South Tower
Atlanta, GA 30303
Website: www.turnerfoundation.org

Urban Park Recreation Recovery (UPARR)

The program was established to provide matching grants and technical assistance to economically distressed urban communities. It was to provide direct Federal assistance to urban localities for rehabilitation of critically needed recreation facilities. Only cities and urban counties meeting established criteria are eligible for assistance.

Contact: National Park Service
Address: Midwest Region
1709 Jackson Street
Omaha, NE 68102-2571
Phone: (402) 221-3358

U.S. Fish & Wildlife Service

Funding from the Fish & Wildlife Resources Grant Program may be used to provide grants to states to benefit a broad array of diverse fish and wildlife species and to provide non-consumptive fish and wildlife recreation opportunities.

Contact: Fish and Wildlife Conservation, Partnership for Wildlife
Mr. Gary Reinitz, Fishery Biologist
Address: U.S. Fish and Wildlife Service, Division of Federal Aid
Arlington Square, Room 140
4401 North Fairfax Drive
Arlington, Virginia 22203
Email Address: Gary_Reinitz@fws.gov
Phone: (202) 358-2156
Deadlines: Open
Financial Data: Variable

Sport Fish Resources Grant Program

The fund may be used to provide the opportunity for states to acquire or develop sites for boating access, fishery projects, or salt/freshwater projects.

Contact: Anadromous Fish Conservation, Federal Aid in Sport Fish
Restoration, Gary Reinitz, Fishery Biologist
Address: U.S. Fish and Wildlife Service, Division of Federal Aid
Arlington Square, Room 140
4401 North Fairfax Drive
Arlington, Virginia 22203
Email Address: Gary_Reinitz@fws.gov
Phone: (202) 358-2156
Deadlines: Open
Financial Data: Variable

U.S. Fish & Wildlife Service and North American Wetlands Conservation Council – Small Grants

The U.S. Fish and Wildlife Service and the North American Wetlands Conservation Council accept proposals that request matching funding for wetland and wetland-associated upland conservation projects under the Small Grants program. Projects must meet the purposes of the Northern American Wetlands Conservation Act of 1989. Please consult the Federal Register for complete information.

Agency: Interior
Deadline: 01-Dec-01
Financial Data: \$50,000
Federal Register: DOCID:fr14jn00-103, published 14-June-00
See the complete NOFA from the Government Printing Office at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2000_register&docid=00-15010-filed
Contact: Dr. Keith A. Morehouse, (703) 358-1784

Applications: North American Waterfowl and Wetlands Office
(703) 358-1784

Wilburforce Foundation

Funding is focused on organizations that work to protect habitats, which are critically important to sustaining abundant ecological communities in western Canada and the western United States.

Contact: Wilburforce Foundation
Address: 3601 Fremont Avenue N. #304
Seattle, WA 98103-8753
Website: www.wilburforce.org
Phone: (206) 632-2325
Financial Data: \$20,000 - \$30,000

William and Flora Hewlett Foundation, The

The Hewlett Foundation provides assistance to organizations working on environmental issues.

Contact: National Park Service
Address: 525 Middlefield Road, Suite 200
Menlo Park, California 94025
Website: www.hewlett.org
Phone: (650) 329-1070
Fax: (650) 329-9342

Wm C. Foundation

The Wm C. Foundation will fund local organizations to participate more effectively in campaigns with their regional and national organization colleagues. It will also fund programs that effectively disseminate information or communication tools or that provide technical assistance to local groups.

Website: www.kenneyfnd.org
Deadlines: Check Spring of 2001 for guidelines
Financial Data: \$7,500 - \$15,000

World Wildlife Foundation (WWF) Innovation Grants

The WWF awards small grants to local, regional, and statewide nonprofits to help implement strategies for the conservation of natural resources. Grants are offered to support projects that conserve wetlands, protect endangered species, preserve migratory birds, conserve coastal resources, and establish and sustain protected natural areas such as greenways.

Contact: World Wildlife Fund
Address: 1250 Twenty-Fourth Street, N.W.
P.O. Box 97180
Washington, DC 20037

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Aqua Fria Channelization - 17

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Industrial Use Areas							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Berms for screening	1206	cubic yd	\$6.00	\$8.00	\$7,236.00	\$9,648.00	Constructed for perimeter areas.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	1.6	mile	\$12,000.00	\$20,000.00	\$19,200.00	\$32,000.00	Used for screening. 100 trees per mile; 211 total.
Revegetation - Seeding disturbed areas	6	acre	\$12,000.00	\$20,000.00	\$72,000.00	\$120,000.00	Used for screening.
Irrigation System	6	acre	\$10,000.00	\$16,000.00			
Subtotal					\$98,436.00	\$161,648.00	
Zone Two - Agricultural Heritage Landscape							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Berms for screening	754	cubic yd	\$6.00	\$8.00	\$4,524.00	\$6,032.00	Stretching the length of 1 mile.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	1	mile	\$16,140.00	\$27,750.00	\$16,140.00	\$27,750.00	Used for screening. 132 trees per mile; 211 total
Revegetation - Seeding disturbed areas	1	mile	\$20,000.00	\$32,000.00	\$20,000.00	\$32,000.00	Used for screening in front of storage yards or delapidated farm buildings.
Irrigation System	1	mile	\$20,000.00	\$32,000.00			
Multi-Use Treatment Retrofit Opportunities							
Recreation Area - Regional Park Facilities	20	acre	\$50,000.00	\$100,000.00	\$1,000,000.00	\$2,000,000.00	Located east of the Agua Fria River and south of Camelback Road.
Trailhead Facility - Full facility with restrooms	3	each	\$50,000.00	\$100,000.00	\$150,000.00	\$300,000.00	Located at Indian School, Van Buren, and Lower BuckEye Roads.
Gateway Facilities - At trail connection points	2	each	\$16,000.00	\$25,000.00	\$32,000.00	\$50,000.00	
Subtotal					\$1,190,664.00	\$2,365,782.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Aqua Fria Channelization - 17

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone Three - River Channel and Levee Structures							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Modify alignment, profile & side slopes of channel	10,560	cubic yd	\$3.00	\$6.00	\$31,680.00	\$63,360.00	13 mile meandering and terraced channel with varied side slopes.
Earthwork - Construct low flow channel with riprap	53,651	linear ft	\$32.00	\$48.00	\$1,716,832.00	\$2,575,248.00	10 mile low flow channel with rock rip rap; length - 53,651 lf.
Earthwork - Construct recharge basin/ponding areas for channel	500	cubic yd	\$3.00	\$6.00	\$1,500.00	\$3,000.00	Install 5 basin/ ponding areas; access 5 drop structures.
Rock Drop Structure - Near basin/ponding areas	500	linear ft	\$45.00	\$60.00	\$22,500.00	\$30,000.00	Estimated 5 structures at 100 lf; 4' wall with 1' exposed.
Urban Art - A patterned motif.	6	each	\$20,000.00	\$40,000.00	\$120,000.00	\$240,000.00	At trailhead connection; 6 potential sites.
Landscaping Treatment Retrofit Opportunities							
Tree Planting for channel	123.17	acre	\$6,000.00	\$10,000.00	\$739,020.00	\$1,231,700.00	18 trees per acre.
Revegetation - Seeding disturbed areas of channel	123.17	acre	\$12,000.00	\$20,000.00	\$1,478,040.00	\$2,463,400.00	Length of channel multiplied by 100 foot width.
Tree Planting for levee	14	mile	\$12,000.00	\$20,000.00	\$168,000.00	\$280,000.00	Trees along the levees, 100 trees per mile.
Irrigation System for levee	14	mile	\$20,000.00	\$32,000.00	\$280,000.00	\$448,000.00	Levee structure retrofit.
Multi-Use Treatment Retrofit Opportunities							
Paved Path for levee	11.94	mile	\$50,000.00	\$75,000.00	\$597,000.00	\$895,500.00	10' wide paved trail on top of existing levees.
Soft Surface Trail	24	mile	\$40,000.00	\$65,000.00	\$960,000.00	\$1,560,000.00	10' wide decomposed granite path on terraces and on both sides of the river channel.
Levee Extension -Construct levee trail access by street crossings	2000	linear ft	\$95.00	\$160.00	\$190,000.00	\$320,000.00	Beneath arterials and interstate.
Safety Railing - Along levee structure	13	mile	\$132,000.00	\$211,200.00	\$1,716,000.00	\$2,745,600.00	Along the top of the levee structure and adjacent to the paved path
Wildlife Viewing Facility	2	each	\$30,000.00	\$50,000.00	\$60,000.00	\$100,000.00	Recommended for channel.
Gateway Features - At trail connection points	10	each	\$16,000.00	\$25,000.00	\$160,000.00	\$250,000.00	Recommended for channel.
Subtotal					\$8,240,572.00	\$13,205,808.00	
Zone Four - Riparian Area							
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	1.2	mile	\$40,000.00	\$65,000.00	\$48,000.00	\$78,000.00	Circular trail north of the river.
Wildlife Viewing Facility	1	each	\$30,000.00	\$50,000.00	\$30,000.00	\$50,000.00	Located at the edge of the Gila river.
Trailhead Facility	1	each	\$50,000.00	\$100,000.00	\$50,000.00	\$100,000.00	Located near the agricultural area where the trails connect to the riparian area.
Gateway Features - at trail connection points	2	each	\$16,000.00	\$25,000.00	\$32,000.00	\$50,000.00	Located at the edge of the Gila river and Lower Buckeye road.
Subtotal					\$160,000.00	\$278,000.00	
Total					\$9,689,672.00	\$16,011,238.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Buckeye FRS 1, 2, 3 - 4

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Upland Open Space Area							
Landscaping Treatment Retrofit Opportunities							
Revegetation - Seeding disturbed areas	60	acre	\$12,000.00	\$20,000.00	\$720,000.00	\$1,200,000.00	Located in the north west portion of the site.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	5	mile	\$40,000.00	\$65,000.00	\$200,000.00	\$325,000.00	10' wide decomposed granite trail.
Subtotal					\$920,000.00	\$1,525,000.00	
Zone Two - Dam and Channel Structure							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Construct overburden areas on the dam structure	81,297	linear ft	\$96.00	\$128.00	\$7,804,512.00	\$10,406,016.00	Modify the alignment, profile and slope of dam. 16cy/ lf at \$6/ cy.
Earthwork - Modify channel alignment, profile, and slope	81,297	linear ft	\$9.00	\$18.00	\$731,673.00	\$1,463,346.00	Meandering and terraced channel with varied side slopes; 3cy/ lf.
Earthwork - Construct low flow channel feature	81,297	linear ft	\$32.00	\$48.00	\$2,601,504.00	\$3,902,256.00	Low flow channel with rock rip rap.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	15	mile	\$12,000.00	\$20,000.00	\$180,000.00	\$300,000.00	For dam screening; 132 trees per mile; total 2033 trees along the south side.
Revegetation - Seeding disturbed areas	224	acre	\$12,000.00	\$20,000.00	\$2,688,000.00	\$4,480,000.00	The south side of dam and the channel area.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	17.7	mile	\$40,000.00	\$65,000.00	\$708,000.00	\$1,150,500.00	Trail improvements along the meandering channel.
Trail Retention - Minor changes fro existing maintenance road	15	mile	\$10,000.00	\$22,000.00	\$150,000.00	\$330,000.00	Moderate improvements to existing dam access road on structure.
Gateway Features - At trail connection points	4	each	\$16,000.00	\$25,000.00	\$64,000.00	\$100,000.00	Located at Hassayampa River, Sun Valley Pkwy, Miller Road, and east end.
Trailhead Facilities	2	each	\$50,000.00	\$100,000.00	\$100,000.00	\$200,000.00	Located at Sun Valley Pkwy and Miller Road.
Subtotal					\$15,027,689.00	\$22,332,118.00	
Zone Three - Foothills Area							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Construct overburden areas on the floodway structure	1300	linear ft	\$96.00	\$128.00	\$124,800.00	\$166,400.00	Modify the alignment, profile and slope of floodway dike. 16cy/ lf at \$6/ cy.
Earthwork - Construct low flow channel feature	1300	linear ft	\$32.00	\$48.00	\$41,600.00	\$62,400.00	Low flow channel with rock rip rap.
Multi-Use Treatment Retrofit Opportunities							
Trail Retention - Minor changes for existing maint. rd. on floodwa	3.8	mile	\$10,000.00	\$22,000.00	\$38,000.00	\$83,600.00	Retain maintenance road on floodway training dike.
Subtotal					\$204,400.00	\$312,400.00	
Zone Four - Lowland Open Space Area							
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	4.7	mile	\$40,000.00	\$65,000.00	\$188,000.00	\$305,500.00	4' wide decomposed granite trail.
Subtotal					\$188,000.00	\$305,500.00	
Total					\$16,340,089.00	\$24,475,018.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Colter Channel - 14

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Earthen Channel							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Modify alignment, profile and side slope	88,462	cubic yd	\$3.00	\$6.00	\$265,386.00	\$530,772.00	Meandering and terraced channel with varied side slopes; estimate moving 6.25 cy/lf.
Earthwork - Create low flow channel with rock rip rap	14.154	linear fee	\$32.00	\$48.00	\$452,928.00	\$679,392.00	8' Low flow channel with rock rip rap; length - 14.154 lf.
Earthwork - Create recharge basin and ponding areas	300	cubic yd	\$3.00	\$6.00	\$900.00	\$1,800.00	Install 3 basin/ ponding areas; access to 3 drop structures; 1.5' deep.
Rock Drop Structure - By ponding areas	300	linear fee	\$45.00	\$60.00	\$13,500.00	\$18,000.00	Estimated 3 structures at 100 lf; 4' wall with 1' exposed.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	78	acre	\$2,196.00	\$3,780.00	\$171,288.00	\$294,840.00	18 trees per acre; (11 acres) - 15 gal., (7 acres) - 24" box.
Revegetation - Seeding disturbed areas	78	acre	\$12,000.00	\$20,000.00	\$936,000.00	\$1,560,000.00	For channel area.
Irrigation System	78	acre	\$10,000.00	\$16,000.00	\$780,000.00	\$1,248,000.00	For channel area.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	2.7	mile	\$40,000.00	\$65,000.00	\$108,000.00	\$175,500.00	10' wide decomposed granite trail along the south side of the channel.
Gateway Features - At trail connection points	2	each	\$16,000.00	\$25,000.00	\$32,000.00	\$50,000.00	By remnant wash west of Dysart Rd. and by Airline Canal.
Subtotal					\$2,760,002.00	\$4,558,304.00	
Zone Two - Open Space Area							
Landscaping Treatment Retrofit Opportunities							
Tree Planting	10	acre	\$6,000.00	\$10,000.00	\$60,000.00	\$100,000.00	18 trees per acre; 180 total.
Revegetation - Seeding disturbed areas	10	acre	\$12,000.00	\$20,000.00	\$120,000.00	\$200,000.00	For open space area.
Irrigation System	10	acre	\$10,000.00	\$16,000.00	\$100,000.00	\$160,000.00	For open space area.
Multi-Use Treatment Retrofit Opportunities							
Recreation Area - Local park facilities	4	acre	\$50,000.00	\$100,000.00	\$200,000.00	\$400,000.00	Located west of Dysart Road within the open space area; 4 acre park site.
Subtotal					\$480,000.00	\$860,000.00	
Total					\$3,240,002.00	\$5,418,304.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Dysart Drain - 12

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Low-Profile Concrete Channel							
Landscaping Treatment Retrofit Opportunities							
Tree Planting	2	mile	\$12,000.00	\$20,000.00	\$24,000.00	\$40,000.00	Along trees and golf course. 100 tree per mile.
Irrigation System	2	mile	\$20,000.00	\$32,000.00	\$40,000.00	\$64,000.00	Along both sides of channels: 30 sf.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	1	mile	\$40,000.00	\$65,000.00	\$40,000.00	\$65,000.00	10' wide decomposed granite path along one side of the existing channels.
Trail Retention - Changes for existing maintenace road	1	mile	\$40,000.00	\$65,000.00	\$40,000.00	\$65,000.00	Retain maintenance road - install fixed and removable bollards.
Subtotal					\$144,000.00	\$234,000.00	
Zone Two - Golf Course Basin Area							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Berms for screening	35,280	cu yd.	\$6.00	\$8.00	\$211,680.00	\$282,240.00	Add 2' high berms to the perimeter area; 5040lf.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	1.5	mile	\$12,000.00	\$20,000.00	\$18,000.00	\$30,000.00	Along channels and golf course; 100 tree per mile.
Irrigation System	1.5	mile	\$20,000.00	\$32,000.00	\$30,000.00	\$48,000.00	The perimeter of golf course; estimated at 30' wide.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	1.5	mile	\$40,000.00	\$65,000.00	\$60,000.00	\$97,500.00	Add trails to the perimeter area.
Subtotal					\$319,680.00	\$457,740.00	
Zone Three - Deep-Profile Concrete Channel							
Landscaping Treatment Retrofit Opportunities							
Tree Planting	2	mile	\$12,000.00	\$20,000.00	\$24,000.00	\$40,000.00	Along channels and golf course. 132 trees per mile; 264 total.
Irrigation System	3.2	acre	\$10,000.00	\$16,000.00	\$32,000.00	\$51,200.00	Along both sides of channels and the perimeter of golf course.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	2.1	mile	\$40,000.00	\$65,000.00	\$84,000.00	\$136,500.00	The trail is a 10' wide with decomposed granite.
Trail Retention - Changes for existing maintenace road	2.1	mile	\$40,000.00	\$65,000.00	\$84,000.00	\$136,500.00	Retain maintenance road - install fixed and removable bollards; 10' soft surface.
Gateway Features - At trail connection nodes	2	each	\$16,000.00	\$25,000.00	\$32,000.00	\$50,000.00	Located by Dysart Road and the Agua Fria.
Land Acquisition Opportunities for Landscape Aesthetics and Multi-use Treatments							
Land Acquisition - To enlarge area for retrofit enhancements	17.6	acre	\$80,000.00	\$160,000.00	\$1,408,000.00	\$2,816,000.00	The channel will act as a greenway corridor; length of channel by 75' wide.
Subtotal					\$1,664,000.00	\$3,230,200.00	
Total of All Zones					\$2,127,680.00	\$3,921,940.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

Holly Acres Levee and Bank Stabilization - 18

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Levee Structure							
Landscaping Treatment Retrofit Opportunities							
Tree Planting	1.2	mile	\$12,000.00	\$20,000.00	\$14,400.00	\$24,000.00	Double row of trees (orchard theme) to screen levee structure.
Irrigation System	1.2	mile	\$20,000.00	\$32,000.00	\$24,000.00	\$38,400.00	
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	0.13	mile	\$40,000.00	\$65,000.00	\$5,200.00	\$8,450.00	Located on levee piers to the wildlife viewing points; 10' wide decomposed granite.
Trail Retention - Minor changes for existing maintenance road	1.34	mile	\$40,000.00	\$65,000.00	\$53,600.00	\$87,100.00	Retain maintenance road - install fixed and removable bollards.
Levee Extension Trail - Construct trail access by street crossing	902	linear ft	\$66.00	\$99.00	\$59,532.00	\$89,298.00	Additional levee structure to provide access under street crossing; 11 cy of fill per lf.
Safety Railing - Along levee structure	902	linear ft	\$25.00	\$30.00	\$22,550.00	\$27,060.00	Located along levee extension structure for safety; \$25-\$30/ lf
Gateway Features - At trail connection nodes	2	each	\$16,000.00	\$25,000.00	\$32,000.00	\$50,000.00	Features located at El Mirage Road and 115th Avenue.
Trailhead Facilities	2	each	\$50,000.00	\$100,000.00	\$100,000.00	\$200,000.00	Facilities located at 115th Avenue.
Interpretive Center	1	each	\$100,000.00	\$150,000.00	\$100,000.00	\$150,000.00	Facility located at 115th Ave. on the north side of Gila River.
Wildlife Viewing Facilities	2	each	\$30,000.00	\$50,000.00	\$60,000.00	\$100,000.00	Facilities are located on the levee piers to view the riparian area and Estrella Mtns.
Land Acquisition Opportunities for Landscape Aesthetics and Multi-use Treatments							
Land Acquisition - To enlarge area for retrofit enhancements	2	acre	\$80,000.00	\$160,000.00	\$160,000.00	\$320,000.00	Land purchase for riparian interpretive education center.
Subtotal					\$631,282.00	\$1,094,308.00	
Zone Two - Riparian Area							
Landscaping Treatment Retrofit Opportunities							
Revegetation - Seeding disturbed areas	10	acre	\$12,000.00	\$20,000.00	\$115,200.00	\$192,000.00	The crossing of and Baseline Rd/ 115th Ave: \$.75 per sf.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	0.5	mile	\$25,000.00	\$45,000.00	\$12,500.00	\$22,500.00	Located in the river channel to connect the wildlife viewing facilities.
Wildlife Viewing Facilities	2	each	\$30,000.00	\$50,000.00	\$60,000.00	\$100,000.00	Two wildlife viewing facilities located in river channel.
Subtotal					\$187,700.00	\$314,500.00	
Total					\$818,982.00	\$1,408,808.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

McMicken Dam and Outlet Channel - 5

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Upland Open Space Area							
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	9.02	mile	\$40,000.00	\$65,000.00	\$360,800.00	\$586,300.00	Trail improvements in natural open space area.
Land Acquisition Opportunities for Landscape Aesthetics and Multi-use Treatments							
Land Acquisition - To incorporate natural features in greenway	150	acre	\$80,000.00	\$160,000.00	\$12,000,000.00	\$24,000,000.00	Land purchased to add corridor connection to White Tanks Regional Park.
Subtotal					\$12,360,800.00	\$24,586,300.00	
Zone Two - Dam Structure							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Remove structure, replace w/ modified structure	1	dam	\$2,297,000.00	\$3,573,000.00	\$2,297,000.00	\$3,573,000.00	Remove approximately 25yds. of the dam structure and replace with basin areas.
Earthwork - Construct overburden areas on the dam structure	701,184	cubic yd	\$6.00	\$10.00	\$4,207,104.00	\$7,011,840.00	Includes length of dam at 8.3 miles; along both sides; 16cy/ lf.
Earthwork - Create low flow channel	14,154	linear ft	\$32.00	\$48.00	\$452,928.00	\$679,392.00	Low flow channel with rock rip rap; length - 14,154 lf.
Earthwork - Create recharge basin and ponding areas	500	cubic yd	\$3.00	\$6.00	\$1,500.00	\$3,000.00	Install 5 basin/ ponding areas - total 5; access 5 drop structures; 1.5' deep.
Rock Drop Structure	500	linear ft	\$45.00	\$60.00	\$22,500.00	\$30,000.00	Estimated 5 structures at 100 lf; 4' wall with 1' exposed.
Earthwork - Removal of earthwork mounds	45,447	cubic yd	\$3.00	\$6.00	\$136,341.00	\$272,682.00	Removal of excavated edge and construction of enhanced nodes; 8.3 miles
Landscaping Treatment Retrofit Opportunities							
Tree Planting	5	acre	\$6,000.00	\$10,000.00	\$30,000.00	\$50,000.00	For 13 enhanced node sites.
Revegetation - Reseeding disturbed areas	60	acre	\$12,000.00	\$20,000.00	\$720,000.00	\$1,200,000.00	30' revegetation area along both sides of the dam.
Multi-Use Treatment Retrofit Opportunities							
Trail Retention - Changes for existing maintenance road	8.26	mile	\$40,000.00	\$65,000.00	\$330,400.00	\$536,900.00	Moderate improvements to existing dam maintenance road at \$8/ lf.
Trail Enhancement - Meander existing maintenance road	16.52	mile	\$40,000.00	\$65,000.00	\$660,800.00	\$1,073,800.00	Separated-use trail on adjacent maintenance roads; \$8/ lf.
Wildlife Viewing Facility	2	each	\$30,000.00	\$50,000.00	\$60,000.00	\$100,000.00	By Trilby wash.
Gateway Features - At trail connection points	2	each	\$16,000.00	\$25,000.00	\$32,000.00	\$50,000.00	Gateways to be located at White Tank Mountain Regional Park and Bell Road.
Trailhead Facilities	3	each	\$50,000.00	\$100,000.00	\$150,000.00	\$300,000.00	Trailheads to be located near Bell Road, Grand Avenue, and Peoria Road.
Subtotal					\$9,100,573.00	\$14,880,614.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Treatments

McMicken Dam and Outlet Channel - 5

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone Three - Emergency Spillway Area							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Remove dike structures and replace with large basin	1	dam	\$3,762,000.00	\$7,524,000.00	\$3,762,000.00	\$7,524,000.00	Basin = 1.1m cy of removal.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	3.8	mile	\$12,000.00	\$20,000.00	\$45,600.00	\$76,000.00	132 trees per mile; 502 total.
Revegetation - Seeding for disturbed areas	3.8	mile	\$20,000.00	\$32,000.00	\$76,000.00	\$121,600.00	
Multi-Use Treatment Retrofit Opportunities							
Gateway Features - At trail connection points	1	each	\$16,000.00	\$25,000.00	\$16,000.00	\$25,000.00	Features placement includes Grand Avenue.
Recreation Area - Regional park facilities	10	acre	\$50,000.00	\$100,000.00	\$500,000.00	\$1,000,000.00	Recreation facilities in emergency spillway area are near Grand Avenue.
Subtotal					\$4,399,600.00	\$8,746,600.00	
Zone Four - Outlet Channel							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Construct low flow feature	30,725	linear ft	\$32.00	\$48.00	\$983,200.00	\$1,474,800.00	8' low flow channel with rock rip rap.
Earthwork - Construct recharge basin/ ponding areas	400	cubic yd	\$3.00	\$6.00	\$1,200.00	\$2,400.00	Install 4 basin/ ponding areas; with access to 2 drop structures.
Rock Drop Structures - By ponding areas	200	linear ft	\$45.00	\$60.00	\$9,000.00	\$12,000.00	Estimated 2 structures at 100 lf; 4' wall. (w/ 1' exposed).
Landscaping Treatment Retrofit Opportunities							
Tree Planting	11	mile	\$12,000.00	\$20,000.00	\$132,000.00	\$220,000.00	100 trees per mile.
Revegetation	11	mile	\$20,000.00	\$20,000.00	\$220,000.00	\$220,000.00	
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	6.42	mile	\$40,000.00	\$65,000.00	\$256,800.00	\$417,300.00	Trail improvements along the meandering channel.
Gateway Features - At trail connection points	1	each	\$16,000.00	\$25,000.00	\$16,000.00	\$25,000.00	Feature located at end of outlet channel.
Land Acquisition Opportunities for Landscape Aesthetics and Multi-use Treatments							
Land Acquisition - To incorporate natural features in greenway	100	acre	\$80,000.00	\$160,000.00	\$8,000,000.00	\$16,000,000.00	Additional land to widen outlet channel area, northeast of Grand Ave.
Subtotal					\$9,618,200.00	\$18,371,500.00	
Total					\$35,479,173.00	\$66,585,014.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Actions

McMicken Outlet Wash - 9						
Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High) Remarks
Zone One - Natural Wash						
Aesthetic Treatment Retrofit Opportunities						
Earthwork & Rock Placement - Repair & reinforce channel	1000	cubic yd	\$6.00	\$8.00	\$6,000.00	\$8,000.00 Repair and reinforce wash channel up to half of wash length - 5000 lf.
Earthwork - Construct recharge basin/ ponding areas	100	cubic yd	\$30.00	\$50.00	\$3,000.00	\$5,000.00 1 basin/ ponding area.
Rock Drop Structures - By ponding areas	100	lf	\$45.00	\$60.00	\$4,500.00	\$6,000.00 For one basin pond - 4' high with 1' above ground.
Earthwork - Landscape berms for screening	2000	cubic yd	\$6.00	\$8.00	\$12,000.00	\$16,000.00 For acquired land area to screen views; 4000 lf; 3' high and meandering.
Landscaping Treatment Retrofit Opportunities						
Tree Planting	36.7	acre	\$6,000.00	\$10,000.00	\$220,200.00	\$367,000.00 4000 lf
Revegetation - Seeding disturbed areas	36.7	acre	\$21,800.00	\$43,560.00	\$800,060.00	\$1,598,652.00 Planted along wash.
Irrigation System	36.7	acre	\$10,000.00	\$16,000.00	\$367,000.00	\$587,200.00 Average is 400' wide.
Multi-Use Treatment Retrofit Opportunities						
Soft Surface Trail	7.64	mile	\$40,000.00	\$65,000.00	\$305,600.00	\$496,600.00 Along both sides of natural wash and channel.
Gateway Features - At trail connection nodes	2	each	\$16,000.00	\$25,000.00	\$32,000.00	\$50,000.00 Located at McMicken Outlet Channel and south of 303 Freeway corridor.
Land Acquisition Opportunities for Landscape Aesthetics and Multi-use Treatments						
Land Acquisition - To enlarge area for retrofit treatments	35	acre	\$80,000.00	\$160,000.00	\$2,800,000.00	\$5,600,000.00 Purchase of land for electrical substation.
					\$4,550,360.00	\$8,734,452.00

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Actions

McMicken Outlet Wash - 9

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone Two - Earthen Channel							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Construct low flow channel	6650	lf	\$32.00	\$48.00	\$212,800.00	\$319,200.00	Low flow channel with rock rip rap; length - 6650lf.
Earthwork - Construct recharge basin/ ponding areas	7260	cubic yd	\$3.00	\$6.00	\$21,780.00	\$43,560.00	3 basin/ ponding areas, 1 acre each - 3 acres total, 1.5' deep.
Rock Drop Structures - By basin/ ponding areas	800	lf	\$45.00	\$60.00	\$36,000.00	\$48,000.00	3 basin/ ponding areas.
Enhanced Drop Structure	3.55	acre	\$32,000.00	\$45,000.00	\$113,600.00	\$159,750.00	At concrete drainpipe outlet area; retrofitting with riprap; \$40ft/ cy.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	15.28	mile	\$12,000.00	\$20,000.00	\$183,360.00	\$305,600.00	Along length of trails; 5 trees every 200'.
Revegetation - Seeding disturbed areas	35.94	acre	\$12,000.00	\$20,000.00	\$431,280.00	\$718,800.00	Seeding disturbed areas is needed for the channel area.
Irrigation System	35.94	acre	\$10,000.00	\$16,000.00	\$359,400.00	\$575,040.00	For disturbed areas and tree planting along the earthen channel.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	7.64	mile	\$40,000.00	\$65,000.00	\$305,600.00	\$496,600.00	Along both sides of the earthen channel.
Trailhead Facilities	1	each	\$50,000.00	\$100,000.00	\$50,000.00	\$100,000.00	Located at El Mirage Road and channel overlook by the Agua Fria River.
Gateway Facilities - At trail connection points	1	each	\$16,000.00	\$25,000.00	\$16,000.00	\$25,000.00	Located at Deer Valley Dr.
Land Acquisition Opportunities for Landscape							
Aesthetics and Multi-use Treatments							
Land Acquisition - To incorporate natural features in greenway	62	acre	\$80,100.00	\$160,000.00	\$4,966,200.00	\$9,920,000.00	Potential land purchase for buffer by proposed Parkway project.
Subtotal					\$6,696,020.00	\$12,711,550.00	
Total					\$11,246,380.00	\$21,446,002.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Actions

Perryville Bank Stabilization - 8

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Agricultural Heritage Landscape							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Berms for screening	5900	cubic yd	\$6.00	\$8.00	\$35,400.00	\$47,200.00	Along bank structure; 23,000lf; 2' average berm ht.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	1.9	mile	\$12,000.00	\$20,000.00	\$22,800.00	\$38,000.00	Tree planting along the river bank trail.
Revegetation - Seeding disturbed areas	1.9	mile	\$20,000.00	\$32,000.00	\$38,000.00	\$60,800.00	For disturbed areas west of the bank structure; some are private property.
Irrigation System	1.9	mile	\$20,000.00	\$32,000.00	\$38,000.00	\$60,800.00	For disturbed areas and tree plantings along the river bank trail.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	2.35	mile	\$40,000.00	\$65,000.00	\$94,000.00	\$152,750.00	Existing bank area trail .43 mile; additional bank trails equal 1.92 miles.
Agricultural Heritage/ Interpretive Center	1	each	\$30,000.00	\$50,000.00	\$30,000.00	\$50,000.00	For education on the agricultural history and riparian environment.
Land Acquisition Opportunities for Landscape Aesthetics and Multi-use Treatment							
Land Acquisition - To enlarge area for retrofit treatments	5	acre	\$80,010.00	\$160,010.00	\$400,050.00	\$800,050.00	Bank structure equals 5 acres; cattle farm & other properties equals 39.42 acres.
Subtotal					\$658,250.00	\$1,209,600.00	
Zone Two - Bank Structure							
Landscaping Treatment Retrofit Opportunities							
Tree Planting	2.46	mile	\$12,000.00	\$20,000.00	\$29,520.00	\$49,200.00	Along bank structure.
Irrigation System	2.46	mile	\$20,000.00	\$32,000.00	\$49,200.00	\$78,720.00	For tree planting along the river bank trail.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	2.5	mile	\$40,000.00	\$65,000.00	\$100,000.00	\$162,500.00	Existing bank area trail .43 mile; additional bank trails 1.92 miles.
Gateway Features - At trail connection nodes	1	each	\$16,000.00	\$25,000.00	\$16,000.00	\$25,000.00	Located at southern end of site.
Trailhead Facilities	1	each	\$50,000.00	\$100,000.00	\$50,000.00	\$100,000.00	East of County Route 85 and adjacent to the canal & bank structure.
Subtotal					\$244,720.00	\$415,420.00	
Zone Three - Riparian Area							
Landscaping Treatment Retrofit Opportunities							
Revegetation - Seeding disturbed area	5.2	acre	\$21,800.00	\$43,560.00	\$113,360.00	\$226,512.00	For disturbed areas and tree plantings within the riparian area.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	1.9	mile	\$40,000.00	\$65,000.00	\$76,000.00	\$123,500.00	Trail improvements along a meandering basin outline.
Wildlife Viewing Facilities and Interpretive Center	1	each	\$30,000.00	\$50,000.00	\$30,000.00	\$50,000.00	Located north of structure near County Road 85.
Subtotal					\$219,360.00	\$400,012.00	
Total					\$1,122,330.00	\$2,025,032.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Actions

White Tanks FRS 3 - 6

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Inlet Channel							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Construct low flow channel	4100	lf	\$32.00	\$48.00	\$131,200.00	\$196,800.00	Earthen inlet channel is 4,100 lf.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	1.7	mile	\$12,000.00	\$20,000.00	\$20,400.00	\$34,000.00	Tree plantings along the trails.
Revegetation - Seeding disturbed areas	12	acre	\$21,800.00	\$43,560.00	\$261,600.00	\$522,720.00	Revegetation of disturbed areas along inlet channel.
Irrigation System	1.7	mile	\$20,000.00	\$32,000.00	\$34,000.00	\$54,400.00	For disturbed areas and tree plantings along the inlet channel.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	1.7	mile	\$40,000.00	\$65,000.00	\$68,000.00	\$110,500.00	Trail improvements along a meandering channel.
Gateway Features - At trail connection points	1	each	\$16,000.00	\$25,000.00	\$16,000.00	\$25,000.00	Located at Northern Avenue near McMicken Dam and Trilby Wash.
Land Acquisition Opportunities for Landscape Aesthetics and Multi-use Treatment							
Land Acquisition - To enlarge area for retrofit treatments	6	acre	\$80,010.00	\$160,010.00	\$480,060.00	\$960,060.00	
Subtotal					\$1,011,260.00	\$1,903,480.00	
Zone Two - Dam Structure - Option One							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Construct overburden area on dam structure	7,700	lf	\$96.00	\$160.00	\$739,200.00	\$1,232,000.00	16 cy. of fill per lf at \$6/ cy.
Landscaping Treatment Retrofit Opportunities							
Revegetation - Seeding disturbed areas	92	acres	\$21,800.00	\$43,560.00	\$2,005,600.00	\$4,007,520.00	Hydroseed native shrub species.
Multi-Use Treatment Retrofit Opportunities							
Trail Retention - Changes for existing maintenance road.	1.41	mile	\$40,000.00	\$65,000.00	\$56,400.00	\$91,650.00	Moderate improvements to existing dam access road on structure.
Subtotal					\$2,801,200.00	\$5,331,170.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Actions

White Tanks FRS 3 - 6

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone Two - Dam Structure - Option Two							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Remove dam structure and replace with large basin	1	lump sur	\$3,762,000.00	\$7,524,000.00	\$3,762,000.00	\$7,524,000.00	20 cy/ lf of removal at \$3/ cy for 7700lf; Basin = 1.1m cy of removal.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	100	acre	\$26,400.00	\$46,200.00	\$2,640,000.00	\$4,620,000.00	12 Trees/ acre.
Revegetation - Seeding disturbed areas	100	acre	\$21,800.00	\$43,560.00	\$2,180,000.00	\$4,356,000.00	Includes park space.
Irrigation System	100	acre	\$21,800.00	\$43,560.00	\$2,180,000.00	\$4,356,000.00	Includes park space.
Multi-Use Treatment Retrofit Opportunities							
Gateway Features - At trail connection points	1	each	\$12,000.00	\$16,000.00	\$12,000.00	\$16,000.00	Located at 203rd Avenue and Bethany Home Road.
Recreation Area - Regional park facilities	27	acre	\$50,000.00	\$100,000.00	\$1,350,000.00	\$2,700,000.00	Includes only passive recreation.
Total of Zone Two (Option Two)					\$12,124,000.00	\$23,572,000.00	
Zone Three - Impoundment Area							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Construct low flow channel feature	4200	lf	\$32.00	\$1,148.00	\$134,400.00	\$4,821,600.00	8' low flow channel with rock riprap.
Earthwork - Construct recharge basin/ ponding areas	20	acre	\$261,360.00	\$522,720.00	\$5,227,200.00	\$10,454,400.00	Arrange 2' depth.
Rock Drop Structures - Near basin/ ponding areas	1600	cubic yd	\$45.00	\$60.00	\$72,000.00	\$96,000.00	Two basin areas to be constructed.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	63	acre	\$26,400.00	\$46,200.00	\$1,663,200.00	\$2,910,600.00	12 trees/ acre.
Revegetation - Seeding disturbed areas	63	acre	\$21,800.00	\$43,560.00	\$1,373,400.00	\$2,744,280.00	Revegetation of disturbed areas within impoundment area.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	2.3	mile	\$10,000.00	\$25,000.00	\$23,000.00	\$57,500.00	Meandering trail improvements in the basin area.
Trailhead Facilities	1	each	\$50,000.00	\$100,000.00	\$50,000.00	\$100,000.00	Located at Northern Ave.
Interpretive/ Wildlife Viewing Facility	1	each	\$100,000.00	\$150,000.00	\$100,000.00	\$150,000.00	Located toward southern portion of site.
Recreation Area - Regional park facilities	20	acre	\$100,000.00	\$150,000.00	\$2,000,000.00	\$3,000,000.00	Includes only passive recreation.
Subtotal					\$10,643,200.00	\$24,334,380.00	
Total of Zone One, Zone Two (Option One) and Zone Three Retrofits					\$14,455,660.00	\$31,569,030.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Actions

White Tanks FRS 4 - 7

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone One - Naturalized Inlet Channel							
Aesthetic Treatment Retrofit Opportunities							
Earthwork & Rock Placement - Repair & reinforce channel	11,640	lf	\$3.00	\$7.00	\$34,920.00	\$81,480.00	To repair portions of the channel that have eroded
Landscaping Treatment Retrofit Opportunities							
Tree Planting	3.4	mile	\$12,000.00	\$20,000.00	\$40,800.00	\$68,000.00	Tree plantings along the trail.
Revegetation - Seeding disturbed areas	16.5	acre	\$21,800.00	\$43,560.00	\$359,700.00	\$718,740.00	Revegetation of disturbed areas within naturalized inlet area.
Irrigation System	16.5	acre	\$10,000.00	\$16,000.00	\$165,000.00	\$264,000.00	Irrigation for tree plantings along trails.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	4.03	mile	\$40,000.00	\$65,000.00	\$161,200.00	\$261,950.00	Meandering trail improvements adjacent to naturalized inlet channel.
Gateway Features - At trail connection points	1	each	\$12,000.00	\$16,000.00	\$12,000.00	\$16,000.00	Gateway to be located at 195th Avenue and McDowell Road.
Land Acquisition Opportunities for Landscape Aesthetics and Multi-use Treatment							
Land Acquisition - To enlarge area for retrofit treatments	8	acre	\$80,010.00	\$160,010.00	\$640,080.00	\$1,280,080.00	To acquire land along the west side of the naturalized channel.
Subtotal					\$1,413,700.00	\$2,690,250.00	
Zone Two - Concrete-Lined Inlet Channel							
Aesthetic Treatment Retrofit Opportunities							
Culvert - Underground concrete-lined channel	200	linear ft	\$1,000.00	\$2,000.00	\$200,000.00	\$400,000.00	Length 200'; width 40'; under Interstate 10.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	2	mile	\$12,000.00	\$20,000.00	\$24,000.00	\$40,000.00	5 trees for every 200'.
Multi-Use Treatment Retrofit Opportunities							
Trail Retention - Minor changes for existing maintenance road	2	mile	\$40,000.00	\$65,000.00	\$80,000.00	\$130,000.00	
Land Acquisition Opportunities for Landscape Aesthetics and Multi-use Treatment							
Land Acquisition - To enlarge area for retrofit treatments	6	acre	\$80,010.00	\$160,010.00	\$480,060.00	\$960,060.00	To acquire land along the west side of the naturalized channel.
Subtotal					\$784,060.00	\$1,530,060.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Actions

White Tanks FRS 4 - 7

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
Zone Three - Dam Structure - Option One							
Aesthetic Treatment Retrofit Opportunities							
Earthwork - Construct overburden area on dam structure	6,200	lf	\$96.00	\$128.00	\$115.20	\$153.60	16cy/ lf at \$6/ cy of import.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	1.2	mile	\$12,000.00	\$20,000.00	\$14,400.00	\$24,000.00	Tree plantings at the 2 enhanced nodes; 132 trees per mile.
Revegetation - Seeding disturbed areas	41	acre	\$21,800.00	\$43,560.00	\$893,800.00	\$1,785,960.00	Revegetation of enhanced nodes and disturbed areas.
Irrigation System	1.2	mile	\$20,000.00	\$32,000.00	\$24,000.00	\$38,400.00	For disturbed areas and tree plantings near the dam structure.
Multi-Use Treatment Retrofit Opportunities							
Trail Retention - Minor changes for existing maint. road on dam	1.3	mile	\$40,000.00	\$65,000.00	\$52,000.00	\$84,500.00	Moderate improvements to existing dam access road on structure.
Trail Improvements - Meander existing maintenance road	2.6	mile	\$25,000.00	\$40,000.00	\$65,000.00	\$104,000.00	Includes rebuilding the structure with a meander.
Gateway Features - At trail connection points	2	each	\$16,000.00	\$25,000.00	\$32,000.00	\$50,000.00	Located at Jackrabbit Trail + north end of dam and Van Buren St. + west end of dam.
Subtotal					\$1,081,315.20	\$2,087,013.60	
Zone Three - Dam Structure - Option Two							
Aesthetics and Multi-use Treatments							
Earthwork - Remove structure and replace.	6,200	lf	\$1,100,000.00	\$2,200,000.00	\$6,820,000.00	\$13,640,000.00	Replace with a modified structure; 20cy to remove at \$3; 20cy to replace at \$6.
Landscaping Treatment Retrofit Opportunities							
Tree Planting	1.3	mile	\$2,196.00	\$3,780.00	\$2,854.80	\$4,914.00	5 trees every 200'.
Revegetation - Seeding disturbed areas	30	acre	\$2,200.00	\$5,200.00	\$66,000.00	\$156,000.00	Revegetation of enhanced nodes and disturbed areas.
Multi-Use Treatment Retrofit Opportunities							
Gateway Features - At trail connection points	1	each	\$16,000.00	\$25,000.00	\$16,000.00	\$25,000.00	Located at Van Buren St. and 195th Ave.
Total of Zone Two (Option Two)					\$6,820,084,854.80	\$13,640,185,914.00	
Zone Four - Impoundment Area							
Aesthetic Treatment Retrofit Opportunities							
Low Flow Channel	850	lf	\$32.00	\$48.00	\$27,200.00	\$40,800.00	
Landscaping Treatment Retrofit Opportunities							
Tree Planting	16	acre	\$6,000.00	\$10,000.00	\$96,000.00	\$160,000.00	12 trees/ acre.
Revegetation - Seeding disturbed areas	16	acre	\$21,800.00	\$43,560.00	\$348,800.00	\$696,960.00	For disturbed areas and tree plantings within the impoundment area.
Multi-Use Treatment Retrofit Opportunities							
Soft Surface Trail	0.97	mile	\$40,000.00	\$65,000.00	\$38,800.00	\$63,050.00	Separated-use trail on basin access road.
Recreation Area - Special use park facilities	25	acre	\$100,000.00	\$150,000.00	\$2,500,000.00	\$3,750,000.00	The recreation area is proposed for active-use.
Subtotal					\$3,010,800.00	\$4,710,810.00	

FLOOD CONTROL STRUCTURE ANALYSIS

Cost Estimate for Retrofit Actions

White Tanks FRS 4 - 7

Item	Quantity	Unit	Unit Cost (Low)	Unit Cost (High)	Total (Low)	Total (High)	Remarks
<i>Zone Five- Borrow Pit Area</i>							
Multi-Use Treatment Retrofit Opportunities							
Recreation Area	16	acre	\$50,000.00	\$100,000.00	\$800,000.00	\$1,600,000.00	ATV, motorcycle, and BMX bicycle park.
Subtotal					\$800,000.00	\$1,600,000.00	
Total of Zone One, Zone Two (Option One) and Zone Three Retrofits					\$7,089,875.20	\$12,618,133.60	

List of References

- Army Corps of Engineers Agua Fria River Wildlife Rehab Project
- Buckeye Irrigation District El Rio Phase I Concept Plan
- City of Goodyear Parks, Trail, and Open Space Masterplan Draft, 2001
- City of Surprise General Plan 2020, Bicycle and Multi – Model Routes
- City of Surprise Ground Water Recharge Project
- FCDMC Area Drainage and Water Course Master Planning
- FCDMC Data on Structures, Nov. 1985, Dec. 1996
- FCDMC Lands 2000 Program
- FCDMC Structures Assessment Program
- Maricopa Association of Governments General Plan, Land Use, Urban Area
- Maricopa Association of Governments , Regional Off Street System Plan,
Nov. 2000
- Proposed Maricopa County Regional Trail System, October 1999
- Recreational. Park and Open Space Standards and Guidelines, 1983
- The El Rio Vision, Multi Agency Review and Response to Planning and Policy
Opportunities on the Gila River
- West Valley Recreational Corridor Design Concept Report, June 1999
- White Tank/ Grand Avenue Area Plan
- Other City, County, and State Recreation, Trails, and Open Space Plans